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February 16, 2018

Ms. Alicia Brown
IDEM OLQ Permits
100 North Senate Avenue
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Indianapolis, Indiana 46204-2251

Re: Investigation Report
Indiana American Water Company,
Ogden Dunes Water Filtration Plant, Case #2008-18172-W

Dear Ms. Brown:

On behalf of Indiana American Water Company ERM is pleased to submit this Investigation Report summarizing activities completed by ERM from November 2015 to September 2017 at the former filtration residuals pond located at 84 Diana Road in Ogden Dunes, Indiana. The completed investigation activities were guided by the *Investigation Work Plan* prepared by ERM dated March 2, 2015 (revised May 22, 2015) (IDEM Virtual File Cabinet (VFC) document #80015012), and approved by the Indiana Department of Environmental Management (IDEM) on August 6, 2015.

Please feel free to contact me at 317-816-7302 if you have any further questions.

Sincerely,



Environmental Resources Management
Martin Ryan, MS, LPG #IN2084
Principal Consultant

Cc. Stacy Hoffman, Ed Nickels, Indiana American Water



Investigation Report

Prepared for:

Indiana American Water Company
650 Madison Street
Gary, Indiana 46401

Former Residuals Pond
84 Diana Road
Ogden Dunes, Indiana
Case #2008-18172-W

February 16, 2018

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ERM

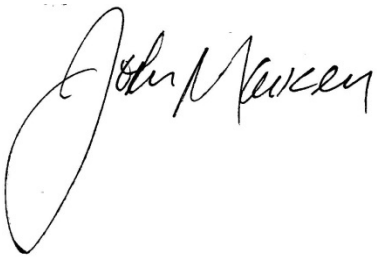
Investigation Report

Former Residuals Pond
84 Diana Road
Ogden Dunes, Indiana

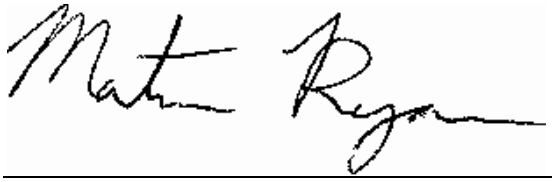
Case #2008-18172-W

February 16, 2018

ERM Project No.: 0346694



John Markey
Partner in Charge



Martin Ryan
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ABBREVIATIONS

BGS	Below Ground Surface
BRA	Background Reference Area
BTV	Background Threshold Value
COPC	Constituent of Potential Concern
CSM	Conceptual Site Model
CWLLDU	Central and Western Long Lake Decision Unit
DU	Decision Unit
EDD	Electronic Data Deliverable
ELLDU	Eastern Long Lake Decision Unit
EPC	Exposure Point Concentration
ERM	Environmental Resources Management
ESL	Ecological Screening Values
FRP	Former Residuals Pond
GPS	Global Positioning System
IAW	Indiana American Water Company
IDEM	Indiana Department of Environmental Management
IHBRR	Indiana Harbor Belt Railroad
mg/Kg	milligrams per Kilogram
NPS	National Park Service
NRWQ	National Recommended Water Quality
NTU	Nephelometric Turbidity Units
ppm	Parts per Million
PVC	Polyvinyl Chloride
RCG	Remediation Closure Guide
RCRA	Resource Conservation and Recovery Act
RSV	Refinement Screening Value
UCL	Upper Confidence Limit
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
µg/L	micrograms per Liter
VFC	Virtual File Cabinet
WTR	Water Treatment Residuals

1.0 INTRODUCTION

On behalf of Indiana American Water Company (IAW), Environmental Resources Management, Inc. (ERM) has prepared this *Investigation Report* summarizing data collected from November 2015 through September 2017 a part of an environmental investigation of the former residuals pond (the "FRP") associated with the Ogden Dunes Water Filtration Plant located at 84 Diana Road in Ogden Dunes, IN (the "Site"). An oblique aerial view of Site is shown on **Photo #1**, and a topographic map showing the location of the Site is provided on **Figure 1**.

The completed investigation activities were guided by the *Investigation Work Plan* prepared by ERM dated March 2, 2015 (revised May 22, 2015) (IDEM Virtual File Cabinet (VFC) document #80015012), and approved by the Indiana Department of Environmental Management (IDEM) on August 6, 2015. The purpose of the completed investigation activities was to assess soil, sediment, surface water and groundwater for the presence of constituents of potential concern (COPCs) related to water treatment residuals (WTR). The new information was then used to supplement the existing conceptual site model (CSM), as requested by IDEM in its April 22, 2013 letter to IAW (VFC #68052974).

To complete all the items listed in the *Investigation Work Plan,* it was necessary for ERM to obtain and maintain a National Park Service (NPS) investigator permit. As agreed under that permit a copy of this *Investigation Report* will also be submitted to NPS.

This *Investigation Report* expands on the *Preliminary Finding Report* submitted to IDEM on April 10, 2017 and addresses IDEM's August 2, 2017 follow-up comments. IDEM's specific comments followed by ERM's responses are listed below:

Comment #1 - USEPA Region 4 Interim Draft ESLs are acceptable as a supplemental ecological screening level, since the USEPA Region 5 ecological screening levels (ESLs) have been archived.

ERM Reply – ERM used the Region 4 ecological screening values for one or more COPCs in the ecological screening tables presented in Section 4.4 of this *Investigation Report*. The Region 4 guidance was also used in the ecological refinement screening discussed in Section 5.4 of the report.

Comment #2 - ERM should use conservative exposure assumptions to calculate the exposure point calculations (EPCs) for FRP, and Long Lake

surface water and sediment to complete the exposure assessment for the final investigation report.

a. For FRP and Long Lake surface water, use the maximum (of four) seasonal sample detections at each sample location to calculate the EPC.
b. For FRP and Long Lake sediment, use the maximum (of two) detections for each sample location to calculate the EPC.
c. If individual ground water sampling results exceed screening level(s), then the facility will need to individually compare each result to the calculated background levels.

ERM Reply – In this *Investigation Report*, for FRP and Long Lake surface water, ERM uses the maximum (of four) seasonal sample detections at each sample location to calculate the EPC. For FRP and Long Lake sediment, ERM uses the maximum (of two) detections for each sample location to calculate the EPC. For individual groundwater sampling results exceeding screening level(s), the results are individually compared to the calculated background levels.

Comment #3 - The *Preliminary Findings Report* describes four quarterly ground water monitoring events, but only includes potentiometric maps (shallow and deep) from the September 2016 event. The facility needs to develop potentiometric maps for both screened intervals for each ground water monitoring event. The facility needs to utilize staff gauge measurements in the development of shallow potentiometric maps and measurements from the USGS off-site piezometers and the background well nest in shallow or deep potentiometric maps as appropriate (i.e. based on their screened intervals). Include these maps in the final investigation report.

ERM Reply – ERM has prepared the requested potentiometric maps for the Site for each of the quarterly gauging events.

Comment #4 - The *Preliminary Findings Report* describes submitting electronic digital data (EDD) via e-mail for soil, sediment, and surface water after completion of the two-year study. The facility also needs to include EDD for groundwater monitoring data (field and laboratory) after completion of the two-year study.

ERM Reply – ERM has included the requested information in appendices to this *Investigation Report.*

2.0 CHRONOLOGY OF INVESTIGATION ACTIVITIES

The sampling period covered by this *Investigation Report* is from November 2015 to September 2017. The work items completed during that time period are listed below.

November 2015

- Completed the first of four planned seasonal surface water sampling events (the winter event) at the IDEM-approved background reference area (BRA) on National Park Service (NPS) land located south of Highway 12. Ten surface water locations, identified as SW-BG-1 through 10 on **Figure 2**, were sampled.
- Collected ten sediment samples from the BRA locations identified on **Figure 2** as SED-BG-1 through 10.
- Collected ten surface soil samples from the BRA locations identified on **Figure 2** as SG-BG-1 through 10.
- Completed the first of four planned seasonal surface water sampling events (the winter event) at 16 surface water locations at Long Lake on NPS property west of the FRP. The 16 locations are identified on **Figure 3** as SW-LL-1 through 16.
- Completed the first of two planned annual sediment sampling events (the 2015 event) at 16 sediment locations at Long Lake on NPS property west of the FRP. The 16 locations are identified on **Figure 3** as SED-LL-1 through 16.
- Completed the first of four planned seasonal surface water sampling events (the winter event) at 20 surface water locations at the FRP. The 20 locations are identified on **Figure 3** as SW-RP-1 through 20.
- Completed the first of two planned annual sediment sampling events (the 2015 event) at 20 sediment locations at the FRP. The 20 locations are identified on **Figure 3** as SED-LL-1 through 20.
- Collected surface soil samples from 13 locations surrounding the FRP. The 13 locations are identified on **Figure 4** as SG-RP-1 through 13.
- Installed one background monitoring well couplet consisting of a shallow well (BG-1S) and an adjacent deeper well (BG-1D) on NPS land near the Inland Marsh/Tolleston Dunes trailhead parking area (see **Figure 3**).
- Installed three additional shallow monitoring wells (MW-6S, MW-7S, and MW-8S) and eight deeper monitoring wells (MW-1D through MW-8D) along the perimeter of the plant property (see locations on F**igure 4**). Shallow monitoring wells MW-1 through 5 were installed by a different consultant in 2009.

December 2015

- Measured depths-to-groundwater from the eight on-site monitoring well couplets and the off-site background monitoring well couplet.
- Completed first of eight planned groundwater sampling events at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.

March 2016

- Installed and surveyed a staff gauge at the FRP.
- Measured depths-to-groundwater from the eight on-site monitoring well couplets, the off-site background monitoring well couplet, and four piezometers (E-2, E-3, E-5, E-8 and M-6 on **Figure 2**) maintained by the United States Geological Survey (USGS).
- Completed second of eight planned groundwater sampling events at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.

June 2016

- Completed the second of four seasonal surface water sampling events (the summer event) at the BRA. Ten surface water locations, identified as SW-BG-1 through 10 on **Figure 2**, were sampled.
- Completed the second of four seasonal surface water sampling events (the summer event) at Long Lake. Sixteen surface water locations, identified as SW-LL-1 through 16 on **Figure 2**, were sampled.
- Completed the second of four seasonal surface water sampling events (the summer event) at the FRP. Ten surface water locations, identified as SW-RP-2, -4, -6, -8, -10, -12, -13, -16, -18, and -20 on **Figures 2** and **3**, were sampled.
- Measured depths-to-groundwater from the eight on-site monitoring well couplets, the off-site background monitoring well couplet, and four USGS piezometers.
- Completed third of eight planned groundwater sampling events at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.
- Performed bathymetric survey at FRP that consisted of 127 sample points.

September 2016

- Measured depths-to-groundwater from the eight on-site monitoring well couplets, the off-site background monitoring well couplet, and four USGS piezometers.

- Completed fourth of eight planned groundwater sampling events at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.
- Performed supplemental bathymetric survey at FRP that consisted of 48 sample points.

October 2016

- Completed the third of four seasonal surface water sampling events (the fall event) at the BRA. Ten surface water locations, identified as SW-BG-1 through 10 on **Figure 2**, were sampled.
- Completed the third of four seasonal surface water sampling events (the fall event) at Long Lake. Sixteen surface water locations, identified as SW-LL-1 through 16 on **Figure 2**, were sampled.
- Completed the second of two annual sediment sampling events (the 2016 event) at 16 sediment locations at Long Lake on NPS property west of the FRP. The 16 locations are identified on **Figure 3** as SED-LL-1 through 16.
- Completed the third of four planned seasonal surface water sampling events (the fall event) at the FRP. Ten surface water locations, identified as SW-RP-2, -4, -6, -8, -10, -12, -13, -16, -18, and -20 on **Figures 3** and **4**, were sampled.
- Completed the second of two annual sediment sampling events (the 2016 event) at 20 sediment locations at the FRP. The 20 locations are identified on **Figure 3** as SED-RP-1 through 20.
- Performed supplemental bathymetric survey of the FRP.

December 2016

- Measured depths-to-groundwater from the eight on-site monitoring well couplets, the off-site background monitoring well couplet, and four USGS piezometers.
- Completed fifth of eight planned groundwater sampling events at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.

March 2017

- Completed the fourth and final seasonal surface water sampling event (the spring event) at the BRA. Ten surface water locations, identified as SW-BG-1 through 10 on **Figure 2**, were sampled.
- Completed the fourth and final seasonal surface water sampling event (the spring event) at Long Lake. Sixteen surface water locations, identified as SW-LL-1 through 16 on **Figure 2**, were sampled.

- Completed the fourth and final seasonal surface water sampling event (the spring event) at the FRP. Ten surface water locations, identified as SW-RP-2, -4, -6, -8, -10, -12, -13, -16, -18, and -20 on **Figures 2** and **3**, were sampled.
- Measured depths-to-groundwater from the eight on-site monitoring well couplets, the off-site background monitoring well couplet, and four USGS piezometers.
- Completed sixth of eight planned groundwater sampling events at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.

June 2017

- Measured depths-to-groundwater from the eight on-site monitoring well couplets, the off-site background monitoring well couplet, and four USGS piezometers.
- Completed seventh of eight planned groundwater sampling events at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.

September 2017

- Measured depths-to-groundwater from the eight on-site monitoring well couplets, the off-site background monitoring well couplet, and four USGS piezometers.
- Completed eighth and final planned groundwater sampling event at the eight on-site monitoring well couplets and at the off-site background monitoring well couplet.

3.0 METHODS

The methods used to complete investigation activities during the period of this report are presented below, as follows: Section 3.1 presents the sample handling and analytical methods, Section 3.2 describes how the sample locations were surveyed, Section 3.3 describes how surface soil, surface water and sediment samples were collected, Section 3.4, presents the methods used to install the monitoring wells and collect groundwater samples, and Section 3.5 describes the steps used to complete the bathymetric survey of the FRP.

3.1 SAMPLE HANDLING AND ANALYTICAL METHODS

All samples collected during the investigation activities described above were placed in new laboratory-provided sample containers. For soil and sediment samples, all COPCs were analyzed from a single 4-oz glass jar. For surface water and groundwater samples, the following containers were used:

250 mL plastic (for metals, minus mercury)

4-40 mL glass vials (for mercury)

250 mL plastic (for anions)

All the sample containers were unpreserved with the exception of the groundwater sample containers for metals (minus mercury), which were pre-preserved with nitric acid. All samples were placed in a cooler with ice and shipped under chain of custody to ALS Environmental in Holland, Michigan where they were analyzed for 16 COPCs using the following methods:

- Aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead manganese, potassium, selenium, silver, and zinc were analyzed by USEPA Method 6010C for soil and sediment and 6020A for water. At the laboratory, prior to analysis, the surface water samples were filtered using 0.45 micron filter. Groundwater samples were not laboratory filtered.

- Mercury in soil and sediment was analyzed by USEPA Method 7471B. Mercury in surface water and groundwater was analyzed by USEPA Method 1631E. At the laboratory, prior to analysis, the surface water samples were filtered using 0.45 micron filter. Groundwater samples were not laboratory filtered.

- Sulfate, nitrogen-nitrate, and hardness (water samples only) were analyzed by USEPA Method 9056.

3.2 SURVEYING AND NAVIGATION METHODS

The latitude/longitude spatial coordinates, in decimal degrees, of each sediment, surface water, and soil sample point in the BRA, Long Lake, and on-site, were determined using Google Earth™ software. The coordinates were uploaded into a Trimble® brand handheld global positioning (GPS) unit with sub-meter accuracy, which was used to navigate to each location in the field.

In December 2015 all eight on-site monitoring well couplets and the off-site background monitoring well couplet were surveyed by an Indiana-licensed professional land surveyor.

The spatial coordinates for the various soil, sediment, surface water, and groundwater sample locations are listed in **Table 1**.

3.3 FIELD SAMPLING METHODS

3.3.1 Surface Soil Sampling

A stainless steel hand trowel was used to sample soil from upper six inches of the soil column. A field geologist described and logged each soil sample and the boring logs can be found in **Appendix A**. The description included the recovery length, composition, structure, grain size, density, sorting, color, and moisture content of the soil sample from visual observation. A Munsell® color chart was used to accurately identify the color of the soil. A portion of each soil sample was placed into the laboratory provided sample containers, taking care to avoid collecting large stones and vegetation. The sample ID and the date and time were written on the container label in indelible ink and the containers were then placed in an ice chest. The hand trowel was decontaminated after the collection of each sample using an Alconox® non-phosphate detergent wash and distilled water rinse.

3.3.2 Surface Water Sampling

All locations were accessible by wading or by a canoe with outriggers (see **Photo #2**). At each sample location a field-grade water quality meter was used to directly measure dissolved oxygen, oxidation-reduction potential, turbidity, specific conductance, pH, and temperature. Water depth was also recorded at each location. After recording the water quality parameters and depth in a field book, a surface water sample was collected manually by dipping the unpreserved laboratory-provided container into the water, taking care not to disturb and entrain any the sediment. The samples were labeled and then placed into an ice chest and shipped to the contract laboratory under proper chain of custody procedures. The samples were filtered by the contract lab using a 0.45 micron filter.

3.3.3 Sediment Sampling

As with the collocated surface water samples, all locations were accessible by wading or by a canoe with outriggers. Sediment samples were collected from the 0-1' interval using a Wildco® stainless sediment core equipped with a disposable acetate liner and disposable plastic core shoe, as shown on **Photo #3**. In deeper water an extend handle was used. New liners and core shoes were used at each location. When wading, care was taken to avoid disturbing the sediment at the proposed sample location. The acetate liner was extruded into a plastic bowl where any stones and vegetation were removed. The samples were homogenized using a stainless steel spoon and then placed into laboratory provided sample containers.

3.4 GROUNDWATER INVESTIGATION METHODS

3.4.1 Monitoring Well Installation

Monitoring well installation methods, which were consistent with IDEM's *Drilling Procedures and Monitoring Well Construction Guidelines – Nonrule Policy Document #Waste-0053* and Department of Natural Resources requirements in 312 IAC 13, are described below.

At each location a boring was advanced into the unconsolidated material using a Geoprobe® equipped with 4.25-inner diameter direct push tooling for 2-inch diameter wells. **Photo #4** shows a Geoprobe® setup on one of the drilling locations. Soil samples were collected using a 4-ft long dual tube sample tube. A professional geologist described and logged each soil sample core recovered from each boring. The descriptions included the recovery length, composition, structure, grain size, density, sorting, color, and moisture content of the soil sample from visual observation. A Munsell® color chart was used to accurately identify the color of the soil. The boring logs for each monitoring well installed can be found in **Appendix A**.

After advancing the drill tooling to the proposed total depth of each monitoring well, a 5-foot long by 2-inch diameter polyvinyl chloride (PVC) pre-packed well screen with #120 mesh ultrafine silica sand (to minimize the infiltration of fine particles that may high bias total metals results) was installed. Each monitoring well couplet well consists of one well screened shallow (near the water table) and one screened deep (in the lower part of the surficial aquifer). The two wells are located five to ten feet away from each other. A foam bridge and 2-foot-thick prepacked bentonite sleeve seal was installed above the sand pack. The remaining annular space from the top of the seal to approximately six inches below ground surface (BGS) was then filled with a cement/ bentonite grout. The grout contained 5% of bentonite by weight. A nine inch-diameter, bolt-down, protective steel, flush-mount well cover embedded in a two by two-foot by six-

inch thick concrete pad was installed at each location. Expandable, locking caps were used to seal the well casing at the surface. Construction diagrams for each well are provided in **Appendix A**.

Each new well was developed no sooner than 24 hours following the installation, to allow the bentonite seal and grout to set. Development consisted of evacuating groundwater with a submersible pump. Each well was developed until the turbidity in the water decreased based on qualitative observations. The development method and volume of water removed during development was recorded in the field book and on the well construction diagrams provided in **Appendix A**.

The investigation-derived waste generated during the well installation and development was handed as follows:

- The analytical results for the sample collected from the drummed investigation-derived waste soil showed that all COPCs were below the residential screening levels. Therefore, in accordance with IDEM Policy Number WASTE-0064, "Uncontaminated Soil Policy", the drummed waste was removed from the drum(s) and placed on the ground surface on- site.
- The analytical results for the drummed investigation-derived water were also below the residential tap water screening levels. With approval from the IDEM geologist the drummed waste water was released to the ground surface on-site.

3.4.2 Groundwater Sampling

Depth-to-water measurements were made at each monitoring well using an electronic water level meter prior to beginning sampling activities. Then samples were collected using low-flow sampling following procedures in IDEM's *The Micro-Purge Sampling Option*, dated January 8, 2003. A peristaltic pump and dedicated Teflon-lined LDPE tubing were used to purge the well. The tubing intake was placed in the center of the saturated screen interval. In accordance with IDEM Non-rule Policy Document W-0057 the purging flow rate was adjusted to prevent drawdown from exceeding 0.3 feet. A water quality meter, with in-line flow cell, was used that was capable of measuring dissolved oxygen, oxidation-reduction potential, turbidity, specific conductance, pH, and temperature (as shown on **Photo #5**). If a turbidity of 10 nephelometric turbidity units (NTU) or less could not be obtained prior to sampling, then a second set of samples were collected from that location using a 10-micron disposable in-line filter cartridge.

Groundwater samples were collected in laboratory-provided, pre-preserved containers. The sample ID and the date and time were written on the container

label in indelible ink and the containers were then placed in an ice chest. The sample cooler was shipped to the contract laboratory using proper chain of custody protocols. Groundwater samples were not filtered using 0.45 micron filters, as the surface water samples were. Therefore, the groundwater results (discussed below in Section 4.0) are total metals results.

Groundwater sampling forms for the eight sampling events covered by this report are attached in **Appendix B**.

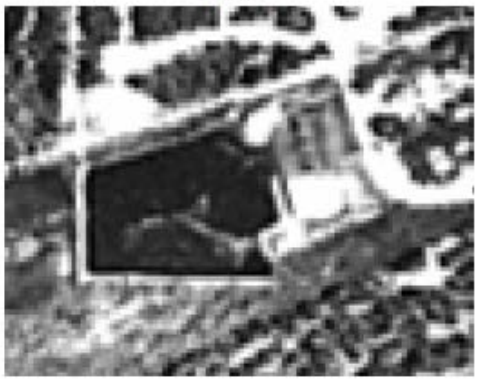
3.5 BATHYMETRIC SURVEY

The goal of the bathymetric survey was to determine the volume and distribution of the WTR currently present in the FRP. A key assumption in making the determination was that any material present above the elevation of the 1963 Alvord, Burdick & Howson *Ogden Dunes Site Water Treatment Plant "As-Built" Site Plan* ("the 1963 as-built") was emplaced during the pond's period of use from 1964 to 2009 and therefore must be accumulated residuals. The 1963 as-built contours are depicted on **Figure 5**. Based on a review of historic aerial photos, the 1963 pond was expanded to its present-day configuration sometime between 1965 and 1973 by adding a new berm along the western and southern property lines (see the 1965 and the 1973 air photos below).

1965



1973



ERM prepared for the bathymetric survey by first using AutoCAD drafting software to create a 50-foot grid over a georeferenced, scaled drawing of the current pond. At each intersecting gridline, a location point was created, and NAD83 latitude and longitude coordinates were obtained for the 127 points located within the current wetted perimeter of the pond. The coordinates for the sample points, shown on **Figure 6**, were uploaded into a Trimble® brand handheld GPS receiver with sub-meter accuracy.

In June 2016 the field team navigated to each location by way of canoe equipped with outriggers for stability. At each of the 127 locations, a fiberglass measuring rod with increments of 0.01 feet was lowered into the water column until it

rested upon the sediment surface (see **Photo #6**). The depth to sediment was recorded, based upon the relative elevation of the water's surface as read upon the measuring rod. The depth to sediment measurements, were subtracted from the water surface elevation as measured on the pond staff gauge the day of field activities, resulting in the NAVD88 elevation of the sediment surface above mean sea level.

In September 2016, 48 additional bathymetric measurement locations were added to more precisely record closely spaced sediment surface irregularities.

Using AutoCAD drafting software data from the 175 surveyed locations collected during the June and September 2016 survey events were combined to create the contour surface of the present day floor of the pond shown on **Figure 6.**

4.0 RESULTS

The results of the investigation activities completed through October 2016 are presented below, as follows: Section 4.1 presents new hydrogeological information specific to the Site, Section 4.2 presents the findings of the ERM bathymetric survey to establish the current distribution of the remaining accumulated residuals, Section 4.3 presents the results of the background sampling completed in the BRA, and Section 4.4 presents the results of FRP and Long Lake sampling.

4.1 HYDROGEOLOGICAL FINDINGS

Depth-to-water readings and potentiometric surface elevations obtained for the monitoring wells for the period covered by this report are listed in **Table 2**. Potentiometric surface maps for each of the eight quarterly events from December 2015 through September 2017 are provided in **Appendix C**. Separate maps were prepared for the shallow-zone wells and the deeper-zone wells. For each of the eight gauging events the two mapped zones, which have very similar potentiometric surfaces, show that the potentiometric head is higher in the direction of Long Lake and lower towards the FRP, and even lower north and northeast of the pond. Monitoring well couplet MW-8S/D is the most downgradient point on the Site.

These potentiometric head readings indicate that the surface water/groundwater system flows eastward from Long Lake through the FRP then into the sandy surficial aquifer north and east of the pond. These findings are similar, but higher in resolution, to the 2011 findings presented in the USGS Scientific Investigations Report 2013-5003 entitled "Hydrologic Data and Groundwater Flow Simulations in the Vicinity of Long Lake, Indiana Dunes National Lakeshore near Gary, Indiana", at following web address.

https://pubs.usgs.gov/sir/2013/5003/

Groundwater flow paths simulated in the USGS report (see Figures 32 and 33 of the referenced report) indicate that groundwater in the surficial aquifer downgradient from the FRP seeps into Lake Michigan approximately 0.75 mile north-northeast of the Site.

Geologic observations noted during the installation of monitoring well clusters MW-1S/D through 8S/D were used to construct the diagrammatic cross-section shown on **Figure 7**. Sand is the predominant geologic material underlying the Site down to the 33-foot maximum depth below grade sampled by ERM. A humus-rich layer of sand was observed to project eastward under the Site at an elevation similar to the bottom of Long Lake. ERM also observed that the upper 10 to 15' of the eastern part of the Site is composed of sand fill. Based on the

historic as-built drawings, the sand fill material was emplaced at the time the Site was developed, in 1963.

4.2 BATHYMETRIC SURVEY RESULTS

The present-day horizontal distribution of accumulated residuals in the FRP is shown on **Figure 8**, based on the bathymetric survey information collected by ERM as described above in Section 3.5. The vertical distribution of the present-day residuals is shown on **Figure 9**. The bathymetric survey shows that dredging activities completed in 2010 IAW effectively removed the accumulated residuals within the central part of the 1963 as-built pond, northwest of the former outfall pipe. The remaining accumulation of residuals appears to be located primarily around the steeply sloping margins of the deeper 1963 as-built pond and in the areas to the east and southeast of the former outfall pipe which contain dense, well-rooted aquatic vegetation that impeded the dredging activities in 2010.

Using AutoCAD's Civil 3D® volumetric calculation functionality to interpolate between the 175 bathymetric points and the 1963 as-built, it was determined that a volume of approximately 5,685 cubic yards of residuals remains in the pond. It was also determined that 885 yards of native sediment was dredged sometime after 1963, with the majority of that occurring in the southwestern part of the pond likely during construction of the current southern and western berms. An undetermined amount (some fraction of 885 yards) of over-dredging also occurred during 2010, especially in the deeper parts of the pond northwest of the outfall pipe.

The moisture content of the residuals remaining in the pond, based on the arithmetic mean of the 20 sediment samples collected by ERM in October 2016, was 62% by weight. Therefore, the total solids residue comprises 38% of the residuals, by weight. According to the following reference, the maximum (most conservative) dry bulk density of typical water treatment residuals is 1.3 g/cm^3, or 1.1 tons/yard.

https://stormwater.ucf.edu/fileRepository/docs/chemicaltreatment/documents/Dayton%20and%20Basta,%202001.pdf

Converting from weight % to volume%, the total solids residue comprises 32% of the residuals volume. Multiplying the present-day residuals volume (5,685 yards) x 32% x 1.1 tons/yard indicates that the equivalent of approximately 2,001 dry weight tons of residuals remains in the pond.

Manifests provided by Troy Risk in Appendix B of the *Risk Assessment Work Plan* prepared on behalf of IAW dated September 28, 2012 (VFC document #66987361) indicate that a total of 5,545 tons of dried residuals was shipped

from the Site in 2010 following dredging operations. Assuming that the residuals was completely dried, and using the moisture content and bulk density information described in the preceding paragraph, the equivalent of 15,753 yards of residuals and adjacent pond bottom sediment was dredged from the FRP in 2010.

Based on the estimated values presented in the preceding paragraphs (15,753 yards/ [15,753 yards + 5,685 yards]), 73% of the pond residuals were removed by dredging in 2010. Rounding down to account for the over-dredging of the pond bottom that also occurred in 2010, a reasonable estimate for the amount of residuals removed from the pond and disposed off-site is 70%. The other 30% of the residuals remains in the pond.

4.3 BACKGROUND SAMPLING RESULTS

Analytical reports including Electronic Data Deliverables (EDDs) for the background samples collected during the period covered by this report are included in **Appendix D**.

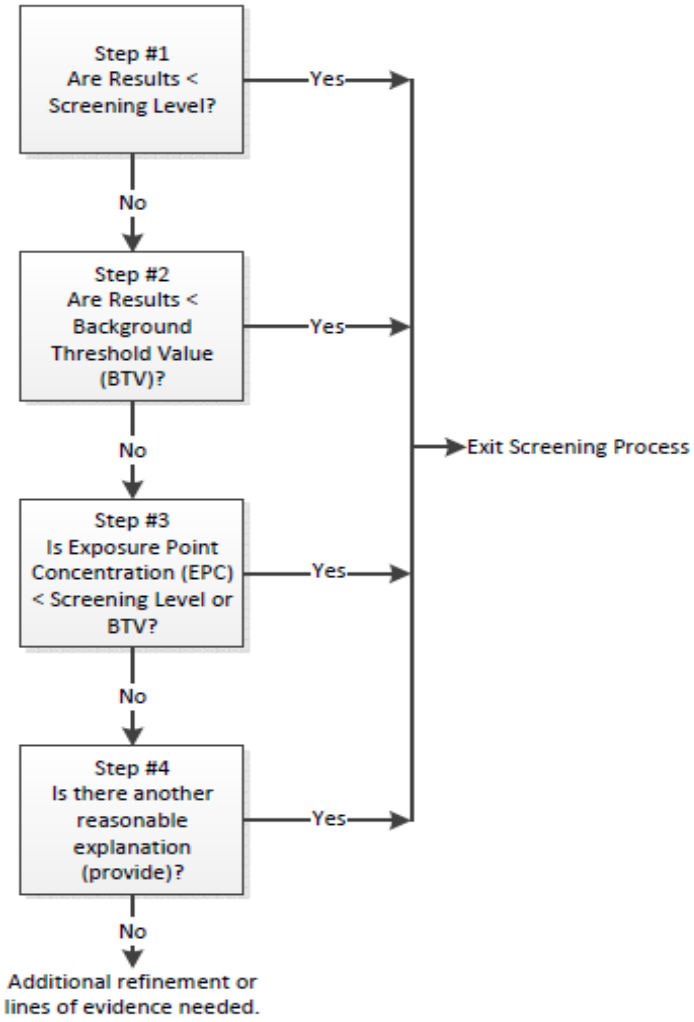
The analytical results for the soil and sediment samples collected from the BRA are summarized in **Table 3,** along with background threshold values (BTVs). The analytical results for the surface water and groundwater samples collected from the BRA are summarized in **Table 4** along with BTVs. The BTVs for each COPC were calculated using EPA's ProUCL software version 5.1. Statistical outliers were identified using ProUCL and eliminated from further consideration. In accordance with IDEM policy for systematically collected data the BTVs were established as the 95% upper confidence limit (UCL) of the mean value of the data set. The statistical spreadsheets are included in **Appendix E**.

By policy, IDEM does not ask responsible parties to address contamination that is related to natural or anthropogenic background levels.

4.4 INVESTIGATION SAMPLE RESULTS AND SCREENING

Analytical reports including EDDs for the sediment, soil, surface water, and groundwater samples collected during the period covered by this report are included in **Appendix D**.

The sediment, soil, and surface water results were screened by ERM using the following basic steps:



For sediment, soil, and surface water, Pro UCL statistical analysis was used to determine the EPCs for COPCs that could not be screened out via Steps #1 and #2 shown in the flow chart. When calculating the EPC (Step #3) the following conservative measures were taken: (1) the maximum value from each sediment and surface location (which were sampled on multiple locations) was used to calculate the 95% upper confidence limit (UCL) of the mean used, as requested by IDEM in Comments #2a and 2b of its August 2, 2017 comment letter; (2) no statistical outliers were removed during the statistical analysis of the various data sets; and (3) the Long Lake sediment and surface water data were separated into two statistical decision units (DUs): the Eastern Long Lake DU (or ELLDU) consisting of sample locations Sed and SW-LL-1 through 8, and the Central and Western Long Lake DU (or CWLLDU) consisting of sample locations Sed and SW-LL-9 through 16. Statistical spreadsheets used to calculate EPCs are included in **Appendix E**.

For groundwater, results were screened individually by comparing them to screening levels and BTVs (the first two steps in the flow chart above), as directed by IDEM in Comment #2c of its August 2, 2017 comment letter.

A more detailed description of the screening processes and presentation of the sample results by medium are presented in the following sections.

4.4.1 ON-SITE LOCATIONS

FRP Sediment

The FRP sediment is at least partially composed of the WTR placed into the pond from 1963 until 2009, which is the material that is the focus of this investigation. The 2015-2016 ERM sediment sample locations relative to the estimated remaining WTR are shown on **Figure 10.** The analytical results for the two sediment sampling events (November 2015 and October 2016) completed at the FRP are summarized in **Tables 5a and 5b** compared to conservative human health screening levels and ecological screening levels, respectively. The following screening levels were utilized for sediment:

Human Health Risk - Soil screening levels were used as a conservative surrogate for sediment. Specifically, the sediment results were compared to the residential screening level for soil direct contact published in Table A-6 (2017 update) of IDEM's Remediation Closure Guide (RCG). The very conservative exposure assumptions used by IDEM to calculate residential screening levels are protective not only for residential direct contact exposure to COPCs in soil (and sediment), but also for exposure scenarios with shorter exposure durations, such as on-site worker, trespasser, and recreator.

Ecological Risk - The sediment ecological screening levels were drawn from three possible sources and used in the following order of preference – (1) the 2003 USEPA Region 5 RCRA Ecological Screening Level for sediment, (2) the lowest protection of freshwater sediment benchmark presented in "A compendium of Environmental Quality Benchmarks" (McDonald, 1999), and (3) the ecological screening values for sediment listed in the 2015 USEPA Region 4 Supplemental Guidance to Ecological Risk Assessment.

The human health screening of FRP sediment indicated that for all COPCs the human health exposure pathway is incomplete. Following the initial human health screening process (Steps #1 through #3 described earlier) the only COPC in FRP sediment that did not screen out was arsenic (see **Table 5a**). The elevated arsenic appears to be a result of an adjoining anthropogenic background source unrelated to the WTR (see discussion in Section 5.1 below).

Following ecological screening (see **Table 5b**) of FRP sediment, these six COPCs could not be screened out and therefore need additional refinement or lines of evidence: aluminum, copper, iron, manganese, mercury, silver, and zinc (see Section 5.4, below). Arsenic was also detected at levels that exceeded ecological screening levels and the BTV but, as stated previously, appears to be related to

an adjoining anthropogenic background source (see discussion in Section 5.1 below).

FRP Berm Surface Soil

The analytical results for the surface soil samples collected from the berm surrounding the FRP are summarized in **Tables 6a and 6b** compared to conservative human health screening levels and ecological screening levels, respectively. The following screening levels were utilized for surface soil:

Human Health Risk - The soil results were compared to the residential screening level for soil direct contact published in Table A-6 (2017 update) of IDEM's RCG. The very conservative exposure assumptions used by IDEM to calculate residential screening levels are protective not only for residential direct contact exposure to COPCs in soil, but also for exposure scenarios with shorter exposure durations, such as on-site worker, trespasser, and recreator.

Ecological Risk -The soil ecological screening levels were drawn from the ecological screening values listed in the 2015 USEPA Region 4 Supplemental Guidance to Ecological Risk Assessment.

The human health screening for on-site soil (see **Table 6a**) showed that all COPCs were below IDEM's residential screening levels and therefore the human health exposure pathway is incomplete.

Following ecological screening (see **Table 6b**) of on-site soil, manganese, selenium, and zinc could not be screened out and therefore need additional refinement or lines of evidence (see Section 5.4, below) to determine whether a completed ecological exposure pathway exists. It was also observed that aluminum and iron, which do not have listed screening levels for soil, exceeded their respective BTVs. According to USEPA OSWER Directive 9285.7-69, aluminum and iron are not expected to be ecologically toxic where soil pH is >5.5. According to the USDA Soil Survey of Porter County, IN, the Oakville soil in the vicinity of the FRP has a pH ranging from 5.6 to 7.3. Therefore, no additional refinement or lines of evidence are necessary for aluminum and iron in soil.

FRP Surface Water

The analytical results for the four surface water sampling events (November 2015, June 2016, October 2016, and March 2017) completed at the FRP are summarized in **Table 7a and 7b** compared to conservative human health screening levels and ecological screening levels, respectively. The following screening levels were utilized for sediment:

Human Health Risk - The surface water results were compared to the human health + the consumption of organism screening levels listed in the 2017 USEPA National Recommended Water Quality (NRWQ) human health criteria table, where available. Otherwise, they were conservatively compared to 2017 tap water screening level listed in IDEM's RCG.

Ecological Risk - The surface water ecological screening levels were drawn from three possible sources and used in the following order of preference: (1) the freshwater chronic (criterion continuous concentration) screening level in the 2017 USEPA NRWQ aquatic life criteria table, (2) the ecological screening values for surface water listed in the 2015 USEPA Region 4 Supplemental Guidance to Ecological Risk Assessment, and (3) the lowest protection of freshwater aquatic life benchmark presented in "A compendium of Environmental Quality Benchmarks" (McDonald, 1999). Additionally, the 5 µg/L 2015 Region 4 value for selenium was replaced by the newer and more conservative 1.5 µg/L 2016 EPA Aquatic Life Ambient Water criterion for lentic water bodies.

The human health screening of FRP surface water indicated that for all COPCs the human health exposure pathway is incomplete. Following the initial human health screening process (Steps #1 through #3 described earlier) the only COPC in FRP surface water that did not screen out was arsenic (see **Table 7a**). However, when the EPC for arsenic was recalculated using the seasonal mean concentration rather than the maximum at each surface water sample point it no longer exceeded the BTV.

The ecological screening of FRP surface water indicated that for all COPCs the ecological exposure pathway is incomplete. Following the initial ecological screening process (Steps #1 through #3 described earlier) the only COPC in FRP surface water that did not screen out was aluminum (see **Table 7b**). However, when the EPC for aluminum was recalculated using the seasonal mean concentration rather than the maximum at each surface water sample point it no longer exceeded the BTV.

FRP Groundwater

The analytical results for the shallow and deeper groundwater sampling events completed in the vicinity of the FRP are summarized in **Table 8a and 9a**, respectively, compared to 2017 tap water level listed in Table A-6 of IDEM's RCG. The only COPCs that did not screen out or were negligible (one or two sporadic spikes over the eight quarter sampling period) were iron and manganese, and only at certain locations.

The slightly elevated iron and manganese results are irrelevant at this time because groundwater is not currently used for potable purposes at the Site and

there are no plans to use it in the future. Therefore, the human health exposure pathway is incomplete for groundwater.

There is no known on-site ecological pathway for groundwater beneath the Site and, therefore, no ecological screening levels are shown.

4.4.2 OFF-SITE LOCATIONS

Long Lake Sediment

The analytical results for the two sediment sampling events (November 2015 and October 2016) completed at Long Lake are summarized in **Tables 10a and 10b** compared to conservative human health screening levels and ecological screening levels, respectively. As stated earlier, because of its large size and the availability of sufficient data points, when calculating statistical mean and EPC for sediment, ERM split Long Lake into two decision units: the ELLDU and the CWLLDU. The same screening levels were utilized for sediment as for the FRP (see previous section).

The human health screening of Long Lake sediment indicated that for all COPCs the human health exposure pathway is incomplete. Following the initial human health screening process (Steps #1 through #3 described earlier) the only COPC in Long Lake sediment that did not screen out (for either decision unit) was arsenic (see **Table 10a**). The elevated arsenic appears to be a result of an adjoining anthropogenic background source unrelated to the WTR (see discussion in Section 5.1 below).

Following ecological screening (see **Table 10b**) of Long Lake sediment these three COPCs could not be screened out and therefore need additional refinement or lines of evidence: iron, manganese, and zinc. Arsenic and cadmium were also detected at one or more decision unit at concentrations that exceeded ecological screening levels and the BTV but appear to be related to an adjoining anthropogenic background source rather than to the WTR (see discussion in Section 5.1 below).

Off-Site Surface Soil

Off-site surface soil was not assessed. However, based on soil samples collected from the perimeter of the Site (shown in **Table 6a**), which were below IDEM's residential screening levels, it may be inferred that the off-site residential soil human health exposure pathway related to the FRP is incomplete. It may also be inferred based on ecological screening levels (see **Table 6b**) that, as with on-site soil, manganese, selenium, and zinc in adjacent off-site soil will need additional refinement or lines of evidence (see Section 5.4) to determine whether a completed ecological exposure pathway exists.

Long Lake Surface Water

The analytical results for the four surface water sampling events (November 2015, June 2016, October 2016, and March 2017) completed at Long Lake are summarized in **Table 11a and 11b** compared to conservative human health screening levels and ecological screening levels, respectively. ERM has split Long Lake into two decision units: the ELLDU and the CWLLDU. The same screening levels were utilized for surface water as the FRP (see previous section).

The human health screening of Long Lake surface water indicated that for all COPCs the human health exposure pathway is incomplete. Following the initial human health screening process (Steps #1 through #3 described earlier) the only COPC in Long Lake surface water that did not screen out was arsenic (see **Table 11a**). However, when the EPC for arsenic was recalculated using the seasonal mean concentration rather than the maximum at each surface water sample point it no longer exceeded the BTV.

The ecological screening of Long Lake surface water indicated that for all COPCs the ecological exposure pathway is incomplete. Following the initial ecological screening process (Steps #1 through #3 described earlier) the only COPC in Long Lake surface water that did not screen out was iron (see **Table 11b**). However, when the EPC for iron was recalculated using the seasonal mean concentration rather than the maximum at each surface water sample point it no longer exceeded the BTV or screening level.

Long Lake Fish Ingestion

In its letter dated April 22, 2013, IDEM asked IAW to consider the fish ingestion exposure pathway within Long Lake. ERM did not directly assess this pathway as part of this investigation but did locate a reference that provided historic fish tissue results for Long Lake. The fish tissue analytical result for mercury reported in Garza, Nevers, and Whitman, (2002) was 0.099 ppm, which is below EPA's recommended tissue-based criterion of 0.3 ppm. Based on this data human health exposure pathway for fish ingestion is incomplete for mercury in Long Lake.

Off-Site Groundwater

Off-site groundwater was not assessed. However, based on results from sampling at downgradient monitoring well couplet MW-8S/D (refer to **Tables 8a and 9a**) the human health exposure pathway for off-site residential ingestion of tap water is assumed to be incomplete or negligible for all COPCs.

Off-Site Surface Water – Lake Michigan

The nearest surface water body downgradient from the Site is Lake Michigan, located approximately 0.75 miles to the north.

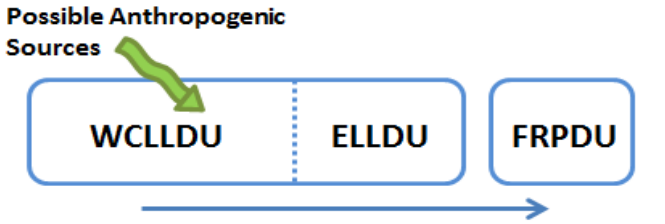
The human health exposure pathway for Lake Michigan surface water was not assessed but is likely incomplete for all COPCs due to mixing and dilution.

The ecological exposure pathway for off-site surface water (Lake Michigan) has not been directly assessed but based on a comparison of on-site groundwater concentrations at downgradient monitoring well couplet MW-8S/D to surface water screening levels for aquatic life (listed with groundwater results in **Tables 8b and 9b**), the only COPCs that did not screen out were manganese and selenium. It is unlikely that there is actually a completed exposure pathway because the low manganese and selenium groundwater concentrations would be diluted by surface water within the hyporheic zone prior to discharge into Lake Michigan.

5.0 DISCUSSION

5.1 POSSIBLE ARSENIC AND CADMIUM BACKGROUND SOURCE

An examination of the spatial distribution of arsenic and cadmium in sediment by statistical decision unit reveals a decreasing concentration gradient from western Long Lake to eastern Long Lake to the FRP, see diagram below.



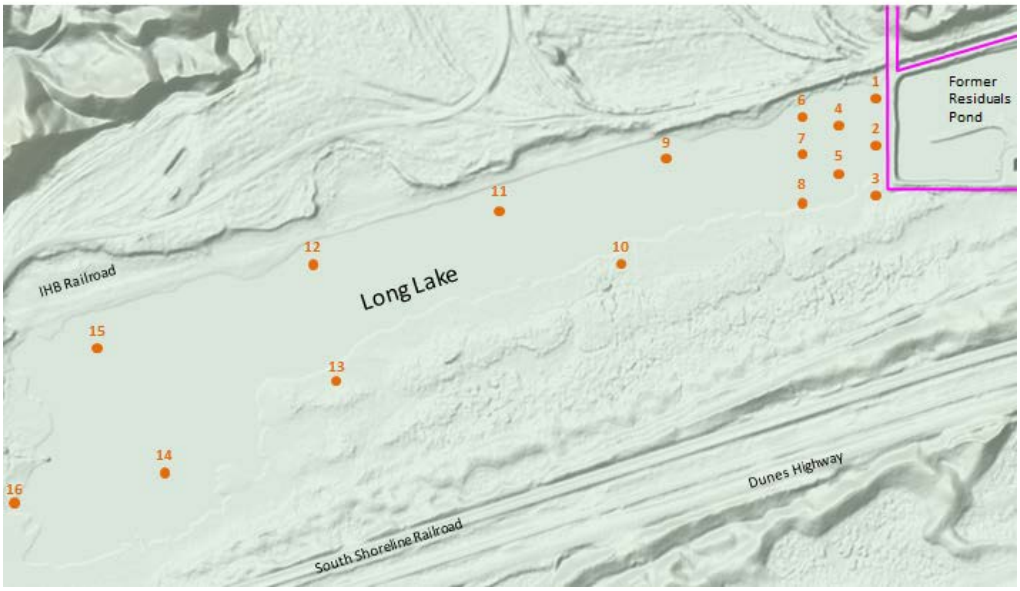
	WCLLDU		ELLDU		FRPDU	
COPC	Mean	EPC	Mean	EPC	Mean	EPC
As	25	55	26	44.1	18.4	30.5
Cd	0.91	2.31	0.66	1.25	0.38	0.954

All results in mg/kg dry weight

The observed distribution is the opposite of what would be expected for a lentic water body like Long Lake if the arsenic and cadmium were derived from the FRP. Therefore, it appears that there may be an off-site anthropogenic source, unrelated to the WTR, that contributed to the elevated levels of arsenic and cadmium detected in the three decision units. By policy IDEM does not routinely ask parties to address contamination that is related to elevated background levels.

A possible anthropogenic source for the elevated arsenic and cadmium in Long Lake is the former Indiana Harbor Belt Railroad (IHBRR), which was built in 1922 along the northern shore of Long Lake and operated until the 1970s. Historical maps reviewed by ERM show the railroad extending through what is currently open water within the northern portion of Long Lake and immediately adjacent to what is now (since 1963) the FRP. Recent LiDAR imagery (shown below) confirms the presence of an old rail bed just beneath the water surface. At the present time coal and cinders are plainly visible on the ground surface along the northern shore of Long Lake. The South Shore Line railroad tracks (also shown on the map embedded above), which was constructed along the south shore of Long Lake in the early 1900s and is still in operation, would have the same associated historical environmental concerns as the defunct IHBRR line discussed above.

Long Lake – Lake Bottom Topography in Shallow Water



Coal ash and cinders associated with historic railroads may contain elevated levels of arsenic and cadmium (as well as other heavy metals like lead, manganese, selenium, and zinc). The use of arsenic-based wood preservatives in the railroad ties and arsenical herbicides applied along the railroad right-of-way may also contribute to elevated arsenic levels. The *Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails* published by the Massachusetts DEP states: "For example, it would not be uncommon to find arsenic (up to ten times natural background levels) present in the soil along a right-of-way from old railroad ties dipped in an arsenic solution, arsenic weed-control sprays, and arsenic-laced slag used as railroad bed fill."

5.3 UPDATED CONCEPTUAL SITE MODEL

The CSM for the Site was updated following the evaluation of the 2015-2017 investigation results and separate potential exposure pathway diagrams were developed for human health exposure (see **Figure 11**) and ecological exposure (see **Figure 12**).

The human health exposure pathways (shown on **Figure 11**) are currently incomplete for the COPCs evaluated in sediment, soil, surface water, and groundwater during this investigation.

The ecological exposure pathways (shown on **Figure 12**) are currently incomplete (or likely incomplete) for the COPCs evaluated in sediment, soil, surface water, and groundwater during this investigation, except for the following:

- potential ecological exposure to aluminum, copper, iron, manganese, mercury, silver, and zinc in FRP sediment;

- potential ecological exposure to iron, manganese, and zinc in Long Lake sediment; and

- Potential ecological exposure to manganese, selenium, and zinc in on-site and (potentially) off-site upland surface soil.

5.4 ECOLOGICAL REFINEMENT SCREENING

Refinement screening helps to identify which COPCs that could not be eliminated through the initial conservative ecological screening process would pose negligible risk if more realistic exposure assumptions were used. This process helps to focus future attention and resources on addressing COPCs that are more likely to pose an actual risk to ecological receptors.

5.4.1 SEDIMENT REFINEMENT SCREENING

EPA, in Table 2a of its Region 4 Ecological Risk Assessment Supplemental Guidance (at link below), provides refinement screening values (RSVs) for freshwater sediment that are appropriate to use at FRP and Long Lake.

https://www.epa.gov/risk/regional-ecological-risk-assessment-era-supplemental-guidance

A summary of the sediment refinement screening results by COPC is provided below.

FRP Sediment (see Table 5b)

Aluminum – The RSV for aluminum in freshwater sediment is 58,000 mg/Kg. Only one sample point in the FRP exceeded that RSV: 65,000 mg/Kg at RP-11 in 2015. If the 2015 value were averaged with the 2016 value (1,400 mg/Kg) the mean value would be 29,700 mg/Kg, which is well below the RSV. An additional line of evidence is that the EPC (calculated using worse-case values) for the FRP was 30,409 mg/Kg, which is also below the RSV. Based on these lines of evidence the potential ecological risk associated with aluminum in FRP sediment is negligible.

Copper – The RSV for copper in freshwater sediment is 149 mg/Kg. Not a single sample point in the FRP had a concentration that exceeded that RSV. Based on that line of evidence the potential ecological risk associated with copper in FRP sediment is negligible.

Iron - The RSV for iron in freshwater sediment is 40,000 mg/Kg. Five sample points in the FRP exceeded that RSV: 140,000 mg/Kg at RP-10, 42,000 mg/Kg at RP-13, 96,000 mg/Kg at RP-14, 41,000 mg/Kg at RP-18, and 52,000 mg/Kg at RP-19. If the 2015 and 2016 values were averaged the mean values at two locations (see **Figure 13**) would continue to exceed the RSV: 100,500 mg/Kg at RP-10 and 48,000 mg/Kg at RP-19. Based on these lines of evidence the potential ecological risk associated with iron in FRP sediment cannot excluded at this time.

Manganese - The RSV for manganese in freshwater sediment is 40,000 mg/Kg. The EPC (calculated using worse-case values) for the FRP was only 975 mg/Kg. Although two individual sample points in the FRP exceeded the RSV: 1,700 mg/Kg at RP-14 and 1,300 mg/Kg at RP-19, the two points do not appear to be spatially clustered (see **Figure 13**). Based on these lines of evidence the potential ecological risk associated with manganese in FRP sediment is negligible.

Mercury - The RSV for mercury in freshwater sediment is 1.1 mg/Kg. Three sample points in the FRP exceeded that RSV: 3.5 mg/Kg at RP-13, 7.2 mg/Kg at RP-14, and 1.6 mg/Kg at RP-17. The three locations are clustered in the northwest corner of the FRP. If the 2015 and 2016 values were averaged the mean values at two locations (see **Figure 13**) would continue to exceed the RSV: 1.8 mg/Kg at RP-13 and 3.8 mg/Kg at RP-14. Based on these lines of evidence the potential ecological risk associated with mercury in FRP sediment cannot excluded at this time.

Silver – The RSV for silver in freshwater sediment is 2.2 mg/Kg. Only a single point (RP-10) out of 20 points sampled (5%) in the FRP had a concentration that exceeded that RSV. The EPC (calculated using worse-case values) for the FRP was only 0.876 mg/Kg. Based on these lines of evidence the potential ecological risk associated with silver in FRP sediment is negligible.

Zinc - The RSV for zinc in freshwater sediment is 459 mg/Kg. Five sample points in the FRP exceeded that RSV: 750 mg/Kg at RP-2, 480 mg/Kg at RP-4, 620 mg/Kg at RP-5, 520 mg/Kg at RP-9, and 610 mg/Kg at RP-13. If the 2015 and 2016 values were averaged the mean values at only one of the five locations would continue to exceed the RSV: 535 mg/Kg at RP-5 (see **Figure 13**). The EPC (calculated using worse-case values) for the FRP was only 429 mg/Kg. Based on the relatively low concentrations of the individual points exceeding BTVs and EPC being lower than the RSV, the potential ecological risk associated with zinc in FRP sediment is negligible.

Long Lake Sediment (see Table 10b)

Iron - The RSV for iron in freshwater sediment is 40,000 mg/Kg. Two sample points in the Long Lake exceeded that RSV: 54,000 mg/Kg at LL-13 and 60,000 mg/Kg at LL-16. Both LL-13 and LL-16 are located in the western part of long Lake more than 2,000 feet away from the western edge of the FRP (see **Figure 13**). If the 2015 and 2016 values were averaged the mean values at LL-13 and LL-16 would not exceed the RSV. Additionally, the EPCs (calculated using worse-case values) for the ELLDU and WCLLDU were only 22,904 mg/Kg and 39,907 mg/Kg, respectively, which both are below the RSV. Based on these lines of evidence, the potential ecological risk associated with iron in Long Lake sediment is negligible.

Manganese - The RSV for manganese in freshwater sediment is 40,000 mg/Kg. Not a single sample point in Long Lake had a concentration that exceeded that RSV. Therefore, the potential ecological risk associated with manganese in Long Lake sediment is negligible.

Zinc - The RSV for zinc in freshwater sediment is 459 mg/Kg. Not a single sample point in Long Lake had a concentration that exceeded that RSV. Therefore, the potential ecological risk associated with zinc in Long Lake sediment is negligible.

5.4.2 SOIL REFINEMENT SCREENING

The Region 4 Ecological Risk Assessment Supplemental Guidance presents several strategies for refinement screening for soil, for example:

- Comparing soil values to 2X the BTV, and
- Selecting individual receptors that are present or likely to be exposed, rather than using the most conservative screening value among all possible receptors.

ERM considered these two strategies and was still unable to eliminate potential ecological risk associated manganese, selenium, and zinc in soil using the existing information.

As discussed in Section 5.1, the IHBRR was operated for 50 plus years adjacent to Long Lake and the FRP. Coal and cinders associated with historic rail lines are known to contain elevated levels of heavy metals, including manganese, selenium, and zinc. The background levels of these three COPCs are likely higher near the former IHBRR than in the more pristine Tolleston Dunes area used to calculate the BTVs for this investigation. For this reason, the soil concentrations detected on-site during this investigation may simply be a

reflection of a more elevated background in the vicinity of the former IHBRR, instead of being related in any way to WTR.

6.0 SUMMARY AND NEXT STEPS

The on-site and off-site human health exposure pathways are currently incomplete for the COPCs evaluated in sediment, soil, surface water, and groundwater during this investigation.

The on-site and off-site ecological exposure pathways are currently incomplete for the COPCs evaluated in sediment, soil, surface water, and groundwater during this investigation, except for the following:

- Potential ecological exposure to iron and mercury in FRP sediment, and
- Potential ecological exposure to manganese, selenium, and zinc in on-site and (potentially) off-site soil.

ERM recommends the next steps to address the two remaining issues listed above:

- In mid-2018, following IDEM's approval of this *Investigation Report*, a closure plan should be developed and submitted to IDEM that presents methods for empirically demonstrating physical isolation of the COPCs within the current sediment layer by natural sedimentation over multi-year period. The plan will include collecting and analyzing sediment samples from the FRP on an annual basis for a specified period of time, and statistically documenting the progressive decrease in surface sediment COPC concentration.
- A refinement background study should be completed in spring 2018 for soil on NPS property west of the IAW Site in the vicinity of the former IHBRR rail line (as proposed on **Figure 14**). Soil sampling and analysis should follow the same methods as in the approved 2015 *Investigation Work Plan*. Sampling should be coordinated in advance with NPS staff. The 2015 on-site soil manganese, selenium, and zinc results should then be screened against the new BTVs. The results and any additional refinement that may be necessary will be reported in the closure plan.

7.0 REFERENCES

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Photo Log



Photo No. 1. 2011 oblique aerial view of the Former Residuals Pond, looking east



Photo No. 2 Navigation by canoe with outriggers in Former Residuals Pond, view looking north, on June 14, 2016



Photo No. 3 Sediment sampling with Wildco® sampler in Background Reference Area, view looking south, on November 17, 2015



Photo No. 4 Installation of MW-1D with Geoprobe® near Former Residuals Pond, view looking west, on November 30, 2015



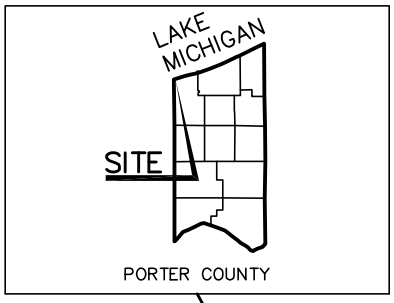
Photo No. 5 Typical groundwater sampling set-up at MW-5S, on December 7, 2015



Photo No. 6 Completing bathymetric survey with measuring rod in Former Residuals Pond, view looking south, on June 14, 2016

Figures



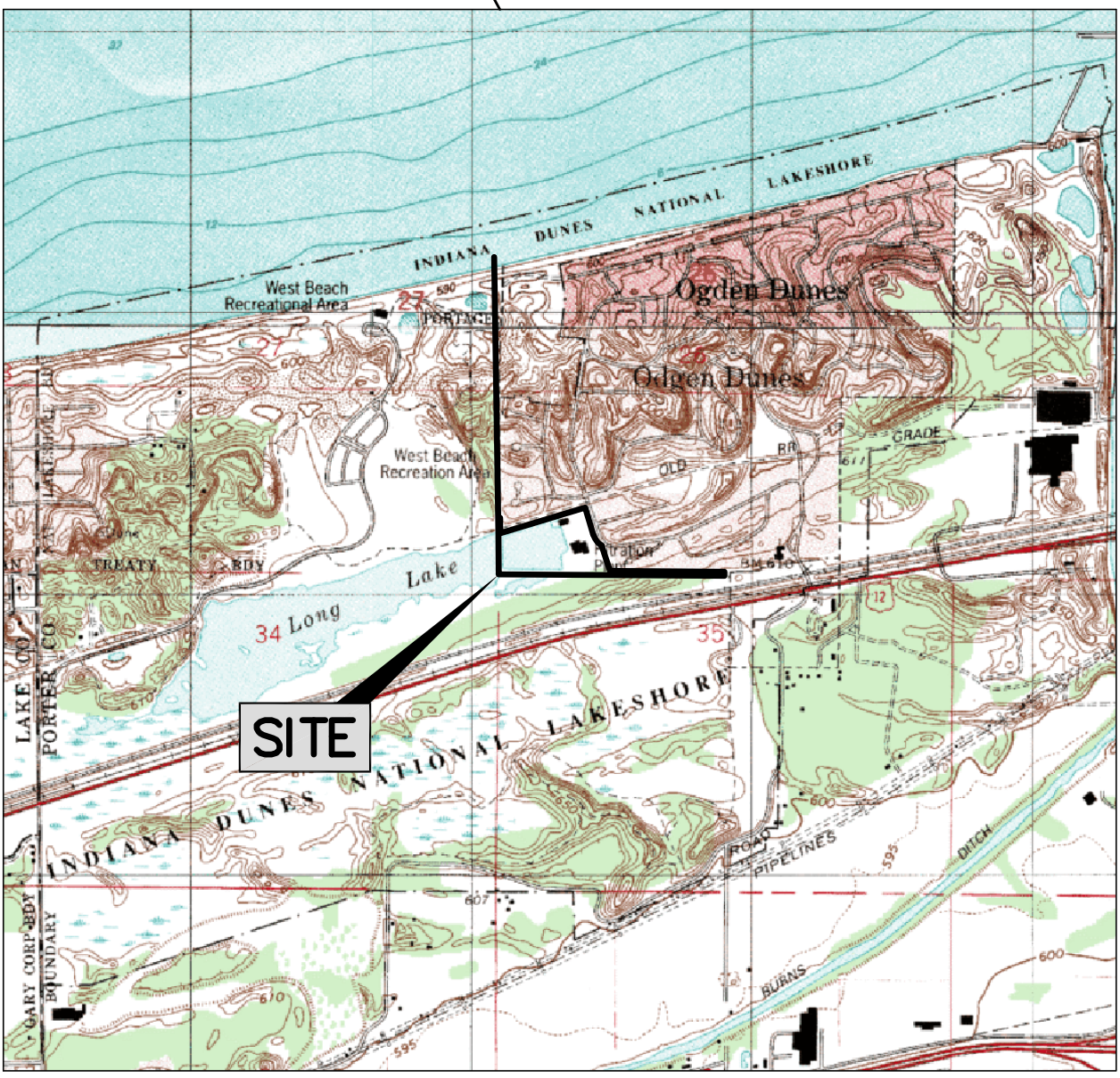


SECTION 35
T.37N. – R.7W.
CITY OF OGDEN DUNES
PORTER COUNTY
INDIANA

N

0 2000

SCALE (IN FEET)



SITE LOCATION MAP

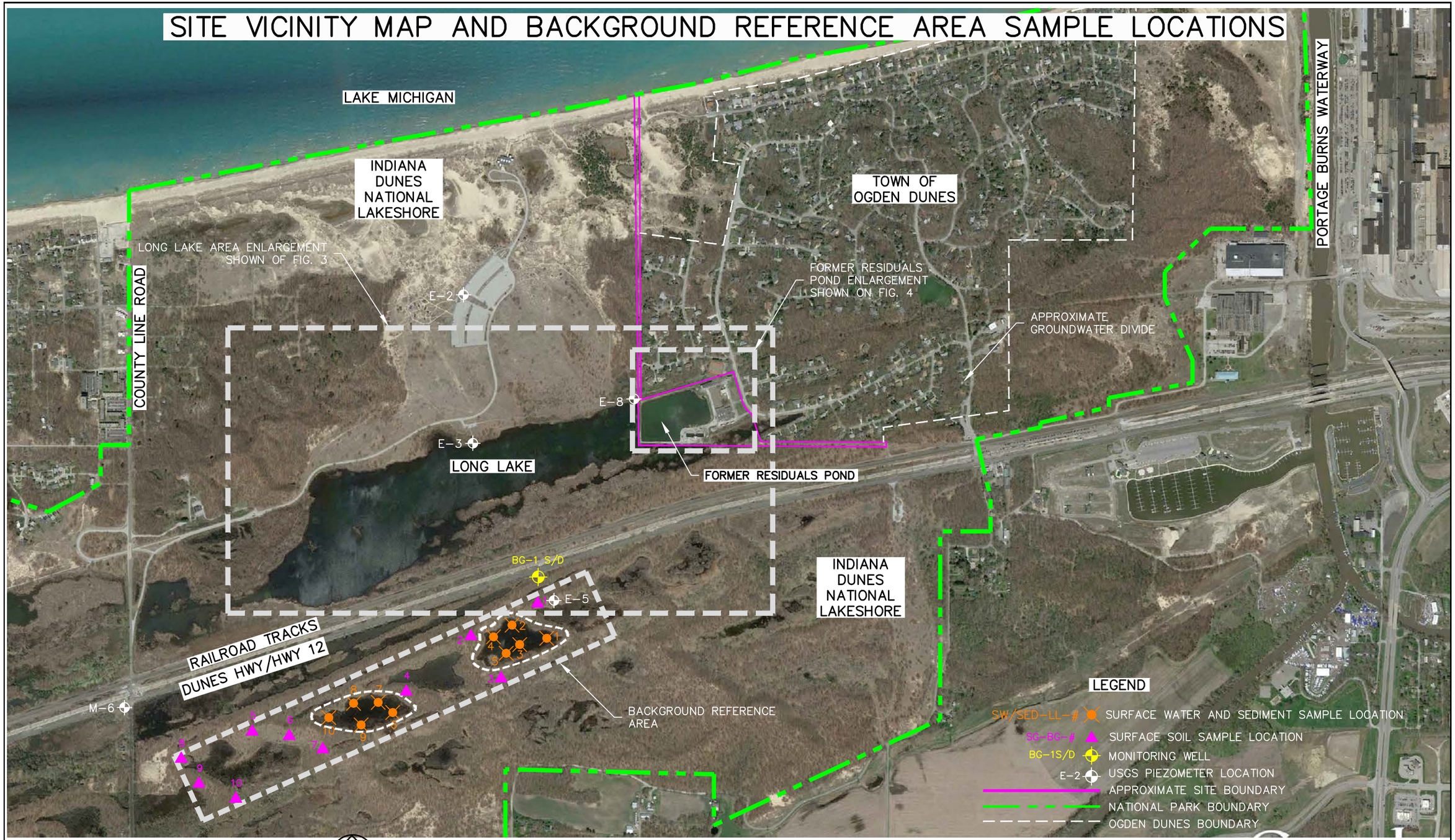
ADAPTED FROM USGS
PORTAGE/1992

REVISIONS ARE TO BE MADE ON THE CADD FILE ONLY

ERM	**INDIANA AMERICAN WATER COMPANY** 84 DIANA ROAD OGDEN DUNES, INDIANA	CADD Review RMK CHK'D AA 0273018
Drawn By GML 02/02/15	Environmental Resources Management	FIGURE 1

R:\Cadd\Clnt\L\Indiana-American Water Company\0273018\0273018-SLM.dwg, SLM, 2/23/2015 1:29:25 PM, GML

SITE VICINITY MAP AND BACKGROUND REFERENCE AREA SAMPLE LOCATIONS



N

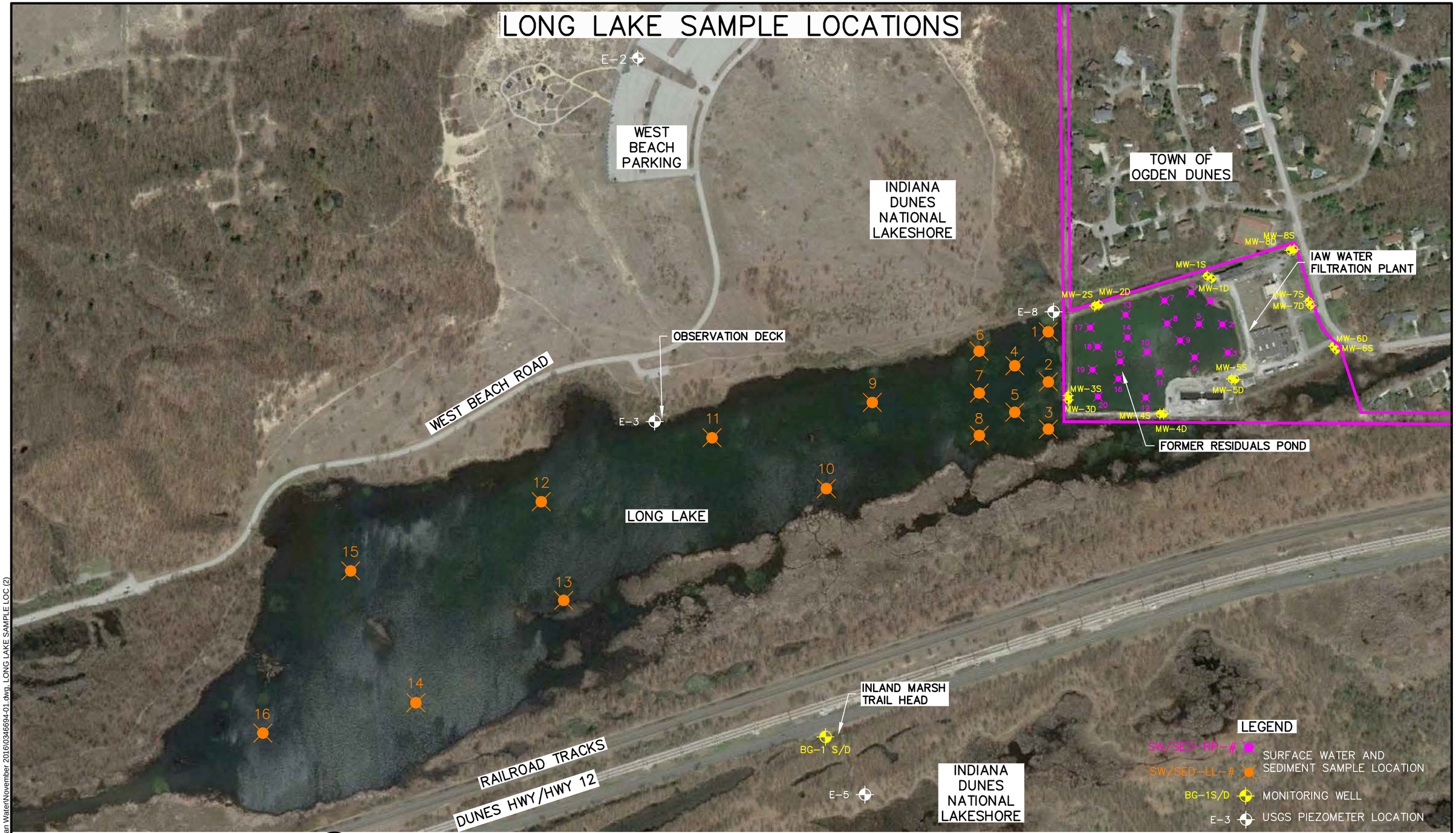
0 1000 2000

SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 1/28/15–12/17/15		Environmental Resources Management	FIGURE 2

T:\Cadd\Indiana American Water\November 2016\0346694-01.dwg, SITE VICINITY AREA SAMPLE

LONG LAKE SAMPLE LOCATIONS



N

0 400 800

SCALE (IN FEET)

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

ERM®

INDIANA AMERICAN WATER COMPANY

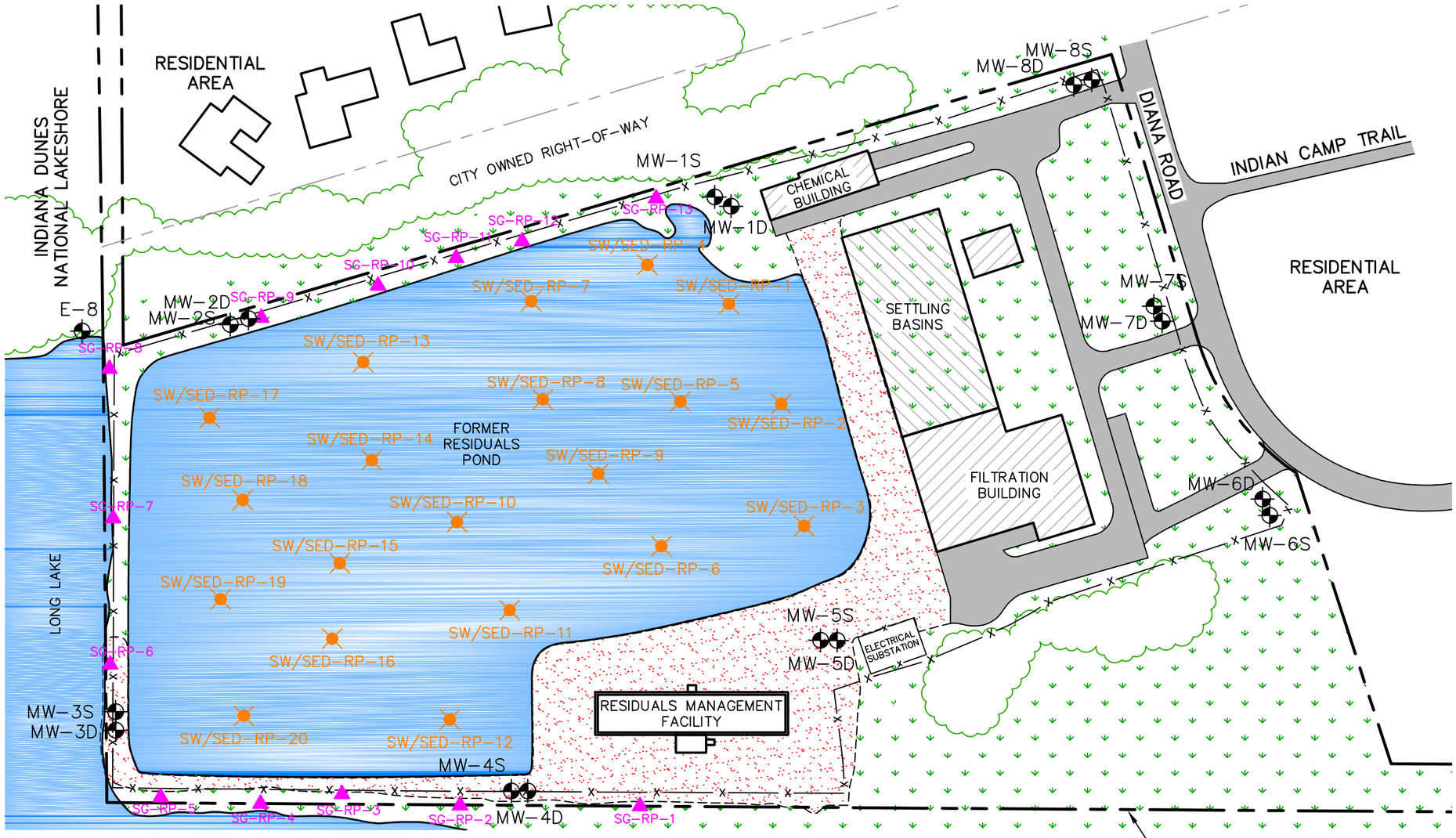
84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 3

T:\Cadd\Indiana American Water\November 2016\0346694-01.dwg, LONG LAKE SAMPLE LOC (2)

ON SITE SAMPLE LOCATIONS



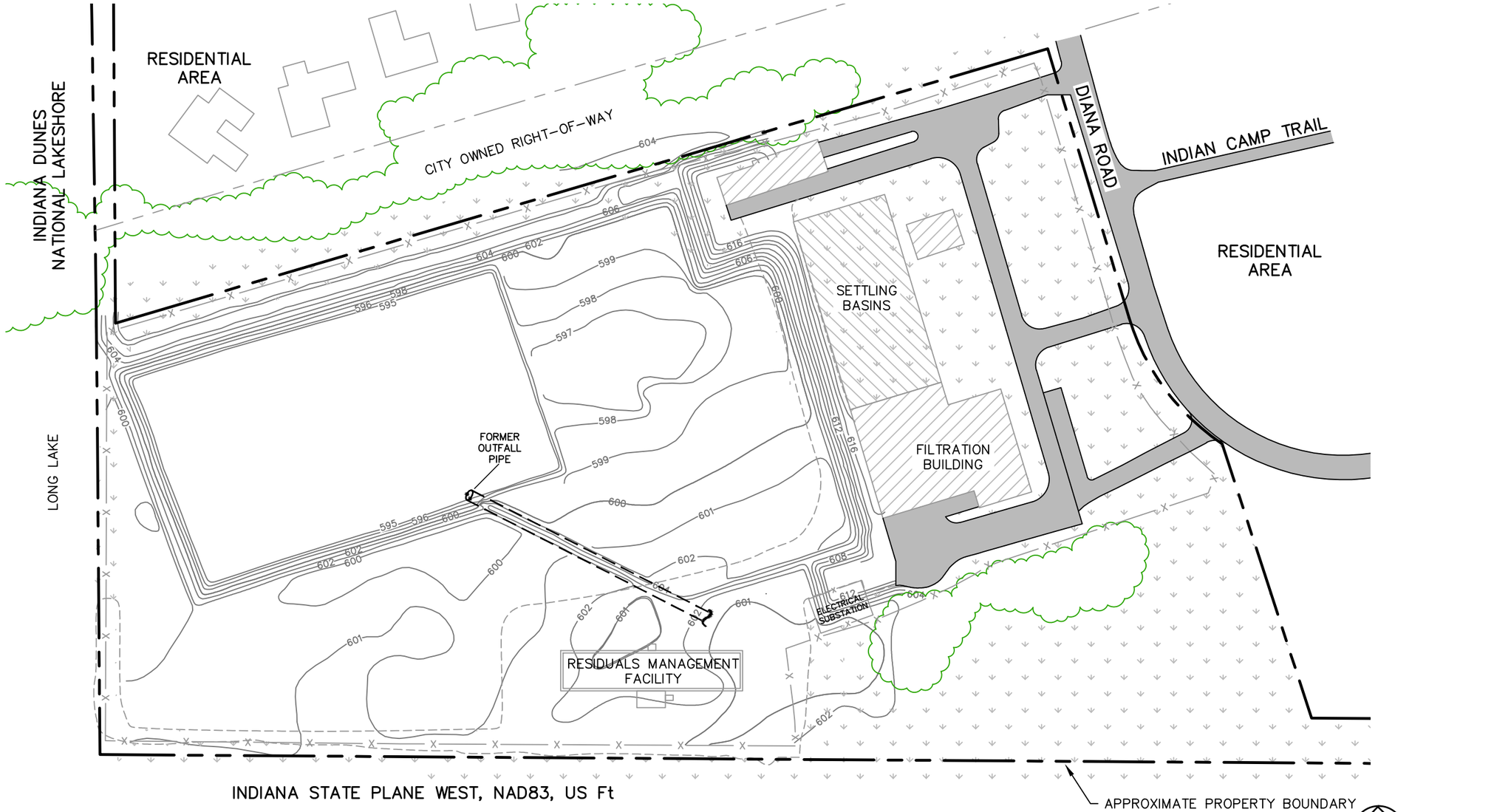
LEGEND

- MONITORING WELL LOCATION
- SURFACE WATER AND SEDIMENT SAMPLE LOCATION
- SURFACE SOIL SAMPLE LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 4

I:\IndyOffice\E-Files - Open by individual\Indy Office Cadd\Indiana American Water\November 2016\0346694-02.dwg, ON SITE SAMPLE LOC, 11/23/2016 10:14:06 AM

2016 SITE MAP SHOWING UNDERLYING 1963 AS-BUILT RESIDUALS POND FLOOR ELEVATION



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- 601 EXISTING CONTOUR (1963)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA
CADD Review RMK		Environmental Resources Management
Date Drawn/Rev'd 10/25/2016		

CHK'D	MR
	0346694
	FIGURE 5

I:\IndyOffice\E-Files - Open by individual\Indy Office Cadd\Indiana American Water\November 2016\0346694-04.dwg, 1963 AS BUILT RESIDUALS, 12/21/2016 3:37:26 PM

2016 UPPER SURFACE OF RESIDUALS POND FLOOR



LEGEND

- BATHYMETRIC SURVEY SAMPLE LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- AREAS WHERE POND FLOOR ELEVATION IS DEEPER THAN 1963 AS-BUILT ELEVATION – OVER-EXCAVATED DURING 2011 DREDGING OR DURING 1970s BERM EXPANSION
- WETTED PERIMETER – BASED ON 6/13/16 STAFF GAUGE (EL. 602.46)
- 600 CURRENT INDEX CONTOUR
- 597 CURRENT INTERMEDIATE CONTOUR

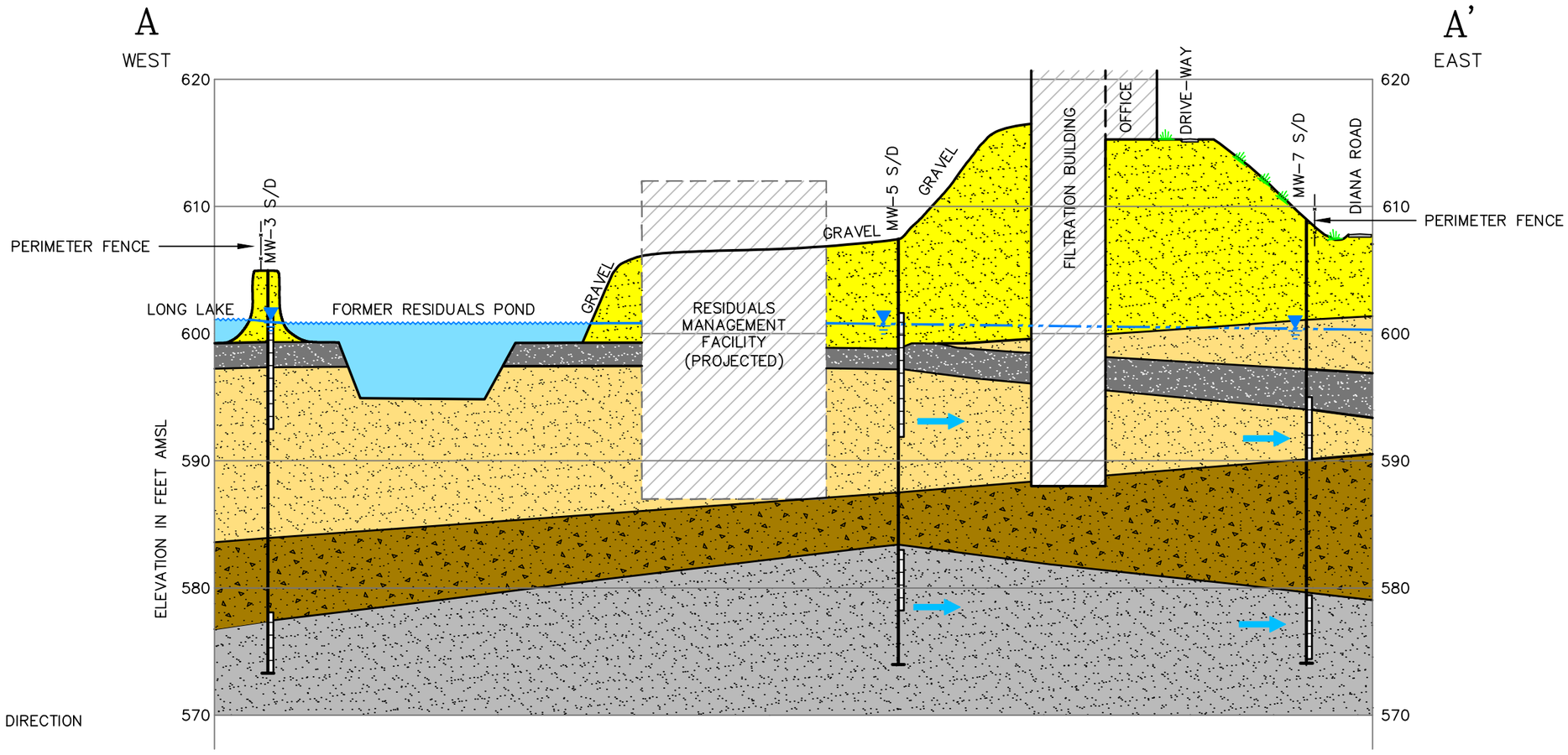
INDIANA STATE PLANE WEST, NAD83, US Ft

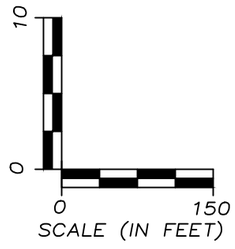
Drawn By GML	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK		0346694
Date Drawn/Rev'd 10/25/2016	Environmental Resources Management	FIGURE 6

ERM®

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DIAGRAMMATIC HYDROGEOLOGICAL CROSS SECTION A–A'





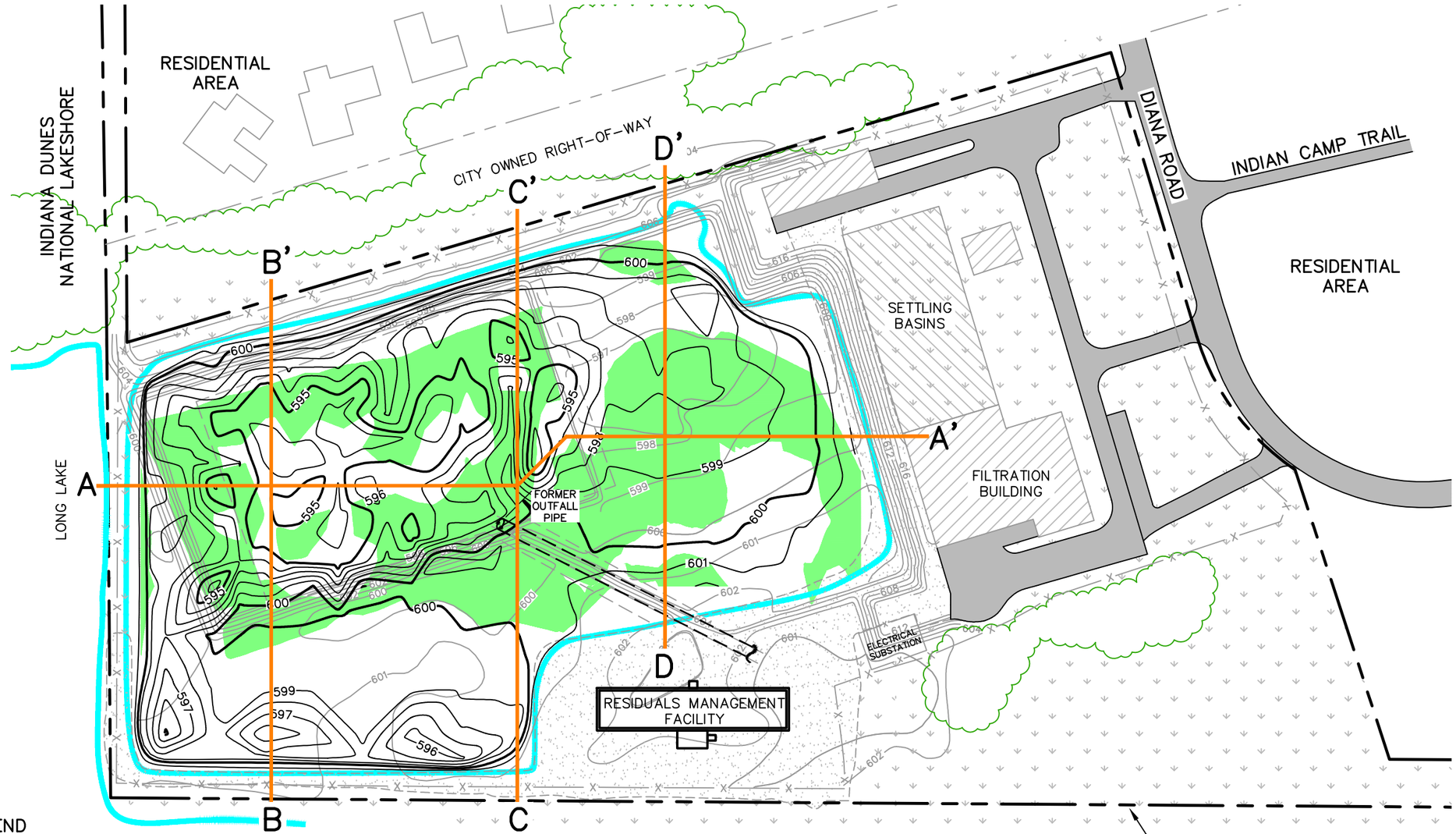
LEGEND

- WATER TABLE
- GROUNDWATER FLOW DIRECTION
- GRASS
- FILL MATERIAL; SAND, SOME GRAVEL
- SAND; BLACK, HIGH ORGANIC HUMUS/PEAT CONTENT
- SAND; PALE–BROWN TO GRAY FINE–COARSE GRAINED
- GRAVELLY SAND; GRAY–BROWN TO DARK GRAY; DENSE, INTERBEDDED FINE TO MEDIUM SAND
- SAND; GRAY, VERY–DENSE, FINE–MEDIUM GRAINED

T:\Cadd\Indiana American Water\November 2016\0346694-03.dwg, CROSS SECTION A-A'

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D TP
CADD Review RMK			0346694
Date Drawn/Rev'd 2/23/16		Environmental Resources Management	FIGURE 7

2016 LOCATION OF REMAINING RESIDUALS



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- A — A' CROSS SECTION TRACE
- WETTED PERIMETER BASED ON 6/13/16 STAFF GAUGE (EL. 602.46)
- 601 1963 AS-BUILT CONTOUR
- 600 CURRENT INDEX CONTOUR
- 597 CURRENT INTERMEDIATE CONTOUR
- AREAS WHERE POND FLOOR ELEVATION IS HIGHER THAN 1963 AS-BUILT ELEVATION – ASSUMED TO BE ACCUMULATED RESIDUALS
- PAVEMENT
- GRAVEL
- TREES
- GRASS

INDIANA STATE PLANE WEST, NAD83, US Ft

VOLUME BETWEEN 1963 SURFACE AND CURRENT SURFACE IS 6,570 CY CUT AND 5,685 CY FILL

0 120 240

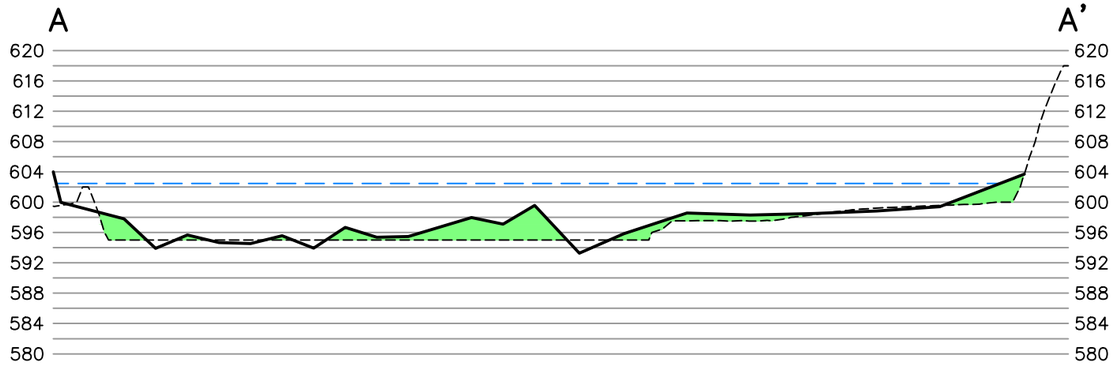
SCALE (IN FEET)

Drawn By GML	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK		0346694
Date Drawn/Rev'd 10/25/2016	Environmental Resources Management	FIGURE 8

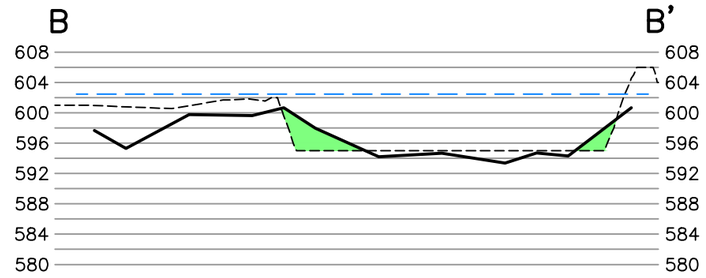
ERM®

Q:\Team\CSM\Cadd\Indiana American Water\November 2016\0346694-04.dwg, 2016 REMAINING SLUDGE

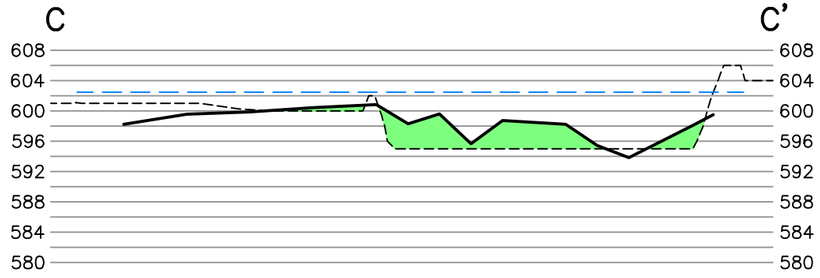
CROSS SECTIONS SHOWING 2016 VERTICAL EXTENT OF REMAINING RESIDUALS



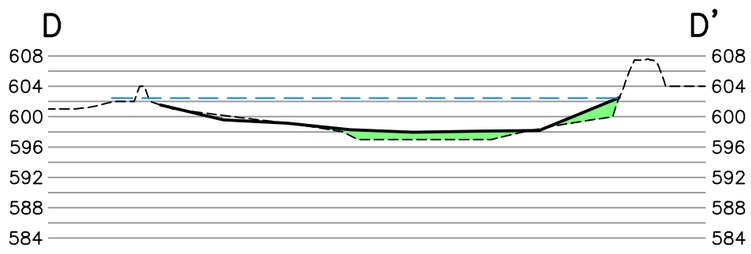
CROSS SECTION A–A'



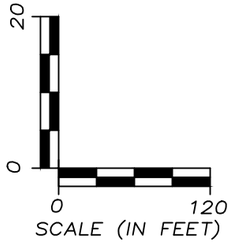
CROSS SECTION B–B'



CROSS SECTION C–C'



CROSS SECTION D–D'



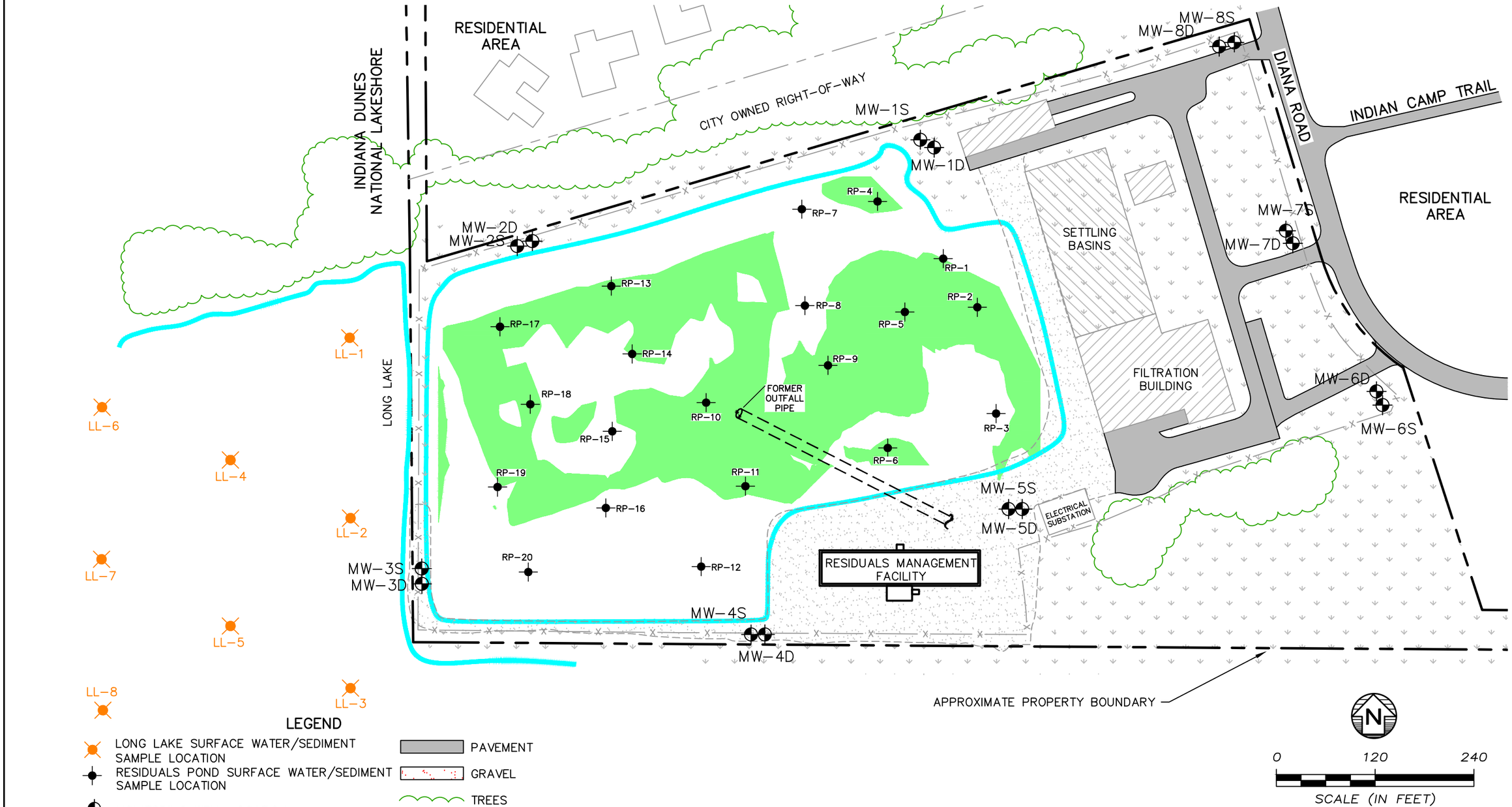
LEGEND

- WETTED PERIMETER BASED ON 6/13/16 STAFF GAUGE (EL. 602.46)
- 1963 AS–BUILT SURFACE
- CURRENT SURFACE
- AREAS WHERE POND FLOOR ELEVATION IS HIGHER THAN 1963 AS–BUILT ELEVATION– ASSUMED TO BE ACCUMULATED RESIDUALS

Drawn By FAK	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0346694
Date Drawn/Rev'd 11/18/2016		Environmental Resources Management	FIGURE 9

Q:\Team\CSM\Cadd\Indiana American Water\November 2016\0346694-05.dwg, CROSS SECTIONS

SAMPLE LOCATIONS RELATIVE TO REMAINING RESIDUALS



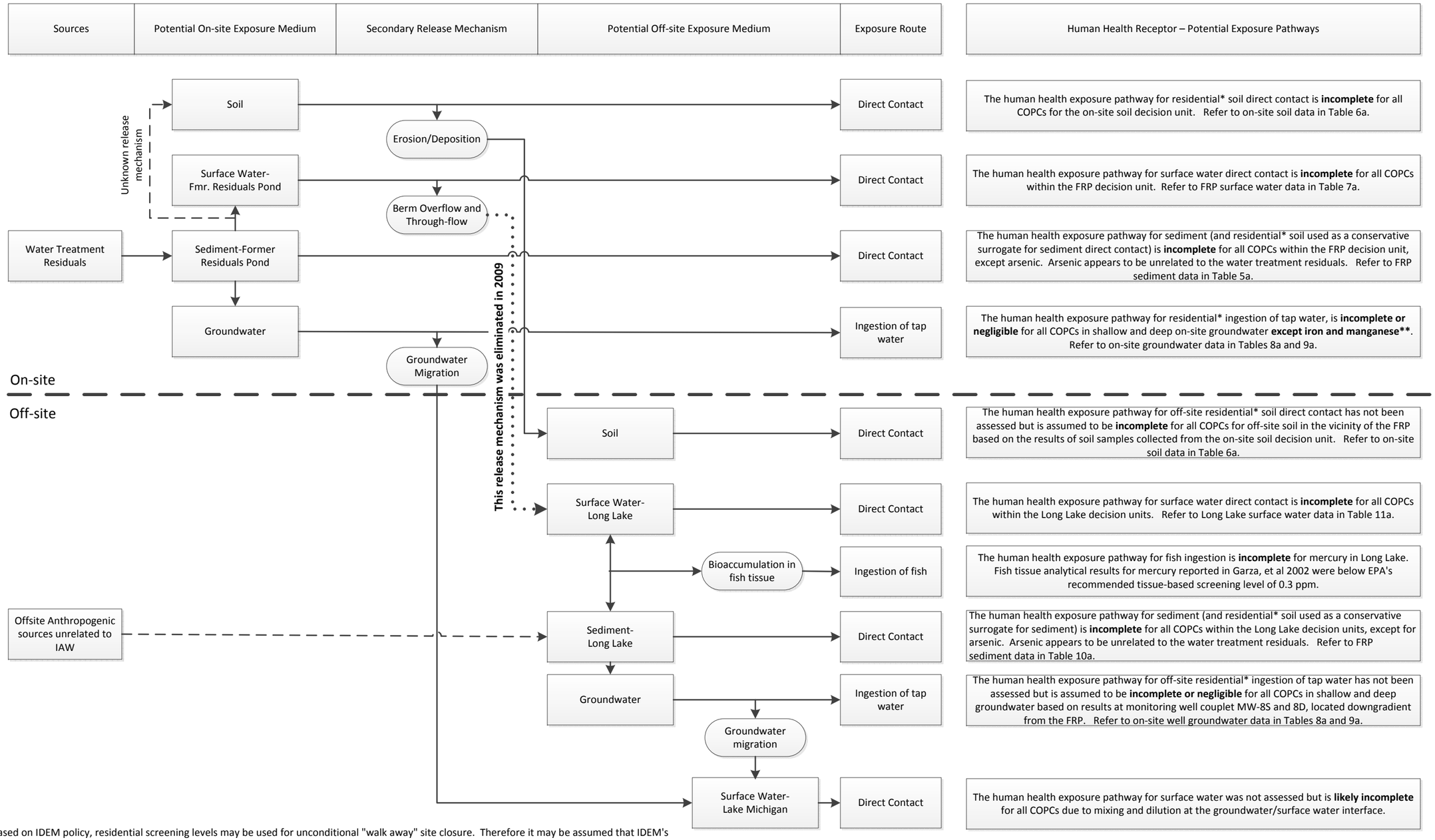
LEGEND

- LONG LAKE SURFACE WATER/SEDIMENT SAMPLE LOCATION
- RESIDUALS POND SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- WETTED PERIMETER BASED ON 6/13/16 STAFF GAUGE (EL. 602.46)
- ACCUMULATED RESIDUALS – 2016
- PAVEMENT
- GRAVEL
- TREES
- GRASS

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0346694
Date Drawn/Rev'd 10/25/2016		Environmental Resources Management	FIGURE 10

T:\Cadd\Indiana American Water\November 2016\0346694-04.dwg, SAMPLE LOCATIONS RELATIVE (2)

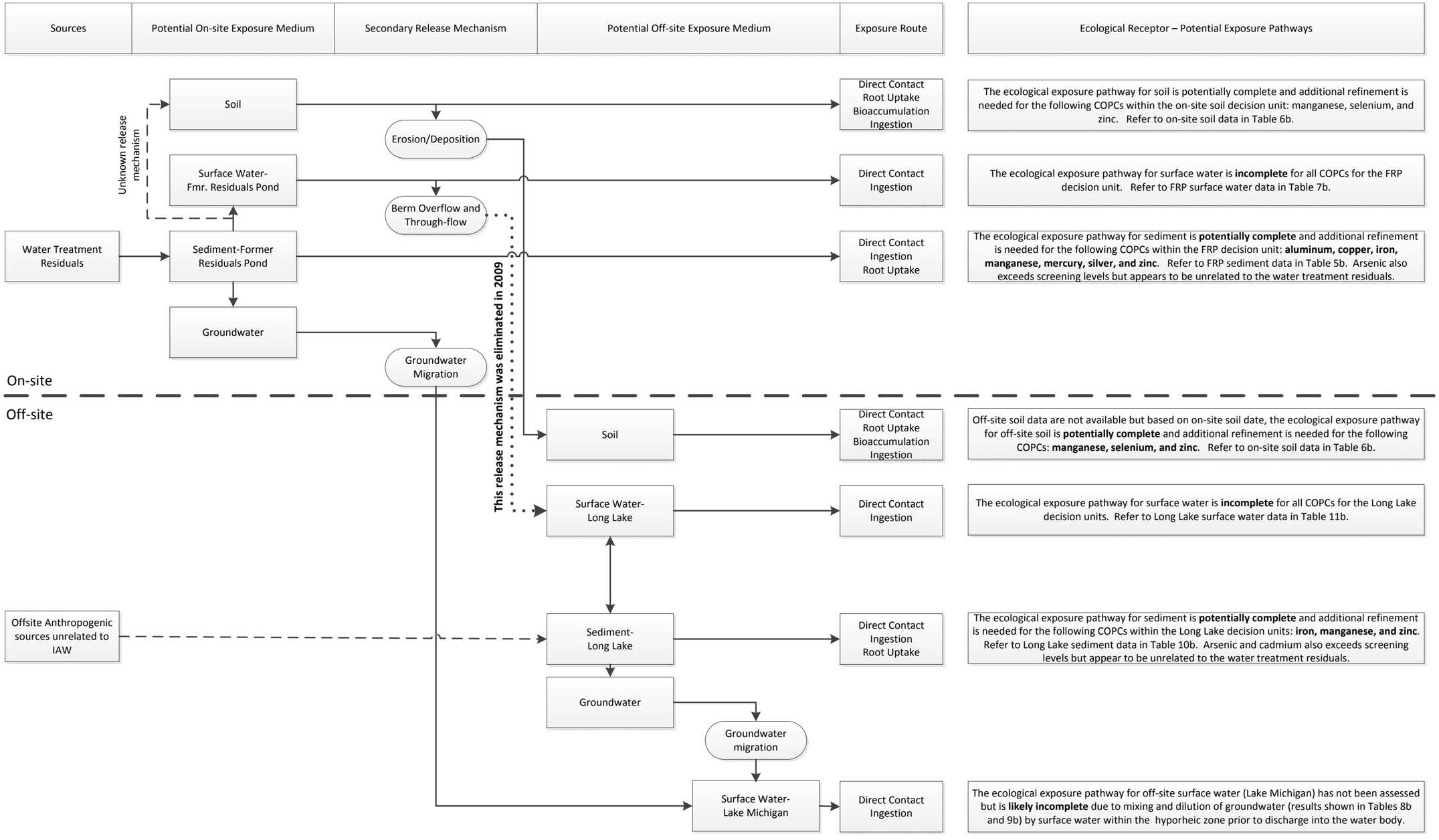
Figure 11 - Updated Potential Exposure Model-Human Health Receptor
Indiana American Water, Ogden Dunes Water Filtration Plan



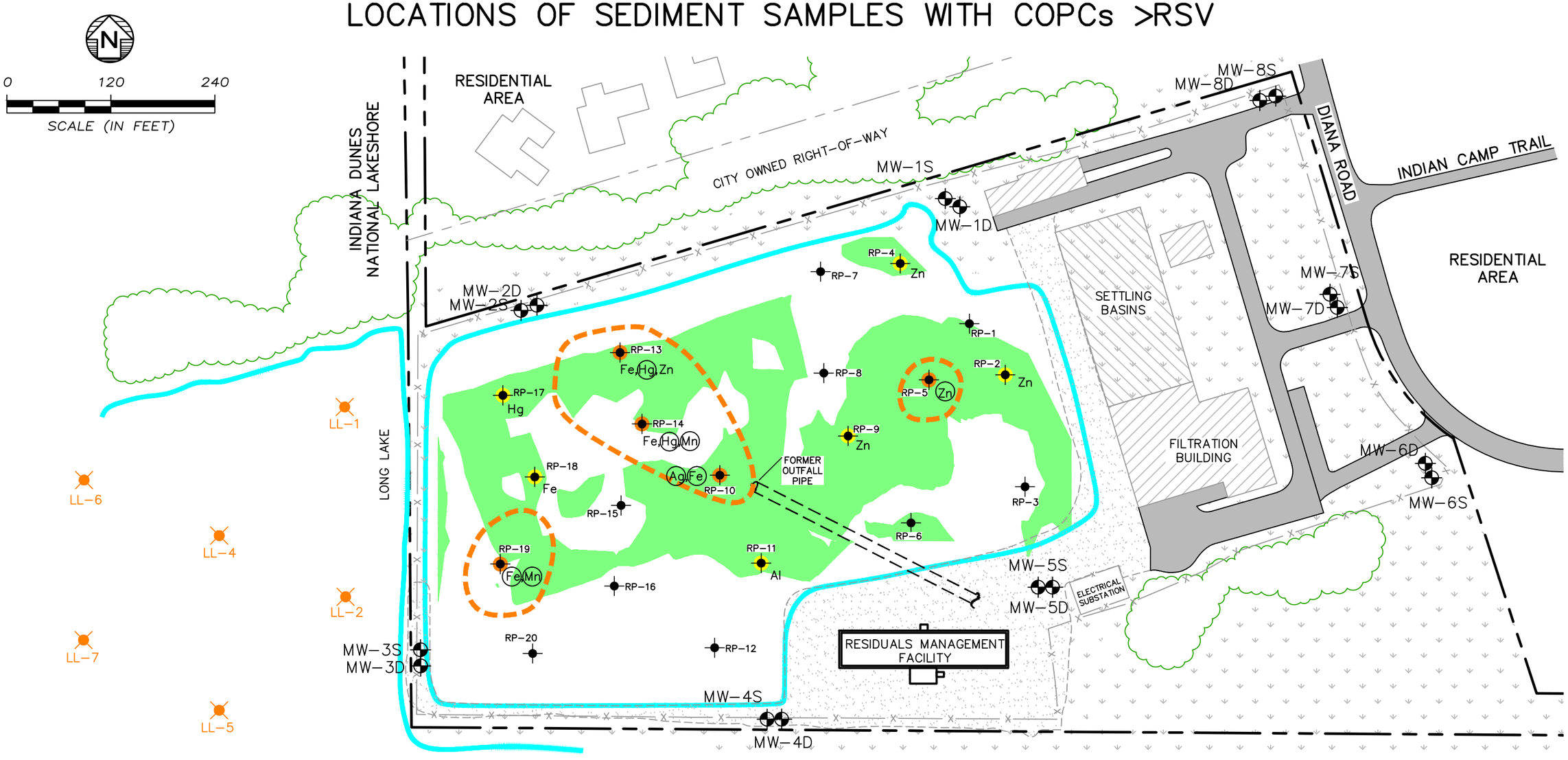
*Based on IDEM policy, residential screening levels may be used for unconditional "walk away" site closure. Therefore it may be assumed that IDEM's residential screening levels are also conservatively protective of future human health exposure under the **on-site worker**, **trespasser**, and **recreational-use** scenarios.

**Currently, on-site groundwater is not being used for potable use.

Figure 12 - Updated Potential Exposure Model-Ecological Receptor
Indiana American Water, Ogden Dunes Water Filtration Plan



LOCATIONS OF SEDIMENT SAMPLES WITH COPCs >RSV



LEGEND

- LONG LAKE SURFACE WATER/SEDIMENT SAMPLE LOCATION
- RESIDUALS POND SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- WETTED PERIMETER BASED ON 6/13/16 STAFF GAUGE (EL. 602.46)
- ACCUMULATED RESIDUALS – 2016
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- Hg — SEDIMENT SAMPLE LOCATION WHERE COPC EXCEEDED THE RSV FOR ONE OF THE TWO SAMPLING EVENTS. COPC IS INDICATED (E.G. Hg)
- Hg — SEDIMENT SAMPLE LOCATION WHERE THE MEAN OF THE TWO SAMPLING EVENTS EXCEEDED THE RSV. COPC IS INDICATED BY CIRCLE (E.G. (Hg))
- APPROXIMATE AREA WHERE ONE OR MORE COPC HAD A MEAN CONCENTRATION THAT EXCEEDED THE RSV

COPC = CONSTITUENT OF POTENTIAL CONCERN
RSV = REFINEMENT SCREENING VALUE

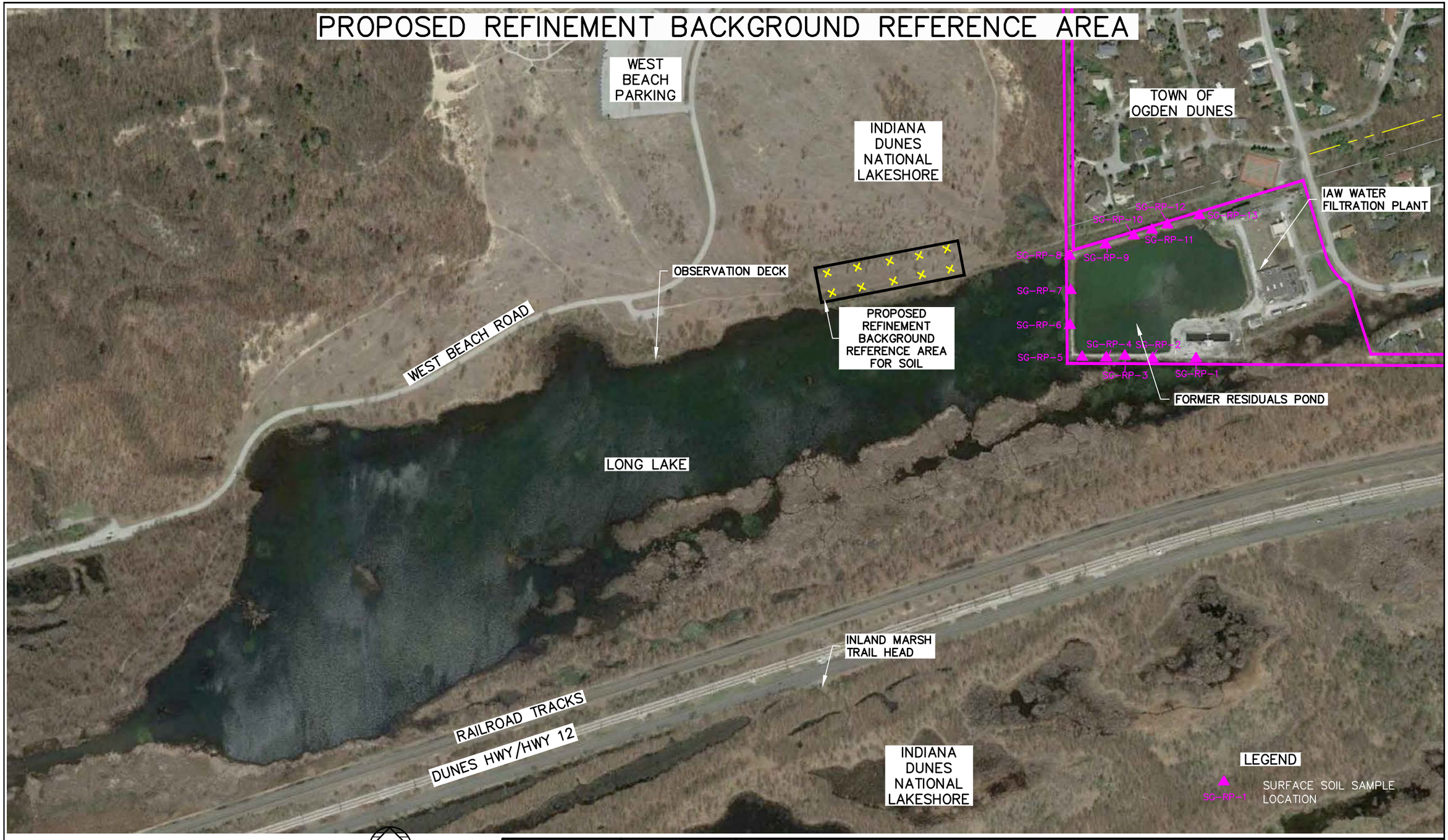
NOTE: EXCEPT FOR ARSENIC (UNRELATED TO THE FRP), NO COPC WAS DETECTED IN LONG LAKE AT A CONCENTRATION >RSV.

Drawn By GML	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR	
CADD Review RMK		0346694	
Date Drawn/Rev'd 10/25/2016	Environmental Resources Management	FIGURE 13	

ERM®

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PROPOSED REFINEMENT BACKGROUND REFERENCE AREA



LEGEND

X PROPOSED REFINEMENT BACKGROUND SOIL SAMPLE LOCATION

N

0 400 800

SCALE (IN FEET)

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

ERM®

INDIANA AMERICAN WATER COMPANY

84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 14

Q:\Team\CSM\Cadd\Indiana American Water\November 2016\0346694-01.dwg, Proposed Refinement Background RA

Tables

Table 1 - Sample Location Coordinates
Indiana American Water, Ogden Dunes Water Filtration Plant

Sample ID	Latitude	Longitude
Background Soil Sample Locations		
SG-BG-1	41.612603	-87.206718
SG-BG-2	41.611679	-87.209335
SG-BG-3	41.610413	-87.208268
SG-BG-4	41.610069	-87.211874
SG-BG-5	41.608810	-87.218935
SG-BG-6	41.608816	-87.216332
SG-BG-7	41.608373	-87.215077
SG-BG-8	41.608103	-87.220940
SG-BG-9	41.607435	-87.219984
SG-BG-10	41.606861	-87.218514
Background Surface Water/Sediment Sample Locations		
SW/SED-BG-1	41.611597	-87.206603
SW/SED-BG-2	41.611945	-87.207724
SW/SED-BG-3	41.611437	-87.207569
SW/SED-BG-4	41.611687	-87.208439
SW/SED-BG-5	41.611254	-87.207986
SW/SED-BG-6	41.609499	-87.212504
SW/SED-BG-7	41.609722	-87.212921
SW/SED-BG-8	41.609695	-87.213863
SW/SED-BG-9	41.609187	-87.213517
SW/SED-BG-10	41.609312	-87.214650
Background Groundwater Sample Locations		
BG-1S	41.613400	-87.206830
BG-1D	41.613399	-87.206847

Sample ID	Latitude	Longitude
Long Lake Water/Sediment Sample Locations		
SW/SED-LL-1	41.618303	-87.203025
SW/SED-LL-2	41.617702	-87.203025
SW/SED-LL-3	41.617179	-87.203025
SW/SED-LL-4	41.617809	-87.203683
SW/SED-LL-5	41.617292	-87.203683
SW/SED-LL-6	41.618041	-87.204255
SW/SED-LL-7	41.617550	-87.204255
SW/SED-LL-8	41.617042	-87.204255
SW/SED-LL-9	41.617403	-87.205740
SW/SED-LL-10	41.616440	-87.206596
SW/SED-LL-11	41.617082	-87.208444
SW/SED-LL-12	41.616220	-87.211308
SW/SED-LL-13	41.615386	-87.210836
SW/SED-LL-14	41.613862	-87.213136
SW/SED-LL-15	41.615483	-87.214155
SW/SED-LL-16	41.613439	-87.215695

Sample ID	Latitude	Longitude
USGS Piezometers*		
E-3	41.617240	-87.209231
E-5	41.612652	-87.205961
E-8	41.618335	-87.203056
M-6	41.609551	-87.222667
E-2	41.621506	-87.209725
IUN-2	41.617786	-87.196944
IUN-6	41.619447	-87.199167
IUN-7	41.619441	-87.198889
IUN-8	41.619176	-87.198611

Sample ID	Latitude	Longitude
Onsite Soil Sample Locations		
SG-RP-1	41.617246	-87.200778
SG-RP-2	41.617260	-87.201431
SG-RP-3	41.617272	-87.201789
SG-RP-4	41.617268	-87.202066
SG-RP-5	41.617277	-87.202438
SG-RP-6	41.617638	-87.202775
SG-RP-7	41.618258	-87.202809
SG-RP-8	41.618476	-87.202779
SG-RP-9	41.618567	-87.202347
SG-RP-10	41.618670	-87.201897
SG-RP-11	41.618743	-87.201582
SG-RP-12	41.618790	-87.201354
SG-RP-13	41.618938	-87.200702
Residuals Pond Surface Water/Sediment Sample Locations		
SW/SED-RP-1	41.618550	-87.200435
SW/SED-RP-2	41.618388	-87.200283
SW/SED-RP-3	41.618034	-87.200199
SW/SED-RP-4	41.618740	-87.200727
SW/SED-RP-5	41.618372	-87.200605
SW/SED-RP-6	41.617919	-87.200680
SW/SED-RP-7	41.618714	-87.201063
SW/SED-RP-8	41.618393	-87.201049
SW/SED-RP-9	41.618194	-87.200946
SW/SED-RP-10	41.618069	-87.201487
SW/SED-RP-11	41.617791	-87.201312
SW/SED-RP-12	41.617523	-87.201508
SW/SED-RP-13	41.618457	-87.201909
SW/SED-RP-14	41.618231	-87.201816
SW/SED-RP-15	41.617973	-87.201904
SW/SED-RP-16	41.617718	-87.201932
SW/SED-RP-17	41.618321	-87.202403
SW/SED-RP-18	41.618063	-87.202268
SW/SED-RP-19	41.617787	-87.202413
SW/SED-RP-20	41.617504	-87.202276
Onsite Groundwater Sample Locations		
MW-1S	41.618922	-87.200565
MW-1D	41.618926	-87.200553
MW-2S	41.618547	-87.202418
MW-2D	41.618542	-87.202430
MW-3S	41.617521	-87.202720
MW-3D	41.617534	-87.202718
MW-4S	41.617311	-87.201278
MW-4D	41.617311	-87.201261
MW-5S	41.617714	-87.200098
MW-5D	41.617702	-87.200077
MW-6S	41.618109	-87.198511
MW-6D	41.618102	-87.198506
MW-7S	41.618599	-87.198855
MW-7D	41.618607	-87.198858
MW-8S	41.619245	-87.199172
MW-8D	41.619253	-87.199177

Notes:

*= Well construction information can be found in USGS report 2013-5003 "Hydrogeologic Data and Groundwater Flow Simulations in the Vicinity of Long Lake, Indiana Dunes National Lakeshore, Near Gary, Indiana"

Table 2 - Depth-to-Water Measurements

Indiana American Water, Ogden Dunes Water Filtration Plant

Location	Screened Interval (feet bgs)	Top-of-casing Elevation (ft amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)	Depth-to-water (btoc)	Groundwater Elevation (ft-amsl)
			12/7/2015		3/15/2016		6/13/2016		9/19/2016		12/13/2016		3/20/2017		6/12/2017		9/19/2017	
BG-1S	5-10'	609.50	6.12	603.38	5.63	603.87	5.98	603.52	6.20	603.30	5.91	603.59	5.08	604.42	5.41	604.09	6.51	602.99
BG-1D	25-30'	609.32	5.93	603.39	5.41	603.91	5.79	603.53	6.01	603.31	5.73	603.59	4.90	604.42	5.27	604.05	6.31	603.01
MW-1S	2-12'	607.01	5.77	601.24	5.32	601.69	5.26	601.75	5.07	601.94	5.07	601.94	4.6	602.41	4.26	602.75	5.19	601.82
MW-1D	27-32'	606.66	5.65	601.01	5.06	601.60	5.04	601.62	4.98	601.68	4.98	601.68	4.32	602.34	4.01	602.65	4.9	601.76
MW-2S	2-12'	605.75	4.14	601.61	3.32	602.43	3.40	602.35	3.66	602.09	3.27	602.48	2.98	602.77	2.52	603.23	3.43	602.32
MW-2D	26-31'	605.91	4.33	601.58	3.57	602.34	3.64	602.27	3.84	602.07	3.79	602.12	2.73	603.18	2.77	603.14	3.61	602.30
MW-3S	2-12'	605.66	3.84	601.82	3.11	602.55	3.23	602.43	3.39	602.27	3.27	602.39	2.39	603.27	2.37	603.29	3.21	602.45
MW-3D	26-31'	605.54	3.70	601.84	3.00	602.54	3.09	602.45	3.22	602.32	3.14	602.40	2.52	603.02	2.25	603.29	3.09	602.45
MW-4S	2-12'	605.45	3.69	601.76	2.91	602.54	3.02	602.43	3.23	602.22	3.11	602.34	2.31	603.14	2.17	603.28	3	602.45
MW-4D	23-28'	605.55	3.76	601.79	3.01	602.54	3.10	602.45	3.30	602.25	3.18	602.37	2.42	603.13	2.32	603.23	3.12	602.43
MW-5S	4-14'	607.10	5.57	601.53	4.79	602.31	4.84	602.26	5.09	602.01	4.98	602.12	4.15	602.95	3.86	603.24	4.69	602.41
MW-5D	23-28'	607.58	5.98	601.60	5.23	602.35	5.29	602.29	5.60	601.98	5.48	602.10	4.6	602.98	4.29	603.29	5.21	602.37
MW-6S	7-12'	605.16	4.54	600.62	3.74	601.42	3.72	601.44	3.84	601.32	3.94	601.22	2.8	602.36	2.13	603.03	3.35	601.81
MW-6D	25-30'	605.17	4.54	600.63	3.74	601.43	3.76	601.41	3.86	601.31	3.93	601.24	2.8	602.37	2.11	603.06	3.33	601.84
MW-7S	12-17'	608.48	7.85	600.63	7.10	601.38	7.05	601.43	7.20	601.28	7.34	601.14	6.13	602.35	5.61	602.87	6.72	601.76
MW-7D	27-32'	608.39	7.80	600.59	7.01	601.38	6.97	601.42	7.11	601.28	7.23	601.16	6.18	602.21	5.52	602.87	6.64	601.75
MW-8S	9-14'	610.11	10.15	599.96	9.51	600.60	9.36	600.75	9.45	600.66	9.28	600.83	8.44	601.67	8.09	602.02	8.91	601.20
MW-8D	28-33'	609.87	9.97	599.90	9.31	600.56	9.18	600.69	9.28	600.59	9.50	600.37	8.59	601.28	7.94	601.93	8.82	601.05
Staff Gauge		600.54	NA	NA	2.01	602.55	1.92	602.46	1.7	602.24	NA- Frozen		2.75	603.29	2.9	603.44	2.02	602.56
E-2*	27.5-32.5'	613.63	NM	NM	20.23	593.40	19.75	593.88	19.01	594.62	19.76	593.87	19.01	594.62	18.83	594.80	19.63	594.00
E-3*	4.6'	605.66	NM	NM	2.95	602.71	2.82	602.84	3.14	602.52	3.01	602.65	2.31	603.35	NM	NM	3.01	602.65
E-5*	6-8'	608.74	NM	NM	6.20	602.54	6.18	602.56	6.88	601.86	6.53	602.21	5.82	602.92	5.93	602.81	7.08	601.66
E-8*	5.5-8'	605.83	NM	NM	3.47	602.36	3.60	602.23	3.82	602.01	3.63	602.2	2.7	603.13	2.51	603.32	3.59	602.24
M-6*	6-11'	609.23	NM	NM	5.52	603.71	5.75	603.48	5.89	603.34	5.80	603.43	5.14	604.09	5.56	603.67	6.4	602.83

* = Well construction information can be found in USGS report 2013-5003 "*Hydrogeologic Data and Groundwater Flow Simulations in the Vicinity of Long Lake, Indiana Dunes National Lakeshore, Near Gary,*

NM : Not Measured NA : Not Available, well not installed on this date.

All "MW"-series wells were were constructed using 2-inch diameter Schedule 40 PVC materials and completed flush with grade using a protective steel manhole embedded in concrete.

All wells were completed flush with grade using a protective steel mahole embedded in a concrete pad.

Monitoring wells MW-1S through MW-5S were installed by Troy Risk, Inc in 2009. All other wells installed by ERM.

btoc = below top of casing amsl = above mean sea level

Staff Gauge is located along the south bank of the Indiana American Filtration Pond.

Table 3 - Background Reference Area Analytical Results - Soil and Sediment
Indiana American Water, Ogden Dunes Water Filtration Plant

Soil (in mg/Kg dry wt.)		Constituent of Potential Concern (COPC)													Other Constituents		
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4
Sample ID	**Sample Date**																
SG-BG-1 (a)	11/16/2015	0.05 J	1,350	2.35 J	15	0.22 J	3.4	4.2	3700	0.0096	113	22	0.35 J	38	97	0.35 J	9.3 J
SG-BG-2	11/16/2015	0.05 U	1,300	1.6	19	0.13 J	4.5	3.9	3,800	0.011 J	200 (c)	22	0.34 J	43	90	0.59 J	6.3 J
SG-BG-3	11/16/2015	0.14 J	2,500	3.4	31	0.26 J	8.1	6.9 (c)	7,100	0.083	330 (c)	40 (c)	0.78 J, (c)	76	170	6.5	23 (c)
SG-BG-4	11/16/2015	0.04 U	1,400	2.4	17	0.19 J	2.9	4.0	3,400	0.0078 J	95	22	0.25 U	38	80	0.63 J	6.4 J
SG-BG-5	11/16/2015	0.04 U	1,300	1.8	10	0.063 J	2.1	1.9	2,800	0.0082 J	52	7.7	0.27 J	18	78	0.22 U	3.0 J
SG-BG-6	11/17/2015	0.04 U	1,100	1.8	11	0.07 J	4.1	2.8	3,400	0.0039 J	89	21	0.29 J	35	93	0.23 U	7.5 J
SG-BG-7	11/17/2015	0.04 U	1,100	1.7	10	0.08 J	3.8	2.8	3,100	0.0071 J	93	20	0.24 U	34	88	0.23 U	2.8 J
SG-BG-8	11/17/2015	0.04 U	630	0.78	4.5	0.07 U	1.9	0.8	1,800	0.0013 U	41	5.7	0.25 U	13	71	0.25 U	4.1 J
SG-BG-9	11/17/2015	0.04 U	1,600	2.9	12	0.10 J	4.4	4.2	4,400	0.013 J	99	24	0.38 J	33	120	0.24 U	4.3 J
SG-BG-10	11/17/2015	0.06 U	3,400	6.7 (c)	38	0.57 J, (c)	12	17 (c)	8,500	0.11	80	93 (c)	1.5 (c)	62	150	4.0	1.1 U
Background Threshold Value (BTV) (b)		Unknown	2,217	2.6	23	0.18	7.3	3.9	5,864	0.078	99	24	0.33	50	129	2.65	6.60

Sediment (in mg/Kg dry wt.)		Constituent of Potential Concern (COPC)													Other Constituents		
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4
Sample ID	**Sample Date**																
SED-BG-1	11/16/2015	0.27 U	3,600	5.8	52	1.30 J	18	23	6,700	0.17	270	110	2.6 J	200	290	1.63 U	110
SED-BG-2	11/16/2015	0.43 U	4,700	11	79	2.10 J	26	35	9,700	0.31	410	180	5.3 J	240	420	2.43 U	43 J
SED-BG-3	11/16/2015	0.36 U	4,200	12	62	1.80 J	25	32	15,000	0.17	300	160	4.2 J	250	350	2.12 U	95 J
SED-BG-4	11/16/2015	0.18 U	2,800	4.5	38	0.65 J	11	16	6,300	0.12	200	55	2.6 J	93	200	1.10 U	82
SED-BG-5	11/17/2015	0.23 U	2,700	5.2	36	0.36 U	7.7	9.9	12,000	0.073 J	90	3.3	3.7 J	19	130	18	150
SED-BG-6	11/17/2015	0.33 U	5,600	9.9	99	1.10 J	40 (c)	38	15,000	0.23	380	160	5.9 J	270	400	2.07 U	100
SED-BG-7	11/17/2015	0.37 U	3,900	6.1	94	0.58 U	19	21	11,000	0.12 J	360	55	5.4 J	150	220	1.96 U	59 J
SED-BG-8	11/17/2015	0.30 U	4,100	6.0	94	0.77 J	20	25	9,700	0.11	320	99	5.2 J	150	300	1.92 U	60 J
SED-BG-9 (a)	11/17/2015	0.29 U	4,200	6.3	45	0.45 U	12	18	10,000	0.096	37.5	52	5.0 J	84.5	180	1.65 U	37 J
SED-BG-10	11/17/2015	0.10 U	2,800	3.9	42	0.59 J	13	18	4,600	0.037 J	99	79	1.9 J	92	210	0.58 U	49
Background Threshold Value (BTV) (b)		Unknown	4,396	8.7	79	1.31	21	29	12,017	0.19	324	129	5.0	203	327	Unknown	99

Notes: (a) Sample results shown are averaged between the sample and its duplicate analytical data.
(b) Background threshold values (BTVs) are the 95% upper confidence limit (UCL) of the mean as determined using ProUCL 5.1. BTV calculations are shown in Appendix A
(c) Statistical outlier identified by Pro UCL. Outlier **not** used in determining 95% UCL.
U = Not detected above method detection limit (shown).
J = Result shown is an estimated concentration between the method detection limit and the reporting limit.

Table 4 - Background Reference Area Analytical Results - Surface Water and Groundwater
Indiana American Water, Ogden Dunes Water Filtration Plant

Surface Water (in µg/L dissolved)			Constituent of Potential Concern (COPC)														Other Constituents			Water Quality Parameters					
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn		K	NO_3	SO_4	Temp.	pH	Cond.	DO	ORP	Turb.	Hard.
Sample ID	Sample Date	Season																		°C	StU	mS	mg/L	eV	NTU	mg/L
SW-BG-1	11/16/2015	Winter	0.1 U	6.5 J	0.87 J	18	0.1 U	0.1 J	0.66 J	190	0.00055	21	0.34 J	1 U	5.5 J		1,100	27 U	2,300	9.83	8.39	0.142	7.55	9.3	96.9	92
	6/13/2016 (a)	Summer	0.1 U	9.6 J	1.7 J	27	0.05 U	0.65 U	0.28 U	1,300	0.0052	21	0.3 U	0.9 U	5.6 J		420	48 U	410 U	9.32	9.28	0.306	14.70	-3.7	2.1	170
	10/11/2016	Fall	0.05 U	8.9 J	1.6 J	20	0.05 U	0.65 U	0.28 U	440	0.0027	7.3	0.52 J	0.9 U	3.5 J		250	78 JH, (c)	1,100	19.85	4.99	0.112	0	74	8.1	89
	3/22/2017	Spring	0.05 U	9.2 J	0.87 U	13	0.05 U	0.65 U	2.6 J, (c)	160	0.0033	4.1 J	0.33 U	0.9 U	3.5 J		550	48 U	3,500	7.27	8.27	1.518	8.88	141.5	1.87	82
SW-BG-2	11/16/2015	Winter	0.1 U	5.5 J	0.75 J	18	0.1 U	0.1 U	0.49 J	180	0.00044 J	20	0.21 J	1 U	5.6 J		1,100	27 U	1,300	8.92	9.48	0.147	10.85	22.7	18.1	93
	6/13/2016	Summer	0.05 U	6.2 J	1.8 J	24	0.05 U	0.65 U	0.28 U	1800	0.0013	5.1	0.33 U	0.9 U	8.5 J		410	90 J, (c)	410 U	26.11	6.71	0.128	3.17	154	2.7	120
	10/11/2016	Fall	0.05 U	4.8 J	1 J	21	0.05 U	0.65 U	0.28 U	690	0.00099	0.97 J	0.33 U	0.9 U	3.7 J		270	48 UH	650 J	18.84	3.59	0.138	0	213	10.1	90
	3/22/2017	Spring	0.05 U	15	0.87 U	12	0.05 U	0.65 U	0.51 J	440	0.011 (c)	4.5 J	0.33 U	0.9 U	3.4 J		560	48 U	3,500	6.4	6.35	1.606	8.45	399.1	10.06	92
SW-BG-3	11/16/2015	Winter	0.1 U	5.6 J	0.85 J	15	0.1 U	0.19 J	0.41 J	140	0.00048 J	12	0.12 J	1 U	5.3 J		930	27 U	3,900	9.92	8.78	0.186	12.62	17.2	6.8	110
	6/13/2016	Summer	0.05 U	5.8 J	2.2 J	26	0.05 U	0.65 U	0.28 U	1900	0.0029	33 (c)	0.33 U	0.9 U	6.2 J		270	52 J	410 U	26.55	6.95	0.131	2.55	92	4.1	120
	10/11/2016	Fall	0.05 U	6.4 J	1.3 J	23	0.05 U	0.65 U	0.28 U	680	0.0011	16	0.33 U	0.9 U	5.7 J		150 J	48 UH	1,800	19.13	4.71	0.127	0	93	15.6	110
	3/22/2017	Spring	0.05 U	11	0.87 U	12	0.05 U	0.65 U	0.53 J	230	0.004	4.9 J	0.33 U	0.9 U	2.5 J		540	48 U	3,500	6.83	7.72	1.595	9.35	111.2	4.26	83
SW-BG-4	11/16/2015	Winter	0.1 U	4.2 J	0.7 U	11	0.1 U	0.1 U	0.31 J	96	0.00050	3.5 J	0.1 U	1 U	5.6 J		860	27 U	1,600	9.82	9.03	0.13	9.1	14.3	51.7	78
	6/13/2016	Summer	0.05 U	5.8 J	1.7 J	21	0.05 U	0.65 U	0.28 U	1500	0.00100	2.3 J	0.3 U	0.9 U	5.3 J		400	48 U	410 U	25.04	6.89	0.125	2.18	119	3	120
	10/11/2016	Fall	0.05 U	4.7 J	1.3 J	18	0.05 U	0.65 U	0.28 U	520	0.0011	2.7 J	0.33 U	0.9 U	9.8 J		170	48 UH	490 J	18.81	4.2	0.092	0	111	19.2	81
	3/22/2017	Spring	0.05 U	12	0.87 U	11	0.05 U	0.65 U	0.48 J	370	0.00230	2.9 J	0.3 U	0.9 U	3 J		560	48 U	3,300	6.24	7.33	1.62	9.36	134.5	2.98	98
SW-BG-5	11/16/2015	Winter	0.1 U	8.6 J	1.0 J	13	0.1 U	0.35 J	0.51 J	100	0.00041 J	5.5	0.1 U	1 U	7.3 J		770	27 U	9,400 (c)	10.09	8.53	0.284	10.75	8.4	597	180
	6/13/2016	Summer	0.05 U	5.2 J	2.0 J	21	0.1 U	0.65 U	0.28 U	2500	0.00084	3.1 J	0.3 U	0.9 U	5.5 J		250	48 U	540 J	24.59	6.83	0.135	2.1	129	3.9	130
	10/11/2016 (a)	Fall	0.05 U	3.7 J	1.2 J	20	0.139 J	1.675 (c)	1.84 J, (c)	205	0.00068	7.2	3.615 (c)	0.9 U	15.55 (c)		2,095	48 U	3,000	18.93	4.64	0.172	0	125	6.7	160
	3/22/2017	Spring	0.05 U	11	0.87 U	10	0.05 U	0.65 U	0.52 J	430	0.0033	2.1 J	0.33 U	0.9 U	2.2 J		540	48 U	3,300	6.01	8.1	1.641	7.96	127.5	14.1	85
SW-BG-6	11/17/2015	Winter	0.1 U	16	1.4 J	9	0.1 U	0.83 J	0.6 J	280	0.00120	12	0.61 J	1 U	5.7 J		1,000	27 U	2,900	9.4	8.5	0.137	10.05	-23.6	156	34
	6/13/2016	Summer	0.05 U	24	1.6 J	12	0.05 U	0.65 U	0.4 J	4000 (c)	0.00440	5.4	0.63 J	0.9 U	9.8 J		210	48 U	410 U	26.17	5.98	0.056	0.96	42	7.3	53
	10/11/2016	Fall	0.05 U	6.8 J	1.1 J	18	0.05 U	0.65 U	0.41 J	610	0.0008	5.6	0.39 J	0.9 U	6.4 J		1300	48 UH	1,200	20.22	3.73	0.073	0	112	6.1	62
	3/22/2017 (a)	Spring	0.05 U	21.5	0.87 U	9.3	0.05 U	0.65 U	0.68 J	735	0.00320	5.05	0.33 U	0.9 U	5.55 J		700	48 U	1,900	8.26	7.45	2.262	0.31	42.8	2.5	37
SW-BG-7	11/17/2015	Winter	0.1 U	26	1.3 J	11	0.1 U	0.92 J	1.2 J, (c)	330	0.00160	12	1.0 J	1 U	7.5 J		1,100	27 U	2,100	9.82	7.28	0.051	12.38	19.3	65.8	32
	6/13/2016	Summer	0.05 U	23	1.6 J	12	0.05 U	0.65 U	0.42 J	3200	0.00180	10	0.9 J	0.9 U	8.4 J		140 J	48 U	410 U	26.49	5.78	0.05	1.01	77	6.1	52
	10/11/2016	Fall	0.05 U	19	1.9 J	17	0.05 U	0.65 U	0.47 J	1,800	0.0016	80 (c)	1.10 J	0.9 U	8.5 J		960	48 UH	420 J	20.19	3.55	0.041	0	103	41.1	33
	3/22/2017	Spring	0.05 U	16	0.87 U	8.9	0.05 U	0.65 U	0.60 J	210	0.0058	4.4 J	0.33 U	0.9 U	4.2 J		740	48 U	2,100	8.61	8.49	1.111	8.51	124.1	5.9	32
SW-BG-8	11/17/2015	Winter	0.1 U	23	1.4 J	6.8	0.1 U	0.82 J	0.73 J	300	0.00180	6.8	0.74 J	1 U	7.4 J		1,200	27 U	1,200	9.36	7.19	0.048	7.8	11.7	53.8	30
	6/13/2016	Summer	0.05 U	28	1.6 J	8.8	0.05 U	0.65 U	0.46 J	2600	0.00220	25	0.94 J	0.9 U	6.7 J		200	48 U	460 J	26.56	6.06	0.041	4.21	57	6.7	41
	10/11/2016	Fall	0.05 U	24	1.4 J	12	0.05 U	0.65 U	11	1,600	0.0026	21	1.40 J	0.9 U	37		1200	48 UH	410 U	20.86	4.55	0.044	0	76	107	33
	3/22/2017	Spring	0.05 U	17	0.87 U	8.6	0.05 U	0.65 U	0.71 J	220	0.0032	4.2 J	0.47 J	0.9 U	2.7 J		820	48 U	2,200	7.94	8.44	1.124	7.85	117.2	5.99	28
SW-BG-9	11/17/2015	Winter	0.1 U	27	1.8 J	15	0.1 U	0.91 J	0.58 J	1,400	0.00120	37 (c)	0.76 J	1 U	6.7 J		800	27 U	1,400	8.9	7.94	0.098	3.67	-28.2	2.3	64
	6/13/2016	Summer	0.05 U	12	1.1 J	5.1	0.05 U	0.65 U	0.28 U	1,500	0.00240	3.7 J	0.33 U	0.9 U	8.1 J		270	48 U	630 J	26.98	5.8	0.04	0.73	123	6.8	37
	10/11/2016	Fall	0.05 U	15	1.3 J	17	0.05 U	0.65 U	0.34 J	830	0.0020	3.0 J	0.33 U	0.9 U	6.9 J		880	97 JH	720 J	18.94	3.37	0.051	0	106	2.5	56
	3/22/2017	Spring	0.05 U	20	0.87 U	7.7	0.05 U	0.65 U	0.61 J	270	0.0022	3.4 J	0.37 J	0.9 U	4.3 J		760	48 U	2,200	8.2	8.05	1.124	8.72	108.1	1.69	30
SW-BG-10	11/17/2015 (a)	Winter	0.1 U	13	1.3 J	8.25	0.1 U	0.695 J	0.78 J	135	0.001435	6.8	0.185 J	1 U	6.9 J		1750	27	845 J	8.95	7.87	0.047	6.1	14.6	180	26
	6/13/2016	Summer	0.05 U	26	1 J	9.7	0.05 U	0.65 U	0.3 J	1600	0.009 (c)	23	0.84 J	0.9 U	6.3 J		420	48 U	410 U	25.82	6.02	0.033	2.07	129	2.6	31
	10/11/2016	Fall	0.05 U	19	1.2 J	14	0.05 U	0.65 U	0.53 J	810	0.00095	8.8	0.55 J	0.9 U	6.5 J		1700	48 UH	410 U	19.51	3.7	0.037	0	91	32.5	33
	3/22/2017	Spring	0.05 U	18	0.87 U	7.8	0.05 U	0.65 U	0.64 J	230	0.0053	4.0 J	0.33 U	0.9 U	3.2 J		790	48 U	2,100	8.86	8.64	1.109	8.6	111.4	3.55	29
Background Threshold Value (b)			Unknown	16.08	1.33	15.8	Unknown	0.348	0.502	1,100	0.0025	11.2	0.476	Unknown	6.3		852	37	1,843							

Groundwater (in µg/L total)			Constituent of Potential Concern (COPC)														Other Constituents			Water Quality Parameters					
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn		K	NO_3	SO_4	Temp.	pH	Cond.	DO	ORP	Turb.	Hard.
Sample ID	Sample Date	Season																		°C	StU	mS	mg/L	eV	NTU	mg/L
Shallow Zone Total Metals Results																										
BG-1S	12/7/2015	Winter	0.1 U	370	3.0 J	11 (c)	0.11 J	2.0 J	3.0 J	4,800	0.011	81	0.82 J	1 U	150 (c)		880	27 U	19,000	10.91	6.31	0.221	0.65	-59.8	1.8	75
	3/16/2016	Spring	0.1 U	120	1.9 J	5.2	0.1 U	0.9 J	4.1 J	1,300	0.0086	16	0.22 J	1 U	21		300	27 U	18,000	7.76	6.17	0.152	0.99	14.2	3.2	80
	6/13/2016	Summer	0.05 U	170	2.4 J	6.5	0.05 U	1.2 J	5.3	3,100	0.013	51	0.3 U	0.9 U	17		580	48 U	45,000	12.47	6.19	0.215	1.10	3.4	4.2	-
	9/20/2016	Fall	0.05 U	160	1.9 J	6.2	0.11 J	1.5 J	11.0	300	0.033	17	0.4 J	0.9 U	10		520	67 J	28,000	17.30	6.65	0.201	0.00	123.0	2.8	-
	12/14/2016	Winter	0.05 U	170	1.4 J	6.0	0.10 J	1.3 J	6.7	650	0.036	12	0.40 J	0.9 U	8.1 J		390	48 U	21,000	9.59	6.38	0.185	1.42	105.4	2.4	110
	3/22/2017	Spring	0.05 U	88	2.4 J	6.5	0.059 J	1.0 J	4.8 J	2,900	0.0097	61	0.5 J	0.9 U	17		480	48 U	40,000	7.50	6.50	0.320	9.50	135.6	3.39	120
	6/13/2017	Summer	0.05 U	130	1.4 J	6.7	0.15 J	1.1 J	7.6	1,500	0.016	63	0.33 U	0.9 U	23		730	48 U	38,000	12.11	6.63	0.277	0.71	3.4	1.80	140
	9/21/2017	Fall	0.05 U	260	1.5 J	6	0.28 J (c)	2.0 J	17.0	1,500	0.051	91	0.55 J	1.3 J	14		920	46 U	32,000	15.51	6.35	0.195	0.82	-67.2	6.10	82
Background Threshold Value (b)			BDL	244.2	2.372	6.5	0.12	1.7	10.5	3,005	0.0328	70	0.56	1.3 J (d)	20		750	67 J (d)	37,025							
Deeper Zone Total Metals Results																										
BG-1D	12/7/2015	Winter	0.1 U	270 (c)	6.2	19	0.1 U	1.9 J	2.5 J (c)	7,300	0.00061	170	0.59 J	1 U	84 (c)		2,400 (c)	27 U	19,000 (c)	10.77	7.32	0.333	0.20	-165.2	14.0	150
	3/16/2016	Spring	0.1 U	21	4.0 J	13	0.1 U	0.63 J	0.87 J	5,900	0.0002 U	180	0.1 U	1 U	34		1,100	87 J	12,000	10.34	7.25	0.253	0.47	-30.4	2.7	140
	6/13/2016	Summer	0.05 U	26	2.2 J	12	0.05 U	0.65 U	0.61 J	5,100	0.0002 U	200	0.33 U	0.9 U	16		980	48 U	11,000	12.36	6.46	0.260	0.58	32.1	4.6	-
	9/20/2016	Fall	0.05 U	11	5.2	14	0.05 U	0.65 U	0.51 J	8,000	0.002 U	180	0.33 U	0.9 U	8.5 J		870	62 J	13,000	14.13	6.89	0.248	0.18	-157.0	3.9	-
	12/14/2016	Winter	0.05 U	15	6.0	15	0.05 U	0.65 U	0.28 U	8,300	0.0002 U	180	0.33 U	0.9 U	4.1 J		780	48 U	12,000	11.30	8.28	0.200	0.46	-61.2	2.2	140
	3/22/2017	Spring	0.05 U	15	5.6	17	0.05 U	0.65 U	0.87 J	5,400	0.0002 U	200	0.33 U	0.9 U	21		1,000	48 U	14,000	10.58	7.57	1.731	0.53	15.3	2.5	150
	6/13/2017	Summer	0.05 U	33	2.4 J	13	0.05 U	0.65 U	1.1 J	2,700	0.0004 J	170	0.33 U	0.9 U	22		1,200	170 (c)	14,000	13.32	7.53	0.250	0.09	-76.9	4.0	140
	9/21/2017	Fall	0.05 U	15	5.1	14	0.05 U	0.65 U	0.31 J	5,200	0.00023 J	180	0.33 U	0.9 U	11		800	58 J	13,000	13.66	7.33	0.213	0.08	-30.3	3.1	130
Background Threshold Value (b)			BDL	25.12	5.634	16	BDL	1.9 J	0.88	7,220	0.00042	190	0.59 J	BDL	24		1,076	65	13,532							

Abbreviations:
BDL = All results are below the detection limit.
U = Not detected above method detection limit (shown).
J = Result shown is estimated concentration between method detection limit and reporting limit
H = Analyte was analyzed outside of hold time

Notes:
(a) Sample results shown are averaged between the sample and its duplicate analytical data
(b) Background threshold values (BTVs) are the 95% upper confidence limit (UCL) of the mean as determined using ProUCL 5.1. BTV calculations are shown in Appendix A
(c) Statistical outlier identified by Pro UCL. Outlier**not** used in determining 95% UCL.
(d) Background Threshold Value (BTV) is the single detected concentration

Table 5a - Former Residuals Pond Sediment Analytical Results and Human Health Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Sediment Screening Levels (in mg/Kg dry wt.)		Constituent of Potential Concern (COPC)													Other Constituents		
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4
Background Threshold Value (BTV) (a):		Unknown	4,396	8.7	79	1.31	21	29	12,017	0.19	324	129	5.0	203	327	Unknown	99
Human Health Risk:																	
IDEM RCG 2017 Residential Screening Level (b)		550	100,000	9.5	21,000	99	100,000	4,300	77,000	3.1	2,500	400	550	32,000	NL	100,000	NL
Sample ID	**Sample Date**																
SED-RP-1	11/19/2015	0.04 U	650	1.0	3.6	0.07 U	1.6	1	1,600	0.0052 J	17	1.4	0.26 U	9.3	92	0.28 U	49
	10/13/2016	0.14 U	21,000	14	25	0.31 J	6.2	10	27,000	0.031 J	870	20	1.30 J	73	190	0.042 U	100
SED-RP-2	11/19/2015	0.19 U	21,000	19	53	0.30 U	31	76	27,000	0.56	180	46	5.0	750	1,000	1.11 U	680
	10/13/2016	0.086 U	1,500	4.5	7.9	0.07 J	2.7	3.5	11,000	0.035	230	5.7	0.4 U	67	99	0.029 U	42
SED-RP-3	11/19/2015	0.20 U	8,000	15	48	0.66 J	20	32	15,000	0.29	140	97	3.8 J	450	460	1.17 U	410
	10/13/2016	0.12 U	12,000	11	31	0.35 J	14	27	12,000	0.32	110	20	1.1 J	340	520	2.0 J	320
SED-RP-4	11/19/2015	0.19 U	26,000	16	42	0.47 J	29	89	21,000	0.56	170	55	3.5 J	480	680	1.26 U	270
	10/13/2016	0.078 U	7,800	3.9	11	0.095 J	5.7	34	5,300	0.24	50	8.7	0.6 J	110	510	0.029 U	70
SED-RP-5	11/19/2015	0.30 U	13,000	21	53	0.62 J	20	38	17,000	0.34	240	88	4.5 J	450	520	8.0 J	300
	10/13/2016	0.34 U	13,000	37	61	2.5 J	21	43	20,000	0.11 J	330	78	3.3 J	620	670	0.12 U	350
SED-RP-6	11/19/2015	0.15 U	5,900	12	34	0.23 U	13	18	11,000	0.047 J	140	25	3.3	150	370	4.0 J	960
	10/13/2016	0.110 U	2,800	11	21	0.46 J	6.5	9.2	9,100	0.04	150	34	0.65 J	110	160	0.037 U	150
SED-RP-7	11/19/2015	0.19 U	4,900	8.9	24	0.29 U	10	9.2	6,400	0.35	220	13	2.8 J	75	250	1.01 U	350
	10/13/2016	0.059 U	1,100	2.3	6.9	0.11 J	2.7	2.7	2,600	0.0094 J	23	8.4	0.58 J	21	84	0.023 U	88
SED-RP-8	11/19/2015	0.33 U	39,000	37	77	0.51 U	29	47	28,000	0.20	340	49	5.3 J	360	1,700	2.06 U	420
	10/13/2016	0.23 U	2,300	20	22	0.52 J	6.2	4.6	7,500	0.02 J	230	3.5	1.3 J	81	230	0.078 U	160
SED-RP-9	11/19/2015	0.23 U	52,000	29	70	0.36 U	28	38	24,000	0.24	250	32	3.8 J	520	1,500	1.48 U	370
	10/13/2016	0.27 U	6,500	25	57	1.6 J	14	33	8,200	0.11	150	150	3.5 J	170	470	0.086 U	610
SED-RP-10	11/19/2015	2	4,300	25	68	0.11 U	32	24	61,000	0.087	480	28	2.2	93	840	0.47 U	18 J
	10/13/2016	2.7	8,700	61	140	0.20 J	79	63	140,000	0.033 J	1100	46	1.8 J	170	1600	0.060 U	23 J
SED-RP-11	11/19/2015	0.15 U	65,000	33	84	0.23 U	25	32	19,000	0.10	310	22	2.5 J	170	1,500	0.94 U	410
	10/13/2016	0.056 U	1,400	1.7	8.6	0.04 U	1.8	1.1	1,600	0.03	27	2.9	0.39 J	21	93	0.023 U	57
SED-RP-12	11/19/2015	0.07 U	3,000	4.3	15	0.11 U	5.6	8.6	5,700	0.045	69	11	1.1 J	72	190	0.42 U	100
	10/13/2016 (c)	0.13 J	875	1.4 J	5.75	0.157 J	1.95	1.85 J	1,450	0.00535 J	15.5	2.05	0.245 U	17	80	0.0195 U	69 J
SED-RP-13	11/19/2015	0.27 U	57,000	48	130	0.51 J	67	61	42,000	3.5	990	61	5.3 J	610	1,300	1.68 U	400
	10/13/2016	0.15 U	2,800	24	88	0.12 J	4	4.6	16,000	0.099	940	2.4	1.7 J	39	170	0.046 U	150
SED-RP-14	11/19/2015	0.21	12,000	38	110	0.27 U	50	58	96,000	0.38	1,500	19	3.6	180	1,200	1.04 U	78
	10/13/2016	0.21 U	51,000	29	68	0.78 J	71	40	10,000	7.2	1,700	53	0.93 U	270	660	0.067 U	42
SED-RP-15	11/19/2015	0.19	25,000	17	41	0.22 U	23	23	23,000	0.13	330	16	1.7 J	150	710	0.91 U	110
	10/13/2016	0.66 U	2,200	2.4	4.9	0.051 U	3	2.5	3,200	0.02	50	2.3	0.30 U	19	120	0.021 U	57
SED-RP-16	11/19/2015	0.13 U	12,000	10	34	0.20 U	14	20	15,000	0.16	260	19	1.7 J	410	470	0.82 U	110
	10/13/2016	0.068 U	1,600	3	7.9	0.05 U	3.1	2.4	3,000	0.014 J	42	12	0.6 J	35	100	0.021 U	130
SED-RP-17	11/19/2015	0.13	17,000	22	53	0.20 U	24	24	21,000	1.60	530	21	1.9 J	150	480	0.83 U	170
	10/13/2016	0.056 U	2,500	3.2	6.6	0.044 U	3.7	3.7	4,400	0.099	100	2.8	0.27 J	29	130	0.020 U	68
SED-RP-18	11/19/2015 (c)	0.11 U	6600	16.5	48	0.165 U	11.5	11	33,500	0.345	775	9.05	1.75 J	62.5	265	0.65 U	97.5 J
	10/13/2016	0.12 U	1,900	20	44	0.092 U	5	3.9	41,000	0.006 U	990	2.8	0.54 U	21	150	0.042 U	26 J
SED-RP-19	11/19/2015	0.20 U	15,000	31	74	0.31 U	22	22	52,000	0.41	1,100	30	3.9 J	190	500	1.20 U	230
	10/13/2016	0.17 U	8,600	30	50	0.73 J	15	19	44,000	0.22	1,300	40	1.4 J	450	260	0.052 U	810
SED-RP-20	11/19/2015	0.06 U	3,000	3.3	11	0.10 U	5.4	5.8	5,400	0.051	88	6.3	0.67 J	93	190	0.38 U	65
	10/13/2016	0.24 U	2,600	26	31	0.93 J	6.8	12	7,100	0.066	130	29	1.3 J	72	250	0.079 U	450
Former Residuals Pond Decision Unit	**Mean**	0.28	13,563	18.4	44	0.38	18.3	24.0	22,476	0.45	417	29.3	2.0	204	519	0.82	234
	Maximum	2.70	65,000	61.0	140	2.5	79	89	140,000	7.2	1,700	150	5.3	750	1,700	8.0	960
	Exposure Point Concentration (d)			30.5					46,320	2.47 (e)					1,046		448
Is additional refinement of COPC needed?		No	No	No (f)	No	No	No	No	No (g)	No (g)	No	No	No	No	Not COPC		

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
NL = Not Listed.
IDEM = Indiana Department of Environmental Management.
BDL = All results are below detection limit.
RCG = Remediation Closure Guide.

Notes:
Concentration exceeds both the listed human health screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 3.
(b) Soil direct contact screening level for residential exposure scenario, Table A-6 (2017 update) of the RCG.
(c) Results shown are the average of the sample and its associated duplicate.
(d) Exposure Point Concentration (EPC) is 95% UCL of the mean, calculated **using the maximum concentration detected at each location** , as requested by IDEM in its August 2, 2017 comment letter.
(e) Value is the 95% Chebyshev(Mean, Sd) UCL, using nonparametric calculations. The data do not follow any distribution.
(f) Based on spatial distribution (levels are higher in off-site Long Lake sediment), the elevated arsenic does not appear to be related to the water treatment residuals.
(g) Although several individual points exceed the screening level and the BTV, the EPC for the decision unit does not.

Table 5b - Former Residuals Pond Sediment Analytical Results and Ecological Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Sediment Screening Levels (in mg/Kg dry wt.)		Constituent of Potential Concern (COPC)													Other Constituents		
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4
Background Threshold Value (BTV) (a):		Unknown	4,396	8.7	79	1.31	21	29	12,017	0.19	324	129	5.0	203	327	Unknown	99
Ecological Risk:																	
EPA Region 5 Ecological Screening Level (b)		0.5	NL	9.79	NL	0.99	43	31.6	NL	0.174	NL	35.8	NL	121	NL	NL	NL
Compendium of Environmental Quality Benchmarks (c)			15,900		20				20,000		NL		0.95		NL	NL	NL
2015 EPA Region 4 Ecological Screening Value (d)											460				NL	NL	NL
Sample ID	**Sample Date**																
SED-RP-1	11/19/2015	0.04 U	650	1.0	3.6	0.07 U	1.6	1	1,600	0.0052 J	17	1.4	0.26 U	9.3	92	0.28 U	49
	10/13/2016	0.14 U	21,000	14	25	0.31 J	6.2	10	27,000	0.031 J	870	20	1.30 J	73	190	0.042 U	100
SED-RP-2	11/19/2015	0.19 U	21,000	19	53	0.30 U	31	76	27,000	0.56	180	46	5.0	750	1,000	1.11 U	680
	10/13/2016	0.086 U	1,500	4.5	7.9	0.07 J	2.7	3.5	11,000	0.035	230	5.7	0.4 U	67	99	0.029 U	42
SED-RP-3	11/19/2015	0.20 U	8,000	15	48	0.66 J	20	32	15,000	0.29	140	97	3.8 J	450	460	1.17 U	410
	10/13/2016	0.12 U	12,000	11	31	0.35 J	14	27	12,000	0.32	110	20	1.1 J	340	520	2.0 J	320
SED-RP-4	11/19/2015	0.19 U	26,000	16	42	0.47 J	29	89	21,000	0.56	170	55	3.5 J	480	680	1.26 U	270
	10/13/2016	0.078 U	7,800	3.9	11	0.095 J	5.7	34	5,300	0.24	50	8.7	0.6 J	110	510	0.029 U	70
SED-RP-5	11/19/2015	0.30 U	13,000	21	53	0.62 J	20	38	17,000	0.34	240	88	4.5 J	450	520	8.0 J	300
	10/13/2016	0.34 U	13,000	37	61	2.5 J	21	43	20,000	0.11 J	330	78	3.3 J	620	670	0.12 U	350
SED-RP-6	11/19/2015	0.15 U	5,900	12	34	0.23 U	13	18	11,000	0.047 J	140	25	3.3	150	370	4.0 J	960
	10/13/2016	0.110 U	2,800	11	21	0.46 J	6.5	9.2	9,100	0.04	150	34	0.65 J	110	160	0.037 U	150
SED-RP-7	11/19/2015	0.19 U	4,900	8.9	24	0.29 U	10	9.2	6,400	0.35	220	13	2.8 J	75	250	1.01 U	350
	10/13/2016	0.059 U	1,100	2.3	6.9	0.11 J	2.7	2.7	2,600	0.0094 J	23	8.4	0.58 J	21	84	0.023 U	88
SED-RP-8	11/19/2015	0.33 U	39,000	37	77	0.51 U	29	47	28,000	0.20	340	49	5.3 J	360	1,700	2.06 U	420
	10/13/2016	0.23 U	2,300	20	22	0.52 J	6.2	4.6	7,500	0.02 J	230	3.5	1.3 J	81	230	0.078 U	160
SED-RP-9	11/19/2015	0.23 U	52,000	29	70	0.36 U	28	38	24,000	0.24	250	32	3.8 J	520	1,500	1.48 U	370
	10/13/2016	0.27 U	6,500	25	57	1.6 J	14	33	8,200	0.11	150	150	3.5 J	170	470	0.086 U	610
SED-RP-10	11/19/2015	2	4,300	25	68	0.11 U	32	24	61,000	0.087	480	28	2.2	93	840	0.47 U	18 J
	10/13/2016	2.7	8,700	61	140	0.20 J	79	63	140,000	0.033 J	1,100	46	1.8 J	170	1600	0.060 U	23 J
SED-RP-11	11/19/2015	0.15 U	65,000	33	84	0.23 U	25	32	19,000	0.10	310	22	2.5 J	170	1,500	0.94 U	410
	10/13/2016	0.056 U	1,400	1.7	8.6	0.04 U	1.8	1.1	1,600	0.03	27	2.9	0.39 J	21	93	0.023 U	57
SED-RP-12	11/19/2015	0.07 U	3,000	4.3	15	0.11 U	5.6	8.6	5,700	0.045	69	11	1.1 J	72	190	0.42 U	100
	10/13/2016 (e)	0.13 J	875	1.4 J	5.75	0.157 J	1.95	1.85 J	1,450	0.00535 J	15.5	2.05	0.245 U	17	80	0.0195 U	69 J
SED-RP-13	11/19/2015	0.27 U	57,000	48	130	0.51 J	67	61	42,000	3.5	990	61	5.3 J	610	1,300	1.68 U	400
	10/13/2016	0.15 U	2,800	24	88	0.12 J	4	4.6	16,000	0.099	940	2.4	1.7 J	39	170	0.046 U	150
SED-RP-14	11/19/2015	0.21	12,000	38	110	0.27 U	50	58	96,000	0.38	1,500	19	3.6	180	1,200	1.04 U	78
	10/13/2016	0.21 U	51,000	29	68	0.78 J	71	40	10,000	7.2	1,700	53	0.93 U	270	660	0.067 U	42
SED-RP-15	11/19/2015	0.19	25,000	17	41	0.22 U	23	23	23,000	0.13	330	16	1.7 J	150	710	0.91 U	110
	10/13/2016	0.66 U	2,200	2.4	4.9	0.051 U	3	2.5	3,200	0.02	50	2.3	0.30 U	19	120	0.021 U	57
SED-RP-16	11/19/2015	0.13 U	12,000	10	34	0.20 U	14	20	15,000	0.16	260	19	1.7 J	410	470	0.82 U	110
	10/13/2016	0.068 U	1,600	3	7.9	0.05 U	3.1	2.4	3,000	0.014 J	42	12	0.6 J	35	100	0.021 U	130
SED-RP-17	11/19/2015	0.13	17,000	22	53	0.20 U	24	24	21,000	1.60	530	21	1.9 J	150	480	0.83 U	170
	10/13/2016	0.056 U	2,500	3.2	6.6	0.044 U	3.7	3.7	4,400	0.099	100	2.8	0.27 J	29	130	0.020 U	68
SED-RP-18	11/19/2015 (e)	0.11 U	6600	16.5	48	0.165 U	11.5	11	33,500	0.345	775	9.05	1.75 J	62.5	265	0.65 U	97.5 J
	10/13/2016	0.12 U	1,900	20	44	0.092 U	5	3.9	41,000	0.006 U	990	2.8	0.54 U	21	150	0.042 U	26 J
SED-RP-19	11/19/2015	0.20 U	15,000	31	74	0.31 U	22	22	52,000	0.41	1,100	30	3.9 J	190	500	1.20 U	230
	10/13/2016	0.17 U	8,600	30	50	0.73 J	15	19	44,000	0.22	1,300	40	1.4 J	450	260	0.052 U	810
SED-RP-20	11/19/2015	0.06 U	3,000	3.3	11	0.10 U	5.4	5.8	5,400	0.051	88	6.3	0.67 J	93	190	0.38 U	65
	10/13/2016	0.24 U	2,600	26	31	0.93 J	6.8	12	7,100	0.066	130	29	1.3 J	72	250	0.079 U	450
Former Residuals Pond Decision Unit	**Mean**	0.28	13,563	18.4	44	0.38	18.3	24.0	22,476	0.45	417	29.3	2.0	204	519	0.82	234
	Maximum	2.70	65,000	61.0	140	2.5	79	89	140,000	7.2	1,700	150	5.3	750	1,700	8.0	960
	Exposure Point Concentration (f)	0.876	30,409	30.5	73.1	0.954	37.2	44.1	46,320	2.47 (g)	975	57.4	3.55	429	1,046	1.82	448
Is additional refinement of COPC needed?		Yes	Yes	No (h)	No (i)	No (i)	No (i)	Yes	Yes	Yes	Yes	No (i)	No (i)	Yes	Not COPC		

Abbreviations:
BDL = All results are below detection limit.
MDL = Method detection limit.
NL = Not Listed.
U = Not detected above method detection limit (shown).
J = Result shown is estimated concentration between method detection limit and reporting limit.
EPA = Regional Environmental Protection Agency.

Notes:
Concentration exceeds both the listed ecological screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 3.
(b) EPA Region 5 RCRA 2003 Ecological Screening Level for sediment.
(c) Lowest protection of freshwater sediment benchmark presented in "A compendium of Environmental Quality Benchmarks" (McDonald, et. al, 1999).
(d) Ecological Screening Value (ESV) for sediment from Table 2a of EPA 2015, Supplemental Guidance to ERAGS: Region 4, Ecological Risk Assessment.
(e) Results shown are the average of the sample and its associated duplicate.
(f) Exposure Point Concentration (EPC) is 95% UCL of the mean, calculated **using the maximum concentration detected at each location,** as requested by IDEM in its August 2, 2017 comment letter.
(g) Value is the 95% Chebyshev(Mean, Sd) UCL, using nonparametric calculations. The data do not follow any distribution.
(h) Based on spatial distribution (levels are higher in off-site Long Lake sediment), the elevated arsenic does not appear to be related to the water treatment residuals.
(i) Although several individual points exceed the screening level and the BTV, the EPC for the decision unit does not.

Table 6a - Former Residual Pond Vicinity Surface Soil Analytical Results and Human Health Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Soil Screening Levels (mg/Kg dry wt.)		Constituent of Potential Concern (COPC)													Other Constituents		
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4
Background Threshold Value (BTV) (a):		Unknown	2,217	2.6	23	0.18	7.3	3.9	5,864	0.078	99	24	0.33	50	129	2.65	6.6
Human Health Risk:																	
IDEM RCG 2017 Residential Screening Level (b)		550	100,000	9.5	21,000	99	100,000	4,300	77,000	3.1	2,500	400	550	32,000	NL	100,000	NL
Sample ID	**Sample Date**																
SG-RP-1	12/3/2015	0.045 U	610	0.63	3.6	0.071 U	1.9	1.0	1,200	0.0067 J	11	1.9	0.29 J	22	74	0.2641	6.4 J
SG-RP-2	12/3/2015	0.042 U	760	1.1	3.2	0.066 U	2.0	2.7	1,600	0.0097 J	18	1.9	0.33 J	21	130	0.2677	5.2 J
SG-RP-3	12/3/2015	0.050 U	1,100	1.4	6.3	0.077 U	2.5	2.2	2,000	0.011 J	12	3.8	0.42 J	16	120	0.65 J	10 J
SG-RP-4	12/3/2015	0.041 U	1,100	1.1	4.5	0.064 U	2.7	1.6	1,900	0.011 J	22	2.6	0.40 J	23	100	1.0 J	4.4 J
SG-RP-5	12/3/2015	0.057 U	3,400	3.3	27	0.088 U	7.8	9.8	6,200	0.024	160	9.6	0.96 J	250	320	0.3021	19
SG-RP-6	12/3/2015	0.044 U	2,500	1.0	25	0.069 U	4.2	1.2	2,200	0.0067 J	310	2.3	0.50 J	12	170	0.2571	10 J
SG-RP-7	12/3/2015	0.046 U	770	0.91	6.5	0.072 U	2.1	1.2	2,200	0.005 J	31	2.3	0.46 J	8.1	90	0.2832	17
SG-RP-8	12/3/2015	0.035 U	1,400	0.93	8.3	0.054 U	3.0	2.2	1,800	0.0066 J	57	2.7	0.37 J	16	140	2.6	3.5 J
SG-RP-9	12/3/2015 (c)	0.040 U	9,250	6.9	51.5	0.065 U	15	17	17,500	0.024	430	13	1.0	81	1,015	1.3 J	4.1 J
SG-RP-10	12/3/2015	0.038 U	8,600	6.0	46	0.059 U	14	15	15,000	0.029	440	14	0.66 J	65	920	2.8	6.2 J
SG-RP-11	12/3/2015	0.038 U	4,400	3.7	24	0.059 U	8.9	7.9	9,200	0.032	220	12	0.78	190	460	0.82 J	7.8 J
SG-RP-12	12/3/2015	0.039 U	4,100	3.8	26	0.060 U	7.7	7.7	7,300	0.031	180	8.9	0.73 J	38	450	3.9	4.7 J
SG-RP-13	12/3/2015	0.037 U	730	2.4	7.5	0.058 U	2.7	2.2	2,900	0.13	58	11	0.49 J	73	99	5.4	4.7 J
On-Site Soil Decision	**Mean**	BDL	2,978	2.6	18	BDL	5.7	5.5	5,462	0.025	150	6.6	0.57	63	314	1.5	7.9
Unit	**Maximum**	BDL	9,250	6.9	52	BDL	15	17	17,500	0.13	440	14	1.0	250	1,015	5.4	19
Is additional refinement of COPC needed?		No	No	No	No	No	No	No	No	No	No	No	No	No	Not COPC		

Abbreviations:
BDL = All results are below detection limit.
J = Result shown is an estimated concentration between the method detection limit and the reporting limit.
IDEM = Indiana Department of Environmental Management.
RCG = Remediation Closure Guide
NL = Not Listed.

Notes:
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 3.
(b) Soil direct contact screening level for residential exposure scenario, Table A-6 (2017 update) of the RCG.
(c) Results shown are the average of the sample and its associated duplicate.
No COPC at any location result exceeded a listed human health soil screening level for the residential land-use scenario.

Table 6b - Former Residual Pond Vicinity Surface Soil Analytical Results and Ecological Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Soil Screening Levels (mg/Kg dry wt.)		Constituent of Potential Concern (COPC)													Other Constituents		
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4
Background Threshold Value (BTV) (a):		Unknown	2,222	2.6	23	0.17	7.3	3.8	5,360	0.078	95	29	0.32	50	122	4.3	6.0
Ecological Risk:																	
2015 EPA Region 4 Ecological Screening Value (b)		4.2	NL	18	330	0.36	28	28	NL	0.1	220	11	0.52	46	NL	NL	NL
Sample ID	**Sample Date**																
SG-RP-1	12/3/2015	0.045 U	610	0.63	3.6	0.071 U	1.9	1.0	1,200	0.0067 J	11	1.9	0.29 J	22	74	0.26	6.4 J
SG-RP-2	12/3/2015	0.042 U	760	1.1	3.2	0.066 U	2.0	2.7	1,600	0.0097 J	18	1.9	0.33 J	21	130	0.27	5.2 J
SG-RP-3	12/3/2015	0.050 U	1,100	1.4	6.3	0.077 U	2.5	2.2	2,000	0.011 J	12	3.8	0.42 J	16	120	0.65 J	10 J
SG-RP-4	12/3/2015	0.041 U	1,100	1.1	4.5	0.064 U	2.7	1.6	1,900	0.011 J	22	2.6	0.40 J	23	100	1.0 J	4.4 J
SG-RP-5	12/3/2015	0.057 U	3,400	3.3	27	0.088 U	7.8	9.8	6,200	0.024	160	9.6	0.96 J	250	320	0.30	19
SG-RP-6	12/3/2015	0.044 U	2,500	1.0	25	0.069 U	4.2	1.2	2,200	0.0067 J	310	2.3	0.50 J	12	170	0.26	10 J
SG-RP-7	12/3/2015	0.046 U	770	0.91	6.5	0.072 U	2.1	1.2	2,200	0.005 J	31	2.3	0.46 J	8.1	90	0.28	17
SG-RP-8	12/3/2015	0.035 U	1,400	0.93	8.3	0.054 U	3.0	2.2	1,800	0.0066 J	57	2.7	0.37 J	16	140	2.6	3.5 J
SG-RP-9	12/3/2015 (c)	0.040 U	9,250	6.9	51.5	0.065 U	15	17	17,500	0.024	430	13	1.0	81	1,015	1.3 J	4.1 J
SG-RP-10	12/3/2015	0.038 U	8,600	6.0	46	0.059 U	14	15	15,000	0.029	440	14	0.66 J	65	920	2.8	6.2 J
SG-RP-11	12/3/2015	0.038 U	4,400	3.7	24	0.059 U	8.9	7.9	9,200	0.032	220	12	0.78	190	460	0.82 J	7.8 J
SG-RP-12	12/3/2015	0.039 U	4,100	3.8	26	0.060 U	7.7	7.7	7,300	0.031	180	8.9	0.73 J	38	450	3.9	4.7 J
SG-RP-13	12/3/2015	0.037 U	730	2.4	7.5	0.058 U	2.7	2.2	2,900	0.13	58	11	0.49 J	73	99	5.4	4.7 J
On-Site Soil Decision Unit	**Mean**	BDL	2,978	2.6	18	BDL	5.7	5.5	5,462	0.025	150	6.6	0.57	63	314	1.5	7.9
	Maximum	BDL	9,250	6.9	52	BDL	15	17	17,500	0.13	440	14	1.0	250	1,015	5.4	19
	Exposure Point Concentration (d)		5,347						12,017 (e)	0.0461	317		0.68	121	700 (e)	2.97	11.1
Is additional refinement of COPC needed?		No	No (f)	No	No	No	No	No	No (f)	No (g)	Yes	No	Yes	Yes	Not COPC		

Abbreviations :
BDL = All results are below detection limit.
J = Result shown is an estimated concentration between the method detection limit and the reporting limit.
U = Not detected above method detection limit (shown).
NL = Not Listed.
EPA = Regional Environmental Protection Agency.

Notes:
Concentration exceeds both the listed ecological screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 3.
(b) Ecological Screening Value (ESV) for soil from Table 3 of EPA 2015, Supplemental Guidance to ERAGS: Region 4, Ecological Risk Assessment.
(c) Results shown are the average of the sample and its associated duplicate.
(d) Exposure Point Concentration (EPC) is 95% UCL of the mean.
(e) Used the 95% Chebyshev (Mean, Sd) UCL, instead of the 95% UCL for a lognormal distribution, because lognormal UCLs are not recommended in the ProUCL technical guide.
(f) According to ECO SSL, aluminum (OSWER Dir. 9285.7-60) and iron (OSWER Dir. 9285.7-69) would only be a COPC if the soil pH is <5.5. According to the USDA Soil Survey of Porter County, IN the Oakville soil in the vicinity of the FRP has a pH of 5.6 to 7.3.
(g) Although several individual points exceed the screening level and the BTV, the EPC for the decision unit does not.

Table 7a - Former Residuals Pond Surface Water Analytical Results and Human Health Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Surface Water (in µg/L dissolved)		Constituent of Potential Concern (COPC)																Other Constituent			Water Quality Parameters						
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4									
Background Threshold Value (BTV) (a):		Unknown	16.08	1.33	15.81	Unknown	0.348	0.502	1,100	0.0025	11.19	0.476	Unknown	6.32	852	37.16	1843									
Human Health Risk:																										
2017 USEPA NRWQ Criteria for Human Health (b)		94*	20,000*	0.18	1,000	5*	100*	1,300	14,000*	2*	50	15*	170	7,400	NL	10,000	NL	Temp.	pH	Cond.	DO	ORP	Turb.	Hard.
Sample ID	**Sample Date**																	°C	StU	mS	mg/L	eV	NTU	mg/L
SW-RP-1	11/19/2015	0.1 U	49	0.89 J	28	0.1 U	0.1 U	1.2 J	10 U	0.00042 J	0.28 J	0.1 U	1 U	5 J	2,600	27 U	26,000	9.73	9.65	0.299	17.50	3.7	6.8	150
SW-RP-2	11/19/2015	0.1 U	38	0.85 J	27	0.1 U	0.13 J	1.1 J	10 U	0.00034 J	0.2 U	0.1 U	1 U	6.9 J	2,600	27 U	26,000	9.09	9.48	0.301	16.62	-7.3	16.2	150
	6/13/2016 (c)	0.05 U	5.25 J	1.4 J	12	0.05 U	0.65 U	0.76 J	4.6 U	0.00077	0.51 U	0.33 U	0.9 U	3.45 J	1,900	48 U	12,000 J	30.17	10.37	0.175	15.3	14	19.6	79.5
	10/13/2016	0.05 U	30	1.1 J	26	0.05 U	0.65 U	0.68 J	31 J	0.0011	1.2 J	0.33 U	0.9 U	8.1 J	1,800	48 U	13,000	17.52	8.12	0.250	2.33	133.0	0	140
	3/21/2017	0.05 U	29	0.87 U	26	0.05 U	0.65 U	1.7 J	140	0.0013	1.8 J	0.33 U	0.9 U	6.4 J	2,400	48 U	13,000	7.47	8.38	1.355	11.36	89.5	*	150
SW-RP-3	11/19/2015	0.1 U	43	0.84 J	27	0.1 U	0.1 U	1.2 J	10 U	0.00055	0.2 U	0.1 U	1 U	4.8 J	2,600	27 U	25,000	9.39	10.07	0.288	12.47	-18.6	27.1	150
SW-RP-4	11/19/2015	0.1 U	68	0.88 J	29	0.1 U	0.1 U	1.3 J	10 U	0.00069	0.35 J	0.1 U	1 U	2.9 J	2,700	27 U	27,000	9.44	9.59	0.303	16.95	-12.2	21.8	160
	6/13/2016	0.05 U	5.8 J	1.7 J	21	0.05 U	0.65 U	0.28 U	46	0.0010	2.3 J	0.33 U	0.9 U	5.3 J	400	48 U	11,000	29.03	9.46	0.176	10.65	51.0	1.0	120
	10/13/2016	0.05 U	27	0.98 J	24	0.05 U	0.65 U	1.9 J	24 J	0.0027	1.5 J	0.33 U	0.9 U	8.5 J	1,800	81 J	14,000	18.57	8.31	0.244	1.64	127.0	13.3	130
	3/21/2017	0.05 U	23	0.87 U	26	0.05 U	0.65 U	1.8 J	39 J	0.0013	1.1 J	0.33 U	0.9 U	1.4 U	2,400	66 J	13,000	7.46	8.27	1.353	12.41	76.5	*	160
SW-RP-5	11/19/2015	0.1 U	41	0.73 J	28	0.1 U	0.1 U	0.9 J	15 J	0.00029 J	0.2 U	0.1 U	1 U	5.5 J	2,700	27 U	27,000	9.08	9.65	0.308	16.73	19.6	7.1	160
SW-RP-6	11/19/2015	0.1 U	35	0.88 J	27	0.1 U	0.1 U	1.1 J	10 U	0.00036 J	0.2 U	0.1 U	1 U	4.8 J	2,600	27 U	27,000	8.71	9.62	0.294	15.13	16.2	4.0	150
	6/13/2016	0.05 U	110	1.5 J	16	0.05 U	0.65 U	0.92 J	16 J	0.00052	1.3 J	0.33 U	0.9 U	1.6 J	2,000	48 U	11,000	29.09	9.37	0.178	9.37	51.0	2.8	81
	10/13/2016 (c)	0.05 U	37	1.035 J	25	0.05 U	0.65 U	0.65 U	32.5 J	0.001335	1.205 J	0.33 U	0.9 U	5.35 J	1750	48 U	13000	18.08	8.36	0.249	3.55	125	0	160
	3/21/2017	0.05 U	24	0.87 U	26	0.05 U	0.65 U	1.6 J	35 J	0.0012	0.94 J	0.33 U	0.9 U	11	2,400	48 U	13,000	7.80	8.52	1.341	11.01	85.9	*	150
SW-RP-7	11/19/2015	0.1 U	33	0.87 J	28	0.1 U	0.1 U	0.97 J	14 J	0.00024 J	0.43 J	0.1 U	1 U	5.5 J	2,600	27 U	27,000	8.97	9.24	0.305	15.55	3.8	3.4	160
SW-RP-8	11/19/2015	0.1 U	34	0.7 U	28	0.1 U	0.1 U	0.87 J	13 J	0.00025 J	0.25 J	0.1 U	1 U	6.3 J	2,600	27 U	26,000	9.47	9.44	0.306	16.06	19.2	2.7	160
	6/13/2016	0.05 U	140	1.3 J	18	0.05 U	0.65 U	0.76 J	22 J	0.00046 J	1.7 J	0.33 U	0.9 U	3.8 J	1,900	48 U	11,000	28.93	9.19	0.178	7.80	56.0	0.0	93
	10/13/2016	0.05 U	37	1.2 J	27	0.05 U	0.65 U	0.55 J	12 J	0.0029	1.4 U	0.33 U	0.9 U	3.4 J	1,900	48 U	13,000	19.27	7.91	0.251	4.56	150.0	0.0	130
	3/21/2017	0.05 U	27	0.87 U	26	0.05 U	0.65 U	1.7 J	59 J	0.0012	2.4 J	0.33 U	0.9 U	2.1 J	2,400	65 J	13,000	7.45	8.42	1.352	11.09	87.8	*	150
SW-RP-9	11/19/2015	0.1 U	60	0.8 J	29	0.1 U	0.1 U	0.82 J	40 J	0.00032 J	0.2 U	0.1 U	1 U	4.3 J	2,500	27 U	25,000	9.46	9.40	0.305	15.97	18.7	3.5	150
SW-RP-10	11/19/2015	0.1 U	40	0.81 J	29	0.1 U	0.1 U	0.86 J	37 J	0.00022 J	1.4 J	0.1 U	1 U	5.5 J	2,700	27 U	26,000	9.50	9.21	0.307	15.24	7.2	3.9	160
	6/13/2016	0.05 U	150	1.2 J	19	0.05 U	0.65 U	0.75 J	33 J	0.00047 J	1.2 J	0.33 U	0.9 U	10	1,900	48 U	11,000	29.15	9.03	0.182	7.64	61.0	1.0	100
	10/13/2016	0.05 U	37	0.87 U	27	0.05 U	1.5 J	2.3 J	130	0.0012	2.4 J	8.3	0.9 U	11	2,600	48 U	12,000	19.49	8.21	0.252	4.87	137.0	12.0	130
	3/22/2017	0.05 U	31	0.87 U	27	0.05 U	0.65 U	1.6 J	62 J	0.0010	1.7 J	0.33 U	0.9 U	1.9 J	2,600	48 U	14,000	5.93	8.60	1.420	10.66	102.4	4.0	160
SW-RP-11	11/19/2015	0.1 U	40	0.78 J	30	0.1 U	0.1 U	0.83 J	44 J	0.00025 J	0.23 J	0.1 U	1 U	3 J	2,800	27 U	25,000	8.47	9.23	0.325	16.28	-2.7	67.4	180
SW-RP-12	11/19/2015	0.1 U	16	0.7 U	30	0.1 U	0.1 U	0.8 J	54 J	0.00022 J	0.49 J	0.1 U	1 U	5.1 J	2,900	72 J	25,000	8.60	9.20	0.326	15.34	-6.9	10.1	180
	6/13/2016	0.05 U	65	1.3 J	14	0.05 U	0.65 U	0.77 J	19 J	0.00046 J	2.5 J	0.33 U	0.9 U	1.4 U	2,500	120	11,000	31.24	10.15	0.171	12.81	25.0	10.6	85
	10/13/2016	0.05 U	21	1.1 J	27	0.05 U	0.65 U	1.1 J	44	0.00046 J	1.1 J	0.33 U	0.9 U	6.2 J	1,800	48 U	13,000	17.38	8.25	0.254	3.46	127.0	0.2	140
	3/22/2017 (c)	0.05 U	32.5	0.87 U	27.5	0.05 U	0.65 U	1.85 J	63 J	0.0014	1.7 J	0.33 U	0.9 U	4.65 J	2,700	56 J	13,500	13.46	7.67	0.425	0.38	-218.3	3.6	155
SW-RP-13	11/19/2015	0.1 U	34	0.81 J	29	0.1 U	0.13 J	0.96 J	15 J	0.0002 U	3.3 J	0.1 U	1 U	6.7 J	2,800	27 U	26,000	9.05	9.22	0.307	15.55	9.7	1.4	170
	6/13/2016	0.05 U	110	1.1 J	19	0.05 U	0.65 U	0.71 J	33 J	0.00048 J	1.5 J	0.33 U	0.9 U	6.0 J	2,000	48 U	11,000	29.36	9.11	0.182	8.33	53.0	0.3	94
	10/13/2016	0.05 U	37	1 J	28	0.05 U	0.65 U	0.28 U	33 J	0.0066	3.5 J	0.33 U	0.9 U	12.0	2,000	48 U	13,000	19.53	8.37	0.249	4.24	132.0	0	130
	3/22/2017	0.05 U	26	0.87 U	28	0.05 U	0.65 U	1.4 J	40 J	0.0012	1.1 J	0.33 U	0.9 U	2.1 J	2,600	48 U	14,000	5.60	8.59	1.993	10.62	109.1	4.89	160
SW-RP-14	11/19/2015	0.1 U	31	0.7 U	28	0.1 U	0.1 U	0.81 J	14 J	0.0002 J	0.25 J	0.1 U	1 U	6.3 J	2,600	27 U	26,000	9.32	9.22	0.307	15.22	14.6	3.4	160
SW-RP-15	11/19/2015	0.1 U	33	0.71 J	30	0.1 U	0.1 U	0.91 J	12 J	0.00021 J	0.22 J	0.1 U	1 U	7.7 J	2,700	27 U	27,000	9.52	9.25	0.305	14.90	14.2	2.6	160
SW-RP-16	11/19/2015	0.1 U	14	0.7 U	30	0.1 U	0.1 U	0.74 J	67 J	0.00031 J	0.82 J	0.1 U	1 U	5.6 J	2,800	27 U	26,000	8.75	9.13	0.325	16.02	14.2	23.3	180
	6/13/2016	0.05 U	130	1.2 J	19	0.05 U	0.65 U	0.90 J	33 J	0.00048 J	1.1 J	0.33 U	0.9 U	2.3 J	2,000	48 U	11,000	30.12	9.38	0.181	11.77	38.0	0.4	95
	10/13/2016	0.05 U	29	0.97 J	26	0.05 U	0.65 U	0.59 J	47	0.00089	2.2 J	0.33 U	0.9 U	7.2 J	1,800	48 U	13,000	18.08	8.15	0.252	4.27	127.0	2.9	130
	3/22/2017	0.05 U	26	0.87 U	27	0.05 U	0.65 U	1.60 J	39 J	0.0013	0.88 J	0.33 U	0.9 U	1.4 U	2,500	48 U	14,000	5.43	8.61	1.434	10.79	109.5	3.76	150
SW-RP-17	11/19/2015	0.1 U	33	0.7 U	29	0.1 U	0.1 U	0.99 J	11 J	0.00024 J	0.2 U	0.1 U	1 U	6.4 J	2,800	27 U	25,000	9.19	9.26	0.307	15.08	-12.6	1.3	170
SW-RP-18	11/19/2015 (c)	0.10 U	33	0.72 J	29	0.1 U	0.11 U	0.905 J	12 J	0.00026 J	0.265 J	0.10 U	1 U	6.45 J	2,750	27 U	26,500	24.58	6.9	0.225	0	118	3.6	165
	6/13/2016	0.05 U	110	1.4 J	20	0.05 U	0.65 U	0.75 J	41 J	0.00047 J	1.9 J	0.33 U	0.9 U	5.2 J	2,000	48 U	11,000	29.63	9.03	0.183	8.33	53.0	0.5	96
	10/13/2016	0.05 U	39	1.1 J	29	0.05 U	0.65 U	0.28 U	39	0.00037	1.4 J	0.33 U	0.9 U	6.3 J	2,000	48 U	13,000	19.56	8.37	0.252	5.17	133.0	3.9	140
	3/22/2017	0.05 U	30	0.87 U	27	0.05 U	0.65 U	1.60 J	54 J	0.0013	1.4 J	0.33 U	0.9 U	2.2 J	2,500	48 U	490 J	5.79	8.54	1.423	10.65	340.7	4.17	140
SW-RP-19	11/19/2015	0.1 U	35	0.9 J	29	0.1 U	0.1 U	0.8 J	16 J	0.00027 J	0.49 J	0.1 U	1 U	4.2 J	2,600	27 U	26,000	9.47	9.37	0.306	14.40	19.4	9.0	160
SW-RP-20	11/19/2015	0.1 U	14	0.7 U	30	0.1 U	0.1 U	0.73 J	22 J	0.0003 J	0.2 U	0.1 U	1 U	4.8 J	2,700	27 U	26,000	8.19	9.50	0.335	14.07	7.2	9.3	160
	6/13/2016	0.05 U	72	1.4 J	19	0.05 U	0.65 U	0.63 J	52 J	0.00044 J	2.0 J	0.33 U	0.9 U	2.2 J	2,300	48 U	11,000	30.60	9.12	0.178	14.30	112.0	0.7	91
	10/13/2016	0.05 U	23	0.98 J	27	0.05 U	0.65 U	0.63 J	65 J	0.00049 J	2.1 J	0.33 U	0.9 U	5.6 J	1,800	48 U	13,000	17.60	7.97	0.255	3.70	150.0	4.9	130
	3/22/2017	0.05 U	30	0.87 U	27	0.05 U	0.65 U	1.70 J	46 J	0.0012	1.4 J	0.33 U	0.9 U	1.4 U	2,500	48 U	14,000	5.35	8.60	1.440	10.83	133.4	4.35	150
Former Residuals Pond Decision Unit	**Mean**	BDL	45.5	1.01	25	BDL	0.54	1.05	40	0.000979	1.40	0.47	BDL	5.1	2,258	48	15,612							
	Maximum	BDL	150	1.7	30	BDL	1.5	2.3	140	0.0066	3.5	8.3	BDL	12.0	2,900	120	27,000							
	Exposure Point Concentration (d)			1.45											2,773		26,484							
Is additional refinement of COPC needed?		No	No	No (e)	No	No	No	No	No	No	No	No	No	No	Not COPC									

Abbreviations:
BDL = All results are below detection limit.
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
IDEM = Indiana Department of Environmental Management.
NL = Not Listed.
RCG = Remediation Closure Guide.

Notes:
Concentration exceeds both the listed human health screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 4.
(b) Human health for the consumption of water + organism from EPA's 2017 NRWQ human health criteria table, unless otherwise noted by asterisk.
*No NRWQ criteria listed. IDEM RCG 2017 tapwater screening level used for comparison instead.
(c) Results shown are the average of the sample and its associated duplicate.
(d) Exposure Point Concentration (EPC) is 95% UCL of the mean, **calculated using the maximum concentration detected at each location sampled during four seasons**, as requested by IDEM in its August 2, 2017 comment letter.
(e) The arsenic EPC calculated using the mean of seasonal data at each point (rather than the max.) is 1.04 ug/L, which is less than the BTV.

Table 7b - Former Residuals Pond Surface Water Analytical Results and Ecological Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Surface Water (in µg/L dissolved)		Constituent of Potential Concern (COPC)														Other Constituent			Water Quality Parameters						
		Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn		K	NO_3	SO_4							
Background Threshold Value (BTV) (a):		Unknown	16.08	1.33	15.81	Unknown	0.348	0.502	1,100	0.0025	11.19	0.476	Unknown	6.32		852	37.16	1,843							
Ecological Risk:																									
2017 EPA NRWQ Criteria for Aquatic Life (b)		3.2	87	150	NL	0.25	74	NL	1,000	0.77	NL	2.5	NL	120		NL	NL	NL							
2015 EPA Region 4 ESV for Surface Water (c)					220			13			93		1.5*			53,000	NL	NL							
Compendium of Environmental Quality Benchmarks (d)																	40,000	300,000							
Sample ID	**Sample Date**																		Temp.	pH	Cond.	DO	ORP	Turb.	Hard.
																			°C	StU	mS	mg/L	eV	NTU	mg/L
SW-RP-1	11/19/2015	0.1 U	49	0.89 J	28	0.1 U	0.1 U	1.2 J	10 U	0.00042 J	0.28 J	0.1 U	1 U	5 J		2,600	27 U	26,000	9.73	9.65	0.299	17.50	3.7	6.8	150
SW-RP-2	11/19/2015	0.1 U	38	0.85 J	27	0.1 U	0.13 J	1.1 J	10 U	0.00034 J	0.2 U	0.1 U	1 U	6.9 J		2,600	27 U	26,000	9.09	9.48	0.301	16.62	-7.3	16.2	150
	6/13/2016 (c)	0.05 U	5.25 J	1.4 J	12	0.05 U	0.65 U	0.76 J	4.6 U	0.00077	0.51 U	0.33 U	0.9 U	3.45 J		1,900	48 U	12,000 J	30.17	10.37	0.175	15.3	14	19.6	79.5
	10/13/2016	0.05 U	30	1.1 J	26	0.05 U	0.65 U	0.68 J	31 J	0.0011	1.2 J	0.33 U	0.9 U	8.1 J		1,800	48 U	13,000	17.52	8.12	0.250	2.33	133.0	0	140
	3/21/2017	0.05 U	29	0.87 U	26	0.05 U	0.65 U	1.7 J	140	0.0013	1.8 J	0.33 U	0.9 U	6.4 J		2,400	48 U	13,000	7.47	8.38	1.355	11.36	89.5	*	150
SW-RP-3	11/19/2015	0.1 U	43	0.84 J	27	0.1 U	0.1 U	1.2 J	10 U	0.00055	0.2 U	0.1 U	1 U	4.8 J		2,600	27 U	25,000	9.39	10.07	0.288	12.47	-18.6	27.1	150
SW-RP-4	11/19/2015	0.1 U	68	0.88 J	29	0.1 U	0.1 U	1.3 J	10 U	0.00069	0.35 J	0.1 U	1 U	2.9 J		2,700	27 U	27,000	9.44	9.59	0.303	16.95	-12.2	21.8	160
	6/13/2016	0.05 U	5.8 J	1.7 J	21	0.05 U	0.65 U	0.28 U	46	0.0010	2.3 J	0.33 U	0.9 U	5.3 J		400	48 U	11,000	29.03	9.46	0.176	10.65	51.0	1.0	120
	10/13/2016	0.05 U	27	0.98 J	24	0.05 U	0.65 U	1.9 J	24 J	0.0027	1.5 J	0.33 U	0.9 U	8.5 J		1,800	81 J	14,000	18.57	8.31	0.244	1.64	127.0	13.3	130
	3/21/2017	0.05 U	23	0.87 U	26	0.05 U	0.65 U	1.8 J	39 J	0.0013	1.1 J	0.33 U	0.9 U	1.4 U		2,400	66 J	13,000	7.46	8.27	1.353	12.41	76.5	*	160
SW-RP-5	11/19/2015	0.1 U	41	0.73 J	28	0.1 U	0.1 U	0.9 J	15 J	0.00029 J	0.2 U	0.1 U	1 U	5.5 J		2,700	27 U	27,000	9.08	9.65	0.308	16.73	19.6	7.1	160
SW-RP-6	11/19/2015	0.1 U	35	0.88 J	27	0.1 U	0.1 U	1.1 J	10 U	0.00036 J	0.2 U	0.1 U	1 U	4.8 J		2,600	27 U	27,000	8.71	9.62	0.294	15.13	16.2	4.0	150
	6/13/2016	0.05 U	110	1.5 J	16	0.05 U	0.65 U	0.92 J	16 J	0.00052	1.3 J	0.33 U	0.9 U	1.6 J		2,000	48 U	11,000	29.09	9.37	0.178	9.37	51.0	2.8	81
	10/13/2016 (e)	0.05 U	37	1.035 J	25	0.05 U	0.65 U	0.65 U	32.5 J	0.001335	1.205 J	0.33 U	0.9 U	5.35 J		1750	48 U	13000	18.08	8.36	0.249	3.55	125	0	160
	3/21/2017	0.05 U	24	0.87 U	26	0.05 U	0.65 U	1.6 J	35 J	0.0012	0.94 J	0.33 U	0.9 U	11		2,400	48 U	13,000	7.80	8.52	1.341	11.01	85.9	*	150
SW-RP-7	11/19/2015	0.1 U	33	0.87 J	28	0.1 U	0.1 U	0.97 J	14 J	0.00024 J	0.43 J	0.1 U	1 U	5.5 J		2,600	27 U	27,000	8.97	9.24	0.305	15.55	3.8	3.4	160
SW-RP-8	11/19/2015	0.1 U	34	0.7 U	28	0.1 U	0.1 U	0.87 J	13 J	0.00025 J	0.25 J	0.1 U	1 U	6.3 J		2,600	27 U	26,000	9.47	9.44	0.306	16.06	19.2	2.7	160
	6/13/2016	0.05 U	140	1.3 J	18	0.05 U	0.65 U	0.76 J	22 J	0.00046 J	1.7 J	0.33 U	0.9 U	3.8 J		1,900	48 U	11,000	28.93	9.19	0.178	7.80	56.0	0.0	93
	10/13/2016	0.05 U	37	1.2 J	27	0.05 U	0.65 U	0.55 J	12 J	0.0029	1.4 U	0.33 U	0.9 U	3.4 J		1,900	48 U	13,000	19.27	7.91	0.251	4.56	150.0	0.0	130
	3/21/2017	0.05 U	27	0.87 U	26	0.05 U	0.65 U	1.7 J	59 J	0.0012	2.4 J	0.33 U	0.9 U	2.1 J		2,400	65 J	13,000	7.45	8.42	1.352	11.09	87.8	*	150
SW-RP-9	11/19/2015	0.1 U	60	0.8 J	29	0.1 U	0.1 U	0.82 J	40 J	0.00032 J	0.2 U	0.1 U	1 U	4.3 J		2,500	27 U	25,000	9.46	9.40	0.305	15.97	18.7	3.5	150
SW-RP-10	11/19/2015	0.1 U	40	0.81 J	29	0.1 U	0.1 U	0.86 J	37 J	0.00022 J	1.4 J	0.1 U	1 U	5.5 J		2,700	27 U	26,000	9.50	9.21	0.307	15.24	7.2	3.9	160
	6/13/2016	0.05 U	150	1.2 J	19	0.05 U	0.65 U	0.75 J	33 J	0.00047 J	1.2 J	0.33 U	0.9 U	10		1,900	48 U	11,000	29.15	9.03	0.182	7.64	61.0	1.0	100
	10/13/2016	0.05 U	37	0.87 U	27	0.05 U	1.5 J	2.3 J	130	0.0012	2.4 J	8.3 (g)	0.9 U	11		2,600	48 U	12,000	19.49	8.21	0.252	4.87	137.0	12.0	130
	3/22/2017	0.05 U	31	0.87 U	27	0.05 U	0.65 U	1.6 J	62 J	0.0010	1.7 J	0.33 U	0.9 U	1.9 J		2,600	48 U	14,000	5.93	8.60	1.420	10.66	102.4	4.0	160
SW-RP-11	11/19/2015	0.1 U	40	0.78 J	30	0.1 U	0.1 U	0.83 J	44 J	0.00025 J	0.23 J	0.1 U	1 U	3 J		2,800	27 U	25,000	8.47	9.23	0.325	16.28	-2.7	67.4	180
SW-RP-12	11/19/2015	0.1 U	16	0.7 U	30	0.1 U	0.1 U	0.8 J	54 J	0.00022 J	0.49 J	0.1 U	1 U	5.1 J		2,900	72 J	25,000	8.60	9.20	0.326	15.34	-6.9	10.1	180
	6/13/2016	0.05 U	65	1.3 J	14	0.05 U	0.65 U	0.77 J	19 J	0.00046 J	2.5 J	0.33 U	0.9 U	1.4 U		2,500	120	11,000	31.24	10.15	0.171	12.81	25.0	10.6	85
	10/13/2016	0.05 U	21	1.1 J	27	0.05 U	0.65 U	1.1 J	44	0.00046 J	1.1 J	0.33 U	0.9 U	6.2 J		1,800	48 U	13,000	17.38	8.25	0.254	3.46	127.0	0.2	140
	3/22/2017 (e)	0.05 U	32.5	0.87 U	27.5	0.05 U	0.65 U	1.85 J	63 J	0.0014	1.7 J	0.33 U	0.9 U	4.65 J		2,700	56 J	13,500	13.46	7.67	0.425	0.38	-218.3	3.6	155
SW-RP-13	11/19/2015	0.1 U	34	0.81 J	29	0.1 U	0.13 J	0.96 J	15 J	0.0002 U	3.3 J	0.1 U	1 U	6.7 J		2,800	27 U	26,000	9.05	9.22	0.307	15.55	9.7	1.4	170
	6/13/2016	0.05 U	110	1.1 J	19	0.05 U	0.65 U	0.71 J	33 J	0.00048 J	1.5 J	0.33 U	0.9 U	6.0 J		2,000	48 U	11,000	29.36	9.11	0.182	8.33	53.0	0.3	94
	10/13/2016	0.05 U	37	1 J	28	0.05 U	0.65 U	0.28 U	33 J	0.0066	3.5 J	0.33 U	0.9 U	12.0		2,000	48 U	13,000	19.53	8.37	0.249	4.24	132.0	0	130
	3/22/2017	0.05 U	26	0.87 U	28	0.05 U	0.65 U	1.4 J	40 J	0.0012	1.1 J	0.33 U	0.9 U	2.1 J		2,600	48 U	14,000	5.60	8.59	1.993	10.62	109.1	4.89	160
SW-RP-14	11/19/2015	0.1 U	31	0.7 U	28	0.1 U	0.1 U	0.81 J	14 J	0.0002 J	0.25 J	0.1 U	1 U	6.3 J		2,600	27 U	26,000	9.32	9.22	0.307	15.22	14.6	3.4	160
SW-RP-15	11/19/2015	0.1 U	33	0.71 J	30	0.1 U	0.1 U	0.91 J	12 J	0.00021 J	0.22 J	0.1 U	1 U	7.7 J		2,700	27 U	27,000	9.52	9.25	0.305	14.90	14.2	2.6	160
SW-RP-16	11/19/2015	0.1 U	14	0.7 U	30	0.1 U	0.1 U	0.74 J	67 J	0.00031 J	0.82 J	0.1 U	1 U	5.6 J		2,800	27 U	26,000	8.75	9.13	0.325	16.02	14.2	23.3	180
	6/13/2016	0.05 U	130	1.2 J	19	0.05 U	0.65 U	0.90 J	33 J	0.00048 J	1.1 J	0.33 U	0.9 U	2.3 J		2,000	48 U	11,000	30.12	9.38	0.181	11.77	38.0	0.4	95
	10/13/2016	0.05 U	29	0.97 J	26	0.05 U	0.65 U	0.59 J	47	0.00089	2.2 J	0.33 U	0.9 U	7.2 J		1,800	48 U	13,000	18.08	8.15	0.252	4.27	127.0	2.9	130
	3/22/2017	0.05 U	26	0.87 U	27	0.05 U	0.65 U	1.60 J	39 J	0.0013	0.88 J	0.33 U	0.9 U	1.4 U		2,500	48 U	14,000	5.43	8.61	1.434	10.79	109.5	3.76	150
SW-RP-17	11/19/2015	0.1 U	33	0.7 U	29	0.1 U	0.1 U	0.99 J	11 J	0.00024 J	0.2 U	0.1 U	1 U	6.4 J		2,800	27 U	25,000	9.19	9.26	0.307	15.08	-12.6	1.3	170
SW-RP-18	11/19/2015 (e)	0.10 U	33	0.72 J	29	0.1 U	0.11 U	0.905 J	12 J	0.00026 J	0.265 J	0.10 U	1 U	6.45 J		2,750	27 U	26,500	24.58	6.9	0.225	0	118	3.6	165
	6/13/2016	0.05 U	110	1.4 J	20	0.05 U	0.65 U	0.75 J	41 J	0.00047 J	1.9 J	0.33 U	0.9 U	5.2 J		2,000	48 U	11,000	29.63	9.03	0.183	8.33	53.0	0.5	96
	10/13/2016	0.05 U	39	1.1 J	29	0.05 U	0.65 U	0.28 U	39	0.00037	1.4 J	0.33 U	0.9 U	6.3 J		2,000	48 U	13,000	19.56	8.37	0.252	5.17	133.0	3.9	140
	3/22/2017	0.05 U	30	0.87 U	27	0.05 U	0.65 U	1.60 J	54 J	0.0013	1.4 J	0.33 U	0.9 U	2.2 J		2,500	48 U	490 J	5.79	8.54	1.423	10.65	340.7	4.17	140
SW-RP-19	11/19/2015	0.1 U	35	0.9 J	29	0.1 U	0.1 U	0.8 J	16 J	0.00027 J	0.49 J	0.1 U	1 U	4.2 J		2,600	27 U	26,000	9.47	9.37	0.306	14.40	19.4	9.0	160
SW-RP-20	11/19/2015	0.1 U	14	0.7 U	30	0.1 U	0.1 U	0.73 J	22 J	0.0003 J	0.2 U	0.1 U	1 U	4.8 J		2,700	27 U	26,000	8.19	9.50	0.335	14.07	7.2	9.3	160
	6/13/2016	0.05 U	72	1.4 J	19	0.05 U	0.65 U	0.63 J	52 J	0.00044 J	2.0 J	0.33 U	0.9 U	2.2 J		2,300	48 U	11,000	30.60	9.12	0.178	14.30	112.0	0.7	91
	10/13/2016	0.05 U	23	0.98 J	27	0.05 U	0.65 U	0.63 J	65 J	0.00049 J	2.1 J	0.33 U	0.9 U	5.6 J		1,800	48 U	13,000	17.60	7.97	0.255	3.70	150.0	4.9	130
	3/22/2017	0.05 U	30	0.87 U	27	0.05 U	0.65 U	1.70 J	46 J	0.0012	1.4 J	0.33 U	0.9 U	1.4 U		2,500	48 U	14,000	5.35	8.60	1.440	10.83	133.4	4.35	150
Former Residuals Pond Decision Unit	**Mean**	BDL	45.5	1.01	25	BDL	0.54	1.05	40	0.000979	1.40	0.47	BDL	5.1		2,258	48	15,612							
	Maximum	BDL	150	1.7	30	BDL	1.5	2.3	140	0.0066	3.5	8.3	BDL	12.0		2,900	120	27,000							
	Exposure Point Concentration (f)		121																						
Is additional refinement of COPC needed?		No	No (h)	No	No	No	No	No	No	No	No	No	No	No		Not COPC									

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
NL = Not Listed.
EPA = Environmental Protection Agency.
NRWQ = National Recommended Water Quality.
*Selenium value is 2016 EPA Aquatic Life Ambient Water Quality Criterion for lentic freshwater.

Notes:
Concentration exceeds both the listed ecological screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 4.
(b) Freshwater chronic criterion continuous concentration value from EPA's 2017 NRWQ aquatic life criteria table.
(c) Freshwater chronic surface water screening value from Table 1a of 2015 EPA Region 4 Supplemental Guide to ERAGS.
(d) Lowest protection of freshwater aquatic life benchmark presented in "A Compendium of Environmental Quality Benchmarks" (McDonald, et al, 1999).
(e) Results shown are the average of the sample and its associated duplicate.
(f) Exposure Point Concentration (EPC) is 95% UCL of the mean, calculated **using the maximum concentration detected at each location sampled during four seasons,** as requested by IDEM in its August 2, 2017 comment letter.
(g) Appears to be spurious data point.
(h) The EPC for aluminum calculated using the mean of seasonal data at each point (rather than the max.) is 53.2 ug/L, which is less than the screening level.

Table 8a - Shallow Zone Groundwater Analytical Results and Human Health Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Groundwater Screening Levels (in µg/L total)			Constituent of Potential Concern (COPC)																		Other Constituents			Groundwater Field Parameters					
			Ag		Al		As		Ba		Cd		Cr		Cu		Fe		Hg		Mn		Pb		Se		Zn		K	NO_3	SO_4					
Background Threshold Value (BTV) (a):			Not detected		244		2.4		6.5		0.12		1.66		10.5		3,005		0.0328		70		0.56		1.3		19.7		750	67	37,025					
Human Health Risk:																																		
IDEM RCG 2017 Residential Screening Level (b)			94		20,000		10		2,000		5		100		1,300		14,000		2		430		15		50		6,000		NL	10,000	NL	T	pH	Cond.	DO	ORP	Turb.
Sample ID	**Sample Date**	**Season**																														°C	StU	mS	mg/L	eV	NTU
MW-1S	12/8/2015	Winter	0.1	U	2.7	J	1.4	J	23		0.14	J	5	J	0.37	J	750		0.00029	J	260		0.1	U	1	U	2.4	U	1,400	2,700	35,000	8.36	7.25	0.510	1.00	-32.3	3.1
	3/16/2016	Spring	0.1	U	7.4	J	3.4	J	34		0.1	U	0.26	J	0.31	J	3,400		0.00046	J	1,000		0.1	U	2.4	J	3.3	J	1,600	4,400	45,000	3.87	7.25	0.400	0.96	118.2	4.4
	6/14/2016	Summer	0.05	U	5.9	J	1.6	J	28		0.05	U	0.65	U	0.42	J	530		0.00049	J	140		0.33	U	0.9	U	1.4	U	2,200	870	26,000	15.69	7.07	0.490	1.50	-1.2	4.5
	9/19/2016	Fall	0.05	U	4.2	U	1.3	J	28		0.05	U	0.65	U	1.1	J	340		0.002	U	330		0.33	U	0.9	U	2.1	J	1,300	680	25,000	24.74	6.32	0.429	0.00	-11.0	0.6
	12/14/2016	Winter	0.05	U	7.2	J	2.9	J	38		0.05	U	0.65	U	0.44	J	2,100		0.00042	J	1000		0.33	U	1.4	J	3.9	J	1,500	1400	30,000	7.52	6.85	0.319	2.37	86.6	3.5
	3/23/2017	Spring*	0.05	U	5.3	J	0.87	U	20		0.05	U	0.65	U	1.4	J	100		0.00051		59		0.33	U	2	J	1.9	J	2,100	1400	41,000	5.10	6.85	0.537	0.63	117.4	11.9
	6/12/2017	Summer*	0.05	U	8.5	J	1.8	J	21		0.05	U	0.65	U	3.9	J	250		0.0014		290		0.33	U	0.9	U	4.4	J	2,400	110	11,000	16.20	7.24	0.440	0.26	-0.6	9.6
	9/19/2017	Fall	0.05	U	6	J	1.9	J	27		0.05	U	0.65	U	0.65	J	730		0.00074		1100		0.33	U	0.9	U	1.9	J	2,700	100	750	J	20.07	7.52	0.383	0.77	22.8	-
MW-2S	12/8/2015	Winter	0.1	U	12		3.0	J	24		0.1	U	0.1	U	0.5	J	1,800		0.0006		41		0.12	J	1	U	2.4	U	660	810	41,000	9.84	7.27	0.458	0.13	-72.8	9.7
	3/16/2016	Spring	0.1	U	18		1.4	J	31		0.1	U	0.26	J	5.1		1,200		0.0014		54		0.2	J	1	U	5.1	J	2,700	640	23,000	4.06	7.14	0.277	1.90	66.4	4.8
	6/14/2016	Summer	0.25	J	62		6.9	J	39		0.31	J	0.89	J	1.2	J	2,800		0.0028		79		0.63	J	0.9	U	1.4	U	2,400	48	U	1,800	17.55	6.89	0.330	0.40	-58.7	4.8
	9/19/2016	Fall	0.05	U	15		4.2	J	32		0.05	U	0.65	U	0.28	U	2,400		0.002	U	85		0.33	U	0.9	U	1.4	J	1,500	48	U	1,200	24.49	6.60	0.314	0.00	-56.0	4.1
	12/14/2016	Winter	0.05	U	20		3.1	J	27		0.05	U	0.65	U	0.79	J	2,500		0.00065		62		0.33	U	0.9	U	1.4	U	700	2,900	U	33,000	7.25	6.57	0.247	0.36	89.9	3.2
	3/24/2017	Spring	0.05	U	49		5.8		35		0.05	U	0.65	U	1.4	J	7,200		0.0011		120		0.77	J	0.9	U	2.3		2,300	430	16,000	6.18	7.04	0.385	0.97	56.7	4.9
	6/13/2017	Summer*	0.05	U	130		5.6		30		0.072	J	2.4	J	2.3	J	3,900		0.0049		49		0.77	J	0.9	U	5.6	J	2,100	48	U	4,200	18.44	6.84	0.278	0.25	-46.4	8.1
	9/20/2017 (c)	Fall	0.05	U	230		6.15		23.5		0.05	U	0.65	U	0.555	J	3,250		0.0014		62		0.745	J	0.9	U	17.05		1,750	50.5	J	2,800	22.13	7.65	0.299	1.41	-43.3	7.9
MW-3S	12/8/2015	Winter	0.1	U	16		0.7	U	72		0.1	U	0.38	J	0.3	J	3,200		0.0002	U	480		0.1	U	1	U	2.4	U	4,500	27	U	310	J	12.17	7.15	0.674	0.13	-92.2	2.4
	3/16/2016	Spring	0.1	U	6.7	J	3.2	J	43		0.1	U	0.29	J	1	J	7,300		0.00025		1,600		0.1	U	1	U	2.5	J	1,600	27	U	51,000	8.09	6.82	0.674	0.85	-71.6	4.7
	6/13/2016	Summer	0.05	U	12		4.3	J	56		0.05	U	0.65	U	0.64	J	13,000		0.00038		1,700		0.33	U	0.9	U	1.4	U	1,800	48	U	34,000	14.34	6.81	0.717	1.00	-66.5	0.8
	9/19/2016	Fall	0.05	U	5.1	J	2.9	J	59		0.05	U	0.65	U	0.61	J	9,300		0.0002	U	1,300		0.33	U	0.9	U	1.4	U	3,400	48	U	1,300	20.54	7.54	0.533	0.28	-84.0	1.2
	12/13/2016	Winter	0.05	U	4.2	U	2.8	J	55		0.05	U	0.65	U	0.28	U	7,200		0.0002	U	820		0.33	U	0.9	U	5.8	J	2,200	48	U	1,900	3.27	7.93	0.404	0.28	-15.0	3.6
	3/16/2017	Spring	0.05	U	12		3.3	J	25		0.05	U	0.65	U	1.6	J	7,400		0.00065		870		0.33	U	0.9	U	2.2	J	640	62	J	12,000	J	11.40	6.24	0.261	0.31	-69.8	2.1
	6/13/2017	Summer	0.05	U	27		3.6		37		0.05	U	0.65	U	0.9	J	12,000		0.00055		1,300		0.33	U	0.9	U	6.9	J	1,100	48	U	6,700	14.95	7.23	0.541	0.04	-103.5	4.6
	9/20/2017	Fall	0.05	U	11		3.0	J	47		0.05	U	0.65	U	0.55	J	6,600		0.00031	J	840		0.33	U	0.9	U	3.1	J	1,700	52	J	570	J	18.65	6.90	0.489	0.38	-46.4	4.9
MW-4S	12/8/2015	Winter	0.1	U	160		4.0	J	40		0.1	U	1.4	J	0.33	J	6,300		0.0011		330		0.82	J	1	U	4.2	J	1,500	27	U	510	J	11.40	6.24	0.261	0.31	-69.8	2.1
	3/16/2016	Spring	0.1	U	21		0.86	J	90		0.1	U	0.31	J	1.2	J	1,700		0.00074		440		0.1	U	2	J	11		1,900	1,600	190,000	6.48	6.73	0.800	0.88	110.4	2.9
	6/14/2016 (c)	Summer	0.05	U	24		3.7	J	155		0.05	U	1		1	J	4,900		0.000735		800		0.33	U	1.15	J	8		2,850	70	200,000	J	13.38	6.67	0.950	0.48	-11.1	5.0
	9/19/2016	Fall	0.05	U	130		12		63		0.05	U	2.30	J	0.58	J	18,000		0.0012		460		0.82	J	0.99	J	11		1,900	48	U	1,100	19.70	6.10	0.367	0.00	-78.0	2.7
	12/13/2016	Winter	0.05	U	140		4	J	64		0.05	U	1.30	J	0.4	J	12,000		0.0018		450		0.52	J	0.9	U	22		2,600	260	1,300	0.48	6.77	0.287	3.00	79.7	3.1
	3/23/2017	Spring*	0.05	U	88		3.8	J	58		0.05	U	0.74	J	4	J	5,100		0.002		420		0.62	J	0.95	J	49		2,800	210	29,000	7.89	7.12	2.163	0.42	35.0	7.0
	6/13/2017	Summer	0.05	U	52		5.4		54		0.05	U	0.65	U	2.0	J	3,600		0.0012		680		0.36	J	0.9	U	45		5,600	48	U	28,000	13.48	7.12	0.547	0.08	-39.5	3.9
	9/20/2017	Fall	0.05	U	36		6.5		46		0.05	U	0.65	U	0.62	J	4,300		0.00075		540		0.33	U	0.9	U	16		3,700	46	U	17,000	17.55	7.04	0.473	1.12	-103.5	2.8
MW-5S	12/7/2015	Winter	0.1	U	70		2.7	J	44		0.1	U	0.47	J	2.4	J	2,100		0.0021		260		0.14	J	1	U	8.4	J	4,100	1,500	170,000	12.06	6.90	0.730	0.58	9.0	11.1
	3/16/2016	Spring	0.1	U	310		0.7	U	19		0.1	U	0.82	J	1.8	J	470		0.0015		49		0.56	J	1	U	31		3,000	1,800	66,000	7.68	7.00	0.298	0.54	270.9	13.2
	6/14/2016	Summer	0.05	U	62		4.6	J	55		0.05	U	0.65	U	1.5	J	3,400		0.0018		480		0.33	U	1.6	J	10		4,400	48	U	190,000	12.87	7.44	0.794	0.45	-60.1	4.9
	9/19/2016	Fall	0.05	U	14		1.8	J	52		0.061	J	0.87	U	4.9	J	740		0.0020		510		0.33	U	0.9	U	12		4,800	48	U	190,000	19.18	7.69	0.776	0.26	-53.0	4.8
	12/13/2016	Winter	0.05	U	24		1.8	J	32		0.05	U	0.65	U	1.7	J	670		0.0015		320		0.33	U	0.9	U	5.6	J	3,900	48	U	76,000	10.86	7.50	0.409	0.24	81.2	3.4
	3/23/2017	Spring	0.05	U	10		1.6	J	36		0.05	U	0.65	U	1.5	J	2,200		0.0014		400		0.33	U	0.9	U	13		4,000	130	91,000	8.66	9.42	1.395	0.30	20.7	1.2
	6/12/2017	Summer	0.05	U	8.3	J	0.87	U	29		0.05	U	0.65	U	2.0	J	22	J	0.00061		79		0.33	U	0.9	U	29		4,600	990	89,900	14.37	6.83	0.518	0.21	51.8	2.72
	9/20/2017	Fall	0.05	U	22		1.9	J	45		0.05	U	0.65	U	1.9	J	920		0.00094		420		0.33	U	0.9	U	18		4,400	150	J	150,000	20.06	7.13	0.650	1.29	-90.7	4.87
MW-6S	12/9/2015	Winter	0.1	U	34		0.82	J	15		0.1	U	1	J	2.7	J	1,700		0.00088		620		0.1	U	3.6	J	2.4	U	1,200	13,000	110,000	12.36	7.70	0.503	0.10	-292.4	4.6
	3/16/2016 (c)	Spring	0.1	U	25.5		0.95	J	11		0.1	U	0.605	J	2.15	J	78	J	0.00093		490		0.10	U	2.1	J	2.6	J	970	3,800	92,000	5.21	8.58	2.008	10.87	131.2	5.42
	6/15/2016	Summer	0.05	U	35		1.8	J	11		0.05	U	0.67	J	2.6	J	74	J	0.0013		550		0.33	U	2.4	J	1.4	U	1,300	1,300	57,000	13.70	6.96	0.523	0.48	-22.2	2.6
	9/19/2016	Fall	0.05	U	12		1.4	J	13		0.05	U	0.65	U	4.6	J	17	J	0.00080		760		0.33	U	5.0	J	1.5	J	1,500	11,000	91,000	19.37	6.78	0.723	0.00	63.0	2.1
	12/14/2016	Winter	0.05	U	14		1.5	J	10		0.05	U	0.65	U	2.9	J	18	J	0.00077		520		0.33	U	2.2	J	1.4	U	1,400	4,200	46,000	12.29	7.73	0.472	0.10	38.9	1.6
	3/23/2017 (c)	Spring	0.05	U	23		1.55	J	12		0.0505	U	0.65	U	3.4	J	31	J	0.00093		305		0.33	U	2.4	J	4.9	J	1,500	6,100	59,000	8.26	7.45	2.262	0.31	42.8	2.5
	6/12/2017	Summer	0.05	U	26		1.6	J	6.4		0.05	U	0.65	U	3.9	J	39	J	0.0032		190		0.33	U	1.9	J	1.9	J	800	8,900	52,000	15.38	6.78	0.497	0.08	56.3	4.3
	9/19/2017	Fall	0.05	U	37		1.2	J	4.6	J	0.05	U	0.65	U	3.6	J	63	J	0.0016		170		0.33	U	0.9	U	1.4	U	720	46	U	4,000	17.24	6.84	0.260	0.85	49.1	2.8
MW-7S	12/8/2015	Winter	0.1	U	32		7.2		77		0.1	U	0.9	J	0.45	J	11,000		0.0013		410		0.12	J	1	U	4.2	J	3,900	27	U	6,200	12.62	6.76	0.773	0.18	-91.6	4.8
	3/17/2016	Spring	0.1	U	9.6	J	1.7	J	75		0.1	U	0.43	J	0.69	J	7,800		0.00033	J	500		0.10	U	1	U	2.4	U	3,300	27	U	34,000	9.12	6.84	0.830	0.19	-63.2	5.0
	6/15/2016	Summer	0.05	U	12		3.3	J	79		0.05	U	0.65	U	0.28	U	9,100		0.00034	J	540		0.33	U	1.0	J	1.4	U	2,900	48	U	8,500	13.96	6.85	0.708	0.93	-77.5	1.5
	9/20/2016	Fall	0.05	U	23		4.9	J	73		0.05	U	0.65	U	0.7	J	9,600		0.002	U	390		0.33	U	0.9	U	1.4	U	3,400	48	U	3,300	17.20	7.09	0.633	0.00	-50.0	1.4
	12/14/2016	Winter	0.05	U	7.4	J	3.3	J	74		0.05	U	0.65	U	0.36	J	5,600		0.0002	U	700		0.33	U	0.9	U	1.4	U	3,100	48	U	14,000	12.10	7.63	0.498	0.24	50.6	3.5
	3/16/2017	Spring*	0.05	U	27		3.3	J	74		0.05	U	0.065	U	0.77	J	8,300		0.0002	U	610		0.36	J	0.9	U	4.4	J	3,300	48	U	5,600	9.55	7.18	2.140	0.46	10.8	33.9
	6/12/2017	Summer	0.05	U	13		3.2	J	65		0.05	U	0.65	U	0.56	J	8,400		0.0002	U	580		0.33	U	0.9	U	2.3	J	3,000	48	U	13,000	14.52	6.82	0.598	0.27	-83.6	3.2
	9/20/2017	Fall	0.05	U	13		4.2	J	69		0.05	U	0.65	U	0.32	J	7,800		0.0002	U	570		0.33	U	0.9	U	1.4	U	3,100	50	J	2,600	18.99	6.67	0.587	0.59	69.3	2.7
MW-8S	12/8/2015	Winter	0.1	U	31		0.89	J	23		0.1	U	0.33	J	1.2	J	390		0.00055		11		0.1	U	1.4	J	2.4	U	720	2,400	32,000	15.11	6.97	0.567	1.67	-8.8	3.6
	3/17/2016	Spring	0.1	U	18		0.9	J	21		0.13	J	0.33	J	0.83	J	49	J	0.00042	J	1.8	J	0.1	U	1.6	J	2.4	U	780	5,500	46,000	10.15	7.07	0.560	3.94	4.0	1.9
	6/15/2016	Summer	0.05	U	17		2.3	J	18		0.13	J	0.65	U	0.97	J	24	J	0.00056		0.51	U	0.33	U	3.1	J	1.4	U	620	7,000	30,000	14.91	7.19	0.415	0.23	-13.6	1.1
	9/20/2016	Fall	0.05	U	5.9	J	1.1	J	19		0.05	U	0.65	U	1.2	J	8.5	J	0.002	U	0.59	J	0.33	U	0.9	U	1.4	J	610	550	27,000	20.76	6.87	0.407	0.00	-27.0	1.5
	12/14/2016 (c)	Winter	0.05	U	10.5		1.45	J	19		0.05	U	0.65	U	0.505	J	16	J	0.00041	J	2.9	J	0.33	U	0.9	U	1.4	U	430	1,150	26,500	13.38	6.67	0.950	0.48	-11.1	5.0
	3/23/2017	Spring*	0.05	U	17		1.8	J	25		0.21	J	0.65	U	2.1	J	19.0	J	0.00054		5.80		0.33	U	4.7	J	6.5	J	850	14,000	50,000	10.74	8.23	1.954	2.68	43.6	5.2
	6/12/2017 (c)	Summer	0.05	U	11		2.55	J	19.5		0.05	U	0.65	U	2.15	J	17.5	J	0.000755		0.51	U	0.33	U	3.6	J	1.7	U	610	12,500	46,000	13.94	7.19	0.458	6.02	62.8	2.3
	9/19/2017	Fall	0.05	U	28		2	J	22		0.05	U	0.65	U	0.82	J	52.0	J	0.00048	J	0.94	J	0.33	U	0.9	U	1.4	U	790	150	35,000	18.84	7.19	0.430	5.54	54.5	-

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
NL = Not Listed.
BDL = All results are below detection limit.

Notes:
Detected value exceeds both the human health screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, calculated for all samples collected from **BG-1S**, see Table 4.
(b) Groundwater "Tap" screening level for residential exposure scenario, Table A-6 (2017 update) of the RCG.
(c) Results shown are the average of the sample and its associated duplicate.
* Field filtered using a 10-micron filter

Table 8b - Shallow Zone Groundwater Analytical Results and Ecological Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Groundwater Screening Levels (in µg/L total)			Constituent of Potential Concern (COPC)														Other Constituents			Groundwater Field Parameters					
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn		K	NO_3	SO_4					
Background Threshold Value (BTV) (a):			Not detected	244	2.4	6.5	0.12	1.66	10.5	3,005	0.0328	70	0.56	1.3	19.7		750	67	37,025					
Ecological Risk:																								
2017 EPA NRWQ Criteria for Aquatic Life (b)			3.2	87	150	NL	0.25	74	NL	1,000	0.77	NL	2.5	1.5**	120		NL	NL	NL					
2015 EPA Region 4 ESV for Surface Water (c)						220			13			93		5			53,000	NL	NL					
Compendium of Environmental Quality Benchmarks (d)																		40,000	300,000	T	pH	Cond.	DO	ORP	Turb.
Sample ID	**Sample Date**	**Season**																		°C	StU	mS	mg/L	eV	NTU
MW-1S	12/8/2015	Winter	0.1 U	2.7 J	1.4 J	23	0.14 J	5.0 J	0.37 J	750	0.00029 J	260	0.1 U	1.0 U	2.4 U		1,400	2,700	35,000	8.36	7.25	0.510	1.00	-32.3	3.1
	3/16/2016	Spring	0.1 U	7.4 J	3.4 J	34	0.1 U	0.26 J	0.31 J	3,400	0.00046 J	1,000	0.1 U	2.4 J	3.3 J		1,600	4,400	45,000	3.87	7.25	0.400	0.96	118.2	4.4
	6/14/2016	Summer	0.05 U	5.9 J	1.6 J	28	0.05 U	0.65 U	0.42 J	530	0.00049 J	140	0.33 U	0.9 U	1.4 U		2,200	870	26,000	15.69	7.07	0.490	1.50	-1.2	4.5
	9/19/2016	Fall	0.05 U	4.2 U	1.3 J	28	0.05 U	0.65 U	1.1 J	340	0.002 U	330	0.33 U	0.9 U	2.1 J		1,300	680	25,000	24.74	6.32	0.429	0.00	-11.0	0.6
	12/14/2016	Winter	0.05 U	7.2 J	2.9 J	38	0.05 U	0.65 U	0.44 J	2,100	0.00042 J	1000	0.33 U	1.4 J	3.9 J		1,500	1400	30,000	7.52	6.85	0.319	2.37	86.6	3.5
	3/23/2017	Spring*	0.05 U	5.3 J	0.87 U	20	0.05 U	0.65 U	1.4 J	100	0.00051	59	0.33 U	2.0 J	1.9 J		2,100	1400	41,000	5.10	6.85	0.537	0.63	117.4	11.9
	6/12/2017	Summer*	0.05 U	8.5 J	1.8 J	21	0.05 U	0.65 U	3.9 J	250	0.0014	290	0.33 U	0.9 U	4.4 J		2,400	110	11,000	16.20	7.24	0.440	0.26	-0.6	9.6
	9/19/2017	Fall	0.05 U	6 J	1.9 J	27	0.05 U	0.65 U	0.65 J	730	0.00074	1100	0.33 U	0.9 U	1.9 J		2,700	100	750 J	20.07	7.52	0.383	0.77	22.8	-
MW-2S	12/8/2015	Winter	0.1 U	12	3.0 J	24	0.1 U	0.1 U	0.5 J	1,800	0.0006	41	0.12 J	1 U	2.4 U		660	810	41,000	9.84	7.27	0.458	0.13	-72.8	9.7
	3/16/2016	Spring	0.1 U	18	1.4 J	31	0.1 U	0.26 J	5.1	1,200	0.0014	54	0.2 J	1 U	5.1 J		2,700	640	23,000	4.06	7.14	0.277	1.90	66.4	4.8
	6/14/2016	Summer	0.25 J	62	6.9 J	39	0.31 J	0.89 J	1.2 J	2,800	0.0028	79	0.63 J	0.9 U	1.4 U		2,400	48 U	1,800	17.55	6.89	0.330	0.40	-58.7	4.8
	9/19/2016	Fall	0.05 U	15	4.2 J	32	0.05 U	0.65 U	0.28 U	2,400	0.002 U	85	0.33 U	0.9 U	1.4 J		1,500	48 U	1,200	24.49	6.60	0.314	0.00	-56.0	4.1
	12/14/2016	Winter	0.05 U	20	3.1 J	27	0.05 U	0.65 U	0.79 J	2,500	0.00065	62	0.33 U	0.9 U	1.4 U		700	2,900 U	33,000	7.25	6.57	0.247	0.36	89.9	3.2
	3/24/2017	Spring	0.05 U	49	5.8	35	0.05 U	0.65 U	1.4 J	7,200	0.0011	120	0.77 J	0.9 U	2.3		2,300	430	16,000	6.18	7.04	0.385	0.97	56.7	4.9
	6/13/2017	Summer*	0.05 U	130	5.6	30	0.072 J	2.4 J	2.3 J	3,900	0.0049	49	0.77 J	0.9 U	5.6 J		2,100	48 U	4,200	18.44	6.84	0.278	0.25	-46.4	8.1
	9/20/2017 (e)	Fall	0.05 U	230	6.15	23.5	0.05 U	0.65 U	0.6 J	3,250	0.0014	62	0.75 J	0.9 U	17.1		1,750	50.5 J	2,800	22.13	7.65	0.299	1.41	-43.3	7.9
MW-3S	12/8/2015	Winter	0.1 U	16	0.7 U	72	0.1 U	0.38 J	0.3 J	3,200	0.0002 U	480	0.1 U	1.0 U	2.4 U		4,500	27 U	310 J	12.17	7.15	0.674	0.13	-92.2	2.4
	3/16/2016	Spring	0.1 U	6.7 J	3.2 J	43	0.1 U	0.29 J	1 J	7,300	0.00025	1,600	0.1 U	1.0 U	2.5 J		1,600	27 U	51,000	8.09	6.82	0.674	0.85	-71.6	4.7
	6/13/2016	Summer	0.05 U	12	4.3 J	56	0.05 U	0.65 U	0.64 J	13,000	0.00038	1,700	0.33 U	0.9 U	1.4 U		1,800	48 U	34,000	14.34	6.81	0.717	1.00	-66.5	0.8
	9/19/2016	Fall	0.05 U	5.1 J	2.9 J	59	0.05 U	0.65 U	0.61 J	9,300	0.0002 U	1,300	0.33 U	0.9 U	1.4 U		3,400	48 U	1,300	20.54	7.54	0.533	0.28	-84.0	1.2
	12/13/2016	Winter	0.05 U	4.2 U	2.8 J	55	0.05 U	0.65 U	0.28 U	7,200	0.0002 U	820	0.33 U	0.9 U	5.8 J		2,200	48 U	1,900	3.27	7.93	0.404	0.28	-15.0	3.6
	3/16/2017	Spring	0.05 U	12	3.3 J	25	0.05 U	0.65 U	1.6 J	7,400	0.00065	870	0.33 U	0.9 U	2.2 J		640	62 J	12,000 J	11.40	6.24	0.261	0.31	-69.8	2.1
	6/13/2017	Summer	0.05 U	27	3.6	37	0.05 U	0.65 U	0.9 J	12,000	0.00055	1,300	0.33 U	0.9 U	6.9 J		1,100	48 U	6,700	14.95	7.23	0.541	0.04	-103.5	4.6
	9/20/2017	Fall	0.05 U	11	3.0 J	47	0.05 U	0.65 U	0.55 J	6,600	0.00031 J	840	0.33 U	0.9 U	3.1 J		1,700	52 J	570 J	18.65	6.90	0.489	0.38	-46.4	4.9
MW-4S	12/8/2015	Winter	0.1 U	160	4.0 J	40	0.1 U	1.4 J	0.33 J	6,300	0.0011	330	0.82 J	1.0 U	4.2 J		1,500	27 U	510 J	11.40	6.24	0.261	0.31	-69.8	2.1
	3/16/2016	Spring	0.1 U	21	0.86 J	90	0.1 U	0.31 J	1.2 J	1,700	0.00074	440	0.1 U	2.0 J	11		1,900	1,600	190,000	6.48	6.73	0.800	0.88	110.4	2.9
	6/14/2016 (e)	Summer	0.05 U	24	3.7 J	155	0.05 U	0.7	1 J	4,900	0.000735	800	0.33 U	1.15 J	8		2,850	70	200,000 J	13.38	6.67	0.950	0.48	-11.1	5.0
	9/19/2016	Fall	0.05 U	130	12	63	0.05 U	2.30 J	0.58 J	18,000	0.0012	460	0.82 J	0.99 J	11		1,900	48 U	1,100	19.70	6.10	0.367	0.00	-78.0	2.7
	12/13/2016	Winter	0.05 U	140	4 J	64	0.05 U	1.30 J	0.4 J	12,000	0.0018	450	0.52 J	0.9 U	22		2,600	260	1,300	0.48	6.77	0.287	3.00	79.7	3.1
	3/23/2017	Spring*	0.05 U	88	3.8 J	58	0.05 U	0.74 J	4 J	5,100	0.002	420	0.62 J	0.95 J	49		2,800	210	29,000	7.89	7.12	2.163	0.42	35.0	7.0
	6/13/2017	Summer	0.05 U	52	5.4	54	0.05 U	0.65 U	2.0 J	3,600	0.0012	680	0.36 J	0.9 U	45		5,600	48 U	28,000	13.48	7.12	0.547	0.08	-39.5	3.9
	9/20/2017	Fall	0.05 U	36	6.5	46	0.05 U	0.65 U	0.62 J	4,300	0.00075	540	0.33 U	0.9 U	16		3,700	46 U	17,000	17.55	7.04	0.473	1.12	-103.5	2.8
MW-5S	12/7/2015	Winter	0.1 U	70	2.7 J	44	0.1 U	0.47 J	2.4 J	2,100	0.0021	260	0.14 J	1.0 U	8.4 J		4,100	1,500	170,000	12.06	6.90	0.730	0.58	9.0	11.1
	3/16/2016	Spring	0.1 U	310	0.7 U	19	0.1 U	0.82 J	1.8 J	470	0.0015	49	0.56 J	1.0 U	31		3,000	1,800	66,000	7.68	7.00	0.298	0.54	270.9	13.2
	6/14/2016	Summer	0.05 U	62	4.6 J	55	0.05 U	0.65 U	1.5 J	3,400	0.0018	480	0.33 U	1.6 J	10		4,400	48 U	190,000	12.87	7.44	0.794	0.45	-60.1	4.9
	9/19/2016	Fall	0.05 U	14	1.8 J	52	0.061 J	0.87 U	4.9 J	740	0.0020	510	0.33 U	0.9 U	12		4,800	48 U	190,000	19.18	7.69	0.776	0.26	-53.0	4.8
	12/13/2016	Winter	0.05 U	24	1.8 J	32	0.05 U	0.65 U	1.7 J	670	0.0015	320	0.33 U	0.9 U	5.6 J		3,900	48 U	76,000	10.86	7.50	0.409	0.24	81.2	3.4
	3/23/2017	Spring	0.05 U	10	1.6 J	36	0.05 U	0.65 U	1.5 J	2,200	0.0014	400	0.33 U	0.9 U	13		4,000	130	91,000	8.66	9.42	1.395	0.30	20.7	1.2
	6/12/2017	Summer	0.05 U	8.3 J	0.87 U	29	0.05 U	0.65 U	2.0 J	22 J	0.00061	79	0.33 U	0.9 U	29		4,600	990	89,900	14.37	6.83	0.518	0.21	51.8	2.72
	9/20/2017	Fall	0.05 U	22	1.9 J	45	0.05 U	0.65 U	1.9 J	920	0.00094	420	0.33 U	0.9 U	18		4,400	150 J	150,000	20.06	7.13	0.650	1.29	-90.7	4.87
MW-6S	12/9/2015	Winter	0.1 U	34	0.82 J	15	0.1 U	1.0 J	2.7 J	1,700	0.00088	620	0.1 U	3.6 J	2.4 U		1,200	13,000	110,000	12.36	7.70	0.503	0.10	-292.4	4.6
	3/16/2016 (e)	Spring	0.1 U	25.5	0.95 J	11	0.1 U	0.605 J	2.15 J	78 J	0.00093	490	0.10 U	2.1 J	2.6 J		970	3,800	92,000	5.21	8.58	2.008	10.87	131.2	5.42
	6/15/2016	Summer	0.05 U	35	1.8 J	11	0.05 U	0.67 J	2.6 J	74 J	0.0013	550	0.33 U	2.4 J	1.4 U		1,300	1,300	57,000	13.70	6.96	0.523	0.48	-22.2	2.6
	9/19/2016	Fall	0.05 U	12	1.4 J	13	0.05 U	0.65 U	4.6 J	17 J	0.00080	760	0.33 U	5.0 J	1.5 J		1,500	11,000	91,000	19.37	6.78	0.723	0.00	63.0	2.1
	12/14/2016	Winter	0.05 U	14	1.5 J	10	0.05 U	0.65 U	2.9 J	18 J	0.00077	520	0.33 U	2.2 J	1.4 U		1,400	4,200	46,000	12.29	7.73	0.472	0.10	38.9	1.6
	3/23/2017 (e)	Spring	0.05 U	23	1.55 J	12	0.0505 U	0.65 U	3.4 J	31 J	0.00093	305	0.33 U	2.4 J	4.9 J		1,500	6,100	59,000	8.26	7.45	2.262	0.31	42.8	2.5
	6/12/2017	Summer	0.05 U	26	1.6 J	6.4	0.05 U	0.65 U	3.9 J	39 J	0.0032	190	0.33 U	1.9 J	1.9 J		800	8,900	52,000	15.38	6.78	0.497	0.08	56.3	4.3
	9/19/2017	Fall	0.05 U	37	1.2 J	4.6 J	0.05 U	0.65 U	3.6 J	63 J	0.0016	170	0.33 U	0.9 U	1.4 U		720	46 U	4,000	17.24	6.84	0.260	0.85	49.1	2.8
MW-7S	12/8/2015	Winter	0.1 U	32	7.2	77	0.1 U	0.9 J	0.45 J	11,000	0.0013	410	0.12 J	1.0 U	4.2 J		3,900	27 U	6,200	12.62	6.76	0.773	0.18	-91.6	4.8
	3/17/2016	Spring	0.1 U	9.6 J	1.7 J	75	0.1 U	0.43 J	0.69 J	7,800	0.00033 J	500	0.10 U	1.0 U	2.4 U		3,300	27 U	34,000	9.12	6.84	0.830	0.19	-63.2	5.0
	6/15/2016	Summer	0.05 U	12	3.3 J	79	0.05 U	0.65 U	0.28 U	9,100	0.00034 J	540	0.33 U	1.0 J	1.4 U		2,900	48 U	8,500	13.96	6.85	0.708	0.93	-77.5	1.5
	9/20/2016	Fall	0.05 U	23	4.9 J	73	0.05 U	0.65 U	0.7 J	9,600	0.002 U	390	0.33 U	0.9 U	1.4 U		3,400	48 U	3,300	17.20	7.09	0.633	0.00	-50.0	1.4
	12/14/2016	Winter	0.05 U	7.4 J	3.3 J	74	0.05 U	0.65 U	0.36 J	5,600	0.0002 U	700	0.33 U	0.9 U	1.4 U		3,100	48 U	14,000	12.10	7.63	0.498	0.24	50.6	3.5
	3/16/2017	Spring*	0.05 U	27	3.3 J	74	0.05 U	0.065 U	0.77 J	8,300	0.0002 U	610	0.36 J	0.9 U	4.4 J		3,300	48 U	5,600	9.55	7.18	2.140	0.46	10.8	33.9
	6/12/2017	Summer	0.05 U	13	3.2 J	65	0.05 U	0.65 U	0.56 J	8,400	0.0002 U	580	0.33 U	0.9 U	2.3 J		3,000	48 U	13,000	14.52	6.82	0.598	0.27	-83.6	3.2
	9/20/2017	Fall	0.05 U	13	4.2 J	69	0.05 U	0.65 U	0.32 J	7,800	0.0002 U	570	0.33 U	0.9 U	1.4 U		3,100	50 J	2,600	18.99	6.67	0.587	0.59	69.3	2.7
MW-8S	12/8/2015	Winter	0.1 U	31	0.89 J	23	0.1 U	0.33 J	1.2 J	390	0.00055	11	0.1 U	1.4 J	2.4 U		720	2,400	32,000	15.11	6.97	0.567	1.67	-8.8	3.6
	3/17/2016	Spring	0.1 U	18	0.9 J	21	0.13 J	0.33 J	0.83 J	49 J	0.00042 J	1.8 J	0.1 U	1.6 J	2.4 U		780	5,500	46,000	10.15	7.07	0.560	3.94	4.0	1.9
	6/15/2016	Summer	0.05 U	17	2.3 J	18	0.13 J	0.65 U	0.97 J	24 J	0.00056	0.51 U	0.33 U	3.1 J	1.4 U		620	7,000	30,000	14.91	7.19	0.415	0.23	-13.6	1.1
	9/20/2016	Fall	0.05 U	5.9 J	1.1 J	19	0.05 U	0.65 U	1.2 J	8.5 J	0.002 U	0.59 J	0.33 U	0.9 U	1.4 J		610	550	27,000	20.76	6.87	0.407	0.00	-27.0	1.5
	12/14/2016 (e)	Winter	0.05 U	10.5	1.45 J	19	0.05 U	0.65 U	0.505 J	16 J	0.00041 J	2.9 J	0.33 U	0.9 U	1.4 U		430	1,150	26,500	13.38	6.67	0.950	0.48	-11.1	5.0
	3/23/2017	Spring*	0.05 U	17	1.8 J	25	0.21 J	0.65 U	2.1 J	19.0 J	0.00054	5.80	0.33 U	4.7 J	6.5 J		850	14,000	50,000	10.74	8.23	1.954	2.68	43.6	5.2
	6/12/2017 (e)	Summer	0.05 U	11	2.55 J	19.5	0.05 U	0.65 U	2.15 J	17.5 J	0.000755	0.51 U	0.33 U	3.55 J	1.70 U		610	12,500	46,000	13.94	7.19	0.458	6.02	62.8	2.3
	9/19/2017	Fall	0.05 U	28	2 J	22	0.05 U	0.65 U	0.82 J	52.0 J	0.00048 J	0.94 J	0.33 U	0.9 U	1.4 U		790	150	35,000	18.84	7.19	0.430	5.54	54.5	-

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
NRWQ = National Recommended Water Quality.
NL = Not Listed.
EPA = Environmental Protection Agency.
**Selenium value is 2016 EPA Aquatic Life Ambient Water Quality Criterion for lentic freshwater.

Notes:
Detected value exceeds both the ecological screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, calculated for all samples collected from **BG-1S,** see Table 4.
(b) Freshwater chronic criterion continuous concentration value from EPA's 2017 NRWQ aquatic life criteria table.
(c) Freshwater chronic surface water screening value from Table 1a of 2015 EPA Region 4 Supplemental Guide to ERAGS.
(d) Lowest protection of freshwater aquatic life benchmark presented in "A Compendium of Environmental Quality Benchmarks" (McDonald, et al, 1999).
(e) Results shown are the average of the sample and its associated duplicate.
* Field filtered using a 10-micron filter

Table 9a - Deep Zone Groundwater Analytical Results and Human Health Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Groundwater Screening Levels (in µg/L total)			Constituent of Potential Concern (COPC)																		Other Constituents						Groundwater Field Parameters					
			Ag		Al		As		Ba	Cd		Cr		Cu		Fe	Hg		Mn	Pb		Se		Zn		K		NO_3		SO_4						
Background Threshold Value (BTV) (a):			Not detected		244		2.4		6.5	0.12		1.66		10.5		3,005	0.0328		70	0.56		1.3		19.7		750		67		37,025						
Human Health Risk:																																		
IDEM RCG 2017 Residential Screening Level (b)			94		20,000		10		2,000	5		100		1,300		14,000	2		430	15		50		6,000		NL		10,000		NL		T	pH	Cond.	DO	ORP	Turb.
Sample ID	**Sample Date**	**Season**																														°C	StU	mS	mg/L	eV	NTU
MW-1D	12/8/2015	Winter	0.1	U	26		0.7	U	26	0.1	U	0.40	J	0.21	J	3,400	0.00027	J	220	0.1	U	1	U	6.4	J	1,800		27	U	9,100		12.49	7.60	0.351	0.08	-179.2	3.5
	3/16/2016	Spring	0.1	U	6.2	J	0.7	U	71	0.1	U	0.22	J	0.2	U	5,900	0.0002	U	580	0.1	U	1	U	2.4	U	1,900		95	J	140	U	10.68	6.88	0.646	0.15	-98.0	0.9
	6/14/2016	Summer	0.05	U	13		1.7	J	74	0.05	J	0.65	U	0.28	U	7,300	0.0002	U	740	0.33	U	0.9	U	1.4	U	2,100		850		410	U	14.38	6.76	0.597	0.35	-52.0	3.4
	9/19/2016 (c)	Fall	0.05	U	7	J	0.87	U	48	0.05	U	0.65	U	0.365	J	4,400	0.002	U	460	0.33	U	0.9	U	1.4	U	2200		48	U	475	J	20.24	7.38	0.342	0.00	-60.0	1.4
	12/14/2016	Winter	0.05	U	22		1.5	J	33	0.05	U	0.65	U	0.28	U	6,000	0.0002	U	340	0.33	U	0.9	U	1.4	U	1,500		48	U	15,000		13.90	7.86	0.217	0.01	36.9	4.2
	3/23/2017	Spring*	0.05	U	4.6	J	0.87	U	73	0.05	U	0.65	U	0.5	J	5,700	0.00024	J	890	0.33	U	0.9	U	2.3	J	2,400		98	J	1,100		10.18	7.24	2.090	0.36	44.0	16.6
	6/12/2017	Summer	0.05	U	12		1.1	J	80	0.05	U	0.65	U	0.68	J	7,200	0.0002	U	850	0.33	U	0.9	U	21		2,600		48	U	580	J	13.99	7.18	0.635	0.08	-71.9	1.7
	9/19/2017	Fall	0.05	U	5.7	J	1.4	J	85	0.05	U	0.65	U	0.28	U	8,200	0.0002	U	980	0.33	U	0.9	U	1.7	J	2,800		46	U	340	U	16.51	6.80	0.551	0.53	80.6	-
MW-2D	12/8/2015	Winter	0.1	U	24		0.81	J	97	0.1	U	0.5	J	0.39	J	9,600	0.0002	U	1,600	0.1	U	1	U	12		2,900		27	U	280	J	13.54	7.22	0.767	0.22	-233.9	2.0
	3/16/2016	Spring	0.1	U	20		0.92	J	77	0.1	U	0.89	J	0.2	U	4,400	0.0002	U	1,600	0.1	U	1	U	2.4	U	2,300		27	U	4,300		9.54	6.81	0.503	0.17	-70.0	4.6
	6/14/2016	Summer	0.05	U	28		1.8	J	89	0.05	U	0.65	U	0.28	U	2,900	0.0002	U	2,100	0.33	U	0.9	U	1.4	U	3,700		48	U	1,800		15.59	6.89	0.511	0.27	-39.5	3.0
	9/19/2016	Fall	0.05	U	5.0	J	0.87	U	95	0.05	U	0.65	U	0.36	J	2,800	0.002	U	2,200	0.33	U	0.9	U	2.4	J	3,800		48	U	1,200		19.94	7.45	0.534	0.00	-54.0	1.4
	12/14/2016	Winter	0.05	U	26.0		1.7	J	90	0.05	U	0.68	J	0.43	J	3,000	0.0002	U	2,000	0.33	U	0.9	U	3.5	J	3,300		57	J	450	J	12.20	7.65	0.384	0.60	70.5	1.2
	3/24/2017	Spring*	0.05	U	5.7	J	1.1	J	70	0.05	U	0.65	U	0.47	J	2,800	0.0002	U	1,800	0.33	U	0.9	U	2	J	2,800		48	U	410	U	10.98	7.66	1.956	0.30	28.7	9.5
	6/13/2017	Summer	0.05	U	21		1.2	J	80	0.05	U	0.65	U	0.60	J	3,800	0.0002	U	1,500	0.33	U	0.9	U	3.0	J	3,000		48	U	1,000		12.57	7.23	0.513	0.02	-65.4	3.7
	9/20/2017	Fall	0.05	U	6	J	1.2	J	83	0.05	U	0.65	U	0.28	U	3,800	0.0002	U	1,600	0.33	U	0.9	U	1.4	U	4,300		46	U	340	U	18.60	6.85	0.515	0.40	-10.7	4.9
MW-3D	12/8/2015	Winter	0.1	U	46		4.5	J	110	0.1	U	1.1	J	0.59	J	13,000	0.0002	U	310	0.1	U	1	U	16		7,300		27	U	570	J	12.48	7.27	0.924	0.10	-223.2	4.5
	3/16/2016	Spring	0.1	U	8.5	J	3.2	J	110	0.1	U	0.49	J	0.2	U	7,800	0.0002	U	210	0.1	U	1	U	4.6	J	6,700		64	J	9,800		10.66	7.33	0.720	0.20	-84.3	3.0
	6/13/2016	Summer	0.05	U	8.7	J	1.1	J	120	0.05	U	0.65	U	0.28	U	8,300	0.0002	U	220	0.33	U	0.9	U	2.2	J	6,700		48	U	410	U	13.88	7.07	0.706	0.43	-107.3	1.1
	9/19/2016	Fall	0.05	U	4.2	U	6.4		120	0.05	U	0.65	U	0.59	J	8,900	0.002	U	370	0.33	U	0.9	U	1.4	U	4,100		57	J	510	J	16.76	6.44	0.644	0.00	-99.0	0.9
	12/13/2016	Winter	0.05	U	4.2	U	6.4		120	0.05	U	0.65	U	0.59	J	8,900	0.002	U	370	0.33	U	0.9	U	1.4	U	4,100		57	J	510	J	12.47	6.58	0.607	0.28	87.3	2.6
	3/24/2017	Spring	0.05	U	5.5	J	8		140	0.05	U	0.65	U	0.28	U	8,800	0.00022	J	520	0.33	U	0.9	U	1.6	J	4,700		48	U	440	J	2.28	8.17	1.896	0.02	26.4	2.5
	6/13/2017	Summer	0.05	U	12		5.5		120	0.05	U	0.65	U	0.57	J	9,800	0.0002	U	450	0.33	U	0.9	U	3.6	J	4,400		48	U	1,200		15.40	7.18	0.645	0.45	-118.4	2.0
	9/20/2017	Fall	0.05	U	4.7	J	7		120	0.05	U	0.65	U	2.4	J	9,400	0.0002	U	460	0.33	U	0.9	U	1.4	U	4,200		46	U	340	U	15.38	7.43	0.629	0.51	-105.1	2.3
MW-4D	12/8/2015	Winter	0.1	U	49		1.4	J	140	0.1	U	1.9	J	1.5	J	21,000	0.00026	J	490	0.1	U	1	U	22		7,100		27	U	260,000		11.25	7.35	1.256	0.14	-254.7	4.8
	3/16/2016	Spring	0.1	U	5	J	0.7	U	140	0.1	U	0.46	J	0.2	U	15,000	0.0002	U	360	0.1	U	1	U	2.4	U	6,600		54	U	180,000		10.64	7.22	0.963	0.08	-171.4	4.7
	6/14/2016	Summer	0.05	U	87		1.8	J	120	0.05	U	0.65	U	0.28	U	24,000	0.0002	U	370	0.33	U	1.1	J	1.9	J	6,500		48	U	91,000		14.08	7.28	0.860	0.40	-179.8	1.7
	9/19/2016	Fall	0.05	U	4.2	U	2.1	J	160	0.05	U	0.78	J	3.6	J	24,000	0.0002	U	620	0.33	U	0.9	U	2	J	3,400		48	U	170,000		24.94	7.37	0.779	0.00	-98.0	0.7
	12/13/2016	Winter	0.05	U	5.4	J	2.3	J	180	0.05	U	0.88	J	0.63	J	22,000	0.0002	U	650	0.33	U	0.9	U	2.1	J	3,600		96	U	160,000		10.60	7.82	0.713	0.19	-4.5	3.8
	3/23/2017	Spring*	0.05	U	9.6	J	2.3	J	160	0.05	U	0.72	J	0.47	J	16,000	0.00029	J	610	0.33	U	0.9	U	3.8	J	3,800		82	J	40,000		10.76	7.07	1.133	0.56	-2.7	29.6
	6/13/2017	Summer	0.05	U	12		2.3	J	160	0.05	U	1.4	J	0.86	J	19,000	0.0002	U	580	0.33	U	0.9	U	2.2	J	3,600		48	U	110,000		14.52	6.95	0.849	0.23	-105.3	4.11
	9/20/2017	Fall	0.05	U	7.8	J	2.4	J	150	0.05	U	0.92	J	1.3	J	18,000	0.0002	U	560	0.33	U	0.9	U	1.6	J	3,300		46	U	110,000		16.26	6.84	0.771	0.36	-57.8	2.60
MW-5D	12/8/2015	Winter	0.1	U	48		0.7	U	42	0.1	U	0.77	J	1.1	J	2,400	0.00039	J	170	0.13	J	1	U	5.7	J	8,000		27	U	86,000		12.65	7.82	0.722	0.55	-291.0	7.4
	3/16/2016	Spring	0.1	U	21		0.7	U	49	0.1	U	0.21	J	0.2	U	3,500	0.0002	U	180	0.1	U	1	U	2.4	U	5,600		55	J	65,000		10.50	7.64	0.537	0.10	-155.7	11.2
	6/14/2016	Summer	0.05	U	8.1	J	1.5	J	77	0.05	U	0.65	U	0.28	U	9,400	0.0002	U	260	0.33	U	0.9	U	1.4	U	4,200		48	U	40,000		12.51	7.65	0.591	0.44	-210.3	14.6
	9/19/2016	Fall	0.05	U	4.2	U	0.87	U	99	0.05	U	0.65	U	1.2	J	8,400	0.0002	U	250	0.33	U	0.9	U	1.4	U	4,400		48	U	40,000		18.81	7.91	0.571	0.35	-173.0	2.7
	12/13/2016	Winter	0.05	U	4.2	U	1.6	J	98	0.05	U	0.65	U	1	J	5,600	0.0002	U	210	0.33	U	0.9	U	1.4	U	4,000		48	U	48,000		13.34	8.34	0.456	0.18	-76.8	2.5
	3/23/2017	Spring	0.07	J	7.4	J	1.3	J	87	0.05	U	0.65	U	0.68	J	3,500	0.0002	U	220	0.33	U	0.9	U	3.5	J	4,000		90	J	55,000		11.39	7.68	0.706	1.10	-58.4	1.9
	6/12/2017	Summer	0.05	U	5.5	J	1.5	J	86	0.05	U	0.65	U	0.95	J	3,700	0.0002	U	240	0.33	U	0.9	U	4.0	J	4,400		48	U	58,000		14.28	7.70	0.587	0.41	-138.1	4.76
	9/20/2017	Fall	0.05	U	8.9	J	1.4	J	82	0.05	U	0.65	U	0.3	J	3,800	0.0002	U	200	0.52	J	0.9	U	1.4	U	4,100		46	U	58,000		16.91	7.50	0.507	0.22	-72.6	7.42
MW-6D	12/9/2015	Winter	0.1	U	19		2.6	J	43	0.1	U	0.22	J	0.2	U	4,400	0.00045	J	160	0.1	U	1	U	10		4,500		47	J	65,000		12.38	7.62	0.501	0.17	-289.1	4.8
	3/16/2016	Spring	0.1	U	2.6	J	3.4	J	62	0.1	U	0.22	J	0.2	U	5,500	0.0002	U	190	0.1	U	1	U	2.4	U	2,700		27	U	85,000		10.13	7.65	0.394	0.28	96.1	9.7
	6/15/2016	Summer	0.05	U	10		3.5	J	100	0.05	U	0.65	U	0.28	U	9,400	0.0002	U	280	0.33	U	1.1	J	1.6	J	2,300		48	U	160,000		13.12	7.23	0.566	0.32	-174.5	4.9
	9/19/2016	Fall	0.05	U	4.2	U	3.4	J	130	0.05	U	0.65	U	4.5	J	9,500	0.0002	U	320	0.33	U	0.9	U	2.3	J	2,100		48	U	270,000		15.45	7.95	0.701	0.00	-124.0	0.7
	12/14/2016	Winter	0.05	U	4.2	U	5		120	0.05	U	0.65	U	0.65	J	8,400	0.0002	U	290	0.33	U	0.9	U	2.1	J	1,900		96	U	210,000		11.46	6.16	0.597	0.30	34.1	2.0
	3/23/2017	Spring	0.05	U	7.4	J	4.8	J	130	0.05	U	0.65	U	0.66	J	8,000	0.0002	U	300	0.33	U	0.9	U	6.7	J	2,100		48	U	240,000		10.95	7.36	0.911	1.80	-33.6	1.9
	6/12/2017	Summer	0.05	U	5.8	J	5.1		63	0.05	U	0.65	U	0.5	J	4,500	0.0002	U	180	0.33	U	0.9	U	2.6	J	1,600		48	U	51,000		12.48	7.29	0.404	0.34	-132.0	3.3
	9/19/2017	Fall	0.05	U	9.1	J	5.1		80	0.05	U	0.65	U	0.32	J	6,300	0.0002	U	200	0.33	U	0.9	U	1.8	J	1,700		46	U	55,000		14.64	6.90	0.401	0.38	83.7	8.1
MW-7D	12/9/2015	Winter	0.1	U	16,000		2.5	J	83	0.1	U	2.7	J	2.1	J	7,600	0.0024		240	12		1	U	28		4,200		33	J	26,000		11.66	7.62	0.480	0.31	-229.7	830.0
	3/17/2016	Spring	0.1	U	17		0.7	U	33	0.1	U	0.20	J	0.2	U	1,200	0.0002	U	190	0.1	U	1	U	2.4	U	2,500		350		8,900		11.51	6.96	0.473	0.57	-90.4	4.1
	6/15/2016	Summer	0.05	U	17		1.1	J	36	0.05	U	0.65	U	0.28	U	1,600	0.0002	U	230	0.33	U	0.9	U	1.6	J	2,800		48	U	18,000		13.15	7.30	0.393	1.04	-76.2	1.5
	9/20/2016	Fall	0.05	U	4.2	U	0.87	U	32	0.05	U	0.65	U	0.39	J	1,500	0.002	U	190	0.33	U	0.9	U	3.3	J	2,600		59	J	9,900		14.86	6.86	0.377	0.00	-27.0	0.7
	12/14/2016	Winter	0.05	U	5.2	J	0.87	U	35	0.05	U	0.65	U	0.28	U	1,400	0.0002	U	200	0.33	U	0.9	U	1.4	U	2,700		48	U	610	J	11.38	6.58	0.334	0.27	85.0	1.6
	3/23/2017	Spring	0.05	U	8.1	J	0.87	U	36	0.05	U	0.65	U	0.52	J	1,100	0.00057		230	0.33	U	0.9	U	5.4	J	3,200		48	U	410	J	11.35	7.61	0.515	0.90	16.9	1.9
	6/12/2017	Summer	0.05	U	6.1	J	0.87	U	33	0.05	U	0.65	U	0.55	J	1,500	0.0002	U	220	0.33	U	0.9	U	3.7	J	3,000		48	U	14,000		14.40	7.67	0.376	0.04	-104.8	2.2
	9/20/2017	Fall	0.05	U	11		0.87	U	26	0.05	U	0.65	U	0.28	U	1,100	0.0002	U	190	0.33	U	0.9	U	1.4	U	2,500		46	U	21,000		14.95	7.53	0.300	0.90	-114.7	3.2
MW-8D	12/8/2015 (c)	Winter	0.1	U	15.5		0.7	U	22.5	0.1	U	0.825	J	0.54	J	4,550	0.00023	J	295	0.10	U	1	U	6.8	J	2,950		27	U	27,500		13.46	7.67	0.425	0.38	-218.3	3.6
	3/17/2016	Spring	0.1	U	6.3	J	0.73	J	28	0.1	U	0.56	J	0.58	J	2,200	0.0002	U	290	0.1	U	1	U	8.6	J	2,000		45	J	32,000		13.11	7.03	0.442	0.65	-128.0	1.4
	6/15/2016	Summer	0.05	U	8.0	J	2.1	J	31	0.05	U	0.65	U	0.28	U	1,800	0.0002	U	380	0.33	U	0.9	U	3.1	J	2,000		48	U	25,000		14.15	7.12	0.365	0.64	-28.9	1.0
	9/20/2016	Fall	0.05	U	4.2	U	0.87	U	31	0.05	U	0.65	U	0.59	J	2,500	0.002	U	350	0.33	U	0.9	U	2.4	J	2,000		56	J	22,000		15.10	7.84	0.398	0.00	-70.0	0.6
	12/14/2016	Winter	0.05	U	4.2	U	1.1	J	37	0.05	U	0.65	U	0.28	U	2,500	0.00002	U	350	0.33	U	0.9	U	1.4	U	2,000		48	U	20,000		13.17	6.71	0.373	0.22	54.7	0.4
	3/23/2017	Spring	0.05	U	6.0	J	0.94	J	65	0.05	U	0.65	U	0.37	J	2,400	0.0002	U	400	0.33	U	0.9	U	3.6	J	2,300		48	U	23,000		12.67	7.48	0.542	1.30	24.1	1.1
	6/12/2017	Summer	0.05	U	7.3	J	0.97	J	34	0.05	U	0.65	U	0.60	J	2,100	J 0.0002	U	380	0.33	U	0.9	U	2.1	J	2,300		48	U	23,000		15.25	7.38	0.375	0.35	-116.4	2.7
	9/19/2017	Fall	0.05	U	5.4	J	0.94	J	33	0.05	U	0.65	U	0.32	J	2,100	0.0002	U	370	0.33	U	0.9	U	1.6	J	2,200		46	U	18,000		15.12	7.44	0.377	0.60	34.4	-

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
NL = Not Listed.
U = Not detected above method detection limit (shown).
BDL = All results are below detection limit.

Notes:
Detected value exceeds both the human health screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, calculated for all samples collected from **BG-1D,** see Table 4.
(b) Groundwater "Tap" screening level for residential exposure scenario, Table A-6 (2017 update) of the RCG.
(c) Results shown are the average of the sample and its associated duplicate.
* Field filtered using a 10-micron filter

Table 9b - Deep Zone Groundwater Analytical Results and Ecological Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Groundwater Screening Levels (in µg/L total)			Constituent of Potential Concern (COPC)															Other Constituents			Groundwater Field Parameters					
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4								
Background Threshold Value (BTV) (a):			Not detected	244	2.4	6.5	0.12	1.66	10.5	3,005	0.0328	70	0.56	1.3	19.7	750	67	37,025								
Ecological Risk:																										
2017 EPA NRWQ Criteria for Aquatic Life (b)			3.2	87	150	NL	0.25	74	NL	1,000	0.77	NL	2.5	1.5**	120	NL	NL	NL								
2015 EPA Region 4 ESV for Surface Water (c)						220			13			93		5		53,000	NL	NL								
Compendium of Environmental Quality Benchmarks (d)																	40,000	300,000								
Sample ID	**Sample Date**	**Season**																	T	pH	Cond.	DO	ORP	Turb.		
																			°C	StU	mS	mg/L	eV	NTU		
MW-1D	12/8/2015	Winter	0.1 U	26	0.7 U	26	0.1 U	0.40 J	0.21 J	3,400	0.00027 J	220	0.1 U	1 U	6.4 J	1,800	27 U	9,100	12.49	7.60	0.351	0.08	-179.2	3.5		
	3/16/2016	Spring	0.1 U	6.2 J	0.7 U	71	0.1 U	0.22 J	0.2 U	5,900	0.0002 U	580	0.1 U	1 U	2.4 U	1,900	95 J	140 U	10.68	6.88	0.646	0.15	-98.0	0.9		
	6/14/2016	Summer	0.05 U	13	1.7 J	74	0.05 J	0.65 U	0.28 U	7,300	0.0002 U	740	0.33 U	0.9 U	1.4 U	2,100	850	410 U	14.38	6.76	0.597	0.35	-52.0	3.4		
	9/19/2016 (e)	Fall	0.05 U	7 J	0.87 U	48	0.05 U	0.65 U	0.365 J	4,400	0.002 U	460	0.33 U	0.9 U	1.4 U	2200	48 U	475 J	20.24	7.38	0.342	0.00	-60.0	1.4		
	12/14/2016	Winter	0.05 U	22	1.5 J	33	0.05 U	0.65 U	0.28 U	6,000	0.0002 U	340	0.33 U	0.9 U	1.4 U	1,500	48 U	15,000	13.90	7.86	0.217	0.01	36.9	4.2		
	3/23/2017	Spring*	0.05 U	4.6 J	0.87 U	73	0.05 U	0.65 U	0.5 J	5,700	0.00024 J	890	0.33 U	0.9 U	2.3 J	2,400	98 J	1,100	10.18	7.24	2.090	0.36	44.0	16.6		
	6/12/2017	Summer	0.05 U	12	1.1 J	80	0.05 U	0.65 U	0.68 J	7,200	0.0002 U	850	0.33 U	0.9 U	21	2,600	48 U	580 J	13.99	7.18	0.635	0.08	-71.9	1.7		
	9/19/2017	Fall	0.05 U	5.7 J	1.4 J	85	0.05 U	0.65 U	0.28 U	8,200	0.0002 U	980	0.33 U	0.9 U	1.7 J	2,800	46 U	340 U	16.51	6.80	0.551	0.53	80.6	-		
MW-2D	12/8/2015	Winter	0.1 U	24	0.81 J	97	0.1 U	0.5 J	0.39 J	9,600	0.0002 U	1,600	0.1 U	1 U	12	2,900	27 U	280 J	13.54	7.22	0.767	0.22	-233.9	2.0		
	3/16/2016	Spring	0.1 U	20	0.92 J	77	0.1 U	0.89 J	0.2 U	4,400	0.0002 U	1,600	0.1 U	1 U	2.4 U	2,300	27 U	4,300	9.54	6.81	0.503	0.17	-70.0	4.6		
	6/14/2016	Summer	0.05 U	28	1.8 J	89	0.05 U	0.65 U	0.28 U	2,900	0.0002 U	2,100	0.33 U	0.9 U	1.4 U	3,700	48 U	1,800	15.59	6.89	0.511	0.27	-39.5	3.0		
	9/19/2016	Fall	0.05 U	5.0 J	0.87 U	95	0.05 U	0.65 U	0.36 J	2,800	0.002 U	2,200	0.33 U	0.9 U	2.4 J	3,800	48 U	1,200	19.94	7.45	0.534	0.00	-54.0	1.4		
	12/14/2016	Winter	0.05 U	26.0	1.7 J	90	0.05 U	0.68 J	0.43 J	3,000	0.0002 U	2,000	0.33 U	0.9 U	3.5 J	3,300	57 J	450 J	12.20	7.65	0.384	0.60	70.5	1.2		
	3/24/2017	Spring*	0.05 U	5.7 J	1.1 J	70	0.05 U	0.65 U	0.47 J	2,800	0.0002 U	1,800	0.33 U	0.9 U	2 J	2,800	48 U	410 U	10.98	7.66	1.956	0.30	28.7	9.5		
	6/13/2017	Summer	0.05 U	21	1.2 J	80	0.05 U	0.65 U	0.60 J	3,800	0.0002 U	1,500	0.33 U	0.9 U	3.0 J	3,000	48 U	1,000	12.57	7.23	0.513	0.02	-65.4	3.7		
	9/20/2017	Fall	0.05 U	6 J	1.2 J	83	0.05 U	0.65 U	0.28 U	3,800	0.0002 U	1,600	0.33 U	0.9 U	1.4 U	4,300	46 U	340 U	18.60	6.85	0.515	0.40	-10.7	4.9		
MW-3D	12/8/2015	Winter	0.1 U	46	4.5 J	110	0.1 U	1.1 J	0.59 J	13,000	0.0002 U	310	0.1 U	1 U	16	7,300	27 U	570 J	12.48	7.27	0.924	0.10	-223.2	4.5		
	3/16/2016	Spring	0.1 U	8.5 J	3.2 J	110	0.1 U	0.49 J	0.2 U	7,800	0.0002 U	210	0.1 U	1 U	4.6 J	6,700	64 J	9,800	10.66	7.33	0.720	0.20	-84.3	3.0		
	6/13/2016	Summer	0.05 U	8.7 J	1.1 J	120	0.05 U	0.65 U	0.28 U	8,300	0.0002 U	220	0.33 U	0.9 U	2.2 J	6,700	48 U	410 U	13.88	7.07	0.706	0.43	-107.3	1.1		
	9/19/2016	Fall	0.05 U	4.2 U	6.4	120	0.05 U	0.65 U	0.59 J	8,900	0.002 U	370	0.33 U	0.9 U	1.4 U	4,100	57 J	510 J	16.76	6.44	0.644	0.00	-99.0	0.9		
	12/13/2016	Winter	0.05 U	4.2 U	6.4	120	0.05 U	0.65 U	0.59 J	8,900	0.002 U	370	0.33 U	0.9 U	1.4 U	4,100	57 J	510 J	12.47	6.58	0.607	0.28	87.3	2.6		
	3/24/2017	Spring	0.05 U	5.5 J	8	140	0.05 U	0.65 U	0.28 U	8,800	0.00022 J	520	0.33 U	0.9 U	1.6 J	4,700	48 U	440 J	2.28	8.17	1.896	0.02	26.4	2.5		
	6/13/2017	Summer	0.05 U	12	5.5	120	0.05 U	0.65 U	0.57 J	9,800	0.0002 U	450	0.33 U	0.9 U	3.6 J	4,400	48 U	1,200	15.40	7.18	0.645	0.45	-118.4	2.0		
	9/20/2017	Fall	0.05 U	4.7 J	7	120	0.05 U	0.65 U	2.4 J	9,400	0.0002 U	460	0.33 U	0.9 U	1.4 U	4,200	46 U	340 U	15.38	7.43	0.629	0.51	-105.1	2.3		
MW-4D	12/8/2015	Winter	0.1 U	49	1.4 J	140	0.1 U	1.9 J	1.5 J	21,000	0.00026 J	490	0.1 U	1 U	22	7,100	27 U	260,000	11.25	7.35	1.256	0.14	-254.7	4.8		
	3/16/2016	Spring	0.1 U	5 J	0.7 U	140	0.1 U	0.46 J	0.2 U	15,000	0.0002 U	360	0.1 U	1 U	2.4 U	6,600	54 U	180,000	10.64	7.22	0.963	0.08	-171.4	4.7		
	6/14/2016	Summer	0.05 U	87	1.8 J	120	0.05 U	0.65 U	0.28 U	24,000	0.0002 U	370	0.33 U	1.1 J	1.9 J	6,500	48 U	91,000	14.08	7.28	0.860	0.40	-179.8	1.7		
	9/19/2016	Fall	0.05 U	4.2 U	2.1 J	160	0.05 U	0.78 J	3.6 J	24,000	0.0002 U	620	0.33 U	0.9 U	2 J	3,400	48 U	170,000	24.94	7.37	0.779	0.00	-98.0	0.7		
	12/13/2016	Winter	0.05 U	5.4 J	2.3 J	180	0.05 U	0.88 J	0.63 J	22,000	0.0002 U	650	0.33 U	0.9 U	2.1 J	3,600	96 U	160,000	10.60	7.82	0.713	0.19	-4.5	3.8		
	3/23/2017	Spring*	0.05 U	9.6 J	2.3 J	160	0.05 U	0.72 J	0.47 J	16,000	0.00029 J	610	0.33 U	0.9 U	3.8 J	3,800	82 J	40,000	10.76	7.07	1.133	0.56	-2.7	29.6		
	6/13/2017	Summer	0.05 U	12	2.3 J	160	0.05 U	1.4 J	0.86 J	19,000	0.0002 U	580	0.33 U	0.9 U	2.2 J	3,600	48 U	110,000	14.52	6.95	0.849	0.23	-105.3	4.11		
	9/20/2017	Fall	0.05 U	7.8 J	2.4 J	150	0.05 U	0.92 J	1.3 J	18,000	0.0002 U	560	0.33 U	0.9 U	1.6 J	3,300	46 U	110,000	16.26	6.84	0.771	0.36	-57.8	2.60		
MW-5D	12/8/2015	Winter	0.1 U	48	0.7 U	42	0.1 U	0.77 J	1.1 J	2,400	0.00039 J	170	0.13 J	1 U	5.7 J	8,000	27 U	86,000	12.65	7.82	0.722	0.55	-291.0	7.4		
	3/16/2016	Spring	0.1 U	21	0.7 U	49	0.1 U	0.21 J	0.2 U	3,500	0.0002 U	180	0.1 U	1 U	2.4 U	5,600	55 J	65,000	10.50	7.64	0.537	0.10	-155.7	11.2		
	6/14/2016	Summer	0.05 U	8.1 J	1.5 J	77	0.05 U	0.65 U	0.28 U	9,400	0.0002 U	260	0.33 U	0.9 U	1.4 U	4,200	48 U	40,000	12.51	7.65	0.591	0.44	-210.3	14.6		
	9/19/2016	Fall	0.05 U	4.2 U	0.87 U	99	0.05 U	0.65 U	1.2 J	8,400	0.0002 U	250	0.33 U	0.9 U	1.4 U	4,400	48 U	40,000	18.81	7.91	0.571	0.35	-173.0	2.7		
	12/13/2016	Winter	0.05 U	4.2 U	1.6 J	98	0.05 U	0.65 U	1.0 J	5,600	0.0002 U	210	0.33 U	0.9 U	1.4 U	4,000	48 U	48,000	13.34	8.34	0.456	0.18	-76.8	2.5		
	3/23/2017	Spring	0.07 J	7.4 J	1.3 J	87	0.05 U	0.65 U	0.68 J	3,500	0.0002 U	220	0.33 U	0.9 U	3.5 J	4,000	90 J	55,000	11.39	7.68	0.706	1.10	-58.4	1.9		
	6/12/2017	Summer	0.05 U	5.5 J	1.5 J	86	0.05 U	0.65 U	0.95 J	3,700	0.0002 U	240	0.33 U	0.9 U	4.0 J	4,400	48 U	58,000	14.28	7.70	0.587	0.41	-138.1	4.76		
	9/20/2017	Fall	0.05 U	8.9 J	1.4 J	82	0.05 U	0.65 U	0.3 J	3,800	0.0002 U	200	0.52 J	0.9 U	1.4 U	4,100	46 U	58,000	16.91	7.50	0.507	0.22	-72.6	7.42		
MW-6D	12/9/2015	Winter	0.1 U	19	2.6 J	43	0.1 U	0.22 J	0.2 U	4,400	0.00045 J	160	0.1 U	1 U	10	4,500	47 J	65,000	12.38	7.62	0.501	0.17	-289.1	4.8		
	3/16/2016	Spring	0.1 U	2.6 J	3.4 J	62	0.1 U	0.22 J	0.2 U	5,500	0.0002 U	190	0.1 U	1 U	2.4 U	2,700	27 U	85,000	10.13	7.65	0.394	0.28	96.1	9.7		
	6/15/2016	Summer	0.05 U	10	3.5 J	100	0.05 U	0.65 U	0.28 U	9,400	0.0002 U	280	0.33 U	1.1 J	1.6 J	2,300	48 U	160,000	13.12	7.23	0.566	0.32	-174.5	4.9		
	9/19/2016	Fall	0.05 U	4.2 U	3.4 J	130	0.05 U	0.65 U	4.5 J	9,500	0.0002 U	320	0.33 U	0.9 U	2.3 J	2,100	48 U	270,000	15.45	7.95	0.701	0.00	-124.0	0.7		
	12/14/2016	Winter	0.05 U	4.2 U	5	120	0.05 U	0.65 U	0.65 J	8,400	0.0002 U	290	0.33 U	0.9 U	2.1 J	1,900	96 U	210,000	11.46	6.16	0.597	0.30	34.1	2.0		
	3/23/2017	Spring	0.05 U	7.4 J	4.8 J	130	0.05 U	0.65 U	0.66 J	8,000	0.0002 U	300	0.33 U	0.9 U	6.7 J	2,100	48 U	240,000	10.95	7.36	0.911	1.80	-33.6	1.9		
	6/12/2017	Summer	0.05 U	5.8 J	5.1	63	0.05 U	0.65 U	0.5 J	4,500	0.0002 U	180	0.33 U	0.9 U	2.6 J	1,600	48 U	51,000	12.48	7.29	0.404	0.34	-132.0	3.3		
	9/19/2017	Fall	0.05 U	9.1 J	5.1	80	0.05 U	0.65 U	0.32 J	6,300	0.0002 U	200	0.33 U	0.9 U	1.8 J	1,700	46 U	55,000	14.64	6.90	0.401	0.38	83.7	8.1		
MW-7D	12/9/2015	Winter	0.1 U	16,000 (f)	2.5 J	83	0.1 U	2.7 J	2.1 J	7,600 (f)	0.0024	240	12 (f)	1 U	28	4,200	33 J	26,000	11.66	7.62	0.480	0.31	-229.7	830.0		
	3/17/2016	Spring	0.1 U	17	0.7 U	33	0.1 U	0.20 J	0.2 U	1,200	0.0002 U	190	0.1 U	1 U	2.4 U	2,500	350	8,900	11.51	6.96	0.473	0.57	-90.4	4.1		
	6/15/2016	Summer	0.05 U	17	1.1 J	36	0.05 U	0.65 U	0.28 U	1,600	0.0002 U	230	0.33 U	0.9 U	1.6 J	2,800	48 U	18,000	13.15	7.30	0.393	1.04	-76.2	1.5		
	9/20/2016	Fall	0.05 U	4.2 U	0.87 U	32	0.05 U	0.65 U	0.39 J	1,500	0.002 U	190	0.33 U	0.9 U	3.3 J	2,600	59 J	9,900	14.86	6.86	0.377	0.00	-27.0	0.7		
	12/14/2016	Winter	0.05 U	5.2 J	0.87 U	35	0.05 U	0.65 U	0.28 U	1,400	0.0002 U	200	0.33 U	0.9 U	1.4 U	2,700	48 U	610 J	11.38	6.58	0.334	0.27	85.0	1.6		
	3/23/2017	Spring	0.05 U	8.1 J	0.87 U	36	0.05 U	0.65 U	0.52 J	1,100	0.00057	230	0.33 U	0.9 U	5.4 J	3,200	48 U	410 J	11.35	7.61	0.515	0.90	16.9	1.9		
	6/12/2017	Summer	0.05 U	6.1 J	0.87 U	33	0.05 U	0.65 U	0.55 J	1,500	0.0002 U	220	0.33 U	0.9 U	3.7 J	3,000	48 U	14,000	14.40	7.67	0.376	0.04	-104.8	2.2		
	9/20/2017	Fall	0.05 U	11	0.87 U	26	0.05 U	0.65 U	0.28 U	1,100	0.0002 U	190	0.33 U	0.9 U	1.4 U	2,500	46 U	21,000	14.95	7.53	0.300	0.90	-114.7	3.2		
MW-8D	12/8/2015 (e)	Winter	0.1 U	15.5	0.7 U	22.5	0.1 U	0.825 J	0.54 J	4,550	0.00023 J	295	0.10 U	1 U	6.8 J	2,950	27 U	27,500	13.46	7.67	0.425	0.38	-218.3	3.6		
	3/17/2016	Spring	0.1 U	6.3 J	0.73 J	28	0.1 U	0.56 J	0.58 J	2,200	0.0002 U	290	0.1 U	1 U	8.6 J	2,000	45 J	32,000	13.11	7.03	0.442	0.65	-128.0	1.4		
	6/15/2016	Summer	0.05 U	8.0 J	2.1 J	31	0.05 U	0.65 U	0.28 U	1,800	0.0002 U	380	0.33 U	0.9 U	3.1 J	2,000	48 U	25,000	14.15	7.12	0.365	0.64	-28.9	1.0		
	9/20/2016	Fall	0.05 U	4.2 U	0.87 U	31	0.05 U	0.65 U	0.59 J	2,500	0.002 U	350	0.33 U	0.9 U	2.4 J	2,000	56 J	22,000	15.10	7.84	0.398	0.00	-70.0	0.6		
	12/14/2016	Winter	0.05 U	4.2 U	1.1 J	37	0.05 U	0.65 U	0.28 U	2,500	0.00002 U	350	0.33 U	0.9 U	1.4 U	2,000	48 U	20,000	13.17	6.71	0.373	0.22	54.7	0.4		
	3/23/2017	Spring	0.05 U	6.0 J	0.94 J	65	0.05 U	0.65 U	0.37 J	2,400	0.0002 U	400	0.33 U	0.9 U	3.6 J	2,300	48 U	23,000	12.67	7.48	0.542	1.30	24.1	1.1		
	6/12/2017	Summer	0.05 U	7.3 J	0.97 J	34	0.05 U	0.65 U	0.60 J	2,100 J	0.0002 U	380	0.33 U	0.9 U	2.1 J	2,300	48 U	23,000	15.25	7.38	0.375	0.35	-116.4	2.7		
	9/19/2017	Fall	0.05 U	5.4 J	0.94 J	33	0.05 U	0.65 U	0.32 J	2,100	0.0002 U	370	0.33 U	0.9 U	1.6 J	2,200	46 U	18,000	15.12	7.44	0.377	0.60	34.4	-		

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
NRWQ = National Recommended Water Quality.
NL = Not Listed.
EPA = Environmental Protection Agency.
**Selenium value is 2016 EPA Aquatic Life Ambient Water Quality Criterion for lentic freshwater.

Notes:
Detected value exceeds both the ecological screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, calculated for all samples collected from **BG-1D,** see Table 4.
(b) Freshwater chronic criterion continuous concentration value from EPA's 2017 NRWQ aquatic life criteria table.
(c) Freshwater chronic surface water screening value from Table 1a of 2015 EPA Region 4 Supplemental Guide to ERAGS.
(d) Lowest protection of freshwater aquatic life benchmark presented in "A Compendium of Environmental Quality Benchmarks" (McDonald, et al, 1999).
(e) Results shown are the average of the sample and its associated duplicate.
(f) Spurious result most likely related to high turbidity/suspended bentonite sediment immediately following well construction.
* Field filtered using a 10-micron filter

Table 10a - Long Lake Sediment Analytical Results and Human Health Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Sediment Screening Levels (in mg/Kg dry wt.)			Constituent of Potential Concern (COPC)														Other Constituents				
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn		K	NO_3		SO_4	
Background Threshold Value (BTV) (a):			Unknown	4,396	8.7	79	1.31	21	29	12,017	0.19	324	129	5.0	203		327	Unknown		99	
Human Health Risk:																					
IDEM RCG 2017 Residential Screening Level (b)			550	100,000	9.5	21,000	99	100,000	4,300	77,000	3.1	2,500	400	550	32,000		NL	100,000		NL	
Sample ID		Sample Date																			
Eastern Long Lake	SED-LL-1	11/18/2015	0.11 U	1,200	5.4	10	0.17 U	6.4	19	4,400	0.022 J	51	27	0.81 J	59		160	0.61 U		14 J	
		10/12/2016	0.063 U	670	2.4	6.3	0.12 J	2.7	2.5	2,000	0.011 J	13	10	0.28 U	20		99	0.021 U		220	
	SED-LL-2	11/18/2015	0.67 U	2,900	43	41	1.05 U	19	27	20,000	0.13 J	120	130	5.4 J	260		330	3.37 U		320	
		10/12/2016	0.19 U	1,400	18	22	0.39 J	4.7	3.5	6,600	0.029 J	62	5.9	1.0 J	34		170	0.071 U		360	
	SED-LL-3	11/18/2015	0.16 U	2,200	13	51	0.25 U	8.9	17	7,400	0.04 J	29	31	2.4 J	67		210	0.83 U		160	
		10/12/2016	1.1 U	2,600	25	30	0.82 J	8	8.9	11,000	0.043 J	38	38	1.6 J	130		180	0.053 U		1,100	
	SED-LL-4	11/18/2015	0.55 U	3,100	47	58	0.85 U	14	26	22,000	0.11 J	200	84	4.1 J	180		310	2.76 U		360	
		10/12/2016	0.23 U	2,000	17	24	0.34 J	7	3.8	13,000	0.042 J	200	4.4	1.2 J	74		250	0.079 U		520	
	SED-LL-5	11/18/2015 (c)	0.33 U	3600	46	48.5	0.51	15	25	14000	0.115 J	71.5	99	5.25 J	175		360	1.85 U		220	
		10/12/2016 ©	0.315 U	2,900	36	37.5	1.7 J	12	19	11,000	0.0715	61.5	83.5	1.85 J	145		280	23.56		690 J	
	SED-LL-6	11/18/2015	0.11 U	1,400	8.6	16	0.23 J	6	11	4,900	0.031 J	48	44	1.6 J	72		120	0.62 U		37	
		10/12/2016	0.094 U	1,400	6.0	13	0.42 J	4.8	6.9	3,600	0.027 J	38	26	0.43 U	45		140	0.033 U		310	
	SED-LL-7	11/18/2015	0.57 U	3,200	33	46	0.89 U	12	14	22,000	0.064 J	310	46	5.3 J	280		390	3.02 U		150	
		10/12/2016	0.22 U	2,000	20	35	0.28 J	6.0	4.5	30,000	0.029 J	700	4.3	0.98 U	45		240	5.00 J		240	
	SED-LL-8	11/18/2015	0.27 U	3,800	44	50	0.51 J	13	27	20,000	0.087 J	140	130	4.6 J	140		370	1.56 U		510	
		10/12/2016	0.25 U	4,400	50	62	2.00 J	18	37	26,000	0.12	160	160	2.7 J	200		430	3.90 J		860	
Central and Western Long Lake	SED-LL-9	11/18/2015	0.13 U	1,600	15	22	0.33 J	6	6.4	6,300	0.022 J	71	34	1.9 J	94		200	0.81 U		210	
		10/12/2016	0.40 U	2,900	24	52	0.60 J	12	10	17,000	0.062 J	240	29	1.8 U	88		370	0.13 U		350	
	SED-LL-10	11/18/2015	0.06 U	900	8.1	12	0.10 U	4.3	3.4	5,000	0.0047 J	26	16	0.73 J	27		97	0.39 U		30	
		10/12/2016	0.062 U	730	5.4	8.7	0.14 J	2.4	1.5	3,700	0.0052 J	23	12	0.28 U	14		90	0.022 U		140	
	SED-LL-11	11/18/2015	0.08 U	1,200	5.5	9.9	0.44 J	3	4.3	3,100	0.021 J	26	15	0.67 J	42		110	0.42 U		73	
		10/12/2016	0.24 U	2,500	13	23	1.00 J	6.1	6.3	5,900	0.16	46	18	1.1 U	150		300	0.080 U		560	
	SED-LL-12	11/18/2015	0.31 U	4,600	37	68	1.70 J	13	37	21,000	0.16	210	120	4.8 J	200		540	1.88 U		610	
		10/12/2016	0.40 U	4,400	53	69	4.40 J	14	41	38,000	0.12	640	110	4.3 J	300		450	0.12 U		1,400	
	SED-LL-13	11/18/2015	0.19 U	2,100	20	32	0.30 U	8.2	5.4	14,000	0.057 J	79	29	2.4 J	67		170	1.15 U		310	
		10/12/2016	0.24 U	4,500	78	75	1.90 J	12	20	54,000	0.13	210	95	3.2 J	150		300	0.076 U		1,100	
	SED-LL-14	11/18/2015	0.06 U	420	2.8	3.6	0.10 U	1.3	0.3 J	4,100	0.002 U	51	2.8	0.38 U	10		80	0.36 U		23	
		10/12/2016	0.063 U	480	2.5	4	0.048 U	1.0	0.3 J	3,400	0.003 J	37	3.3	0.28 U	6.6		80	0.020 U		100	
	SED-LL-15	11/18/2015	0.24 U	3,300	21	51	0.38 U	12	14	12,000	0.06 J	140	57	4.5 J	170		350	1.46 U		360	
		10/12/2016	0.38 U	2,300	24	50	0.62 J	6.4	13	13,000	0.081 J	160	22	1.7 U	63		240	7.00 J		360	
	SED-LL-16	11/18/2015	0.09 U	950	14	9.4	0.14 U	3.6	4.7	9,200	0.025 J	66	27	0.92 J	52		99	0.56 U		120	
		10/12/2016	0.25 U	3,800	74	52	2.40 J	17	30	60,000	0.046 J	590	140	1.9 J	420		330	0.094 U		1,000	
Eastern Long Lake Decision Unit		Mean	BDL	2,423	26	34.4	0.66	9.8	15.8	13,619	0.0607	140	57.7	2.47	120		252	2.96		379	
		Maximum	BDL	4,400	50	62	2.00	19	37	30,000	0.13	700	160	5.4	280		430	23.56		1,100	
		Exposure Point Concentration (d)			44.1												364			752	
Central and Western Long Lake Decision Unit		Mean	BDL	2,293	25	33.9	0.91	7.6	12.4	16,856	0.0599	163	45.6	1.93	116		238	0.91		422	
		Maximum	BDL	4,600	78	75	4.40	17	41	60,000	0.16	640	140	4.8	420		540	7.0		1,400	
		Exposure Point Concentration (d)			55												396			949	
Is additional refinement of COPC needed?			No	No	No (e)	No	No	No	No	No	No	No	No	No	No		Not COPC				

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
NL = Not Listed.
BDL = All results are below detection limit.
IDEM = Indiana Department of Environmental Management.
RCG = Remediation Closure Guide.
FRP = Former Residuals Pond

Notes:
Concentration exceeds both the listed human health screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 3.
(b) Soil direct contact screening level for residential exposure scenario, Table A-6 (2017 update) of the RCG.
(c) Results shown are the average of the sample and its associated duplicate.
(d) Exposure Point Concentration (EPC) is 95% UCL of the mean, calculated using **the maximum concentration detected at each location**, as requested by IDEM in its August 2, 2017 comment letter.
(e) Based on spatial distribution (levels are higher in off-site Long Lake sediment than the former residuals pond), the elevated arsenic does not appear to be related to the former residuals pond.

Table 10b - Long Lake Sediment Analytical Results and Ecological Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

		Sediment Screening Levels (in mg/Kg dry wt.)	Constituent of Potential Ecological Concern (COPC)													Other Constituents		
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4
		Background Threshold Value (BTV) (a):	Unknown	4,396	8.7	79	1.31	21	29	12,017	0.19	324	129	5.0	203	327	Unknown	99
		Ecological Risk:																
		EPA Region 5 Ecological Screening Level (b)	0.5	NL	9.79	NL	0.99	43	31.6	NL	0.174	NL	35.8	NL	121	NL	NL	NL
		Compendium of Environmental Quality Benchmarks (c)		15,900		20				20,000		NL		0.95		NL	NL	NL
		2015 EPA Region 4 Ecological Screening Value (d)										460				NL	NL	NL
Sample ID	**Sample Date**																	
Eastern Long Lake	SED-LL-1	11/18/2015	0.11 U	1,200	5.4	10	0.17 U	6.4	19	4,400	0.022 J	51	27	0.81 J	59	160	0.61 U	14 J
		10/12/2016	0.063 U	670	2.4	6.3	0.12 J	2.7	2.5	2,000	0.011 J	13	10	0.28 U	20	99	0.021 U	220
	SED-LL-2	11/18/2015	0.67 U	2,900	43	41	1.05 U	19	27	20,000	0.13 J	120	130	5.4 J	260	330	3.37 U	320
		10/12/2016	0.19 U	1,400	18	22	0.39 J	4.7	3.5	6,600	0.029 J	62	5.9	1.0 J	34	170	0.071 U	360
	SED-LL-3	11/18/2015	0.16 U	2,200	13	51	0.25 U	8.9	17	7,400	0.04 J	29	31	2.4 J	67	210	0.83 U	160
		10/12/2016	1.1 U	2,600	25	30	0.82 J	8	8.9	11,000	0.043 J	38	38	1.6 J	130	180	0.053 U	1,100
	SED-LL-4	11/18/2015	0.55 U	3,100	47	58	0.85 U	14	26	22,000	0.11 J	200	84	4.1 J	180	310	2.76 U	360
		10/12/2016	0.23 U	2,000	17	24	0.34 J	7	3.8	13,000	0.042 J	200	4.4	1.2 J	74	250	0.079 U	520
	SED-LL-5 (f)	11/18/2015 (e)	0.33 U	3600	46	48.5	0.51	15	25	14000	0.115 J	71.5	99	5.25 J	175	360	1.85 U	220
		10/12/2016 (e)	0.315 U	2,900	36	37.5	1.7 J	12	19	11,000	0.0715	61.5	83.5	1.85 J	145	280	23.56	690 J
	SED-LL-6	11/18/2015	0.11 U	1,400	8.6	16	0.23 J	6	11	4,900	0.031 J	48	44	1.6 J	72	120	0.62 U	37
		10/12/2016	0.094 U	1,400	6.0	13	0.42 J	4.8	6.9	3,600	0.027 J	38	26	0.43 U	45	140	0.033 U	310
	SED-LL-7	11/18/2015	0.57 U	3,200	33	46	0.89 U	12	14	22,000	0.064 J	310	46	5.3 J	280	390	3.02 U	150
		10/12/2016	0.22 U	2,000	20	35	0.28 J	6.0	4.5	30,000	0.029 J	700	4.3	0.98 U	45	240	5.00 J	240
	SED-LL-8	11/18/2015	0.27 U	3,800	44	50	0.51 J	13	27	20,000	0.087 J	140	130	4.6 J	140	370	1.56 U	510
		10/12/2016	0.25 U	4,400	50	62	2.00 J	18	37	26,000	0.12	160	160	2.7 J	200	430	3.90 J	860
Central and Western Long Lake	SED-LL-9	11/18/2015	0.13 U	1,600	15	22	0.33 J	6	6.4	6,300	0.022 J	71	34	1.9 J	94	200	0.81 U	210
		10/12/2016	0.40 U	2,900	24	52	0.60 J	12	10	17,000	0.062 J	240	29	1.8 U	88	370	0.13 U	350
	SED-LL-10	11/18/2015	0.06 U	900	8.1	12	0.10 U	4.3	3.4	5,000	0.0047 J	26	16	0.73 J	27	97	0.39 U	30
		10/12/2016	0.062 U	730	5.4	8.7	0.14 J	2.4	1.5	3,700	0.0052 J	23	12	0.28 U	14	90	0.022 U	140
	SED-LL-11	11/18/2015	0.08 U	1,200	5.5	9.9	0.44 J	3	4.3	3,100	0.021 J	26	15	0.67 J	42	110	0.42 U	73
		10/12/2016	0.24 U	2,500	13	23	1.00 J	6.1	6.3	5,900	0.16	46	18	1.1 U	150	300	0.080 U	560
	SED-LL-12	11/18/2015	0.31 U	4,600	37	68	1.70 J	13	37	21,000	0.16	210	120	4.8 J	200	540	1.88 U	610
		10/12/2016	0.40 U	4,400	53	69	4.40 J	14	41	38,000	0.12	640	110	4.3 J	300	450	0.12 U	1,400
	SED-LL-13	11/18/2015	0.19 U	2,100	20	32	0.30 U	8.2	5.4	14,000	0.057 J	79	29	2.4 J	67	170	1.15 U	310
		10/12/2016	0.24 U	4,500	78	75	1.90 J	12	20	54,000	0.13	210	95	3.2 J	150	300	0.076 U	1,100
	SED-LL-14	11/18/2015	0.06 U	420	2.8	3.6	0.10 U	1.3	0.3 J	4,100	0.002 U	51	2.8	0.38 U	10	80	0.36 U	23
		10/12/2016	0.063 U	480	2.5	4	0.048 U	1.0	0.3 J	3,400	0.003 J	37	3.3	0.28 U	6.6	80	0.020 U	100
	SED-LL-15	11/18/2015	0.24 U	3,300	21	51	0.38 U	12	14	12,000	0.06 J	140	57	4.5 J	170	350	1.46 U	360
		10/12/2016	0.38 U	2,300	24	50	0.62 J	6.4	13	13,000	0.081 J	160	22	1.7 U	63	240	7.00 J	360
	SED-LL-16	11/18/2015	0.09 U	950	14	9.4	0.14 U	3.6	4.7	9,200	0.025 J	66	27	0.92 J	52	99	0.56 U	120
		10/12/2016	0.25 U	3,800	74	52	2.40 J	17	30	60,000	0.046 J	590	140	1.9 J	420	330	0.094 U	1,000
Eastern Long Lake Decision Unit		Mean	BDL	2,423	26	34.4	0.66	9.8	15.8	13,619	0.0607	140	57.7	2.47	120	252	2.96	379
		Maximum	BDL	4,400	50	62	2.00	19	37	30,000	0.13	700	160	5.4	280	430	23.56	1,100
		Exposure Point Concentration (f)			44.1		1.25		27.6	22,904		472	111	4.9	223	364	10.52	752
Central and Western Long Lake Decision Unit		Mean	BDL	2,293	25	33.9	0.91	7.6	12.4	16,856	0.0599	163	45.6	1.93	116	238	0.91	422
		Maximum	BDL	4,600	78	75	4.4	17	41	60,000	0.16	640	140	4.8	420	540	7.0	1,400
		Exposure Point Concentration (f)			55		2.38		25.0	39,907		407	95.2	3.43	257	396	7.0 J (g)	949
Is additional refinement of COPC needed?			No	No	No (h)	No	No (h)	No	No (i)	Yes	No	Yes	No (i)	No (i)	Yes	Not COPC		

Abbreviations:
BDL = All results are below detection limit.
MDL = Method detection limit.
NL = Not Listed.
U = Not detected above method detection limit (shown).
J = Result shown is estimated concentration between method detection limit and reporting limit.
EPA = Regional Environmental Protection Agency.

Notes:
Concentration exceeds both the listed ecological screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 3.
(b) EPA Region 5 RCRA 2003 Ecological Screening Level for sediment.
(c) Lowest protection of freshwater sediment benchmark presented in "A compendium of Environmental Quality Benchmarks" (McDonald, et. al, 1999).
(d) Ecological Screening Value (ESV) for sediment from Table 2a of EPA 2015, Supplemental Guidance to ERAGS: Region 4, Ecological Risk Assessment.
(e) Results shown are the average of the sample and its associated duplicate.
(f) Exposure Point Concentration (EPC) is 95% UCL of the mean, calculated **using the maximum concentration detected at each location,** as requested by IDEM in its August 2, 2017 comment letter.
(g) Value is the single detection, as a worst-case scenario.
(h) Based on spatial distribution (levels are higher in off-site Long Lake sediment than the former residuals pond), the elevated arsenic and cadmium does not appear to be related to the former residuals pond.
(i) Although several individual points exceed the screening level and the BTV, the EPC for the decision units do not.

Table 11a - Long Lake Surface Water Analytical Results and Human Health Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Surface Water (in µg/L dissolved)			Constituent of Potential Concern (COPC)														Other Constituents			Water Quality Parameters						
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn		K	NO_3	SO_4							
		Background Threshold Value (BTV) (a):	Unknown	16.08	1.33	15.81	Unknown	0.348	0.502	1,100	0.0025	11.19	0.476	Unknown	6.32		852	37.16	1,843							
		Human Health Risk: Current USEPA NRWQ Criteria for Human Health (b)	94*	20,000*	0.18	1,000	5*	100*	1,300	14,000*	2*	50	15*	170	7,400		NL	10,000	NL							
Sample ID		Sample Date																		Temp.	pH	Cond.	DO	ORP	Turb.	Hard.
																				°C	StU	mS	mg/L	eV	NTU	mg/L
Eastern Long Lake	SW-LL-1	11/18/2015 (c)	0.1 U	4.65 J	1.9 J	23	0.1 U	0.1 U	0.2 U	300	0.00055	3.4 J	0.175 J	1 J	5.6 J		2,150	27 U	5,550	11.35	8.86	0.364	11.84	28.7	90.8	130
		6/14/2016	0.05 U	4.2 U	1.7 J	22	0.05 U	0.65 U	0.28 U	310	0.0006	9.6	0.33 U	0.9 U	11		1,200	220	2,900	24.75	7.47	0.224	2.8	97	1.3	120
		10/12/2016	0.05 U	4.2 U	1 J	14	0.05 U	0.65 U	0.36 J	630	0.00036 J	1.7 J	0.33 U	0.9 U	7.8 J		1,400	48 U	630 J	18.83	7.37	0.215	0	137	1.5	99
		3/21/2017	0.05 U	8.3 J	0.87 U	11	0.05 U	0.65 U	0.32 J	140	0.0012	4.6 J	0.33 U	0.9 U	1.4 U		2,100	48 U	960	8.56	7.95	1.32	9.5	113.5	5.83	110
	SW-LL-2	11/18/2015	0.10 U	5.5 J	1.8 J	22	0.10 U	0.10 U	0.21 J	290	0.00055	4.7 J	0.16 J	1.0 U	4.7 J		2,000	27 U	5,600	11.74	8.26	0.361	7.05	1.7	476	130
		6/14/2016	0.05 U	4.7 J	1.5 J	16	0.05 U	0.65 U	0.28 U	410	0.00088	5.6	0.33 U	0.9 U	5.5 J		1,300	48 U	2,700	24.49	7.32	0.227	1.3	123	6.1	120
		10/12/2016	0.05 U	4.2 U	0.89 J	15	0.05 U	0.65 U	0.28 U	490	0.00034 J	0.79 J	0.33 U	0.9 U	6.7 J		1,200	48 U	600 J	20.51	7.73	0.218	0	124	5.4	100
		3/21/2017	0.05 U	4.8 J	0.87 U	12	0.05 U	0.65 U	0.31 J	99	0.00096	4.8 J	0.33 U	0.9 U	1.4 U		2,200	48 U	2,800	8.92	8.01	1.305	9.11	156	3.65	110
	SW-LL-3	11/18/2015	0.10 U	1.1 U	0.73 J	22	0.10 U	0.10 U	0.20 U	54 J	0.00058	2.2 J	0.1 U	1.0 U	5.6 J		3,500	27 U	4,500	12.71	8.33	0.324	2.75	-27.2	232	120
		6/14/2016	0.05 U	4.2 U	1.4 J	15	0.05 U	0.65 U	0.28 U	580	0.0013	5.6	0.33 U	0.9 U	7.1 J		2,300	48 U	1,300	24.61	6.94	0.236	0	-21	10	130
		10/12/2016	0.05 U	4.2 U	0.87 U	13	0.05 U	0.65 U	0.28 U	150	0.00048 J	0.8 J	0.33 U	0.9 U	6.2 J		1,900	48 U	780 J	20.25	7.71	0.198	0	127	12.5	95
		3/21/2017	0.05 U	6.2 J	0.87 U	12	0.05 U	0.65 U	0.28 U	140	0.001	4.2 J	0.33 U	0.9 U	1.4 J		2,200	48 U	400 U	8.77	8.03	1.31	9.56	128.3	3.59	110
	SW-LL-4	11/18/2015	0.10 U	4.5 J	0.7 U	23	0.10 U	0.10 U	0.20 U	360	0.00048 J	5.6	0.16 J	1.0 U	6.5 J		2,100	27 U	5,200	11.55	8.53	0.365	12.1	7.2	234	130
		6/14/2016 (c)	0.05 U	5 J	1.7 J	23	0.05 U	0.65 U	0.285 J	650	0.00048	3.3 J	0.33 U	0.9 U	10		750	48 U	3,100 J	24.58	6.9	0.225	0	118	3.6	120
		10/12/2016	0.05 U	4.2 U	1.3 J	16	0.05 U	0.65 U	0.29 J	560	0.00045 J	1.6 J	0.33 U	0.9 U	3.4 J		940	48 U	710 J	20.09	7.51	0.211	0	114	3.3	100
		3/21/2017	0.05 U	4.4 J	0.87 U	11	0.05 U	0.65 U	0.28 U	88	0.001	1.9 J	0.33 U	0.9 U	1.4 U		2,100	48 U	2,800	8.27	7.94	1.334	9.75	101.8	3.48	110
	SW-LL-5	11/18/2015	0.10 U	3.1 J	0.95 J	23	0.10 U	0.10 U	0.20 U	380	0.00048 J	4.9 J	0.12 J	1.0 U	5.4 J		2,200	27 U	5,400	11.44	8.57	0.36	11.21	14.6	9.8	120
		6/14/2016	0.05 U	4.6 J	1.7 J	20	0.05 U	0.65 U	0.28 U	1,000	0.00051	10	0.33 U	0.9 U	6.7 J		960	48 U	2,500	24.56	6.96	0.228	0	73	2.7	120
		10/12/2016	0.05 U	4.2 U	0.87 U	17	0.05 U	0.65 U	0.28 U	480	0.00066	0.98 J	0.33 U	0.9 U	8.4 J		1,000	48 U	680 J	19.43	7.65	0.208	0	125	0.4	100
		3/21/2017	0.05 U	6.0 J	0.87 U	11	0.05 U	0.65 U	0.28 U	150	0.00099	6.1	0.33 U	0.9 U	2.4 J		2,100	48 U	4,400	8.29	7.91	1.329	9.72	134.2	3.62	110
	SW-LL-6	11/18/2015	0.10 U	3.4 J	0.7 U	23	0.10 U	0.10 U	0.20 U	340	0.00043 J	1.1 J	0.1 U	1.0 U	4.8 J		2,000	27 U	5,100	11.38	8.71	0.361	13.52	19.2	44.4	130
		6/14/2016	0.05 U	4.2 U	1.4 J	24	0.05 U	0.65 U	0.29 J	290	0.00059	1.9 J	0.33 U	0.9 U	5.6 J		970	48 U	2,500	24.55	6.99	0.228	0	103	3.5	120
		10/12/2016	0.05 U	4.2 U	0.87 U	11	0.05 U	0.65 U	0.28 U	190	0.00027 J	0.51 U	0.33 U	0.9 U	3.8 J		1,100	48 U	600 J	18.74	7.29	0.216	0	134	0.6	100
		3/21/2017	0.05 U	4.2 U	0.87 U	11	0.05 U	0.65 U	0.28 U	84	0.001	3.20 J	0.33 U	0.9 U	1.4 U		2,000	48 U	1,100	8.18	7.8	1.36	9.91	101.7	4.17	110
	SW-LL-7	11/18/2015	0.10 U	4.2 J	1.2 J	23	0.10 U	0.10 U	0.20 U	610	0.00035 J	6.5	0.12 J	1.0 U	8.5 J		2,100	27 U	5,200	11.26	8.67	0.365	12.86	-6.7	9.7	130
		6/14/2016	0.05 U	5.7 J	1.5 J	21	0.05 U	0.65 U	0.28 U	1,200	0.0011	5.2	0.33 U	0.9 U	7.0 J		600	48 U	3,100	24.54	7.06	0.224	2.45	7.06	0.9	120
		10/12/2016	0.05 U	4.2 U	0.99 J	15	0.05 U	0.65 U	0.28 U	590	0.00027 J	4.2 J	0.33 U	0.9 U	6.6 J		780	48 U	840 J	19	7.42	0.218	0	128	0.7	110
		3/21/2017	0.05 U	5.7 J	0.87 U	11	0.05 U	0.65 U	0.32	100	0.001	4.4 J	0.33 U	0.9 U	1.8 J		2,100	63 J	4,500	8.14	8	1.35	9.93	97.3	3.85	120
	SW-LL-8	11/18/2015	0.10 U	1.3 J	1.8 J	23	0.10 U	0.10 U	0.20 U	400	0.00045 J	2.2 J	0.1 U	1.0 U	5.2 J		2,000	27 U	5,100	11.68	8.6	0.364	10.28	-8.2	19.3	130
		6/14/2016	0.05 U	4.6 J	1.6 J	20	0.05 U	0.65 U	0.28 U	1,700	0.0022	4.9 J	0.33 U	0.9 U	6.4 J		1,300	48 U	2,100	24.54	6.95	0.219	0	26	8.5	130
		10/12/2016	0.05 U	16.0	1.2 J	16	0.05 U	0.65 U	0.28 U	460	0.00034 J	3.8 J	0.33 U	0.9 U	8.5 J		1,300	48 U	1,700	19.02	7.53	0.217	0	124	4.3	120
		3/21/2017	0.05 U	4.5 J	0.87 U	11	0.05 U	0.65 U	0.28 U	130	0.001	5.4	0.33 U	0.9 U	1.8 J		2,100	48 U	4,500	8.17	7.98	1.335	9.8	108.2	3.18	110
Central and Western Long Lake	SW-LL-9	11/18/2015	0.10 U	3.4 J	0.77 J	23	0.10 U	0.10 U	0.20 U	310	0.00051	1.5 J	0.1 U	1.0 U	5.1 J		2,000	27 U	5,400	11.98	8.67	0.373	14.03	14.2	2.5	130
		6/14/2016	0.05 U	5.9 J	1.2 J	18	0.05 U	0.65 U	0.28 U	850	0.00041 J	4.2 J	0.33 U	0.9 U	9.1 J		650	48 U	3,200	24.75	7.38	0.221	0.71	107	1.8	110
		10/12/2016 (c)	0.05 U	6.05 J	1.25 J	19	0.05 U	0.65 U	0.53 J	960	0.00061	8.5	0.405 J	0.9 U	6.5 J		840	48 U	795 J	18.17	7.41	0.233	0	163	3.3	110
		3/21/2017	0.05 U	7.2 J	0.87 U	12	0.05 U	0.65 U	0.28 U	100	0.0011	7.4	0.33 U	0.9 U	2.8 J		2,100	48 U	4,600	8.09	8.01	1.377	9.86	121.2	3.72	110
	SW-LL-10	11/18/2015	0.10 U	1.7 J	0.7 U	24	0.10 U	0.31 J	3.8 J	290	0.00036 J	3.5 J	0.1 U	1.0 U	5.8 J		2,500	27 U	6,600	12.12	8.64	0.363	10.98	-10.2	86	130
		6/14/2016	0.05 U	11.0	1.6 J	9.5	0.05 U	0.65 U	0.28 J	1,200	0.00058	4.8 J	0.33 U	0.9 U	6.2 J		940	48 U	2,000	27.25	9.70	0.201	11.91	67	5.8	100
		10/12/2016	0.05 U	4.2 U	0.98 J	17	0.05 U	0.65 U	0.32 J	350	0.00036 J	2.1 J	0.33 U	0.9 U	5.5 J		1,000	48 U	1,500	19.43	7.99	0.227	0	110	0	120
		3/21/2017	0.05 U	4.3 J	0.87 U	12	0.05 U	0.65 U	0.28 U	130	0.00096	5.4	0.33 U	0.9 U	1.4 U		2,100	48 U	4,600	7.46	7.79	1.38	9.87	104.8	3.59	110
	SW-LL-11	11/18/2015	0.10 U	2.4 J	0.76 J	24	0.10 U	0.10 U	0.20 U	280	0.00047 J	0.63 J	0.1 U	1.0 U	4.2 J		2,000	27 U	5,400	11.85	8.82	0.385	13.71	8.1	2.4	140
		6/14/2016	0.05 U	5.2 J	1.1 J	14	0.05 U	0.65 U	0.28 U	480	0.00047 J	6.4	0.33 U	0.9 U	7.1 J		660	48 U	3,600	25.31	7.54	0.216	4.33	112	0.6	110
		10/12/2016	0.05 U	4.2 U	0.96 J	22	0.05 U	0.65 U	0.28 U	1,100	0.00047 J	12.0	0.33 U	0.9 U	8.4 J		810	48 U	530 J	18.29	7.33	0.265	0	154	0.8	120
		3/21/2017 (c)	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	105	0.00099	8.35	0.33 U	0.9 U	1.4 U		2,100	48 U	4,400	7.86	8.05	1.38	9.86	117.5	3.54	110
	SW-LL-12	11/18/2015	0.10 U	3.0 J	1.6 J	24	0.10 U	0.10 U	0.20 U	230	0.00038 J	0.59 J	0.1 U	1.0 U	4 J		2,100	27 U	5,900	12.42	8.75	0.426	14.3	6.4	7.9	140
		6/14/2016	0.05 U	4.6 J	1.0 J	8.6	0.05 U	0.65 U	0.28 U	430	0.00045 J	1.6 J	0.33 U	0.9 U	8.2 J		570	48 U	3,900	25.39	8.02	0.221	6.00	111	0.4	100
		10/12/2016	0.05 U	4.2 U	0.87 U	25	0.05 U	0.65 U	0.28 U	710	0.00039 J	9.1	0.33 U	0.9 U	7.5 J		730	48 U	1,300	18.37	7.4	0.307	0.00	124	1.9	130
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	120	0.00099	9.6	0.33 U	0.9 U	1.4 U		2,200	48 U	4,600	7.92	8.04	1.38	9.91	116.2	3.59	110
	SW-LL-13	11/18/2015	0.10 U	1.2 J	0.87 J	24	0.10 U	0.10 U	0.20 U	400	0.00072	7.1	0.1 U	1.0 U	6.3 J		2,100	27 U	5,300	11.87	8.79	0.413	13.1	27.6	71.8	140
		6/14/2016	0.05 U	7.6 J	1.6 J	9.8	0.05 U	0.65 U	0.28 U	1,200	0.00054	3.3 J	0.33 U	0.9 U	5.8 J		970	48 U	2,600	25.98	9.00	0.221	5.25	74	2.9	100
		10/12/2016	0.11 J	4.2 U	0.9 J	23	0.05 U	0.65 U	0.39 J	270	0.00022 J	1.6 J	0.33 U	0.9 U	6.2 J		860	48 U	2,300	19.07	7.89	0.318	0	97	1.1	130
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	120	0.00095	7.2	0.33 U	0.9 U	1.4 U		2,100	48 U	4,600	7.65	7.58	1.366	10.06	110.5	3.86	110
	SW-LL-14	11/18/2015	0.10 U	1.1 U	1.3 J	24	0.10 U	0.10 U	0.20 U	210	0.00079	1.2 J	0.1 U	1.0 U	2.6 J		2,100	27 U	6,000	12.19	8.63	0.428	13.75	8.7	33.6	140
		6/14/2016	0.05 U	13.0	1.3 J	13	0.05 U	0.65 U	0.32 J	620	0.00063	3.7 J	0.33 U	0.9 U	5.9 J		1,100	48 U	5,900	26.98	8.85	0.233	4.6	65	4.7	100
		10/12/2016	0.05 U	6.9 J	1.4 J	29	0.05 U	0.65 U	0.28 U	730	0.00023 J	21	0.33 U	0.9 U	9.4 J		890	48 U	3,200	19.39	7.8	0.352	0	81	0	140
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	98	0.00097	5.6	0.33 U	0.9 U	2.9 J		2,100	48 U	4,700	7.63	7.73	1.37	10	112	3.92	110
	SW-LL-15	11/18/2015	0.10 U	3.1 J	1.6 J	23	0.10 U	0.10 U	0.20 U	240	0.00043 J	0.24 J	0.1 U	1.0 U	2.6 J		2,100	27 U	5,900	12.58	8.86	0.428	13.03	-9.2	192	140
		6/14/2016	0.05 U	12.0	1.6 J	13	0.05 U	0.65 U	0.39 J	1,500	0.00059	6.8	0.39 J	0.9 U	7.8 J		1,100	48 U	3,800	25.5	7.5	0.235	0.00	117	5.7	110
		10/12/2016	0.05 U	4.2 U	0.87 U	27	0.05 U	0.65 U	0.28 U	500	0.00021 J	4.9 J	0.33 U	0.9 U	11		680	48 U	2,100	18.1	7.55	0.337	0.00	120	0.7	140
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	150	0.001	8.6	0.33 U	0.9 U	1.4 U		2,100	48 U	4,400	7.85	8.01	1.363	9.78	103.6	3.88	110
	SW-LL-16	11/18/2015	0.10 U	6.4 J	1.1 J	30	0.10 U	0.10 U	0.20 U	1,500	0.00088	98 (f)	0.21 J	1.0 U	3 J		1,400	27 U	4,100	12.33	8.41	0.477	7.62	14.6	44.5	160
		6/14/2016	0.05 U	9.2 J	1.1 J	9.4	0.05 U	0.65 U	0.38 J	840	0.0025	3.1	0.33 U	0.9 U	3.3 J		1,600	48 U	2,000	27.64	9.5	0.251	0.251	66	22.9	110
		10/12/2016	0.05 U	7.9 J	1.4 J	29	0.05 U	0.65 U	0.28 U	730	0.0014	8.1	0.33 U	0.9 U	7.6 J		1,100	48 U	2,700	19.63	7.91	0.396	0	75	3.6	160
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	200	0.0011	6.3	0.33 U	0.9 U	1.4 U		2,200	48 U	5,000	7.77	7.76	1.371	10.1	106.7	4.11	110
Eastern Long Lake Decision Unit		Mean	BDL	4.8	1.2	17.4	BDL	BDL	0.27	427	0.0007	3.9	0.28	0.9	5.4		1,673	48.6	2,753							
		Maximum	BDL	16.0	1.9	24.0	BDL	BDL	0.36	1,700	0.0022	10.0	0.33	1.0 J	11.0		3,500	220	5,600							
		Exposure Point Concentration (d)			1.78							8.0					2,173		5,437							
Central and Western Long Lake Decision Unit		Mean	0.06	5.3	1.1	18.3	BDL	0.51	0.40	540	0.0007	8.58	0.28	BDL	5.2		1,471	BDL	3,804							
		Maximum	0.11 J	13.0	1.6	30	BDL	0.65 U	3.80	1,500	0.0025	98.0	0.405	BDL	11.0		2,500	BDL	6,600							
		Exposure Point Concentration (d)			1.57							69.6 (f)					2,164		6,028							
Is additional refinement of COPC needed?			No	No	No (e)	No	No	No	No	No	No	No		No	No		Not COPC									

Abbreviations:
BDL = All results are below detection limit.
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
NL = Not Listed.
*No NRWQ criteria listed. IDEM RCG 2017 tapwater screening level used for comparison instead.

Notes:
Concentration exceeds both the listed human health screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 4.
(b) Human health for the consumption of water + organism from EPA's 2017 NRWQ human health criteria table, unless otherwise noted by asterisk.
(c) Results shown are the average of the sample and its associated duplicate.
(d) Exposure Point Concentration (EPC) is 95% UCL of the mean, **calculated using the maximum concentration detected at each location sampled during four seasons**, as requested by IDEM in its August 2, 2017 comment letter.
(e) The arsenic EPC calculated using the mean of seasonal data at each point (rather than the max.) is 1.27 ug/L for the ELLDU and 1.16 ug/L for the CWLLDU, which are both less than the BTV.
(f) Appears to be spurious data point, or result of spurious data point.

Table 11b - Long Lake Surface Water Analytical Results and Ecological Screening Levels
Indiana American Water, Ogden Dunes Water Filtration Plant

Surface Water (in µg/L dissolved)			Constituent of Potential Concern (COPC)												Other Constituents			Water Quality Parameters						
			Ag	Al	As	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Pb	Se	Zn	K	NO_3	SO_4						
Background Threshold Value (BTV) (a):			Unknown	16.08	1.33	15.81	Unknown	0.348	0.502	1,100	0.0025	11.19	0.476	Unknown	6.32	852	37.16	1,843						
Ecological Risk:																								
2017 EPA NRWQ Criteria for Aquatic Life (b)			3.2	87	150	NL	0.25	74	NL	1,000	0.77	NL	2.5	1.5*	120	NL	NL	NL						
2015 EPA Region 4 ESV for Surface Water (c)						220			13			93		5		53,000	NL	NL						
Compendium of Environmental Quality Benchmarks (d)																	40,000	300,000						
Sample ID		Sample Date																	°C	StU	mS	mg/L	eV	NTU	mg/L
Eastern Long Lake	SW-LL-1	11/18/2015 (e)	0.1 U	4.65 J	1.9 J	23	0.1 U	0.1 U	0.2 U	300	0.00055	3.4 J	0.175 J	1 J	5.6 J	2,150	27 U	5,550	11.35	8.86	0.364	11.84	28.7	90.8	130
		6/14/2016	0.05 U	4.2 U	1.7 J	22	0.05 U	0.65 U	0.28 U	310	0.0006	9.6	0.33 U	0.9 U	11	1,200	220	2,900	24.75	7.47	0.224	2.8	97	1.3	120
		10/12/2016	0.05 U	4.2 U	1 J	14	0.05 U	0.65 U	0.36 J	630	0.00036 J	1.7 J	0.33 U	0.9 U	7.8 J	1,400	48 U	630 J	18.83	7.37	0.215	0	137	1.5	99
		3/21/2017	0.05 U	8.3 J	0.87 U	11	0.05 U	0.65 U	0.32 J	140	0.0012	4.6 J	0.33 U	0.9 U	1.4 U	2,100	48 U	960	8.56	7.95	1.32	9.5	113.5	5.83	110
	SW-LL-2	11/18/2015	0.10 U	5.5 J	1.8 J	22	0.10 U	0.10 U	0.21 J	290	0.00055	4.7 J	0.16 J	1.0 U	4.7 J	2,000	27 U	5,600	11.74	8.26	0.361	7.05	1.7	476	130
		6/14/2016	0.05 U	4.7 J	1.5 J	16	0.05 U	0.65 U	0.28 U	410	0.00088	5.6	0.33 U	0.9 U	5.5 J	1,300	48 U	2,700	24.49	7.32	0.227	1.3	123	6.1	120
		10/12/2016	0.05 U	4.2 U	0.89 J	15	0.05 U	0.65 U	0.28 U	490	0.00034 J	0.79 J	0.33 U	0.9 U	6.7 J	1,200	48 U	600 J	20.51	7.73	0.218	0	124	5.4	100
		3/21/2017	0.05 U	4.8 J	0.87 U	12	0.05 U	0.65 U	0.31 J	99	0.00096	4.8 J	0.33 U	0.9 U	1.4 U	2,200	48 U	2,800	8.92	8.01	1.305	9.11	156	3.65	110
	SW-LL-3	11/18/2015	0.10 U	1.1 U	0.73 J	22	0.10 U	0.10 U	0.20 U	54 J	0.00058	2.2 J	0.1 U	1.0 U	5.6 J	3,500	27 U	4,500	12.71	8.33	0.324	2.75	-27.2	232	120
		6/14/2016	0.05 U	4.2 U	1.4 J	15	0.05 U	0.65 U	0.28 U	580	0.0013	5.6	0.33 U	0.9 U	7.1 J	2,300	48 U	1,300	24.61	6.94	0.236	0	-21	10	130
		10/12/2016	0.05 U	4.2 U	0.87 U	13	0.05 U	0.65 U	0.28 U	150	0.00048 J	0.8 J	0.33 U	0.9 U	6.2 J	1,900	48 U	780 J	20.25	7.71	0.198	0	127	12.5	95
		3/21/2017	0.05 U	6.2 J	0.87 U	12	0.05 U	0.65 U	0.28 U	140	0.001	4.2 J	0.33 U	0.9 U	1.4 J	2,200	48 U	400 U	8.77	8.03	1.31	9.56	128.3	3.59	110
	SW-LL-4	11/18/2015	0.10 U	4.5 J	0.7 U	23	0.10 U	0.10 U	0.20 U	360	0.00048 J	5.6	0.16 J	1.0 U	6.5 J	2,100	27 U	5,200	11.55	8.53	0.365	12.1	7.2	234	130
		6/14/2016 (e)	0.05 U	5 J	1.7 J	23	0.05 U	0.65 U	0.285 J	650	0.00048	3.3 J	0.33 U	0.9 U	10	750	48 U	3,100 J	24.58	6.9	0.225	0	118	3.6	120
		10/12/2016	0.05 U	4.2 U	1.3 J	16	0.05 U	0.65 U	0.29 J	560	0.00045 J	1.6 J	0.33 U	0.9 U	3.4 J	940	48 U	710 J	20.09	7.51	0.211	0	114	3.3	100
		3/21/2017	0.05 U	4.4 J	0.87 U	11	0.05 U	0.65 U	0.28 U	88	0.001	1.9 J	0.33 U	0.9 U	1.4 U	2,100	48 U	2,800	8.27	7.94	1.334	9.75	101.8	3.48	110
	SW-LL-5	11/18/2015	0.10 U	3.1 J	0.95 J	23	0.10 U	0.10 U	0.20 U	380	0.00048 J	4.9 J	0.12 J	1.0 U	5.4 J	2,200	27 U	5,400	11.44	8.57	0.36	11.21	14.6	9.8	120
		6/14/2016	0.05 U	4.6 J	1.7 J	20	0.05 U	0.65 U	0.28 U	1,000	0.00051	10	0.33 U	0.9 U	6.7 J	960	48 U	2,500	24.56	6.96	0.228	0	73	2.7	120
		10/12/2016	0.05 U	4.2 U	0.87 U	17	0.05 U	0.65 U	0.28 U	480	0.00066	0.98 J	0.33 U	0.9 U	8.4 J	1,000	48 U	680 J	19.43	7.65	0.208	0	125	0.4	100
		3/21/2017	0.05 U	6.0 J	0.87 U	11	0.05 U	0.65 U	0.28 U	150	0.00099	6.1	0.33 U	0.9 U	2.4 J	2,100	48 U	4,400	8.29	7.91	1.329	9.72	134.2	3.62	110
	SW-LL-6	11/18/2015	0.10 U	3.4 J	0.7 U	23	0.10 U	0.10 U	0.20 U	340	0.00043 J	1.1 J	0.1 U	1.0 U	4.8 J	2,000	27 U	5,100	11.38	8.71	0.361	13.52	19.2	44.4	130
		6/14/2016	0.05 U	4.2 U	1.4 J	24	0.05 U	0.65 U	0.29 J	290	0.00059	1.9 J	0.33 U	0.9 U	5.6 J	970	48 U	2,500	24.55	6.99	0.228	0	103	3.5	120
		10/12/2016	0.05 U	4.2 U	0.87 U	11	0.05 U	0.65 U	0.28 U	190	0.00027 J	0.51 U	0.33 U	0.9 U	3.8 J	1,100	48 U	600 J	18.74	7.29	0.216	0	134	0.6	100
		3/21/2017	0.05 U	4.2 U	0.87 U	11	0.05 U	0.65 U	0.28 U	84	0.001	3.20 J	0.33 U	0.9 U	1.4 U	2,000	48 U	1,100	8.18	7.8	1.36	9.91	101.7	4.17	110
	SW-LL-7	11/18/2015	0.10 U	4.2 J	1.2 J	23	0.10 U	0.10 U	0.20 U	610	0.00035 J	6.5	0.12 J	1.0 U	8.5 J	2,100	27 U	5,200	11.26	8.67	0.365	12.86	-6.7	9.7	130
		6/14/2016	0.05 U	5.7 J	1.5 J	21	0.05 U	0.65 U	0.28 U	1,200	0.0011	5.2	0.33 U	0.9 U	7.0 J	600	48 U	3,100	24.54	7.06	0.224	2.45	7.06	0.9	120
		10/12/2016	0.05 U	4.2 U	0.99 J	15	0.05 U	0.65 U	0.28 U	590	0.00027 J	4.2 J	0.33 U	0.9 U	6.6 J	780	48 U	840 J	19	7.42	0.218	0	128	0.7	110
		3/21/2017	0.05 U	5.7 J	0.87 U	11	0.05 U	0.65 U	0.32	100	0.001	4.4 J	0.33 U	0.9 U	1.8 J	2,100	63 J	4,500	8.14	8	1.35	9.93	97.3	3.85	120
	SW-LL-8	11/18/2015	0.10 U	1.3 J	1.8 J	23	0.10 U	0.10 U	0.20 U	400	0.00045 J	2.2 J	0.1 U	1.0 U	5.2 J	2,000	27 U	5,100	11.68	8.6	0.364	10.28	-8.2	19.3	130
		6/14/2016	0.05 U	4.6 J	1.6 J	20	0.05 U	0.65 U	0.28 U	1,700	0.0022	4.9 J	0.33 U	0.9 U	6.4 J	1,300	48 U	2,100	24.54	6.95	0.219	0	26	8.5	130
		10/12/2016	0.05 U	16.0	1.2 J	16	0.05 U	0.65 U	0.28 U	460	0.00034 J	3.8 J	0.33 U	0.9 U	8.5 J	1,300	48 U	1,700	19.02	7.53	0.217	0	124	4.3	120
		3/21/2017	0.05 U	4.5 J	0.87 U	11	0.05 U	0.65 U	0.28 U	130	0.001	5.4	0.33 U	0.9 U	1.8 J	2,100	48 U	4,500	8.17	7.98	1.335	9.8	108.2	3.18	110
Central and Western Long Lake	SW-LL-9	11/18/2015	0.10 U	3.4 J	0.77 J	23	0.10 U	0.10 U	0.20 U	310	0.00051	1.5 J	0.1 U	1.0 U	5.1 J	2,000	27 U	5,400	11.98	8.67	0.373	14.03	14.2	2.5	130
		6/14/2016	0.05 U	5.9 J	1.2 J	18	0.05 U	0.65 U	0.28 U	850	0.00041 J	4.2 J	0.33 U	0.9 U	9.1 J	650	48 U	3,200	24.75	7.38	0.221	0.71	107	1.8	110
		10/12/2016 (e)	0.05 U	6.05 J	1.25 J	19	0.05 U	0.65 U	0.53 J	960	0.00061	8.5	0.405 J	0.9 U	6.5 J	840	48 U	795 J	18.17	7.41	0.233	0	163	3.3	110
		3/21/2017	0.05 U	7.2 J	0.87 U	12	0.05 U	0.65 U	0.28 U	100	0.0011	7.4	0.33 U	0.9 U	2.8 J	2,100	48 U	4,600	8.09	8.01	1.377	9.86	121.2	3.72	110
	SW-LL-10	11/18/2015	0.10 U	1.7 J	0.7 U	24	0.10 U	0.31 J	3.8 J	290	0.00036 J	3.5 J	0.1 U	1.0 U	5.8 J	2,500	27 U	6,600	12.12	8.64	0.363	10.98	-10.2	86	130
		6/14/2016	0.05 U	11.0	1.6 J	9.5	0.05 U	0.65 U	0.28 J	1,200	0.00058	4.8 J	0.33 U	0.9 U	6.2 J	940	48 U	2,000	27.25	9.70	0.201	11.91	67	5.8	100
		10/12/2016	0.05 U	4.2 U	0.98 J	17	0.05 U	0.65 U	0.32 J	350	0.00036 J	2.1 J	0.33 U	0.9 U	5.5 J	1,000	48 U	1,500	19.43	7.99	0.227	0	110	0	120
		3/21/2017	0.05 U	4.3 J	0.87 U	12	0.05 U	0.65 U	0.28 U	130	0.00096	5.4	0.33 U	0.9 U	1.4 U	2,100	48 U	4,600	7.46	7.79	1.38	9.87	104.8	3.59	110
	SW-LL-11	11/18/2015	0.10 U	2.4 J	0.76 J	24	0.10 U	0.10 U	0.20 U	280	0.00047 J	0.63 J	0.1 U	1.0 U	4.2 J	2,000	27 U	5,400	11.85	8.82	0.385	13.71	8.1	2.4	140
		6/14/2016	0.05 U	5.2 J	1.1 J	14	0.05 U	0.65 U	0.28 U	480	0.00047 J	6.4	0.33 U	0.9 U	7.1 J	660	48 U	3,600	25.31	7.54	0.216	4.33	112	0.6	110
		10/12/2016	0.05 U	4.2 U	0.96 J	22	0.05 U	0.65 U	0.28 U	1,100	0.00047 J	12.0	0.33 U	0.9 U	8.4 J	810	48 U	530 J	18.29	7.33	0.265	0	154	0.8	120
		3/21/2017 (e)	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	105	0.00099	8.35	0.33 U	0.9 U	1.4 U	2,100	48 U	4,400	7.86	8.05	1.38	9.86	117.5	3.54	110
	SW-LL-12	11/18/2015	0.10 U	3.0 J	1.6 J	24	0.10 U	0.10 U	0.20 U	230	0.00038 J	0.59 J	0.1 U	1.0 U	4 J	2,100	27 U	5,900	12.42	8.75	0.426	14.3	6.4	7.9	140
		6/14/2016	0.05 U	4.6 J	1.0 J	8.6	0.05 U	0.65 U	0.28 U	430	0.00045 J	1.6 J	0.33 U	0.9 U	8.2 J	570	48 U	3,900	25.39	8.02	0.221	6.00	111	0.4	100
		10/12/2016	0.05 U	4.2 U	0.87 U	25	0.05 U	0.65 U	0.28 U	710	0.00039 J	9.1	0.33 U	0.9 U	7.5 J	730	48 U	1,300	18.37	7.4	0.307	0.00	124	1.9	130
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	120	0.00099	9.6	0.33 U	0.9 U	1.4 U	2,200	48 U	4,600	7.92	8.04	1.38	9.91	116.2	3.59	110
	SW-LL-13	11/18/2015	0.10 U	1.2 J	0.87 J	24	0.10 U	0.10 U	0.20 U	400	0.00072	7.1	0.1 U	1.0 U	6.3 J	2,100	27 U	5,300	11.87	8.79	0.413	13.1	27.6	71.8	140
		6/14/2016	0.05 U	7.6 J	1.6 J	9.8	0.05 U	0.65 U	0.28 U	1,200	0.00054	3.3 J	0.33 U	0.9 U	5.8 J	970	48 U	2,600	25.98	9.00	0.221	5.25	74	2.9	100
		10/12/2016	0.11 J	4.2 U	0.9 J	23	0.05 U	0.65 U	0.39 J	270	0.00022 J	1.6 J	0.33 U	0.9 U	6.2 J	860	48 U	2,300	19.07	7.89	0.318	0	97	1.1	130
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	120	0.00095	7.2	0.33 U	0.9 U	1.4 U	2,100	48 U	4,600	7.65	7.58	1.366	10.06	110.5	3.86	110
	SW-LL-14	11/18/2015	0.10 U	1.1 U	1.3 J	24	0.10 U	0.10 U	0.20 U	210	0.00079	1.2 J	0.1 U	1.0 U	2.6 J	2,100	27 U	6,000	12.19	8.63	0.428	13.75	8.7	33.6	140
		6/14/2016	0.05 U	13.0	1.3 J	13	0.05 U	0.65 U	0.32 J	620	0.00063	3.7 J	0.33 U	0.9 U	5.9 J	1,100	48 U	5,900	26.98	8.85	0.233	4.6	65	4.7	100
		10/12/2016	0.05 U	6.9 J	1.4 J	29	0.05 U	0.65 U	0.28 U	730	0.00023 J	21	0.33 U	0.9 U	9.4 J	890	48 U	3,200	19.39	7.8	0.352	0	81	0	140
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	98	0.00097	5.6	0.33 U	0.9 U	2.9 J	2,100	48 U	4,700	7.63	7.73	1.37	10	112	3.92	110
	SW-LL-15	11/18/2015	0.10 U	3.1 J	1.6 J	23	0.10 U	0.10 U	0.20 U	240	0.00043 J	0.24 J	0.1 U	1.0 U	2.6 J	2,100	27 U	5,900	12.58	8.86	0.428	13.03	-9.2	192	140
		6/14/2016	0.05 U	12.0	1.6 J	13	0.05 U	0.65 U	0.39 J	1,500	0.00059	6.8	0.39 J	0.9 U	7.8 J	1,100	48 U	3,800	25.5	7.5	0.235	0.00	117	5.7	110
		10/12/2016	0.05 U	4.2 U	0.87 U	27	0.05 U	0.65 U	0.28 U	500	0.00021 J	4.9 J	0.33 U	0.9 U	11	680	48 U	2,100	18.1	7.55	0.337	0.00	120	0.7	140
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	150	0.001	8.6	0.33 U	0.9 U	1.4 U	2,100	48 U	4,400	7.85	8.01	1.363	9.78	103.6	3.88	110
	SW-LL-16	11/18/2015	0.10 U	6.4 J	1.1 J	30	0.10 U	0.10 U	0.20 U	1,500	0.00088	98 (g)	0.21 J	1.0 U	3 J	1,400	27 U	4,100	12.33	8.41	0.477	7.62	14.6	44.5	160
		6/14/2016	0.05 U	9.2 J	1.1 J	9.4	0.05 U	0.65 U	0.38 J	840	0.0025	3.1	0.33 U	0.9 U	3.3 J	1,600	48 U	2,000	27.64	9.5	0.251	0.251	66	22.9	110
		10/12/2016	0.05 U	7.9 J	1.4 J	29	0.05 U	0.65 U	0.28 U	730	0.0014	8.1	0.33 U	0.9 U	7.6 J	1,100	48 U	2,700	19.63	7.91	0.396	0	75	3.6	160
		3/21/2017	0.05 U	4.2 U	0.87 U	12	0.05 U	0.65 U	0.28 U	200	0.0011	6.3	0.33 U	0.9 U	1.4 U	2,200	48 U	5,000	7.77	7.76	1.371	10.1	106.7	4.11	110
Eastern Long Lake Decision Unit		Mean	BDL	4.8	1.17	17.4	BDL	BDL	0.27	427	0.00070	3.88	0.28	0.9	5.4	1,673	48.6	2,753							
		Maximum	BDL	16.0	1.9	24	BDL	BDL	0.36	1,700	0.0022	10	0.33	1.0 U	11.0	3,500	220 U	5,600							
		Exposure Point Concentration (f)								1,125		10.38													
Central and Western Long Lake Decision Unit		Mean	0.06	5.3	1.1	18.3	BDL	0.51	0.40	540	0.00070	8.58	0.28	BDL	5.2	1,471	BDL	3,804							
		Maximum	0.11 J	13.0	1.6	30	BDL	0.65 U	3.80	1,500	0.00250	98.0	0.405	BDL	11.0	2,500	BDL	6,600							
		Exposure Point Concentration (f)								1,316		10.4													
Is additional refinement of COPC needed?			No	No	No	No	No	No	No	No (h)	No	No	No	No	No	Not COPC									

Abbreviations:
J = Result shown is estimated concentration between method detection limit and reporting limit.
U = Not detected above method detection limit (shown).
IDEM = Indiana Department of Environmental Management.
NL = Not Listed.
RCG = Remediation Closure Guide.
EPA = Environmental Protection Agency.
NRWQ = National Recommended Water Quality.
*Selenium value is 2016 EPA Aquatic Life Ambient Water Quality Criterion for lentic freshwater.

Notes:
Concentration exceeds both the listed ecological screening level and the BTV.
(a) Background threshold value (BTV) = 95% UCL of the mean of the background reference area results, see Table 4.
(b) Freshwater chronic criterion continuous concentration value from EPA's 2017 NRWQ aquatic life criteria table.
(c) Freshwater chronic surface water screening value from Table 1a of 2015 EPA Region 4 Supplemental Guide to ERAGS.
(d) Lowest protection of freshwater aquatic life benchmark presented in "A Compendium of Environmental Quality Benchmarks" (McDonald, et al, 1999).
(e) Results shown are the average of the sample and its associated duplicate.
(f) Exposure Point Concentration (EPC) is 95% UCL of the mean, calculated **using the maximum concentration detected at each location sampled during four seasons,** as requested by IDEM in its August 2, 2017 comment letter.
(g) Appears to be spurious data point.
(h) The EPCs for iron calculated for each decision unit using the mean of seasonal data at each point (rather than the max.) are are 531 ug/L for the ELLDU and 621 ug/L for the WCLLDU, which are both less than the BTV.

Appendices

Appendix A

Boring Logs and Well Construction Diagrams

ERM, Inc.
11350 N. Meridian Street, Suite 320
Carmel, Indiana 46032
(317) 706-2000

Soil Boring Log

Boring No: BG-1 S/D

Date: 11/17/2015 **Proj. No.:** 273018 **Project:** Ogden Dunes Residual Pond
Client: Indiana American Water **Location:** 84 Diana Rd. Ogden Dunes, IN
Drilling Company: NA **Driller:** NA
Logged By: Aaron Alexander / Martin Ryan LPG #2084 **Drilling Method:** Direct Push
Surface Elevation: 609.75 **Top of Casing Elevation:** Shallow - 609.50 / Deep - 609.32
Total Depth: 30' **Diameter:** 4" **Sampling Method:** Dual-Tube / MacroCore
Comments: BG-1S - Monitoring Well Blind Drilled to 10' bgs ~4' from BG-1D; Note: Used five foot rods for the last two pushes 20-25' and 25-30' bgs. Borings were located mowed grass 20 feet west of Inland Marsh trailhead boardwalk, south of Dunes Highway.

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	60.3			**0-2' Sand**, trace gravel, some roots, fine-medium sand, well sorted, moist, no stains, no odors, 10YR 3/2 very dark grayish brown
2.0			100%	
3.0	66.6			**2-9' Sand**, trace cinders at top of unit, fine-medium grained, well sorted, moist, no stained, no odors, 10 YR 5/4 yellowish brown Saturated at ~6' bgs
4.0				
5.0	78.4			
6.0			60%	
7.0	49.9			
8.0				
9.0	31.1			**9-16' Sand**, fine-coarse grained, no stains, no odors, saturated, 10 YR 5/1 gray
10.0				
11.0	10.9		80%	
12.0				
13.0	9.0			
14.0				
15.0	0.8		50%	
16.0				**16-23' gravelly Sand**, gravel up to ~1/2" medium-coarse sand, no stains, no odors, saturated, 10YR 5/1 gray
17.0	0.6			
18.0				
19.0	0.7		90%	
20.0				
21.0	1.1			
22.0				
23.0	1.0		100%	**23-25' Sand**, trace gravel up to ~1/2", fine-medium sand, no stains, no odors, saturated, 10 YR 5/1 gray
24.0				
25.0	1.0			**25-27' gravelly Sand**, gravel up to ~1/2", medium-coarse sand, no stains, no odors, 10 YR 5/1 gray
26.0				
27.0	0.8			**27-30' Sand**, fine grained, well sorted, no stains, no odors, saturated, 10 YR 5/1 gray gravel seams at ~28', 28.5', 29'
28.0			100%	
29.0	0.9			
30.0				
31.0				**End of Boring at 30' - Monitoring Wells installed at 10' and 30'**
32.0				
33.0				
34.0				

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Soil Boring Log

Boring No: MW-1D

Date: 11/17/2015 **Proj. No.:** 273018
Client: Indiana American Water
Drilling Company: NA
Logged By: Aaron Alexander / Martin Ryan LPG #2084
Surface Elevation: 607.17
Total Depth: 32' **Diameter:** 4"
Comments: Last push was with 5 ft. rod (27-32' bgs)

Project: Ogden Dunes Residual Pond
Location: 84 Diana Rd. Ogden Dunes, IN
Driller: NA
Drilling Method: Direct Push
Top of Casing Elevation: 606.66
Sampling Method: Dual-Tube / MacroCore

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	20.8		100%	**0-4.5' Sand**, trace gravel up to ~1", fine-medium grained, well sorted, loose, moist, no stains, no odors, 10YR 4/1 gray
2.0				
3.0	20.9			
4.0				
5.0	23.6		100%	**4.5-8' organic Silt**, some sand, compacted organics (peat) from lake bottom, moist, no stains, organic odor, 10YR 2/1 black saturated at ~6'bgs
6.0				
7.0	20.6			
8.0			80%	**8-20' Sand**, fine-medium grained, well sorted, loose, no stains, no odors, saturated, 10YR 5/3 brown
9.0	21.7			
10.0				
11.0	21.2			
12.0			90%	
13.0	21.4			
14.0				
15.0	21.8			
16.0			80%	
17.0	21.0			
18.0				
19.0	22.8			
20.0			100%	**20-25.5' Sand**, fine-medium grained, well sorted, loose dense, no stains, no odors, 10 YR 5/2 grayish brown gravel lens from 24.7-24.75'
21.0	18.9			
22.0				
23.0	17.1			
24.0			100%	**25-27.5' gravelly Sand**, gravel; up to ~ 1/4", coarse grained, well sorted, medium dense, saturated, no stains, no odors, 10YR5/1 gray
25.0	18.1			
26.0				
27.0	18.9			
28.0			100%	**27.5-32' Sand**, fine grained, well sorted, medium dense, saturated, no stains, no odors, 10YR 5/1 gray gravel up to ~1" @ 31'bgs
29.0	16.1			
30.0				
31.0	16.3			
32.0				
33.0				**End of Boring at 32' - Monitoring Well Installed**
34.0				

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Soil Boring Log

Boring No: MW-2D

Date: 11/17/2015 **Proj. No.:** 273018
Client: Indiana American Water
Drilling Company: NA
Logged By: Aaron Alexander / Martin Ryan LPG #2084
Surface Elevation: 606.1
Total Depth: 32' **Diameter:** 4"
Comments: Last push was with 5 ft. rod (27-32' bgs)

Project: Ogden Dunes Residual Pond
Location: 84 Diana Rd. Ogden Dunes, IN
Driller: NA
Drilling Method: Direct Push
Top of Casing Elevation: 605.91
Sampling Method: Dual-Tube / MacroCore

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	3.2		100%	**0-4' Loamy Sand**, trace gravel up to ~1", well sorted, medium grained, moist, dark organic staining (peat), loose-medium dense, no odors, 10 YR 4/4 dark yellowish brown
2.0				
3.0	10.6			
4.0			80%	**4-6' Sand**, well sorted, fine grained, moist, loose-medium dense, dark staining (peat) ending at 6' bgs, no odors, 10 YR 6/3 pale brown Saturated at ~6' bgs
5.0	20.4			
6.0				**6-29' Sand**, fine grained, well sorted, saturated, medium dense, no stains, no odors, 10 YR 5/2 grayish brown
7.0	18.2			
8.0			80%	
9.0	19.3			
10.0				
11.0	19.6			
12.0			90%	
13.0	12.5			
14.0				
15.0	10.2			
16.0			90%	
17.0	10.1			
18.0				
19.0	16.3			
20.0			90%	
21.0	20.4			
22.0				
23.0	15.3			
24.0			90%	
25.0	23.8			
26.0				
27.0	22.3			
28.0			100%	
29.0	24.5			**29-32' Sand**, some fine gravel up to ~1/4", fine-coarse sand, moderate-poorly sorted, medium dense, no stains, no odors, 10YR 6/2 light brownish gray
30.0				
31.0	28.2			
32.0				
33.0				**End of Boring at 32' - Monitoring Well Installed**
34.0				

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Soil Boring Log

Boring No: MW-3D

Date: 11/17/2015 **Proj. No.:** 273018
Client: Indiana American Water
Drilling Company: NA
Logged By: Aaron Alexander / Martin Ryan LPG #2084
Surface Elevation: 605.77
Total Depth: 32' **Diameter:** 4"
Comments: Last two pushes were in 5 ft. intervals (22-27') & (27-32')

Project: Ogden Dunes Residual Pond
Location: 84 Diana Rd. Ogden Dunes, IN
Driller: NA
Drilling Method: Direct Push
Top of Casing Elevation: 605.54
Sampling Method: Dual-Tube / MacroCore

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	20.1		100%	**0-4" Limestone gravel** up to ~3"
2.0				**4"-2.5' silty Clay loam**, slightly plastic, slightly cohesive, slightly firm, slightly moist, increased organics darker in color, no odors, 10 YR 4/4 dark yellowish brown
3.0	19.4			**2.5-21.5' Sandy loam**, trace gravel up to ~1/4", fine-medium grained sand, well sorted, medium dense, saturated at ~5'bgs, black, high organic humus/peat from 5-6' bgs, no stains, no odors, 10 YR 6/3 pale brown
4.0				
5.0	21.2			
6.0			90%	
7.0	10.2			
8.0				
9.0	8.6		70%	
10.0				
11.0	10.2			
12.0				
13.0	8.4		80%	
14.0				
15.0	7.6			
16.0				
17.0	5.4		70%	
18.0				
19.0	5.8			
20.0				
21.0	7.9		10%	**21.5-28' gravelly Sand**, rounded gravel up to ~1/2", fine-coarse sand, poorly-moderatly sorted, dense, saturated, no stains, no odors, 10 YR 5/2 grayish brown
22.0				
23.0	10.2			
24.0				
25.0	12.3		75%	
26.0				
27.0	15.1			
28.0				**28-32' Sand**, fine-medium grained, well sorted, saturated, dense-very dense, no stains, no odors, 10YR 5/1 gray
29.0	16.7		70%	
30.0				
31.0	16.4			
32.0				
33.0				**End of Boring at 32' - Monitoring Well Installed**
34.0				

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Soil Boring Log

Boring No: MW-4D

Date: 11/17/2015 **Proj. No.:** 273018
Client: Indiana American Water
Drilling Company: NA
Logged By: Aaron Alexander / Martin Ryan LPG #2084
Surface Elevation: 605.72
Total Depth: 32' **Diameter:** 4"
Comments: Last two pushes were with 5 ft. rods from 22-27' & 27-32'

Project: Ogden Dunes Residual Pond
Location: 84 Diana Rd. Ogden Dunes, IN
Driller: NA
Drilling Method: Direct Push
Top of Casing Elevation: 605.55
Sampling Method: Dual-Tube / MacroCore

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.0			**0-4" Limestone gravel** up to ~3"
2.0				**4"-2' clayey Silt**, slightly firm, slightly plastic, slightly cohesive, dry, no stains, no odors 10YR 4/4 dark yellowish brown
3.0	0.0		100%	**2-5' loamy Sand**, medium-coarse grained, moderate-poorly sorted, medium dense, saturated at ~5'bgs, increase in dark staining (peat) @ 5' bgs, no odors, 10 YR 6/5 pale brown
4.0				
5.0	0.0			**5-30.5' Sand**, fine-coarse grained, moderately sorted, trace gravel up to ~1/4" saturated, no odors, dark staining (peat) @ 7-8' bgs, increased gravel from 19-19.5'bgs, increased density (dense-very dense) @ 28.5' bgs, 10YR 5/2 grayish brown
6.0				
7.0	0.0		70%	
8.0				
9.0	0.2			
10.0			65%	
11.0	0.3			
12.0				
13.0	0.1			
14.0			90%	
15.0	0.2			
16.0				
17.0	0.1			
18.0			90%	
19.0	0.2			
20.0				
21.0	0.3			
22.0			85%	
23.0	0.1			
24.0				
25.0	0.0		70%	
26.0				
27.0	0.0			
28.0				
29.0	0.0			
30.0			75%	
31.0	0.4			**30.5-32' sandy Gravel**, gravel content increaseing with depth, gravel up to ~1/2", poorly sorted, saturated, no stains, no odors, 10 YR 5/1 gray
32.0				
33.0				**End of Boring at 32' - Monitoring Well Installed**
34.0				

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Soil Boring Log

Boring No: MW-5D

Date: 12/2/2015 **Proj. No.:** 273018
Client: Indiana American Water
Drilling Company: Envirodynamics Inc.
Logged By: Aaron Alexander / Tanner Parker / Martin Ryan LPG #2084
Surface Elevation: 607.67
Total Depth: 32' **Diameter:** 4"
Comments: Last three pushes were with 5 ft. rods from 17-22', 22-27', and 27-32'

Project: Ogden Dunes Residual Pond
Location: 84 Diana Rd. Ogden Dunes, IN
Driller: Rob Mores
Drilling Method: Direct Push
Top of Casing Elevation: 607.58
Sampling Method: Dual-Tube / MacroCore

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.0			**0-1.5' silty Sand,** high organics, some limestone gravel, poorly sorted, moist, no stains, no odors, 10YR 3/3 dark brown
2.0				**1.5-2' Sand**, trace organics, fine-medium grained, well sorted, no stains, no odors, 10YR 4/2 dark grayish brown,
3.0	0.0		100%	**2-7' Sandy Loam**, fine-medium grained, moist, well sorted, increased organic content starting at 5.5' bgs, no odors, 10YR 7/6 yellow
4.0				
5.0	0.0			
6.0			60%	
7.0	0.0			**7-9' Loamy Sand**, fine-very fine grained, saturated @ ~7', black, high organic humus/peat from 7.5-9' bgs, no stains, no odors, 10YR 3/1 very dark gray
8.0				
9.0	0.0			**9-15' Sand**, fine-medium grained, well sorted, saturated, no stains, no odors, 10YR 5/1 gray
10.0			90%	
11.0	0.0			
12.0				
13.0	0.0			
14.0			90%	
15.0	0.0			**15-18.5' Sand**, fine-coarse grained, moderately sorted, saturated, medium dense-dense, no stains, no odors, 10YR 5/1 gray
16.0				
17.0	0.0			
18.0			90%	
19.0	0.0			**18.5-23' gravelly Sand**, gravel up to ~1/4", medium-coarse grained sand, poorly sorted, saturated, no stains, no odors, saturated, 10YR 5/1 gray
20.0				
21.0	0.0			
22.0				
23.0	0.0			**23-32' Sand**, fine-medium grained, moderately sorted, sand becomes very dense @ 26' bgs, no stains, no odors, saturated, 10YR 5/1 gray
24.0			90%	
25.0	0.0			
26.0				
27.0	0.0			
28.0				
29.0	0.0		60%	
30.0				
31.0	0.0			
32.0				
33.0				**End of Boring at 32' - Monitoring Well Installed**
34.0				

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Soil Boring Log

Boring No: MW-6 S/D

Date: 12/2/2015 **Proj. No.:** 273018 **Project:** Ogden Dunes Residual Pond
Client: Indiana American Water **Location:** 84 Diana Rd. Ogden Dunes, IN
Drilling Company: Envirodynamics Inc. **Driller:** Rob Mores
Logged By: Aaron Alexander / Tanner Parker / Martin Ryan LPG #2084 **Drilling Method:** Direct Push
Surface Elevation: 605.33 **Top of Casing Elevation:** Shallow - 605.16 / Deep - 605.17
Total Depth: 35' **Diameter:** 4" **Sampling Method:** Dual-Tube / MacroCore
Comments: MW-6S Blind Drilled to TD located ~4' from MW-6D, last three pushes for MW-6D were with larger 5' rods from 20-25', 25-30', and 30-35'

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.0		100%	**0-1' silty Sand,** high organics, fine-medium sand, moderately sorted, moist, no stains, no odors, 10YR 2/2 very dark brown
2.0				**1-12' Loamy Sand,** fine-medium grained, well sorted, moist, loose, no stains, no odors, 10YR 7/4 very pale brown saturated @ ~4'
3.0	0.0			
4.0				
5.0	0.0			
6.0			90%	
7.0	0.0			
8.0				
9.0	0.0		90%	
10.0				
11.0	0.7			
12.0				**12-17' Sand**, medium-coarse grained, moderately sorted, saturated, medium dense, no stains, no odors, 10YR 7/3 very pale brown
13.0	0.5		90%	
14.0				
15.0	0.3			
16.0				
17.0	0.1		90%	**17-18' gravelly Sand,** coarse grained, moderate-poorly sorted, gravel up to ~1/2", saturated, no stains, no odors
18.0				
19.0	0.2			**18-20' Sand**, fine-medium grained, some coarse sand up to ~1/8", moderate-poorly sorted, saturated, medium dense, no stains, no odors, 10YR 7/3 very pale brown
20.0				
21.0	0.0		90%	**20-23.5' sandy Gravel**, coarse sand gravel up to ~1/2 poorlysorted, no stains, no odors, saturated, 10YR 5/1 gray
22.0				
23.0	0.0			
24.0				**23.5-25' Sand**, medium-fine grained, moderate-well sorted, no stains, no odors, saturated, dense, 10YR 6/3 light brown
25.0	0.0		80%	**25-35' Sand**, some gravel up to ~3/4" medium-coarse grained, moderately sorted, saturated, very dense @ 29' bgs, no stains, no odors, 10YR 5/2 grayish brown
26.0				
27.0	0.1			
28.0				
29.0	0.0			
30.0			90%	
31.0	0.0			
32.0				
33.0	0.0			
34.0				
35.0	0.0			**End of Boring at 35' - Monitoring Wells Installed at 12' and 30'**

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Soil Boring Log

Boring No: MW-7 S/D

Date: 12/2/2015 **Proj. No.:** 273018 **Project:** Ogden Dunes Residual Pond
Client: Indiana American Water **Location:** 84 Diana Rd. Ogden Dunes, IN
Drilling Company: Envirodynamics Inc. **Driller:** Rob Mores
Logged By: Aaron Alexander / Tanner Parker / Martin Ryan LPG #2084 **Drilling Method:** Direct Push
Surface Elevation: 608.77 **Top of Casing Elevation:** Shallow - 608.48 / Deep - 608.39
Total Depth: 33' **Diameter:** 4" **Sampling Method:** Dual-Tube / MacroCore
Comments: MW-7S Blind Drilled to TD located ~4' from MW-7D, Last two pushes were 5 ft. (23-28') & (28-33')

Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.0			**0-1' Sand,** some silt, dark staining, well sorted, no stains, no odors, moist, 10YR 3/3 dark brown
2.0				**1-11' Sand**, fine-medium grained, well sorted, moist, loose, no stains, no odors, 10YR 6/4 light yellowish brown
3.0	0.0		100%	
4.0				
5.0	0.5			
6.0			30%	
7.0	10.1			
8.0				
9.0	11.6			
10.0			50%	
11.0	12.2			**11-13' silty Sand**, black, high organic humus/peat from 11-13' bgs, fine-medium grained, well sorted, loose, saturated, no stains, no odors, 10YR 3/3 dark brown
12.0				
13.0	13.1			**13-17' Sand**, fine-medium grained, well sorted, saturated, loose, no stains, no odors, continued organic content through 16.5' bgs, 10YR 6/3 pale brown
14.0			30%	
15.0	14.6			
16.0				
17.0	15.9			**17-22' Sand**, fine-course grained, moderately sorted, saturated, loose-medium dense, no stains no odors, 10 YR 5/1 gray
18.0			95%	
19.0	16.8			
20.0				
21.0	18.1			
22.0			90%	**22-24' Sand**, fine-medium grained, well sorted, trace gravel at ~23-23.25', saturated, medium dense, no stains, no odors, 10YR 5/1 gray
23.0	16.5			
24.0				**24-25' gravelly Sand**, gravel up to ~1/2" fine-course grained, poorly sorted, saturated, no stains, no odors 10 YR 4/1 gray
25.0	16.8			**25-33' Sand**, fine-medium grained, well sorted, saturated, medium dense, no stains, no odors, 10 YR 6/1 gray
26.0			85%	gravel seam at 25.25-25.5'bgs
27.0	15.6			gravel seam at 27-28'bgs
28.0				
29.0	14.8			
30.0			90%	
31.0	16.2			
32.0				
33.0	12.7			**End of Boring at 33' - Monitoring Wells Installed at 17' and 32'**
34.0				

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Soil Boring Log

Boring No: MW-8 S/D

Date: 12/2/2015 **Proj. No.:** 273018 **Project:** Ogden Dunes Residual Pond
Client: Indiana American Water **Location:** 84 Diana Rd. Ogden Dunes, IN
Drilling Company: Envirodynamics Inc. **Driller:** Rob Mores
Logged By: Aaron Alexander / Tanner Parker / Martin Ryan LPG #2084 **Drilling Method:** Direct Push
Surface Elevation: 610.51 **Top of Casing Elevation:** Shallow - 610.11 / Deep - 609.87
Total Depth: 34' **Diameter:** 4" **Sampling Method:** Dual-Tube / MacroCore
Comments: MW-8S Blind Drilled to TD located ~4' from MW-8D, last push for MW-8D was with larger 5' casing from 29-34'

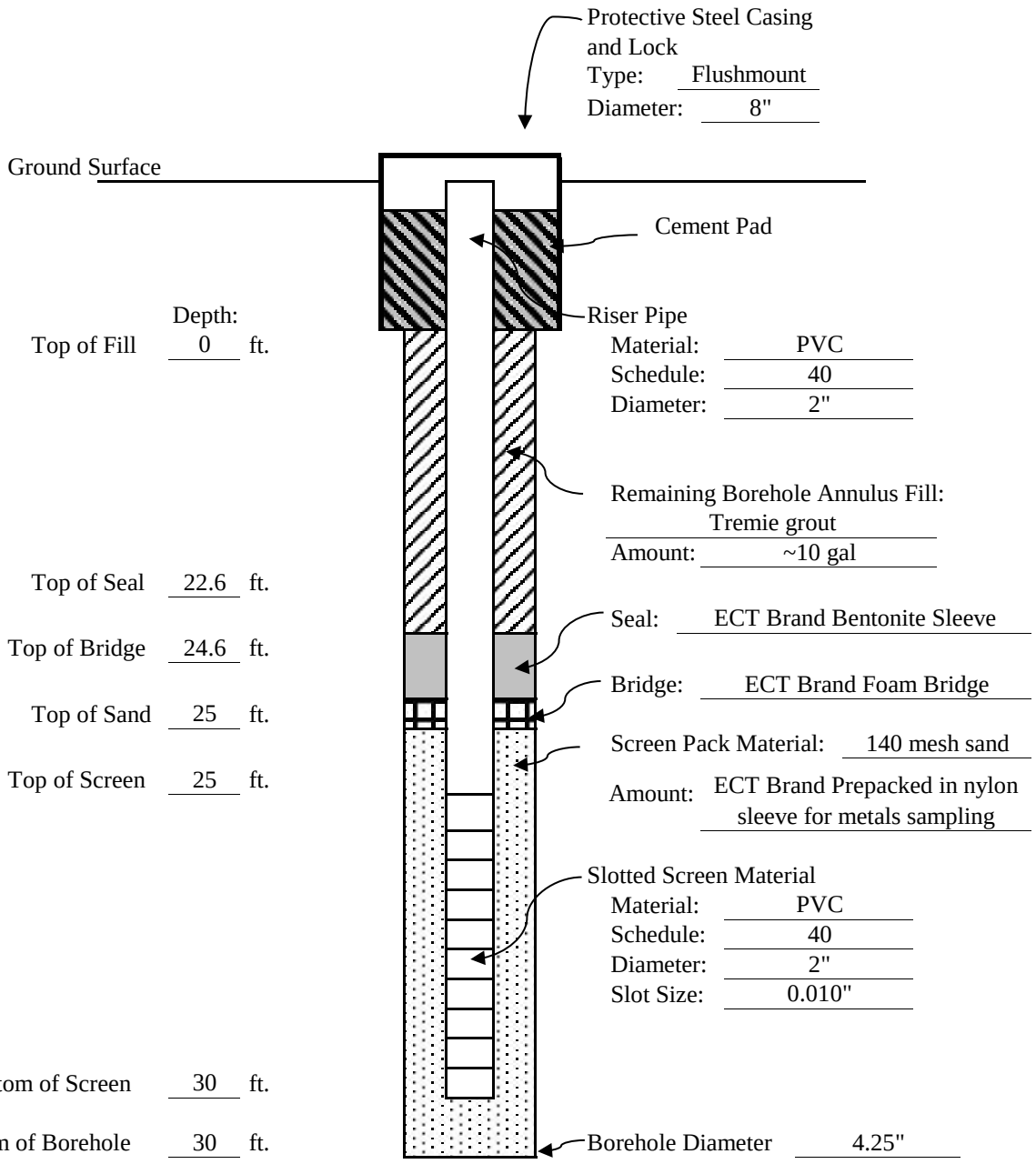
Depth (ft.)	PID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.7		100%	**0-6" Sand**, some silt and organics, fine-med grained, well sorted, moist, loose, no stain/odors, 10YR 3/3 dark
2.0				**6"-26' Loamy Sand**, fine-medium grained, well sorted, no stains, no odors, moist, loose 10YR 6/3 pale brown, saturated at ~7' bgs
3.0	0.9			high organic humus/peat layer at ~7-7.5'bgs, increased trace gravel content from 24-26' bgs
4.0				
5.0	1.4		50%	
6.0				
7.0	1.6			
8.0			60%	
9.0	1.9			
10.0				
11.0	1.6			
12.0			90%	
13.0	1.5			
14.0				
15.0	1.7			
16.0			90%	
17.0	1.3			
18.0				
19.0	1.1			
20.0			90%	
21.0	1.1			
22.0				
23.0	1.7			
24.0			90%	
25.0	1.6			
26.0				**26-34' Sand**, trace gravel up to ~1/2" fine-course sand,poorly sorted, medium dense, no stains, no odors 10YR 5/2 grayish brown, increased gravel content from 26-27' bgs
27.0	1.3			
28.0				
29.0	1.5		90%	
30.0				
31.0	1.4			
32.0				
33.0	1.9			
34.0				
35.0				**End of Boring at 34' - Monitoring Wells Installed at 14' and 33'**

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Well Construction Diagram

Well Identification: **BG-1D**

Client:	Indiana American Water	**Date Installed:**	11/30/2015
Project:	Ogden Dunes	**Date Developed:**	12/3/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~13 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	5.93
Driller:	Rob Mores	**Top of Casing Elevation:**	609.32
Drilling Method:	Direct Push	**Ground Elevation:**	609.72
Latitude	41.6133988	**Longitude**	-87.2068244

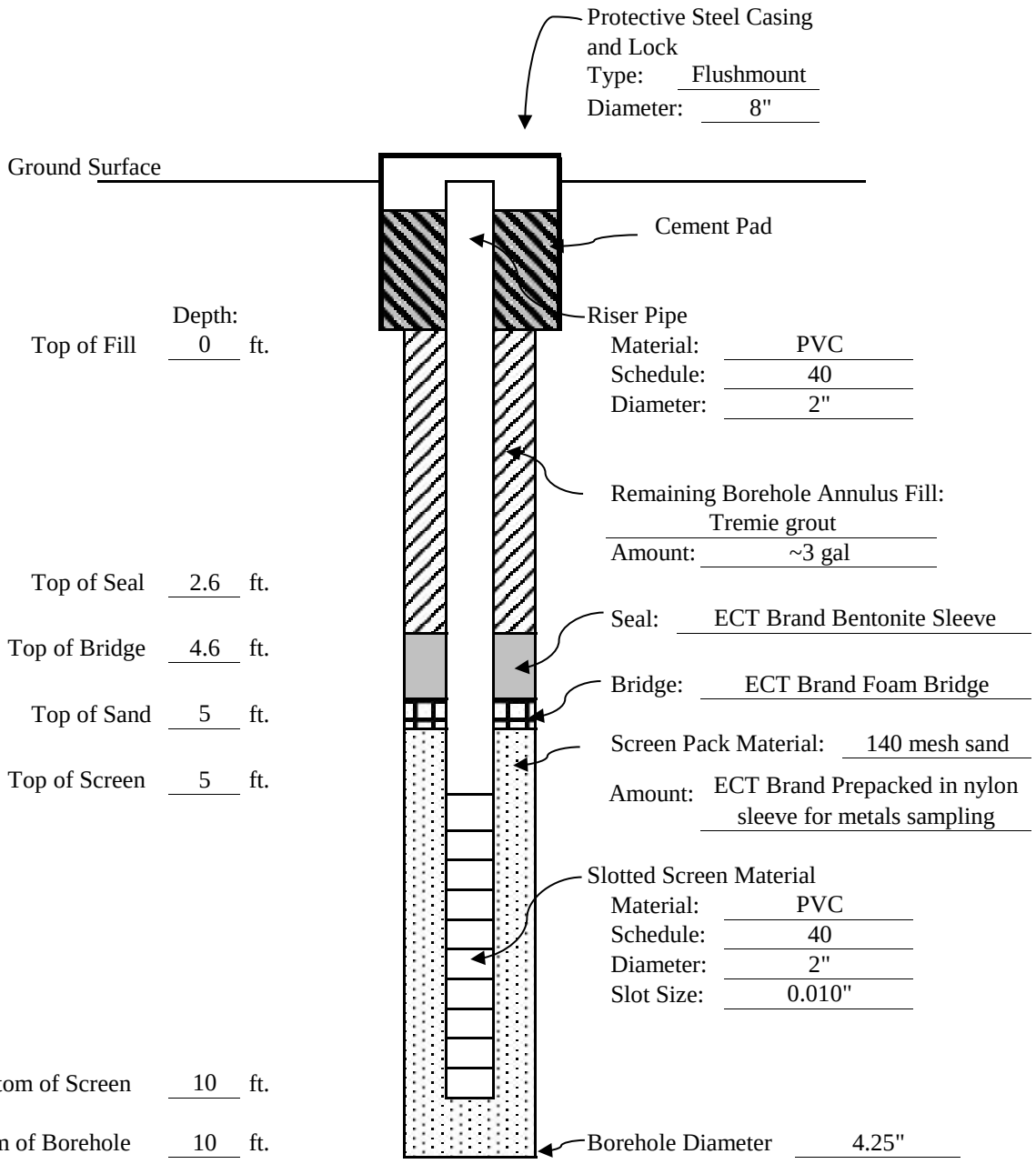


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Well Construction Diagram

Well Identification: **BG-1S**

Client:	Indiana American Water	**Date Installed:**	11/30/2015
Project:	Ogden Dunes	**Date Developed:**	12/3/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~6.5 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	6.12
Driller:	Rob Mores	**Top of Casing Elevation:**	609.50
Drilling Method:	Direct Push	**Ground Elevation:**	609.81
Latitude	41.6133997	**Longitude**	-87.200073



Depth:

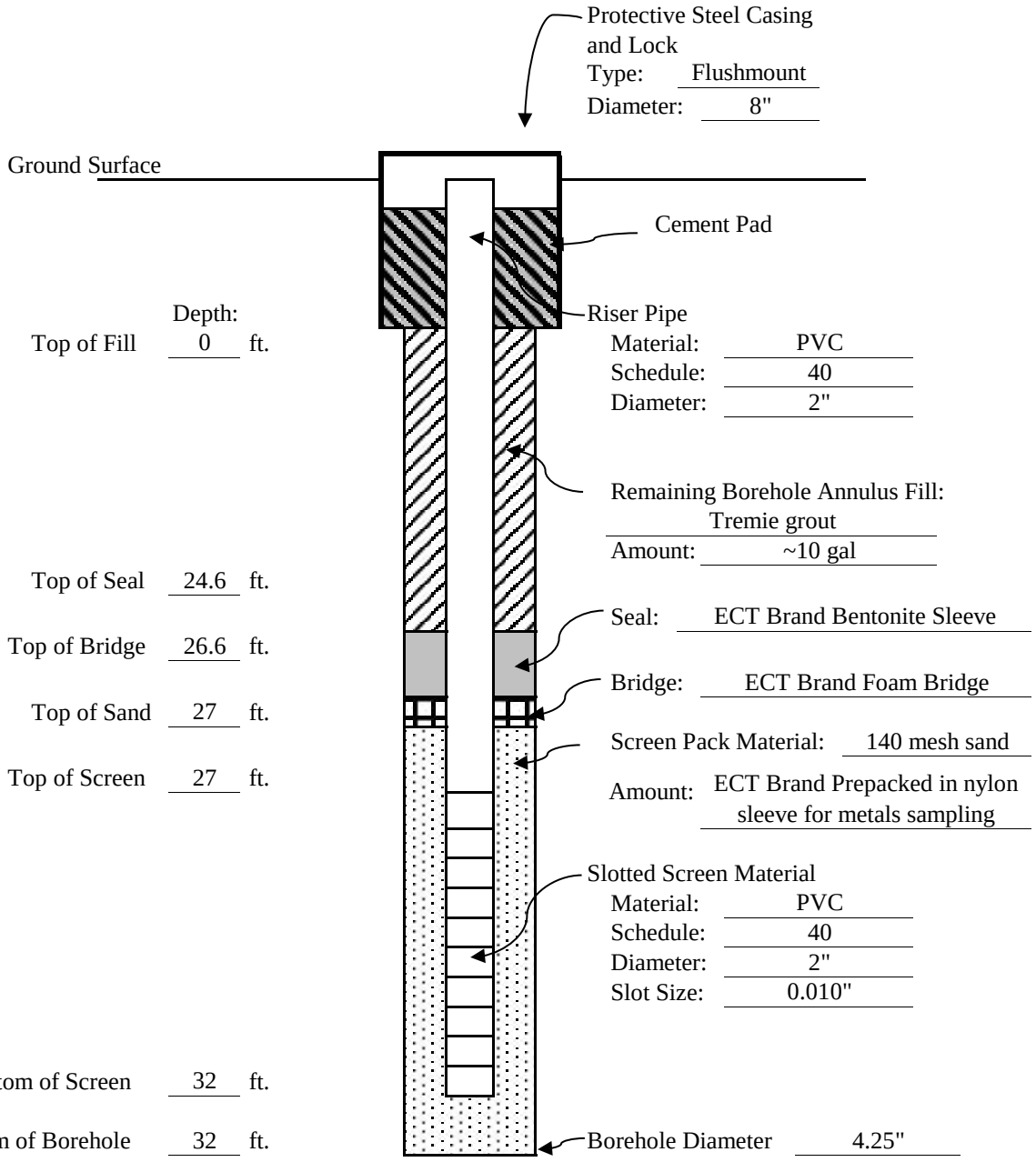
Top of Fill	0	ft.
Top of Seal	2.6	ft.
Top of Bridge	4.6	ft.
Top of Sand	5	ft.
Top of Screen	5	ft.
Bottom of Screen	10	ft.
Bottom of Borehole	10	ft.

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Well Construction Diagram

Well Identification: **MW-1D**

Client:	Indiana American Water	**Date Installed:**	11/30/2015
Project:	Ogden Dunes	**Date Developed:**	12/3/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~15 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	5.65
Driller:	Rob Mores	**Top of Casing Elevation:**	606.66
Drilling Method:	Direct Push	**Ground Elevation:**	607.17
Latitude	41.6189262	**Longitude**	-87.2005528

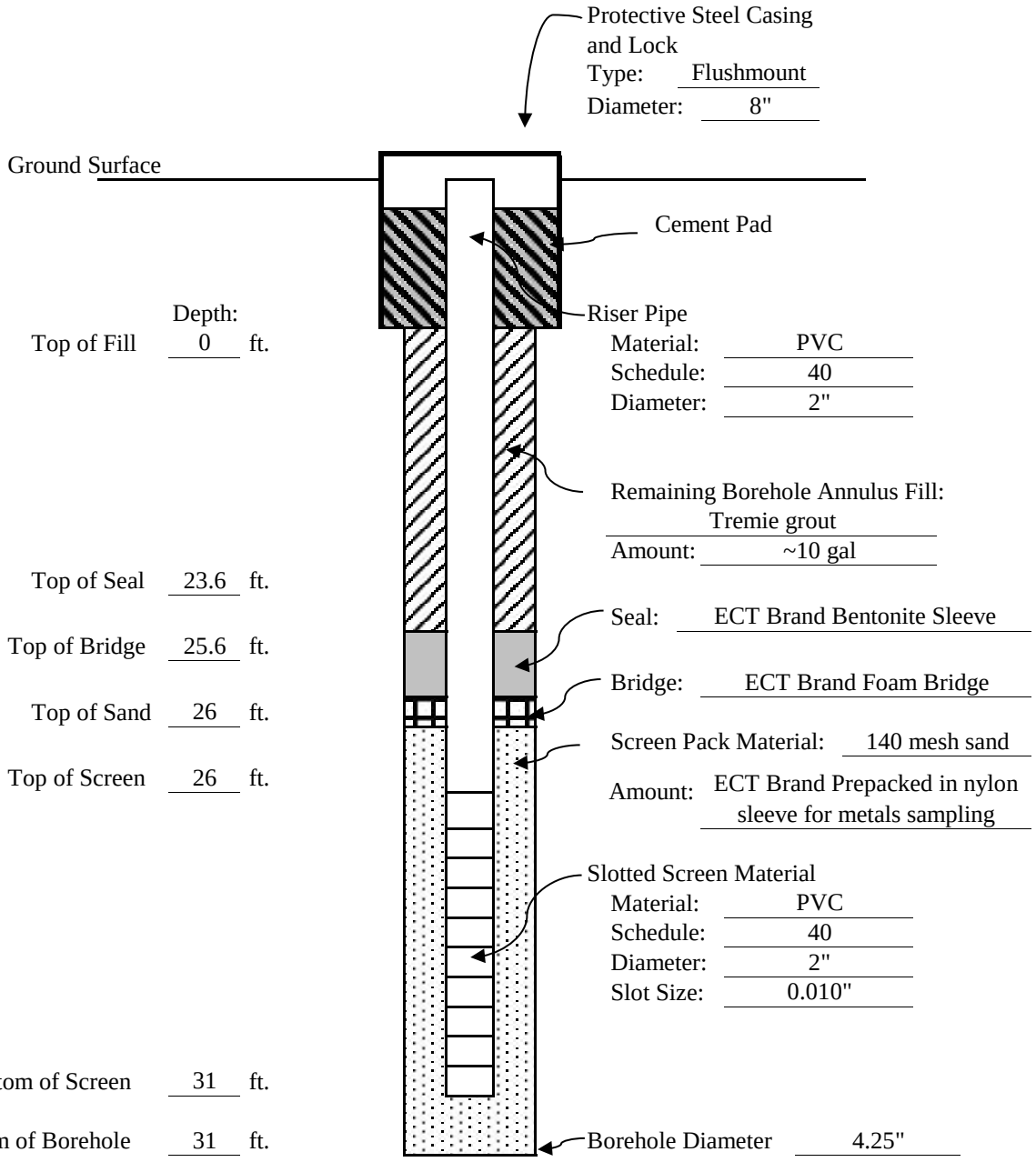


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Well Construction Diagram

Well Identification: **MW-2D**

Client:	Indiana American Water	**Date Installed:**	12/1/2015
Project:	Ogden Dunes	**Date Developed:**	12/3/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~16 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	4.33
Driller:	Rob Mores	**Top of Casing Elevation:**	605.91
Drilling Method:	Direct Push	**Ground Elevation:**	606.10
Latitude	41.6185415	**Longitude**	-87.2024296

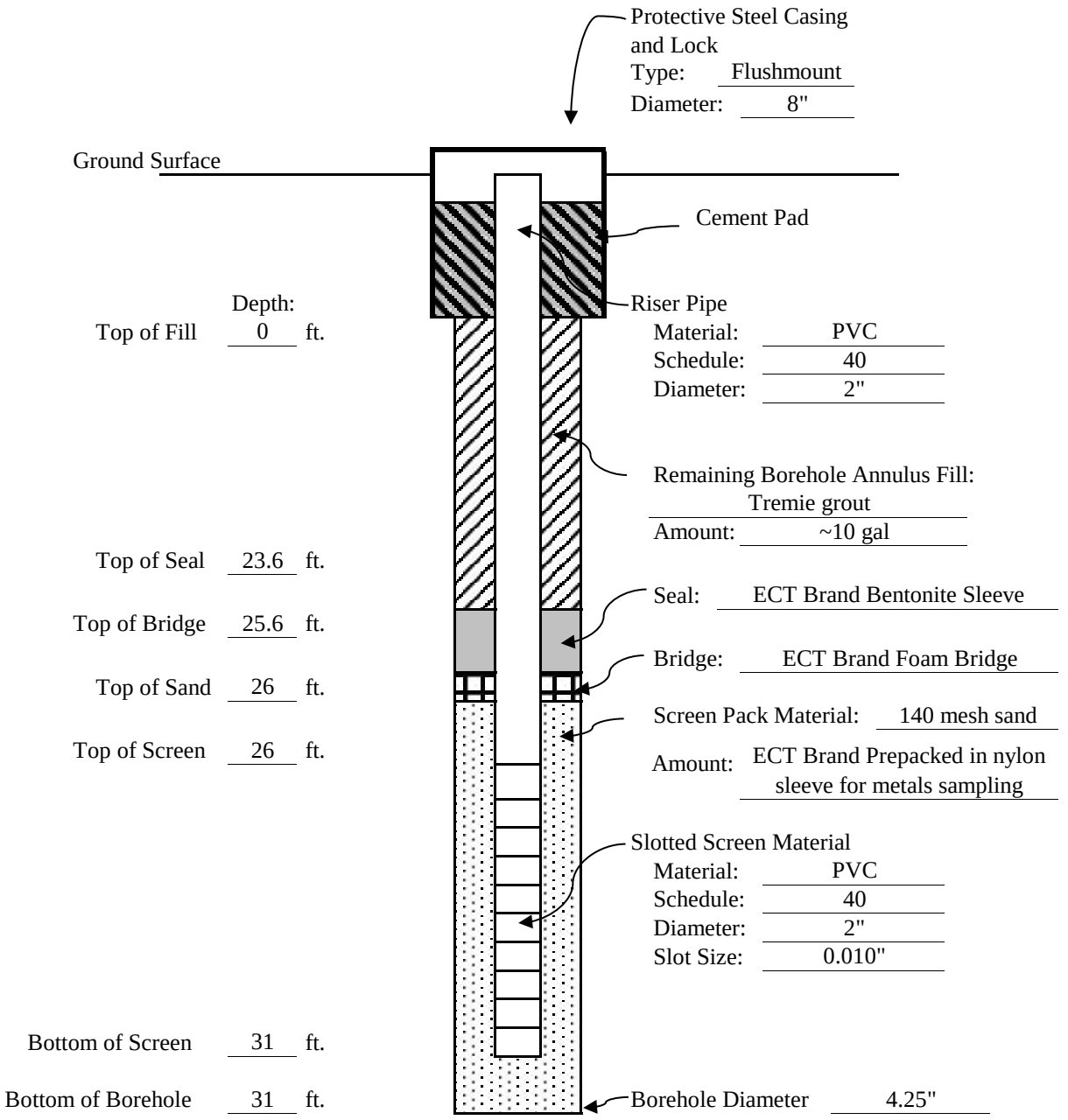


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Well Construction Diagram

Well Identification: **MW-3D**

Client:	Indiana American Water	**Date Installed:**	12/1/2015
Project:	Ogden Dunes	**Date Developed:**	12/3/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~14 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	3.7
Driller:	Rob Mores	**Top of Casing Elevation:**	605.54
Drilling Method:	Direct Push	**Ground Elevation:**	605.77
Latitude	41.6175335	**Longitude**	-87.2027178

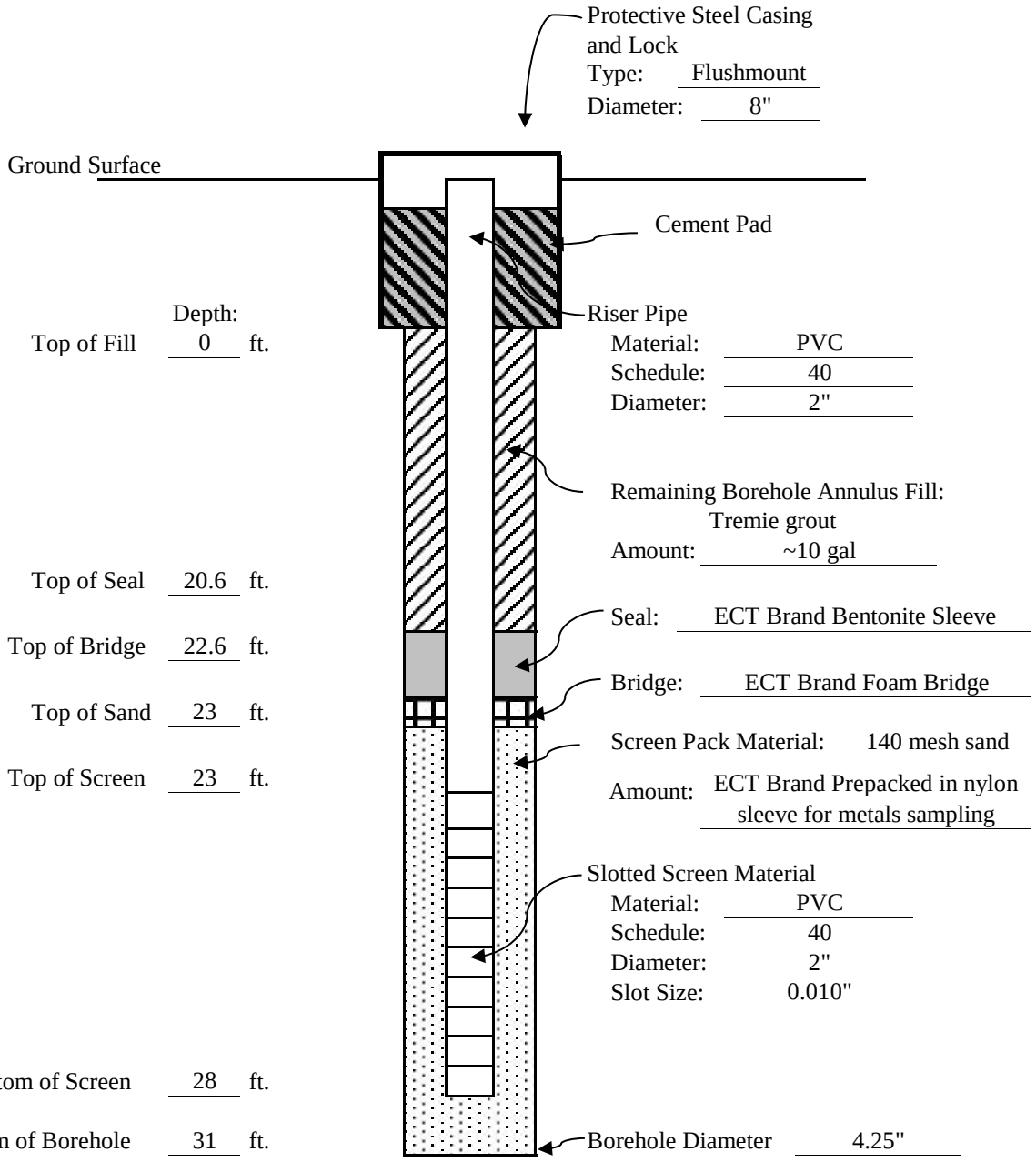


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Well Construction Diagram

Well Identification: **MW-4D**

Client:	Indiana American Water	**Date Installed:**	12/2/2015
Project:	Ogden Dunes	**Date Developed:**	12/3/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~13 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	3.76'
Driller:	Rob Mores	**Top of Casing Elevation:**	605.55
Drilling Method:	Direct Push	**Ground Elevation:**	605.72'
Latitude	41.617311	**Longitude**	-87.2012606

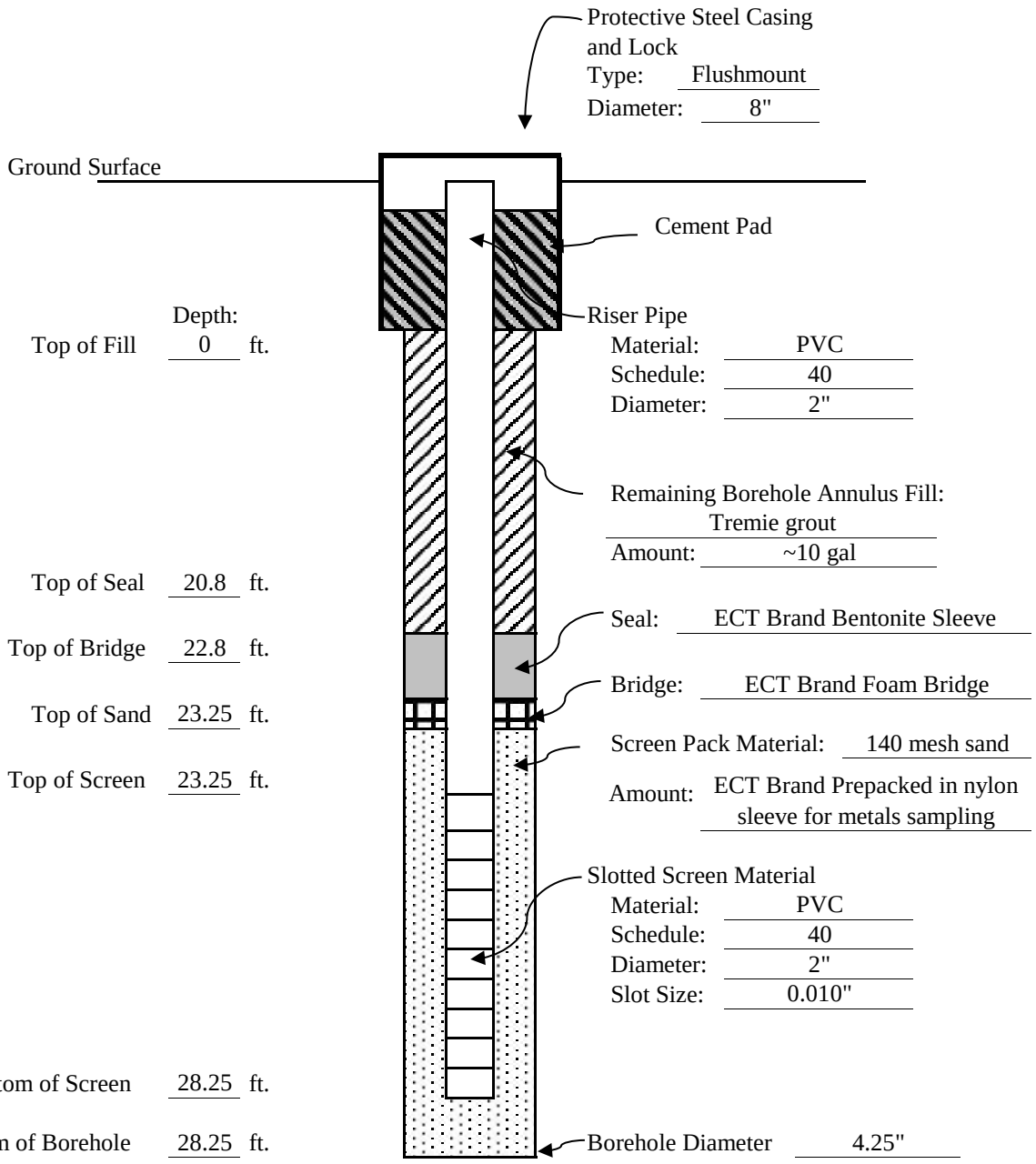


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Well Construction Diagram

Well Identification: **MW-5D**

Client:	Indiana American Water	**Date Installed:**	12/2/2015
Project:	Ogden Dunes	**Date Developed:**	12/3/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~15 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	5.18'
Driller:	Rob Mores	**Top of Casing Elevation:**	607.58'
Drilling Method:	Direct Push	**Ground Elevation:**	607.68'
Latitude	41.6177017	**Longitude**	-87.2000769



Depth:

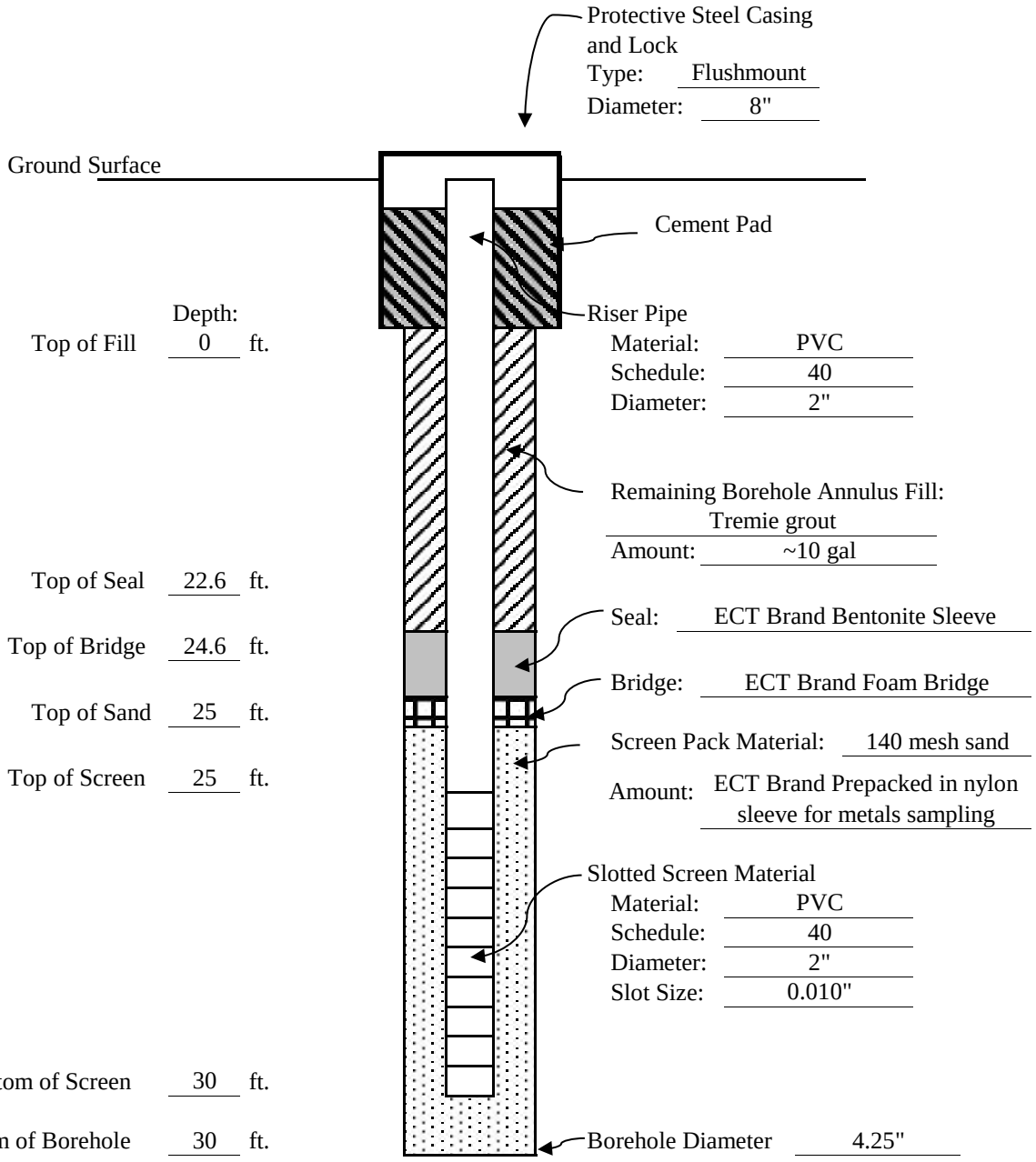
Top of Fill	0	ft.
Top of Seal	20.8	ft.
Top of Bridge	22.8	ft.
Top of Sand	23.25	ft.
Top of Screen	23.25	ft.
Bottom of Screen	28.25	ft.
Bottom of Borehole	28.25	ft.

ERM, Inc.
11350 N. Meridian Street, Suite 220
Carmel, Indiana 46032
(317) 706-2000

Well Construction Diagram

Well Identification: **MW-6D**

Client:	Indiana American Water	**Date Installed:**	12/2/2015
Project:	Ogden Dunes	**Date Developed:**	12/4/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~15 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	4.54'
Driller:	Rob Mores	**Top of Casing Elevation:**	605.17'
Drilling Method:	Direct Push	**Ground Elevation:**	605.21'
Latitude	41.6181015	**Longitude**	-87.1985059

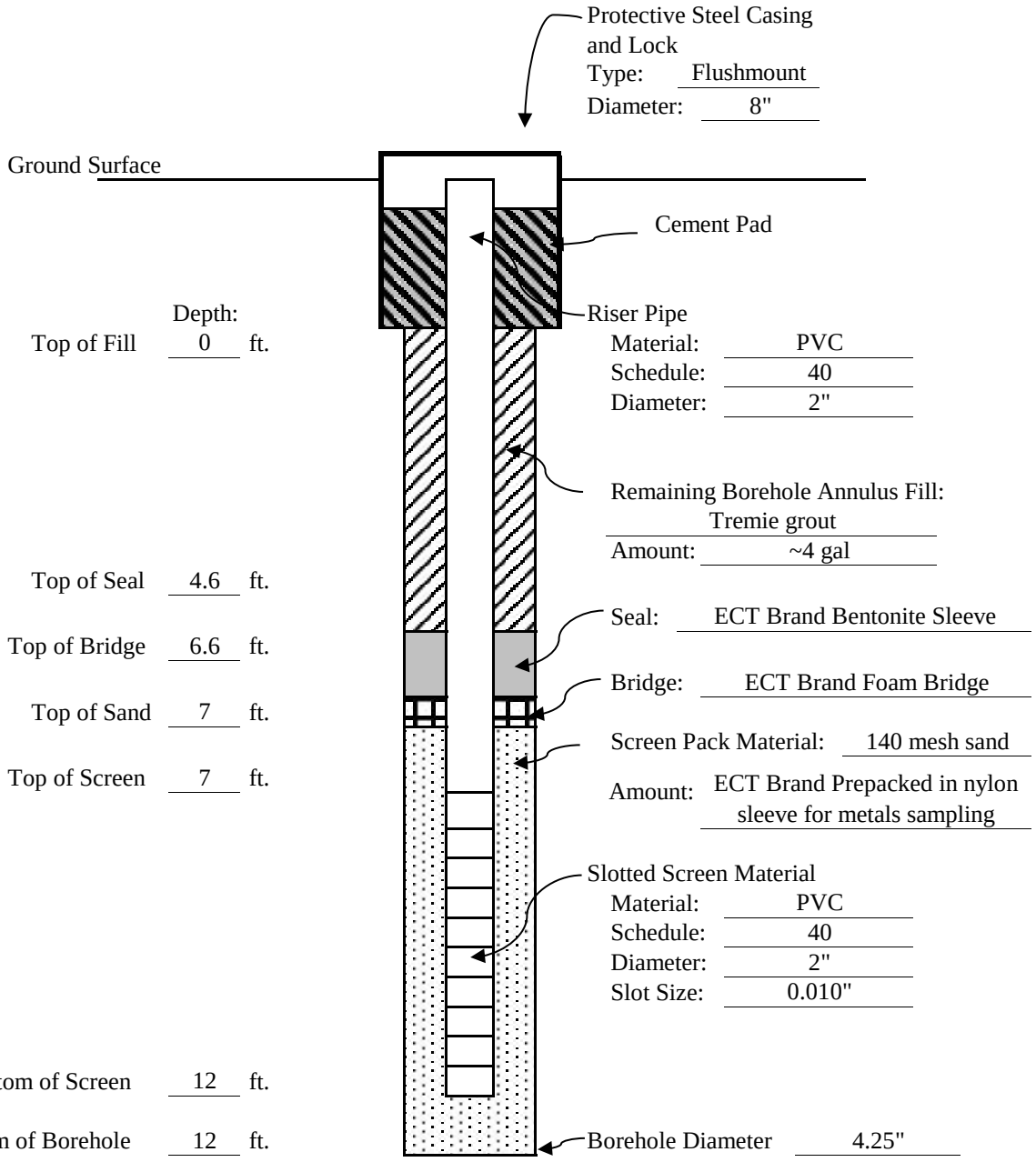


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Well Construction Diagram

Well Identification: **MW-6S**

Client:	Indiana American Water	**Date Installed:**	12/2/2015
Project:	Ogden Dunes	**Date Developed:**	12/4/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~5 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	4.54'
Driller:	Rob Mores	**Top of Casing Elevation:**	605.16'
Drilling Method:	Direct Push	**Ground Elevation:**	605.47'
Latitude	41.6181085	**Longitude**	-87.1985112

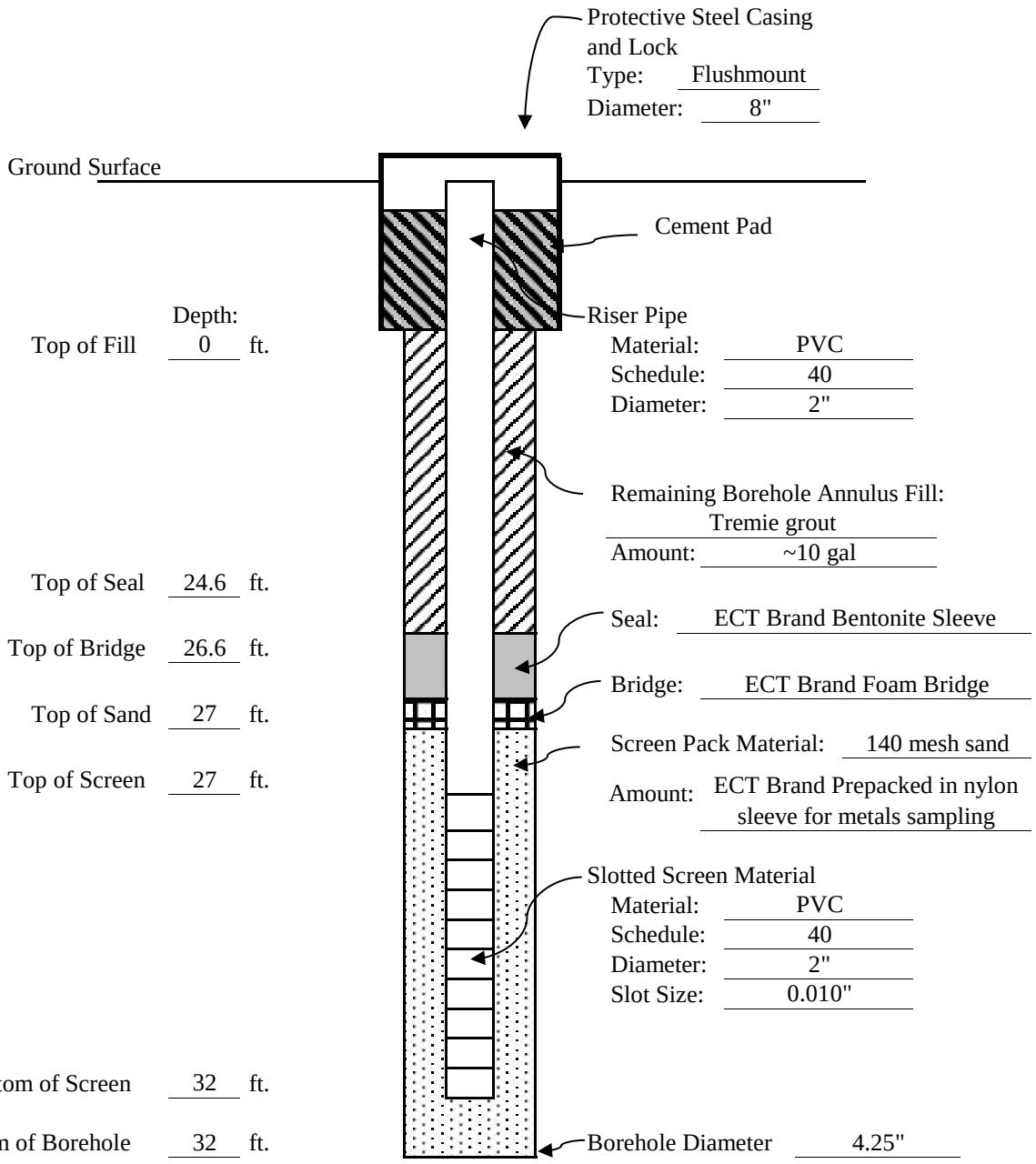


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(317) 706-2000

Well Construction Diagram

Well Identification: **MW-7D**

Client:	Indiana American Water	**Date Installed:**	12/3/2015
Project:	Ogden Dunes	**Date Developed:**	12/4/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~16 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	7.80'
Driller:	Rob Mores	**Top of Casing Elevation:**	608.39'
Drilling Method:	Direct Push	**Ground Elevation:**	608.70'
Latitude	41.6186069	**Longitude**	-87.1988575

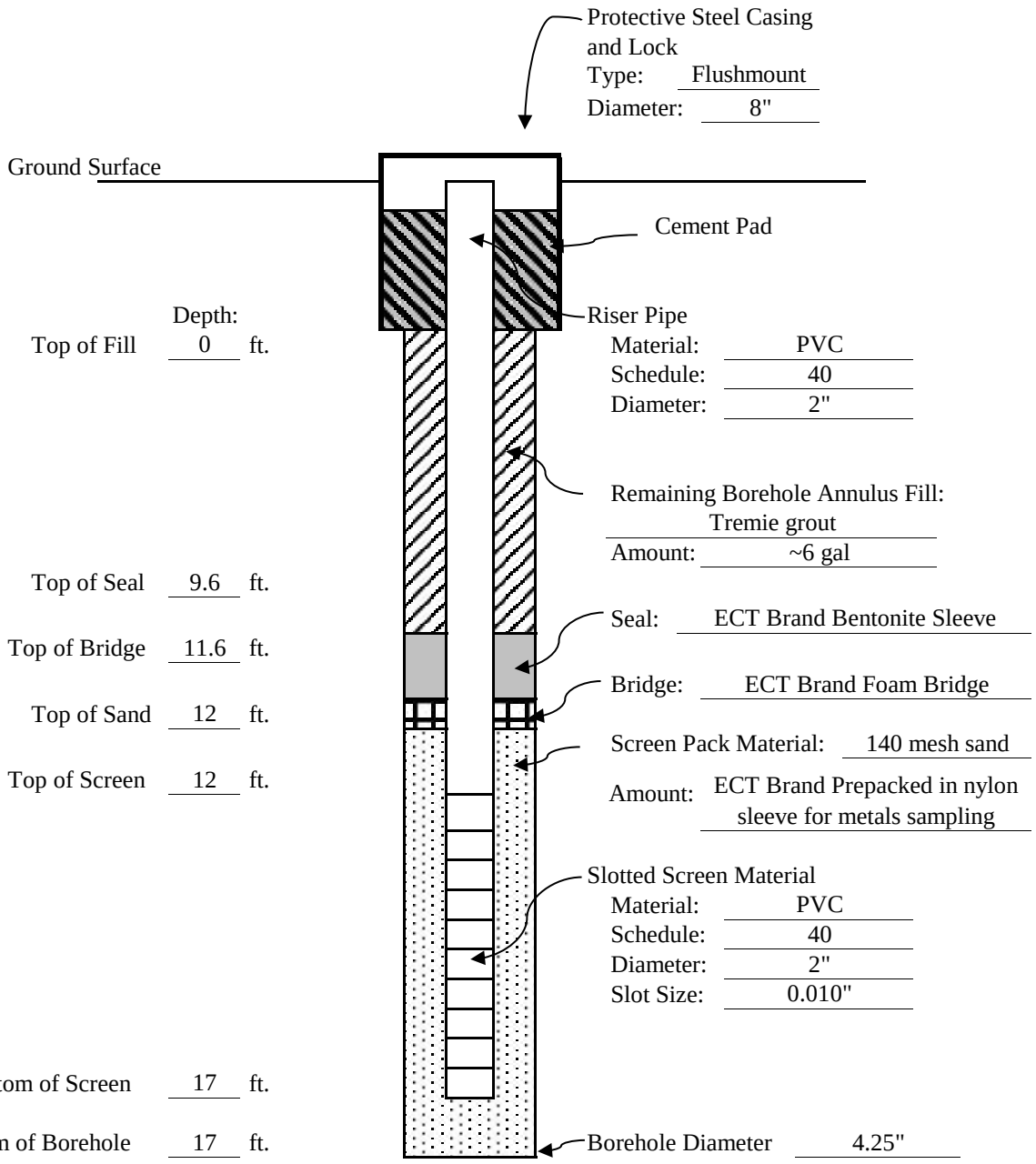


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Well Construction Diagram

Well Identification: **MW-7S**

Client:	Indiana American Water	**Date Installed:**	12/3/2015
Project:	Ogden Dunes	**Date Developed:**	12/4/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~5 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	7.85'
Driller:	Rob Mores	**Top of Casing Elevation:**	608.48'
Drilling Method:	Direct Push	**Ground Elevation:**	608.74'
Latitude	41.6185992	**Longitude**	-87.1988545

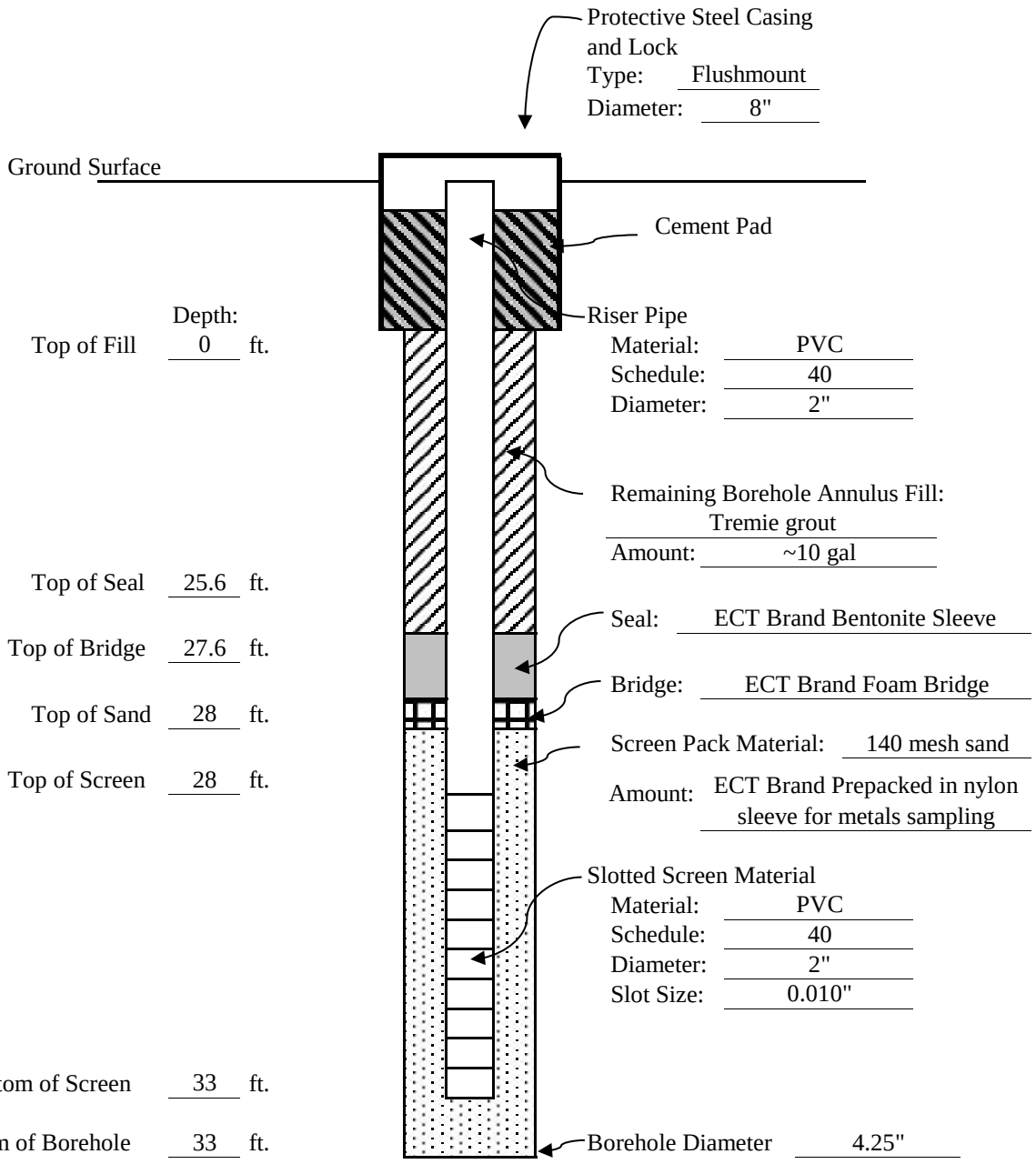


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Well Construction Diagram

Well Identification: **MW-8D**

Client:	Indiana American Water	**Date Installed:**	12/4/2015
Project:	Ogden Dunes	**Date Developed:**	12/4/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~15 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	9.97'
Driller:	Rob Mores	**Top of Casing Elevation:**	609.87'
Drilling Method:	Direct Push	**Ground Elevation:**	610.52'
Latitude	41.6192532	**Longitude**	-87.1991767

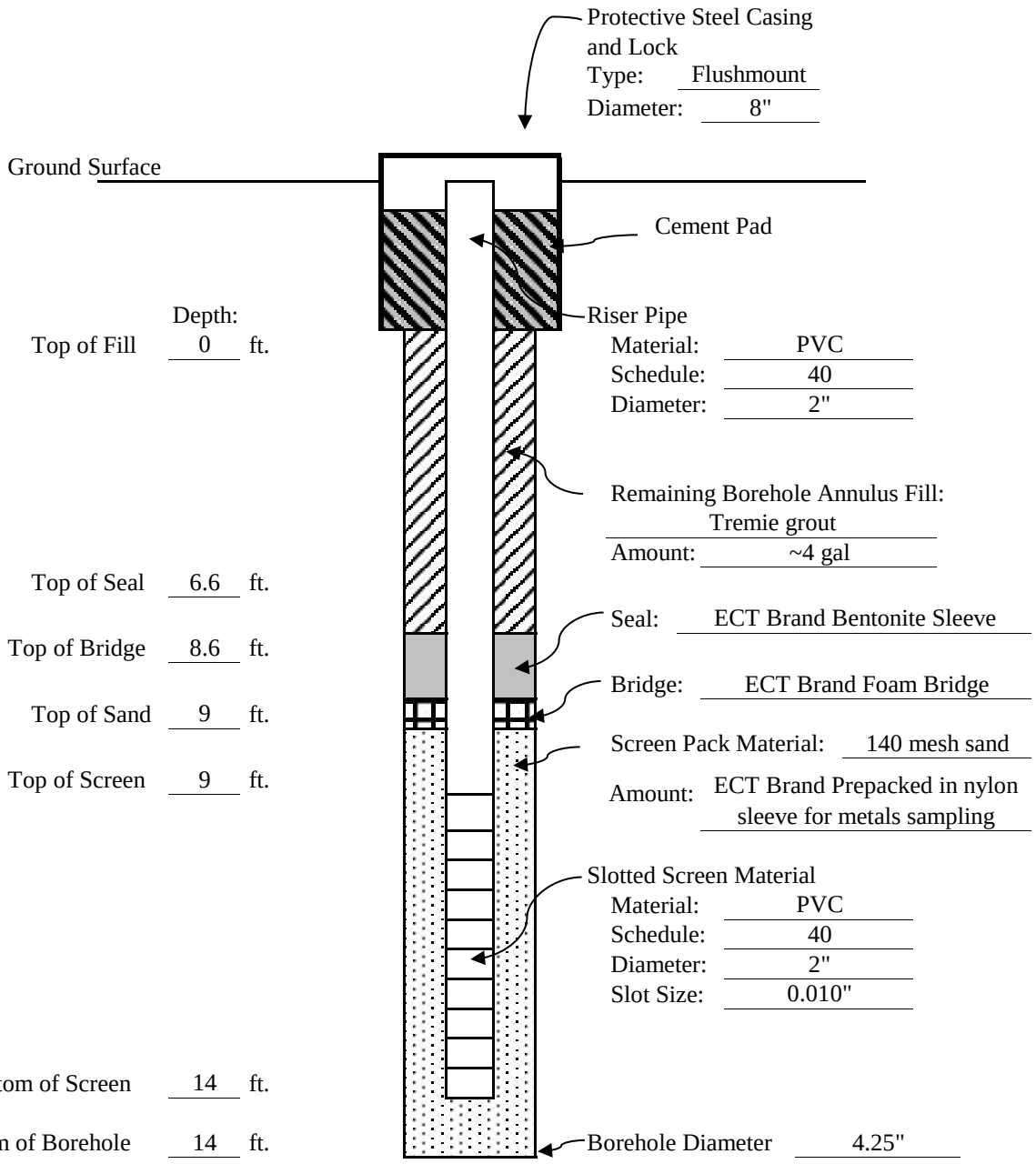


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(317) 706-2000

Well Construction Diagram

Well Identification: **MW-8S**

Client:	Indiana American Water	**Date Installed:**	12/4/2015
Project:	Ogden Dunes	**Date Developed:**	12/4/2015
Proj. No.:	0273018	**Development Method:**	Peristaltic Pump
ERM Geologist:	A. Alexander/M. Ryan LPG #2084	**Water Removed During Development:**	~7 gal
Drilling Company:	EnviroDynamics	**Static Water Level Depth/Elevation:**	10.15'
Driller:	Rob Mores	**Top of Casing Elevation:**	610.11'
Drilling Method:	Direct Push	**Ground Elevation:**	610.52'
Latitude	41.6192446	**Longitude**	-87.1991721



Appendix B

Groundwater Sampling Field Forms

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**BG-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/07/15	Static Water Level:	5.93'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	30.63'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/7/15	1340	X		0.1	5.93	10.78	NA	6.88	NA	0.319	NA	1.98	NA	-97.8	NA	43.2	NA
12/7/15	1345	X		0.2	5.93	10.90	NA	7.04	NA	0.321	NA	0.79	NA	-124.8	NA	37.4	NA
12/7/15	1350	X		0.3	5.93	10.93	TRUE	7.14	FALSE	0.324	TRUE	0.40	FALSE	-135.5	FALSE	29.7	FALSE
12/7/15	1355	X		0.4	5.93	10.94	TRUE	7.18	FALSE	0.327	TRUE	0.28	FALSE	-149.2	FALSE	29.2	FALSE
12/7/15	1400	X		0.5	5.93	10.92	TRUE	7.20	TRUE	0.327	TRUE	0.27	FALSE	-158.6	FALSE	26.3	FALSE
12/7/15	1405	X		0.6	5.95	10.90	TRUE	7.22	TRUE	0.328	TRUE	0.24	FALSE	-186.0	FALSE	25.6	FALSE
12/7/15	1410	X		0.7	5.95	10.87	TRUE	7.26	TRUE	0.329	TRUE	0.23	FALSE	-182.7	FALSE	24.9	TRUE
12/7/15	1415	X		0.8	5.94	10.85	TRUE	7.27	TRUE	0.329	TRUE	0.22	TRUE	-167.2	FALSE	15.5	FALSE
12/7/15	1420	X		0.9	5.94	10.81	TRUE	7.30	TRUE	0.330	TRUE	0.21	TRUE	-166.5	FALSE	15.0	FALSE
12/7/15	1425		X	1	5.93	10.77	TRUE	7.32	TRUE	0.333	TRUE	0.20	TRUE	-165.2	TRUE	14.0	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None
Dissolved Metals/Field Filtered	Plastic/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/7/2015
Time	1235
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**BG-1S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/07/15	Static Water Level:	6.12'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	9.60'		
Well Screened Interval	5-10'	Pump Intake Depth	8'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/7/15	1250	X		0.1	6.12	10.95	NA	6.27	NA	0.262	NA	2.04	NA	-44.8	NA	8.0	NA
12/7/15	1255	X		0.2	6.12	10.95	NA	6.28	NA	0.248	NA	1.23	NA	-46.7	NA	7.5	NA
12/7/15	1300	X		0.3	6.13	10.95	TRUE	6.28	TRUE	0.239	FALSE	0.75	FALSE	-57.5	FALSE	5.3	FALSE
12/7/15	1305	X		0.4	6.12	10.83	TRUE	6.27	TRUE	0.235	FALSE	0.74	FALSE	-54.7	FALSE	2.2	FALSE
12/7/15	1310	X		0.5	6.13	10.88	TRUE	6.28	TRUE	0.232	TRUE	0.74	TRUE	-56.5	TRUE	2.1	FALSE
12/7/15	1315	X		0.6	6.12	10.90	TRUE	6.30	TRUE	0.226	FALSE	0.70	TRUE	-58.8	TRUE	1.9	FALSE
12/7/15	1320	X		0.7	6.12	10.90	TRUE	6.31	TRUE	0.224	FALSE	0.66	FALSE	-59.1	TRUE	1.9	TRUE
12/7/15	1325		X	0.8	6.12	10.91	TRUE	6.31	TRUE	0.221	TRUE	0.65	TRUE	-59.8	TRUE	1.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/7/2015
Time	1235
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	5.65	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	32'		
Well Screened Interval	27-32'	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1415	X		0.1	5.65	12.25	NA	7.42	NA	0.350	NA	0.90	NA	-120.6	NA	7.8	NA
12/8/15	1420	X		0.2	5.66	12.29	NA	7.51	NA	0.352	NA	0.34	NA	-136.4	NA	5.1	NA
12/8/15	1425	X		0.3	5.65	12.30	TRUE	7.54	FALSE	0.352	TRUE	0.22	FALSE	-147.2	FALSE	4.0	FALSE
12/8/15	1430	X		0.4	5.65	12.43	TRUE	7.59	TRUE	0.352	TRUE	0.08	FALSE	-172.8	FALSE	3.8	FALSE
12/8/15	1435	X		0.5	5.65	12.46	TRUE	7.59	TRUE	0.351	TRUE	0.08	FALSE	-176.3	FALSE	3.6	TRUE
12/8/15	1440		X	0.6	5.65	12.49	TRUE	7.60	TRUE	0.351	TRUE	0.08	TRUE	-179.2	TRUE	3.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-1s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	6.12'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	9.60'		
Well Screened Interval	5-10'	Pump Intake Depth	8.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1335	X		0.1	6.12	8.45	NA	7.29	NA	0.580	NA	2.66	NA	-9.6	NA	13.5	NA
12/8/15	1340	X		0.2	6.12	8.42	NA	7.25	NA	0.566	NA	2.19	NA	-10.2	NA	12.4	NA
12/8/15	1345	X		0.3	6.12	8.39	TRUE	7.25	TRUE	0.545	FALSE	1.56	FALSE	-21.3	FALSE	4.5	FALSE
12/8/15	1350	X		0.4	6.12	8.38	TRUE	7.24	TRUE	0.515	FALSE	1.10	FALSE	-23.5	FALSE	3.2	FALSE
12/8/15	1355	X		0.5	6.12	8.38	TRUE	7.25	TRUE	0.511	FALSE	1.05	FALSE	-29.7	TRUE	3.4	FALSE
12/8/15	1400		X	0.6	6.12	8.36	TRUE	7.25	TRUE	0.510	TRUE	1.00	TRUE	-32.3	TRUE	3.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-2D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	4.33'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	30.62'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1300	X		0.1	4.33	13.43	NA	7.08	NA	0.739	NA	0.55	NA	-175.2	NA	7.6	NA
12/8/15	1305	X		0.2	4.33	13.56	NA	7.10	NA	0.756	NA	0.21	NA	-186.0	NA	2.3	NA
12/8/15	1310	X		0.3	4.33	13.75	TRUE	7.18	TRUE	0.764	FALSE	0.20	FALSE	-231.2	FALSE	2.2	FALSE
12/8/15	1315	X		0.4	4.33	13.57	TRUE	7.20	FALSE	0.767	TRUE	0.20	TRUE	-233.8	FALSE	2.1	TRUE
12/8/15	1320		X	0.5	4.33	13.54	TRUE	7.22	TRUE	0.767	TRUE	0.22	TRUE	-233.9	TRUE	2.0	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-2s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	4.14'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.75'		
Well Screened Interval	7-12'	Pump Intake Depth	9.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1220	X		0.1	4.14	10.27	NA	7.62	NA	0.468	NA	1.20	NA	-36.4	NA	28.2	NA
12/8/15	1225	X		0.2	4.15	10.31	NA	7.32	NA	0.464	NA	1.14	NA	-36.8	NA	16.4	NA
12/8/15	1230	X		0.3	4.14	9.87	FALSE	7.24	FALSE	0.460	TRUE	1.02	FALSE	-50.2	FALSE	12.6	FALSE
12/8/15	1235	X		0.4	4.14	9.86	FALSE	7.25	TRUE	0.460	TRUE	0.14	FALSE	-64.7	FALSE	10.1	FALSE
12/8/15	1240	X		0.5	4.14	9.84	TRUE	7.26	TRUE	0.458	TRUE	0.13	FALSE	-70.7	FALSE	9.9	FALSE
12/8/15	1245		X	0.6	4.14	9.84	TRUE	7.27	TRUE	0.458	TRUE	0.13	TRUE	-72.8	TRUE	9.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None
Dissolved Metals/Field Filtered	Plastic/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-3D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	3.7	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	31'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1125	X		0.1	3.7	12.43	NA	7.16	NA	0.949	NA	0.59	NA	-186.4	NA	7.8	NA
12/8/15	1130	X		0.2	3.70	12.51	NA	7.19	NA	0.941	NA	0.67	NA	-222.7	NA	7.2	NA
12/8/15	1135	X		0.3	3.69	12.53	TRUE	7.25	TRUE	0.918	FALSE	0.11	FALSE	-231.7	FALSE	4.9	FALSE
12/8/15	1140	X		0.4	3.69	12.51	TRUE	7.27	TRUE	0.913	TRUE	0.11	FALSE	-228.1	TRUE	4.8	FALSE
12/8/15	1145		X	0.5	3.70	12.48	TRUE	7.27	TRUE	0.924	TRUE	0.10	TRUE	-223.2	TRUE	4.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-3s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	3.84'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.66'		
Well Screened Interval	7-12'	Pump Intake Depth	10'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1055	X		0.1	3.84	11.79	NA	7.33	NA	0.677	NA	1.10	NA	-68.5	NA	5.6	NA
12/8/15	1100	X		0.2	3.84	12.20	NA	7.22	NA	0.674	NA	0.32	NA	-81.8	NA	4.3	NA
12/8/15	1105	X		0.3	3.84	12.20	FALSE	7.16	FALSE	0.674	TRUE	0.14	FALSE	-90.5	FALSE	2.6	FALSE
12/8/15	1110	X		0.4	3.84	12.21	TRUE	7.17	TRUE	0.674	TRUE	0.14	FALSE	-90.7	TRUE	2.5	FALSE
12/8/15	1115		X	0.5	3.84	12.17	TRUE	7.15	TRUE	0.674	TRUE	0.13	TRUE	-92.2	TRUE	2.4	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-4D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	3.76	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	28'		
Well Screened Interval	23-28'	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1000	X		0.1	3.76	11.05	NA	6.95	NA	1.258	NA	0.99	NA	-222.8	NA	12.7	NA
12/8/15	1005	X		0.2	3.76	11.26	NA	7.13	NA	1.258	NA	0.72	NA	-237.9	NA	11.6	NA
12/8/15	1010	X		0.3	3.76	11.27	TRUE	7.24	FALSE	1.248	TRUE	0.32	FALSE	-257.6	FALSE	6.6	FALSE
12/8/15	1015	X		0.4	3.76	11.23	TRUE	7.32	FALSE	1.238	TRUE	0.15	FALSE	-248.7	FALSE	5.1	FALSE
12/8/15	1020	X		0.5	3.76	11.21	TRUE	7.35	FALSE	1.250	TRUE	0.14	FALSE	-253.8	TRUE	4.9	FALSE
12/8/15	1030		X	0.6	3.76	11.25	TRUE	7.35	TRUE	1.256	TRUE	0.14	TRUE	-254.7	TRUE	4.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-4s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	3.69'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.57'		
Well Screened Interval	7-12'	Pump Intake Depth	10'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	0925	X		0.1	3.69	11.31	NA	6.63	NA	0.261	NA	1.12	NA	-43.4	NA	9.4	NA
12/8/15	0930	X		0.2	3.69	11.36	NA	6.43	NA	0.261	NA	0.55	NA	-56.3	NA	5.4	NA
12/8/15	0935	X		0.3	3.69	11.38	TRUE	6.28	FALSE	0.262	TRUE	0.43	FALSE	-67.0	FALSE	2.3	FALSE
12/8/15	0940	X		0.4	3.69	11.39	TRUE	6.28	FALSE	0.262	TRUE	0.33	FALSE	-69.0	FALSE	2.3	FALSE
12/8/15	0945	X		0.5	3.7	11.40	TRUE	6.25	TRUE	0.262	TRUE	0.32	FALSE	-69.0	TRUE	2.2	TRUE
12/8/15	0950		X	0.6	3.7	11.40	TRUE	6.24	TRUE	0.261	TRUE	0.31	TRUE	-69.8	TRUE	2.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-5D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/07/15	Static Water Level:	5.98'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	27.76'		
Well Screened Interval	23-28'	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	0810	X		0.1	5.98	13.04	NA	7.78	NA	0.739	NA	1.87	NA	-191.3	NA	11.3	NA
12/8/15	0815	X		0.2	5.98	13.25	NA	7.74	NA	0.739	NA	1.52	NA	-207.5	NA	11.4	NA
12/8/15	0820	X		0.3	5.98	13.32	TRUE	7.72	TRUE	0.739	TRUE	1.30	FALSE	-218.5	FALSE	11.6	TRUE
12/8/15	0825	X		0.4	5.98	13.00	TRUE	7.73	TRUE	0.739	TRUE	1.14	FALSE	-231.5	FALSE	11.7	TRUE
12/8/15	0830	X		0.5	5.98	12.90	FALSE	7.73	TRUE	0.737	TRUE	0.62	FALSE	-247.9	FALSE	8.9	FALSE
12/8/15	0835	X		0.6	5.98	12.85	TRUE	7.74	TRUE	0.736	TRUE	0.60	FALSE	-257.0	FALSE	7.8	FALSE
12/8/15	0840	X		0.7	5.99	12.78	TRUE	7.79	TRUE	0.729	TRUE	0.60	TRUE	-286.7	FALSE	7.5	FALSE
12/8/15	0845	X		0.8	5.98	12.69	TRUE	7.81	TRUE	0.729	TRUE	0.59	TRUE	-288.3	FALSE	7.4	TRUE
12/8/15	0850		X	0.9	5.98	12.65	TRUE	7.82	TRUE	0.722	TRUE	0.55	TRUE	-291.0	TRUE	7.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/ 250 mL	None
Total Metals	Plastic/ 250 mL	HNO3
Low Level Mercury	Clear Glass/ 250 mL	None
Dissolved Metals/Field Filtered	Plastic/ 250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-5s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/07/15	Static Water Level:	5.57'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	13.90'		
Well Screened Interval	9-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/7/15	1525	X		0.1	5.57	12.58	NA	6.96	NA	0.740	NA	1.20	NA	11.8	NA	32.9	NA
12/7/15	1530	X		0.2	5.56	12.26	NA	6.92	NA	0.735	NA	0.95	NA	8.4	NA	25.6	NA
12/7/15	1535	X		0.3	5.57	12.23	TRUE	6.92	TRUE	0.733	TRUE	0.99	FALSE	8.3	TRUE	23.1	FALSE
12/7/15	1540	X		0.4	5.57	12.23	TRUE	6.92	TRUE	0.734	TRUE	0.82	FALSE	8.3	TRUE	21.2	FALSE
12/7/15	1545	X		0.5	5.56	12.18	TRUE	6.91	TRUE	0.735	TRUE	0.85	FALSE	8.2	TRUE	18.1	FALSE
12/7/15	1550	X		0.6	5.56	12.18	TRUE	6.87	TRUE	0.729	TRUE	0.61	FALSE	10.5	TRUE	11.6	FALSE
12/7/15	1555	X		0.7	5.57	12.10	TRUE	6.91	TRUE	0.728	TRUE	0.58	FALSE	10.9	TRUE	11.2	FALSE
12/7/15	1600		X	0.8	5.56	12.06	TRUE	6.90	TRUE	0.730	TRUE	0.58	TRUE	9.0	TRUE	11.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/ 250 mL	None
Total Metals	Plastic/ 250 mL	HNO3
Low Level Mercury	Clear Glass/ 250 mL	None
Dissolved Metals/Field Filtered	Plastic/ 250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/7/2015
Time	1235
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-6D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/09/15	Static Water Level:	4.54'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	29.41'		
Well Screened Interval	25-30'	Pump Intake Depth	27.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/9/15	0935	X		0.1	4.54	12.41	NA	7.55	NA	0.503	NA	0.21	NA	-240.9	NA	11.5	NA
12/9/15	0940	X		0.2	4.54	12.40	NA	7.56	NA	0.502	NA	0.19	NA	-265.6	NA	11.4	NA
12/9/15	0945	X		0.3	4.54	12.37	TRUE	7.61	TRUE	0.502	TRUE	0.22	FALSE	-282.8	FALSE	11.4	TRUE
12/9/15	0950	X		0.4	4.54	12.37	TRUE	7.62	TRUE	0.501	TRUE	0.18	FALSE	-289.7	FALSE	5.1	FALSE
12/9/15	0955	X		0.5	4.54	12.37	TRUE	7.63	TRUE	0.501	TRUE	0.18	FALSE	-289.4	TRUE	4.9	FALSE
12/9/15	1000		X	0.6	4.54	12.38	TRUE	7.62	TRUE	0.501	TRUE	0.17	TRUE	-289.1	TRUE	4.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-6s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/09/15	Static Water Level:	4.54'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.32'		
Well Screened Interval	7-12'	Pump Intake Depth	9.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/9/15	0845	X		0.1	4.54	12.41	NA	7.55	NA	0.503	NA	0.21	NA	-240.9	NA	11.5	NA
12/9/15	0850	X		0.2	4.54	12.40	NA	7.56	NA	0.502	NA	0.19	NA	-265.6	NA	11.4	NA
12/9/15	0855	X		0.3	4.54	12.37	TRUE	7.61	TRUE	0.502	TRUE	0.22	FALSE	-282.8	FALSE	11.4	TRUE
12/9/15	0900	X		0.4	4.54	12.37	TRUE	7.62	TRUE	0.501	TRUE	0.11	FALSE	-289.7	FALSE	5.1	FALSE
12/9/15	0905	X		0.5	4.54	12.35	TRUE	7.67	TRUE	0.504	TRUE	0.11	FALSE	-290.6	TRUE	5.0	FALSE
12/9/15	0910		X	0.6	4.54	12.36	TRUE	7.70	TRUE	0.503	TRUE	0.10	TRUE	-292.4	TRUE	4.6	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-7D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0213018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/09/15	Static Water Level:	7.80'	Comments: Encountered high turbidity; purged ~6 gallons from well and let settle for an hour before resampling. High turbidity levels still present.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	31.26'		
Well Screened Interval	27-32'	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/9/15	1005	X		0.1	7.8	11.77	NA	8.34	NA	0.521	NA	1.00	NA	-162.8	NA	2830.0	NA
12/9/15	1010	X		0.2	7.8	11.82	NA	7.90	NA	0.505	NA	0.65	NA	-189.3	NA	2456.0	NA
12/9/15	1015	X		0.3	7.7	11.82	TRUE	7.90	FALSE	0.499	FALSE	0.58	FALSE	-193.2	FALSE	2245.0	FALSE
12/9/15	1020	X		0.4	7.8	11.82	TRUE	7.89	TRUE	0.495	TRUE	0.52	FALSE	-205.5	FALSE	2157.0	FALSE
12/9/15	1025	X		0.5	7.8	11.78	TRUE	7.76	FALSE	0.488	TRUE	0.38	FALSE	-214.4	FALSE	1734.0	FALSE
12/9/15	1030	X		0.6	7.8	11.75	TRUE	7.69	FALSE	0.484	TRUE	0.29	FALSE	-224.0	FALSE	1400.0	FALSE
12/9/15	1035	X		0.7	7.8	11.71	TRUE	7.66	TRUE	0.482	TRUE	0.28	FALSE	-220.2	TRUE	1167.0	FALSE
12/9/15	1040	X		0.8	7.8	11.68	TRUE	7.66	TRUE	0.482	TRUE	0.29	TRUE	-225.3	TRUE	1000.0	FALSE
12/9/15	1045	X		0.9	7.8	11.65	TRUE	7.66	TRUE	0.482	TRUE	0.29	TRUE	-226.1	TRUE	980.0	FALSE
12/9/15	1050	X		1	7.8	11.67	TRUE	7.65	TRUE	0.481	TRUE	0.30	TRUE	-227.2	TRUE	915.0	TRUE
12/9/15	1055	X		1.2	7.8	11.64	TRUE	7.64	TRUE	0.481	TRUE	0.30	TRUE	-228.7	TRUE	880.0	FALSE
12/9/15	1100		X	1.3	7.8	11.66	TRUE	7.62	TRUE	0.480	TRUE	0.31	TRUE	-229.7	TRUE	830.0	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None
Dissolved Metals/Field Filtered	Plastic/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-7s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	7.85'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	16.46'		
Well Screened Interval	12-17'	Pump Intake Depth	14.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1610	X		0.1	7.85	12.49	NA	6.93	NA	0.748	NA	0.68	NA	-47.0	NA	7.9	NA
12/8/15	1615	X		0.2	7.85	12.87	NA	6.86	NA	0.767	NA	0.26	NA	-68.1	NA	7.5	NA
12/8/15	1620	X		0.3	7.85	12.77	FALSE	6.83	TRUE	0.772	FALSE	0.20	FALSE	-79.6	FALSE	7.4	TRUE
12/8/15	1625	X		0.4	7.85	12.82	TRUE	6.79	TRUE	0.770	TRUE	0.20	FALSE	-86.0	FALSE	7.3	TRUE
12/8/15	1630	X		0.5	7.85	12.70	TRUE	6.76	TRUE	0.773	TRUE	0.19	TRUE	-90.1	FALSE	5.1	FALSE
12/8/15	1635	X		0.6	7.85	12.68	TRUE	6.76	TRUE	0.774	TRUE	0.18	TRUE	-91.2	TRUE	4.9	FALSE
12/8/15	1640		X	0.7	7.85	12.62	TRUE	6.76	TRUE	0.773	TRUE	0.18	TRUE	-91.6	TRUE	4.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-8D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	9.97'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	32.24'		
Well Screened Interval	28-33'	Pump Intake Depth	30.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1525	X		0.1	9.97	13.54	NA	7.63	NA	0.425	NA	0.45	NA	-214.5	NA	4.1	NA
12/8/15	1530	X		0.2	9.97	13.54	NA	7.63	NA	0.426	NA	0.38	NA	-215.2	NA	4.1	NA
12/8/15	1535	X		0.3	9.97	13.52	TRUE	7.61	TRUE	0.424	TRUE	0.36	FALSE	-217.4	TRUE	3.9	TRUE
12/8/15	1540	X		0.4	9.97	13.48	TRUE	7.66	TRUE	0.425	TRUE	0.36	TRUE	-218.1	TRUE	3.7	TRUE
12/8/15	1545		X	0.5	9.97	13.46	TRUE	7.67	TRUE	0.425	TRUE	0.38	TRUE	-218.3	TRUE	3.6	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-8s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	12/08/15	Static Water Level:	10.15'	Comments:	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	13.41'		
Well Screened Interval	9-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/8/15	1500	X		0.1	10.15	15.20	NA	7.03	NA	0.570	NA	3.66	NA	-10.6	NA	5.2	NA
12/8/15	1505	X		0.2	10.15	15.21	NA	7.01	NA	0.565	NA	2.61	NA	-10.5	NA	5.0	NA
12/8/15	1515	X		0.3	10.15	15.15	TRUE	7.00	TRUE	0.567	TRUE	1.76	FALSE	-9.8	TRUE	3.8	FALSE
12/8/15	1510	X		0.4	10.15	15.11	TRUE	6.99	TRUE	0.567	TRUE	1.70	FALSE	-9.6	TRUE	3.6	FALSE
12/8/15	1515		X	0.5	10.15	15.11	TRUE	6.97	TRUE	0.567	TRUE	1.67	TRUE	-8.8	TRUE	3.6	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**BG-1S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	5.63'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	9.60'		
Well Screened Interval	5-10'	Pump Intake Depth	8.00'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1405	X		0.1	5.63	8.39	7.64	0.23	1.65	24.4	7.60
	1410	X		0.2	5.63	7.76	6.59	0.146	1.63	35.4	5.90
	1415	X		0.3	5.63	7.79	6.47	0.153	1.34	32.7	4.80
	1420	X		0.4	5.63	7.82	6.32	0.159	1.14	30.4	3.42
	1425	X		0.5	5.63	7.86	6.28	0.155	1.12	19.3	3.30
	1430	X		0.6	5.63	7.86	6.19	0.152	1.05	16.7	3.30
	1435	X		0.7	5.63	7.88	6.13	0.148	0.96	17.1	3.20
	1440		X	0.8	5.63	7.76	6.17	0.152	0.99	14.2	3.20

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**BG-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	5.41'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	30.63'		
Well Screened Interval	26-31'	Pump Intake Depth	28.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1420	X		0.1	5.41	10.05	7.21	0.251	4	106.1	28.2
	1425	X		0.2	5.41	10.21	7.22	0.252	0.53	35.7	13.4
	1430	X		0.3	5.41	10.25	7.24	0.252	0.53	-20	3.2
	1435	X		0.4	5.41	10.3	7.24	0.253	0.5	-28.7	3
	1440	X		0.5	5.41	10.33	7.25	0.253	0.48	-29	3
	1445		X	0.6	5.41	10.34	7.25	0.253	0.47	-30.4	2.7

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-1S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	5.32'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	9.60'		
Well Screened Interval	5-10'	Pump Intake Depth	8.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1150	X		0.1	5.32	3.82	7.20	0.477	5.43	150.6	16.70
	1155	X		0.2	5.32	3.83	7.20	0.477	4.47	148.5	12.40
	1200	X		0.3	5.32	3.85	7.22	0.454	1.20	123.4	5.66
	1205	X		0.4	5.32	3.85	7.24	0.410	0.99	122.5	4.60
	1210	X		0.5	5.32	3.87	7.24	0.403	0.98	122.9	4.50
	1215		X	0.6	5.32	3.87	7.25	0.400	0.96	118.2	4.40

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	5.06'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	32.00'		
Well Screened Interval	27-32'	Pump Intake Depth	29.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1150	X		0.1	5.06	10.21	6.75	0.632	1.17	-76.4	4.60
	1155	X		0.2	5.06	10.35	6.75	0.634	0.67	-79.7	3.20
	1200	X		0.3	5.06	10.42	6.80	0.639	0.42	-88.3	1.20
	1205	X		0.4	5.06	10.48	6.85	0.640	0.16	-93.3	1.00
	1210	X		0.5	5.06	10.62	6.88	0.641	0.16	-96.7	0.98
	1215		X	0.6	5.06	10.68	6.88	0.646	0.15	-98.0	0.90

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-2S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.32'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.75'		
Well Screened Interval	7-12'	Pump Intake Depth	9.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1105	X		0.1	3.32	3.90	7.36	0.277	3.90	120.6	52.2
	1110	X		0.2	3.32	3.99	7.34	0.277	3.80	114.1	50.6
	1115	X		0.3	3.32	4.00	7.25	0.277	3.50	100.4	32.3
	1120	X		0.4	3.32	4.00	7.20	0.276	2.50	85.6	15.6
	1125	X		0.5	3.32	4.03	7.15	0.276	1.94	76.2	5.2
	1130	X		0.6	3.32	4.04	7.15	0.277	1.90	69.7	4.8
	1135		X	0.7	3.32	4.06	7.14	0.277	1.90	66.4	4.8

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-2D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.57'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	30.62'		
Well Screened Interval	26-31'	Pump Intake Depth	28.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1110	X		0.1	3.57	8.12	6.78	0.490	1.37	-51.1	8.32
	1115	X		0.2	3.57	9.03	6.80	0.501	0.40	-59.4	7.30
	1120	X		0.3	3.57	9.39	6.74	0.503	0.24	-67.3	6.90
	1125	X		0.4	3.57	9.51	6.74	0.503	0.23	-70.9	5.40
	1130		X	0.5	3.57	9.54	6.81	0.503	0.17	-70.0	4.60

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-3S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.11'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.66'		
Well Screened Interval	2-12'	Pump Intake Depth	7.00'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1010	X		0.1	3.11	8.09	6.83	0.718	1.49	-44.0	21.20
	1015	X		0.2	3.11	8.19	6.83	0.715	1.70	-49.1	19.50
	1020	X		0.3	3.11	8.08	6.89	0.717	1.41	-55.4	12.40
	1025	X		0.4	3.11	7.88	6.76	0.685	1.18	-54.8	5.70
	1030	X		0.5	3.11	7.97	6.79	0.677	0.94	-68.2	4.90
	1035	X		0.6	3.11	8.07	6.81	0.676	0.91	-65.9	4.70
	1040		X	0.7	3.11	8.09	6.82	0.674	0.85	-71.6	4.70

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-3D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.00'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	31.00'		
Well Screened Interval	26-31'	Pump Intake Depth	28.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1010	X		0.1	3.00	10.66	7.34	0.690	0.82	-40.6	4.90
	1015	X		0.2	3.00	10.66	7.32	0.699	0.60	-49.0	4.80
	1020	X		0.3	3.00	10.66	7.32	0.715	0.42	-67.3	4.50
	1025	X		0.4	3.00	10.66	7.33	0.722	0.22	-80.3	3.33
	1030	X		0.5	3.00	10.66	7.32	0.721	0.20	-83.3	3.21
	1035		X	0.6	3.00	10.66	7.33	0.720	0.20	-84.3	3.00

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-4S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	2.91'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.57'		
Well Screened Interval	7-12'	Pump Intake Depth	10.00'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	0920	X		0.1	2.91	6.50	6.74	0.821	1.20	225.7	4.30
	0925	X		0.2	2.91	6.50	6.74	0.812	0.98	187.6	3.80
	0930	X		0.3	2.91	6.49	6.73	0.808	0.95	132.8	3.60
	0935	X		0.4	2.91	6.48	6.73	0.803	0.91	118.5	3.01
	0940	X		0.5	2.91	6.48	6.73	0.801	0.89	112.3	3.00
	0945		X	0.6	2.91	6.48	6.73	0.800	0.88	110.4	2.91

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-4D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.01'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	28'		
Well Screened Interval	23-28'	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	915	X		0.1	3.01	9.73	7.09	0.881	3.51	-110.4	14.7
	920	X		0.2	3.01	9.95	7.16	0.883	2.01	-122.9	11.3
	925	X		0.3	3.01	10.26	7.31	0.888	0.07	-151.7	10.2
	930	X		0.4	3.01	10.41	7.32	0.899	0.05	-168.7	8.8
	935	X		0.5	3.01	10.52	7.32	0.925	0.07	-178.8	7.4
	940	X		0.6	3.01	10.6	7.3	0.95	0.08	-178.2	6.1
	945	X		0.7	3.01	10.48	7.27	0.951	0.08	-174.0	5.1
	950		X	0.8	3.01	10.64	7.22	0.963	0.08	-171.4	4.7

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-5S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	4.79'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	13.90'		
Well Screened Interval	4-14'	Pump Intake Depth	9.90'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	810	X		0.1	4.79	7.54	7.04	0.204	0.91	266.9	34.5
	815	X		0.2	4.79	7.57	7.04	0.222	0.82	270.9	31.4
	820	X		0.3	4.79	7.48	7.03	0.227	0.75	272.2	27.6
	825	X		0.4	4.79	7.46	7.01	0.243	0.67	274.7	25.3
	830	X		0.5	4.79	7.48	6.97	0.257	0.64	275.1	23.6
	835	X		0.6	4.79	7.57	7.00	0.274	0.61	274.2	17.5
	840	X		0.7	4.79	7.58	6.99	0.282	0.58	271.9	15.2
	845	X		0.8	4.79	7.70	7.00	0.293	0.56	271.0	14.6
	850		X	0.9	4.79	7.68	7.00	0.298	0.54	270.9	13.2

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None
Filtered Metals	1 - 500mL Plastic	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-5D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	5.23'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	27.76'		
Well Screened Interval	23-28'	Pump Intake Depth	25.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	0810	X		0.1		10.7	7.56	0.536	0.05	-153.4	26.2
	0815	X		0.2		10.68	7.54	0.536	0.04	-147.6	20.5
	0820	X		0.3		10.68	7.54	0.536	0.04	-149.2	12.26
	0825	X		0.4		10.6	7.6	0.537	0.04	-156.7	12.2
	0830	X		0.5		10.58	7.61	0.537	0.04	-162.3	12
	0835	X		0.6		10.48	7.61	0.537	0.1	-154.3	11.7
	0840	X		0.7		10.45	7.61	0.537	0.1	-151.1	11.5
	0845		X	0.8		10.5	7.64	0.537	0.1	-155.7	11.2

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/ 250 mL	None
Total Metals	Plastic/ 250 mL	HNO3
Low Level Mercury	Clear Glass/ 250 mL	None
Dissolved Metals/Field Filtered	Plastic/ 250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-6S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.74'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.32'		
Well Screened Interval	7-12'	Pump Intake Depth	9.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1530	X		0.1	3.74	8.40	6.64	0.734	0.71	29.1	5.00
	1535	X		0.2	3.74	8.52	6.67	0.734	0.25	32.4	4.70
	1540	X		0.3	3.74	8.46	6.67	0.726	0.24	32.8	4.60
	1545		X	0.4	3.74	8.46	6.70	0.723	0.23	34.9	4.50

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-6D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.74'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	29.41'		
Well Screened Interval	25-30'	Pump Intake Depth	27.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/16/16	1530	X		0.1	3.74	10.02	7.69	0.385	0.38	150.7	20.20
	1535	X		0.2	3.74	10.04	7.68	0.386	0.37	145.7	15.00
	1540	X		0.3	3.74	10.09	7.68	0.388	0.33	120.8	13.80
	1545	X		0.4	3.74	10.1	7.67	0.390	0.29	105.6	10.50
	1550	X		0.5	3.74	10.13	7.65	0.393	0.29	98.1	10.20
	1555		X	0.6	3.74	10.13	7.65	0.394	0.28	96.1	9.68

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None
Filtered Metals	1 - 500mL Plastic	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/16/2016
Time	740
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-7S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/17/16	Static Water Level:	7.10'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	16.46'		
Well Screened Interval	12-17'	Pump Intake Depth	14.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/17/16	0845	X		0.1	7.1	9.08	6.8	0.831	0.40	49.3	15.6
	0850	X		0.2	7.1	9.10	6.81	0.830	0.30	41.1	13.9
	0855	X		0.3	7.1	9.08	6.81	0.829	0.32	34.2	12.0
	0900	X		0.4	7.1	9.01	6.82	0.826	0.23	-4.1	7.6
	0905	X		0.5	7.1	9.08	6.84	0.827	0.23	-39.4	7.6
	0910	X		0.6	7.1	9.10	6.84	0.830	0.22	-58.5	10.1
	0915	X		0.7	7.1	9.10	6.84	0.830	0.21	-60.2	5.4
	0920	X		0.8	7.1	9.11	6.83	0.829	0.20	-61.3	5.1
	0925		X	0.9	7.1	9.12	6.84	0.830	0.19	-63.2	5.0

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/17/2016
Time	815
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-7D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/17/16	Static Water Level:	7.01'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	31.26'		
Well Screened Interval	27-32'	Pump Intake Depth	29.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/17/16	850	X		0.1	7.01	11.17	6.8	0.468	1.25	14.6	8.9
	855	X		0.2	7.01	11.18	6.8	0.468	0.71	-19.8	7.5
	900	X		0.3	7.01	11.24	6.87	0.47	0.68	-68.2	5.3
	905	X		0.4	7.01	11.35	6.88	0.472	0.61	-83.7	4.2
	910	X		0.5	7.01	11.45	6.92	0.473	0.58	-86.9	4.1
	915		X	0.6	7.01	11.51	6.96	0.473	0.57	-90.4	4.1

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/17/2016
Time	815
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-8S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/17/16	Static Water Level:	9.51'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	13.41'		
Well Screened Interval	9-14'	Pump Intake Depth	11.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/17/16	0950	X		0.1	9.51	10.16	7.10	0.562	4.01	1.7	2.09
	0955	X		0.2	9.51	10.17	7.11	0.562	3.92	2.3	2.00
	1000	X		0.3	9.51	10.14	7.09	0.562	3.95	3.5	1.98
	1005		X	0.4	9.51	10.15	7.07	0.560	3.94	4.0	1.90

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/17/2016
Time	815
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-8D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/17/16	Static Water Level:	9.31'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	32.24'		
Well Screened Interval	28-33'	Pump Intake Depth	30.50'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
3/17/16	935	X		0.1	9.31	11.21	7.25	0.425	2.68	-42.7	3.20
	940	X		0.2	9.31	13.05	7.04	0.423	1.65	-72.3	2.70
	945	X		0.3	9.31	13.08	7.02	0.440	1.54	-97.2	1.90
	950	X		0.4	9.31	13.19	6.99	0.440	0.71	-119.7	1.30
	955	X		0.5	9.31	13.22	7.01	0.441	0.69	-124.6	1.28
	1000		X	0.6	9.31	13.11	7.03	0.442	0.65	-128.0	1.40

Laboratory ALS Environmental City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals	1- 500mL Plastic	HNO3
Low-Lvl Mercury	1 - 250 mL Glass	None
Anion	1-250mL Plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Used 3-point calibration to calibrate YSI

Most Recent Calibration:	
Date	3/17/2016
Time	815
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4
pH 7.0	7
pH 10.0	10

Standard	Reading
Cond 1.419	1.419
ORP 240	240

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**BG-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/13/16	Static Water Level:	5.79'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	30.63'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C) Reading	Temperature (°C) Sample	pH (Std. Units) Reading	pH (Std. Units) Sample	Specific Conductance (mS/cm) Reading	Specific Conductance (mS/cm) Sample	Dissolved Oxygen (mg/L) Reading	Dissolved Oxygen (mg/L) Sample	Redox Potential (mV) Reading	Redox Potential (mV) Sample	Turbidity (NTU) Reading	Turbidity (NTU) Sample
6/13/16	1120	X		0.1	5.79	11.95	NA	6.07	NA	0.264	NA	1.46	NA	6.8	NA	4.98	NA
	1125	X		0.2	5.79	11.94	NA	6.30	NA	0.263	NA	0.63	NA	-11.4	NA	4.84	NA
	1130	X		0.3	5.8	12.22	TRUE	6.32	FALSE	0.260	TRUE	0.62	FALSE	-15.2	FALSE	4.78	TRUE
	1135	X		0.4	5.79	12.28	TRUE	6.36	TRUE	0.260	TRUE	0.60	TRUE	-20.1	TRUE	4.63	TRUE
	1140	X		0.5	5.8	12.31	TRUE	6.38	TRUE	0.260	TRUE	0.58	TRUE	-22.5	TRUE	4.62	TRUE
	1145	X		0.6	5.82	12.39	TRUE	6.41	TRUE	0.260	TRUE	0.54	TRUE	-28.2	TRUE	4.60	TRUE
	1150		X	0.7	5.8	12.36	TRUE	6.46	TRUE	0.260	TRUE	0.58	TRUE	-32.1	TRUE	4.55	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/13/2016
Time	1045
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**BG-1S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/13/16	Static Water Level:	5.98'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	9.60'		
Well Screened Interval	5-10'	Pump Intake Depth	8'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/16	1205	X		0.1	5.98	12.28	NA	6.17	NA	0.206	NA	1.57	NA	9.3	NA	5.00	NA
	1210	X		0.2	5.99	12.33	NA	6.20	NA	0.211	NA	1.34	NA	10.6	NA	4.67	NA
	1215	X		0.3	5.99	12.35	TRUE	6.18	TRUE	0.213	FALSE	1.23	FALSE	10.3	TRUE	4.33	FALSE
	1220	X		0.4	5.98	12.43	TRUE	6.21	TRUE	0.215	TRUE	1.21	TRUE	6.5	TRUE	4.30	TRUE
	1225	X		0.5	5.98	12.46	TRUE	6.20	TRUE	0.215	TRUE	1.12	TRUE	3.7	TRUE	4.20	TRUE
	1230		X	0.6	5.99	12.47	TRUE	6.19	TRUE	0.215	TRUE	1.10	TRUE	3.4	TRUE	4.15	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-Point pH and specific conductance calibration

Most Recent Calibration:	
Date	6/13/2016
Time	1045
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	5.04'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	32'		
Well Screened Interval	27-32'	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/14/16	1415	X		0.1	4.98	14.21	NA	6.75	NA	0.597	NA	0.40	NA	-40.3	NA	4.6	NA
	1420	X		0.2	4.98	14.23	NA	6.76	NA	0.597	NA	0.39	NA	-41.1	NA	3.6	NA
	1425	X		0.3	4.98	14.15	TRUE	6.76	TRUE	0.598	TRUE	0.38	TRUE	-42.4	TRUE	3.6	FALSE
	1430	X		0.4	4.98	14.20	TRUE	6.76	TRUE	0.597	TRUE	0.37	TRUE	-49.7	TRUE	3.6	TRUE
	1435	X		0.5	4.99	14.32	TRUE	6.77	TRUE	0.597	TRUE	0.36	TRUE	-50.9	TRUE	3.4	TRUE
	1440		X	0.6	4.99	14.38	TRUE	6.76	TRUE	0.597	TRUE	0.35	TRUE	-52.0	TRUE	3.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	MW-1S	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	5.26'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	9.60'		
Well Screened Interval	5-10'	Pump Intake Depth	8.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/14/16	1330	X		0.1	5.19	15.49	NA	7.01	NA	0.505	NA	1.78	NA	-6.7	NA	17.5	NA
	1335	X		0.2	5.2	15.51	NA	7.05	NA	0.503	NA	1.69	NA	-6.2	NA	10.2	NA
	1340	X		0.3	5.2	15.58	TRUE	7.05	TRUE	0.501	TRUE	1.65	TRUE	-5.8	TRUE	5.0	FALSE
	1345	X		0.4	5.2	15.56	TRUE	7.03	TRUE	0.498	TRUE	1.63	TRUE	-2.8	TRUE	4.9	FALSE
	1350	X		0.5	5.2	15.67	TRUE	7.07	TRUE	0.495	TRUE	1.58	TRUE	-1.7	TRUE	4.5	TRUE
	1355		X	0.6	5.2	15.69	TRUE	7.07	TRUE	0.490	TRUE	1.50	TRUE	-1.2	TRUE	4.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-2D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	3.64'	Comments: Sampled well when all stablization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	30.62'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C) Reading	Temperature (°C) Sample	pH (Std. Units) Reading	pH (Std. Units) Sample	Specific Conductance (mS/cm) Reading	Specific Conductance (mS/cm) Sample	Dissolved Oxygen (mg/L) Reading	Dissolved Oxygen (mg/L) Sample	Redox Potential (mV) Reading	Redox Potential (mV) Sample	Turbidity (NTU) Reading	Turbidity (NTU) Sample
6/14/16	1610	X		0.1	3.6	15.69	NA	6.81	NA	0.513	NA	0.32	NA	-29.1	NA	5.0	NA
	1615	X		0.2	3.6	15.75	NA	6.81	NA	0.514	NA	0.31	NA	-31.0	NA	4.2	NA
	1620	X		0.3	3.6	15.66	TRUE	6.84	TRUE	0.513	TRUE	0.29	TRUE	-36.7	TRUE	3.6	FALSE
	1625	X		0.4	3.6	15.60	TRUE	6.86	TRUE	0.510	TRUE	0.28	TRUE	-38.4	TRUE	3.3	FALSE
	1630		X	0.5	3.6	15.59	TRUE	6.89	TRUE	0.511	TRUE	0.27	TRUE	-39.5	TRUE	3.0	FALSE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-2S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	3.40'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	11.75'		
Well Screened Interval	7-12'	Pump Intake Depth	9.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/14/16	1530	X		0.1	3.33	17.17	NA	6.74	NA	0.350	NA	0.52	NA	-46.0	NA	15.8	NA
	1535	X		0.2	3.33	17.27	NA	6.73	NA	0.349	NA	0.50	NA	-47.1	NA	11.2	NA
	1540	X		0.3	3.33	17.34	TRUE	6.74	TRUE	0.347	TRUE	0.48	TRUE	-48.4	TRUE	7.4	FALSE
	1545	X		0.4	3.33	17.43	TRUE	6.78	TRUE	0.344	TRUE	0.46	TRUE	-55.0	TRUE	5.0	FALSE
	1550	X		0.5	3.34	17.45	TRUE	6.82	TRUE	0.338	TRUE	0.44	TRUE	-57.2	TRUE	4.9	FALSE
	1555	X		0.6	3.34	17.53	TRUE	6.84	TRUE	0.340	TRUE	0.42	TRUE	-58.6	TRUE	4.9	TRUE
	1600		X	0.7	3.34	17.55	TRUE	6.89	TRUE	0.330	TRUE	0.40	TRUE	-58.7	TRUE	4.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-3D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/13/16	Static Water Level:	3.09'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	31'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/16	1700	X		0.1	3.05	13.90	NA	7.01	NA	0.705	NA	0.55	NA	-93.4	NA	1.90	NA
	1705	X		0.2	3.05	13.88	NA	7.01	NA	0.705	NA	0.50	NA	-97.1	NA	1.43	NA
	1710	X		0.3	3.06	13.92	TRUE	7.01	TRUE	0.703	TRUE	0.46	FALSE	-100.6	TRUE	1.22	FALSE
	1715	X		0.4	3.06	13.90	TRUE	7.02	TRUE	0.703	TRUE	0.45	TRUE	-103.9	TRUE	1.15	FALSE
	1720	X		0.5	3.06	13.90	TRUE	7.03	TRUE	0.704	TRUE	0.43	TRUE	-106.9	TRUE	1.11	TRUE
	1725		X	0.6	3.06	13.88	TRUE	7.07	TRUE	0.706	TRUE	0.43	TRUE	-107.3	TRUE	1.08	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-Point pH calibration.

Most Recent Calibration:	
Date	6/13/2016
Time	1045
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-3S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/13/16	Static Water Level:	3.23'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	11.66'		
Well Screened Interval	7-12'	Pump Intake Depth	10'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/16	1630	X		0.1	3.19	14.00	NA	6.63	NA	0.721	NA	1.02	NA	-52.8	NA	0.90	NA
	1635	X		0.2	3.19	14.10	NA	6.70	NA	0.719	NA	1.08	NA	-55.6	NA	0.84	NA
	1640	X		0.3	3.2	14.15	TRUE	6.72	TRUE	0.720	TRUE	1.02	TRUE	-58.7	TRUE	0.84	TRUE
	1645	X		0.4	3.19	14.23	TRUE	6.76	TRUE	0.720	TRUE	0.98	TRUE	-62.4	TRUE	0.81	TRUE
	1650		X	0.5	3.19	14.34	TRUE	6.81	TRUE	0.717	TRUE	1.00	TRUE	-66.5	TRUE	0.78	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-Point pH calibration.

Most Recent Calibration:	
Date	6/13/2016
Time	1045
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-4D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	3.10'	Comments: Sample well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	28'		
Well Screened Interval	23-28'	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/14/16	1110	X		0.1	3.06	14.00	NA	7.22	NA	0.860	NA	0.56	NA	-188.9	NA	1.9	NA
	1115	X		0.2	3.06	14.02	NA	7.23	NA	0.861	NA	0.50	NA	-188.0	NA	1.9	NA
	1120	X		0.3	3.07	14.02	TRUE	7.25	TRUE	0.863	TRUE	0.48	FALSE	-186.3	TRUE	1.9	TRUE
	1125	X		0.4	3.06	14.01	TRUE	7.27	TRUE	0.863	TRUE	0.42	FALSE	-183.4	TRUE	1.8	TRUE
	1130	X		0.5	3.06	14.05	TRUE	7.28	TRUE	0.862	TRUE	0.43	FALSE	-181.4	TRUE	1.8	TRUE
	1135		X	0.6	3.06	14.08	TRUE	7.28	TRUE	0.860	TRUE	0.40	TRUE	-179.8	TRUE	1.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-4s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	3.02'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	11.57'		
Well Screened Interval	7-12'	Pump Intake Depth	10'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/14/16	1025	X		0.1	2.98	13.28	NA	6.62	NA	0.962	NA	0.62	NA	-6.4	NA	6.50	NA
	1030	X		0.2	2.98	13.29	NA	6.64	NA	0.960	NA	0.57	NA	-6.8	NA	6.38	NA
	1035	X		0.3	2.98	13.31	TRUE	6.65	TRUE	0.958	TRUE	0.55	FALSE	-7.5	TRUE	6.15	TRUE
	1040	X		0.4	2.96	13.34	TRUE	6.67	TRUE	0.955	TRUE	0.52	TRUE	-9.2	TRUE	5.05	FALSE
	1045	X		0.5	2.98	13.35	TRUE	6.69	TRUE	0.953	TRUE	0.50	TRUE	-10.8	TRUE	5.02	FALSE
	1050		X	0.6	2.98	13.38	TRUE	6.67	TRUE	0.950	TRUE	0.48	TRUE	-11.1	TRUE	4.98	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-5D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	5.29'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	27.76'		
Well Screened Interval	23-28'	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/14/16	905	X		0.1	5.23	12.31	NA	7.52	NA	0.589	NA	0.58	NA	-219.7	NA	22.50	NA
	910	X		0.2	5.23	12.33	NA	7.53	NA	0.589	NA	0.54	NA	-220.2	NA	19.30	NA
	915	X		0.3	5.23	12.38	TRUE	7.56	TRUE	0.590	TRUE	0.56	TRUE	-225.3	TRUE	19.70	FALSE
	920	X		0.4	5.24	12.43	TRUE	7.60	TRUE	0.590	TRUE	0.53	TRUE	-227.4	TRUE	18.42	TRUE
	925	X		0.5	5.24	12.45	TRUE	7.64	TRUE	0.594	TRUE	0.51	TRUE	-220.4	TRUE	17.98	TRUE
	930	X		0.6	5.23	12.46	TRUE	7.64	TRUE	0.595	TRUE	0.48	TRUE	-218.3	TRUE	17.30	TRUE
	935	X		0.7	5.23	12.48	TRUE	7.65	TRUE	0.595	TRUE	0.47	TRUE	-216.5	TRUE	16.00	FALSE
	940	X		0.8	5.23	12.50	TRUE	7.66	TRUE	0.593	TRUE	0.48	TRUE	-213.2	TRUE	13.20	FALSE
	945		X	0.9	5.23	12.51	TRUE	7.65	TRUE	0.591	TRUE	0.44	TRUE	-210.3	TRUE	14.60	FALSE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/ 250 mL	None
Total Metals	Plastic/ 250 mL	HNO3
Low Level Mercury	Clear Glass/ 250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:Performed 3-point pH calibration

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-5s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	4.84'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	13.90'		
Well Screened Interval	9-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/14/16	815	X		0.1	4.78	12.78	NA	7.43	NA	0.808	NA	0.76	NA	-49.7	NA	22.40	NA
	820	X		0.2	4.78	12.75	NA	7.42	NA	0.808	NA	0.54	NA	-50.8	NA	17.21	NA
	825	X		0.3	4.79	12.78	TRUE	7.43	TRUE	0.808	TRUE	0.54	FALSE	-51.7	TRUE	15.30	FALSE
	830	X		0.4	4.8	12.74	TRUE	7.44	TRUE	0.807	TRUE	0.52	TRUE	-52.9	TRUE	13.80	FALSE
	835	X		0.5	4.79	12.77	TRUE	7.44	TRUE	0.804	TRUE	0.50	TRUE	-56.2	TRUE	5.00	FALSE
	840	X		0.6	4.79	12.82	TRUE	7.44	TRUE	0.796	TRUE	0.48	TRUE	-59.5	TRUE	4.98	FALSE
	845		X	0.7	4.78	12.87	TRUE	7.44	TRUE	0.794	TRUE	0.45	TRUE	-60.1	TRUE	4.92	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/ 250 mL	None
Total Metals	Plastic/ 250 mL	HNO3
Low Level Mercury	Clear Glass/ 250 mL	None
Dissolved Metals/Field Filtered	Plastic/ 250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-6D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	03/16/16	Static Water Level:	3.76'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	29.41'		
Well Screened Interval	25-30'	Pump Intake Depth	27.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/15/16	0755	X		0.1	3.72	13.09	NA	7.13	NA	0.552	NA	0.35	NA	-173.4	NA	7.5	NA
	0800	X		0.2	3.72	13.28	NA	7.14	NA	0.552	NA	0.35	NA	-174.3	NA	6.4	NA
	0805	X		0.3	3.73	13.15	TRUE	7.16	TRUE	0.552	TRUE	0.35	TRUE	-175.2	TRUE	6.1	FALSE
	0810	X		0.4	3.74	13.12	TRUE	7.18	TRUE	0.553	TRUE	0.32	TRUE	-176.7	TRUE	5.3	FALSE
	0815	X		0.5	3.73	13.12	TRUE	7.22	TRUE	0.561	TRUE	0.32	TRUE	-173.8	TRUE	5.2	FALSE
	0820		X	0.6	3.74	13.12	TRUE	7.23	TRUE	0.566	TRUE	0.32	TRUE	-174.5	TRUE	4.9	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-6S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/15/16	Static Water Level:	3.72'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	11.32'		
Well Screened Interval	7-12'	Pump Intake Depth	9.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/15/16	0835	X		0.1	3.67	13.45	NA	7.04	NA	0.457	NA	0.45	NA	-41.0	NA	5.3	NA
	0840	X		0.2	3.67	13.51	NA	6.95	NA	0.500	NA	0.50	NA	-35.6	NA	3.5	NA
	0845	X		0.3	3.68	13.57	TRUE	6.94	TRUE	0.512	FALSE	0.48	FALSE	-28.9	FALSE	2.9	FALSE
	0850	X		0.4	3.68	13.62	TRUE	6.95	TRUE	0.522	FALSE	0.52	TRUE	-24.6	FALSE	2.8	FALSE
	0855	X		0.5	3.68	13.69	TRUE	6.95	TRUE	0.525	TRUE	0.50	TRUE	-24.2	TRUE	2.8	TRUE
	0900		X	0.6	3.68	13.70	TRUE	6.96	TRUE	0.523	TRUE	0.48	TRUE	-22.2	TRUE	2.6	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-7D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0213018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/15/16	Static Water Level:	6.97'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	31.26'		
Well Screened Interval	27-32'	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/15/16	0955	X		0.1	6.92	13.17	NA	7.25	NA	0.394	NA	0.99	NA	-70.7	NA	5.2	NA
	1000	X		0.2	6.92	13.21	NA	7.27	NA	0.394	NA	1.01	NA	-72.6	NA	1.8	NA
	1005	X		0.3	6.92	13.18	TRUE	7.30	TRUE	0.393	TRUE	1.03	TRUE	-74.5	TRUE	1.6	FALSE
	1010	X		0.4	6.92	13.14	TRUE	7.30	TRUE	0.393	TRUE	1.03	TRUE	-75.4	TRUE	1.6	FALSE
	1015		X	0.5	6.92	13.15	TRUE	7.30	TRUE	0.393	TRUE	1.04	TRUE	-76.2	TRUE	1.5	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-7S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/15/16	Static Water Level:	7.05'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	16.46'		
Well Screened Interval	12-17'	Pump Intake Depth	14.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/15/16	0920	X		0.1	7.01	13.98	NA	6.82	NA	0.710	NA	0.91	NA	-75.3	NA	1.9	NA
	0925	X		0.2	7.01	13.99	NA	6.84	NA	0.708	NA	0.88	NA	-74.3	NA	1.6	NA
	0930	X		0.3	7.01	14.02	TRUE	6.85	TRUE	0.705	TRUE	0.89	TRUE	-74.5	TRUE	1.6	FALSE
	0935	X		0.4	7.01	13.99	TRUE	6.85	TRUE	0.709	TRUE	0.86	TRUE	-75.7	TRUE	1.6	TRUE
	0940	X		0.5	7.01	13.95	TRUE	6.85	TRUE	0.708	TRUE	0.93	TRUE	-76.8	TRUE	1.5	TRUE
	0945		X	0.6	7.01	13.96	TRUE	6.85	TRUE	0.708	TRUE	0.93	TRUE	-77.5	TRUE	1.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	MW-8D	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/15/16	Static Water Level:	9.18'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	32.24'		
Well Screened Interval	28-33'	Pump Intake Depth	30.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/15/16	1050	X		0.1	9.12	14.09	NA	7.10	NA	0.368	NA	0.66	NA	-32.2	NA	1.20	NA
	1055	X		0.2	9.12	14.10	NA	7.10	NA	0.367	NA	0.65	NA	-29.9	NA	1.10	NA
	1100	X		0.3	9.12	14.12	TRUE	7.12	TRUE	0.366	TRUE	0.64	TRUE	-29.2	TRUE	1.10	TRUE
	1105	X		0.4	9.12	14.14	TRUE	7.12	TRUE	0.366	TRUE	0.65	TRUE	-29.1	TRUE	1.05	TRUE
	1110		X	0.5	9.12	14.15	TRUE	7.12	TRUE	0.365	TRUE	0.64	TRUE	-28.9	TRUE	1.02	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	MW-8S	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/15/16	Static Water Level:	9.36'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	T. Parker	Measured Well Depth:	13.41'		
Well Screened Interval	9-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/15/16	1025	X		0.1	9.32	14.90	NA	7.20	NA	0.415	NA	0.24	NA	-15.2	NA	1.3	NA
	1030	X		0.2	9.32	14.88	NA	7.20	NA	0.413	NA	0.23	NA	-14.5	NA	1.2	NA
	1035	X		0.3	9.32	14.87	TRUE	7.21	TRUE	0.411	TRUE	0.23	TRUE	-14.1	TRUE	1.2	TRUE
	1040		X	0.4	9.33	14.91	TRUE	7.19	TRUE	0.415	TRUE	0.23	TRUE	-13.6	TRUE	1.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**BG-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/20/16	Static Water Level:	6.01'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	30.63'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/16	725	X		0.1	5.96	14.42	NA	6.89	NA	0.240	NA	0.20	NA	-146.0	NA	4.20	NA
	730	X		0.2	5.96	14.38	NA	6.90	NA	0.240	NA	0.18	NA	-148.0	NA	4.01	NA
	735	X		0.3	5.96	14.25	TRUE	6.90	TRUE	0.245	TRUE	0.18	TRUE	-156.0	TRUE	3.96	TRUE
	740	X		0.4	5.96	14.16	TRUE	6.89	TRUE	0.247	TRUE	0.18	TRUE	-156.0	TRUE	3.89	TRUE
	745	X		0.5	5.96	14.13	TRUE	6.89	TRUE	0.248	TRUE	0.19	TRUE	-156.0	TRUE	3.80	TRUE
	750		X	0.6	5.96	14.13	TRUE	6.89	TRUE	0.248	TRUE	0.18	TRUE	-157.0	TRUE	3.90	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None
Dissolved Metals/Field Filtered	Plastic/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2016
Time	700
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**BG-1s**
Project Number:	0273018	Well Diameter:	2"
Date:	09/20/16	Static Water Level:	6.20'
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	9.60'
Well Screened Interval	5-10'	Pump Intake Depth	8'

Purge/Sampling Method: Low Flow Sampling
Stabilization Equipment: YSI/Peristaltic
Comments: Sampled well when all stabilization parameters successfully met criteria.

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/16	730	X		0.1	6.13	17.31	NA	6.91	NA	0.223	NA	0.00	NA	171.0	NA	4.20	NA
	735	X		0.2	6.13	17.28	NA	6.87	NA	0.217	NA	0.00	NA	170.0	NA	3.00	NA
	740	X		0.3	6.13	17.29	TRUE	6.65	FALSE	0.211	FALSE	0.00	#DIV/0!	144.0	FALSE	2.90	FALSE
	745	X		0.4	6.13	17.27	TRUE	6.63	FALSE	0.201	FALSE	0.00	#DIV/0!	130.0	FALSE	2.82	TRUE
	750	X		0.5	6.13	17.29	TRUE	6.63	TRUE	0.199	FALSE	0.00	#DIV/0!	125.0	FALSE	2.80	TRUE
	755		X	0.6	6.13	17.30	TRUE	6.65	TRUE	0.201	TRUE	0.00	#DIV/0!	123.0	TRUE	2.84	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/4 x 40 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-Point pH and specific conductance calibration

Most Recent Calibration:	
Date	9/20/2016
Time	700
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-1D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	4.98'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	32'		
Well Screened Interval	27-32'	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1445	X		0.1	4.92	20.44	NA	7.54	NA	0.325	NA	0.00	NA	-59.0	NA	1.6	NA
	1450	X		0.2	4.92	20.40	NA	7.49	NA	0.326	NA	0.00	NA	-60.0	NA	1.5	NA
	1455	X		0.3	4.92	20.33	TRUE	7.41	FALSE	0.335	FALSE	0.00	#DIV/0!	-58.0	TRUE	1.5	TRUE
	1500	X		0.4	4.92	20.28	TRUE	7.38	FALSE	0.340	FALSE	0.00	#DIV/0!	-59.0	TRUE	1.4	TRUE
	1505	X		0.5	4.92	20.28	TRUE	7.36	TRUE	0.341	TRUE	0.00	#DIV/0!	-60.0	TRUE	1.4	TRUE
	1510		X	0.6	4.92	20.24	TRUE	7.38	TRUE	0.342	TRUE	0.00	#DIV/0!	-60.0	TRUE	1.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/8/2015
Time	810
Meter	YSI/Peristaltic

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-1S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	5.07'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	9.60'		
Well Screened Interval	5-10'	Pump Intake Depth	8.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1450	X		0.1	5.01	24.77	NA	6.46	NA	0.480	NA	0.00	NA	-1.0	NA	0.6	NA
	1455	X		0.2	5.01	24.79	NA	6.44	NA	0.478	NA	0.00	NA	-1.0	NA	0.6	NA
	1500	X		0.3	5.01	24.77	TRUE	6.41	TRUE	0.469	TRUE	0.00	#DIV/0!	-2.0	TRUE	0.6	TRUE
	1505	X		0.4	5.01	24.73	TRUE	6.38	TRUE	0.434	FALSE	0.00	#DIV/0!	-1.0	TRUE	0.6	TRUE
	1510	X		0.5	5.01	24.73	TRUE	6.35	TRUE	0.433	FALSE	0.00	#DIV/0!	-10.0	TRUE	0.6	TRUE
	1515		X	0.6	5.01	24.74	TRUE	6.32	TRUE	0.429	TRUE	0.00	#DIV/0!	-11.0	TRUE	0.6	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

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Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-2D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	3.84'	Comments: Sampled well when all stablization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	30.62'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1405	X		0.1	3.78	19.94	NA	7.49	NA	0.537	NA	0.00	NA	-52.0	NA	1.5	NA
	1410	X		0.2	3.78	19.96	NA	7.50	NA	0.533	NA	0.00	NA	-50.0	NA	1.5	NA
	1415	X		0.3	3.78	20.00	TRUE	7.49	TRUE	0.534	TRUE	0.00	#DIV/0!	-49.0	TRUE	1.5	TRUE
	1420	X		0.4	3.78	19.93	TRUE	7.46	TRUE	0.530	TRUE	0.00	#DIV/0!	-52.0	TRUE	1.4	TRUE
	1425		X	0.5	3.79	19.94	TRUE	7.45	TRUE	0.534	TRUE	0.00	#DIV/0!	-54.0	TRUE	1.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	MW-2S	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/14/16	Static Water Level:	3.66'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.75'		
Well Screened Interval	7-12'	Pump Intake Depth	9.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1400	X		0.1	3.6	24.25	NA	6.57	NA	0.310	NA	0.00	NA	-56.0	NA	4.3	NA
	1405	X		0.2	3.6	24.26	NA	6.56	NA	0.311	NA	0.00	NA	-54.0	NA	4.1	NA
	1410	X		0.3	3.6	24.47	TRUE	6.58	TRUE	0.314	TRUE	0.00	#DIV/0!	-59.0	TRUE	4.2	TRUE
	1415	X		0.4	3.6	24.49	TRUE	6.58	TRUE	0.312	TRUE	0.00	#DIV/0!	-60.0	TRUE	4.2	TRUE
	1420		X	0.5	3.6	24.49	TRUE	6.60	TRUE	0.314	TRUE	0.00	#DIV/0!	-56.0	TRUE	4.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None
Dissolved Metals/Field Filtered	Plastic/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	MW-3D	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	06/13/16	Static Water Level:	3.23'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	31'		
Well Screened Interval	26-31'	Pump Intake Depth	28.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/16	1330	X		0.1	3.16	16.86	NA	6.70	NA	0.645	NA	0.00	NA	-112.0	NA	1.02	NA
	1335	X		0.2	3.16	16.75	NA	6.47	NA	0.644	NA	0.00	NA	-102.0	NA	0.96	NA
	1340	X		0.3	3.16	16.74	TRUE	6.45	FALSE	0.645	TRUE	0.00	#DIV/0!	-100.0	FALSE	0.90	FALSE
	1345	X		0.4	3.16	16.77	TRUE	6.43	TRUE	0.642	TRUE	0.00	#DIV/0!	-98.0	TRUE	0.88	TRUE
	1350	X		0.5	3.16	16.76	TRUE	6.44	TRUE	0.644	TRUE	0.00	#DIV/0!	-99.0	TRUE	0.90	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-Point pH calibration.

Most Recent Calibration:	
Date	6/13/2016
Time	1045
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-3s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	3.39'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.66'		
Well Screened Interval	7-12'	Pump Intake Depth	10'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1325	X		0.1	3.32	20.28	NA	7.54	NA	0.525	NA	0.30	NA	-78.0	NA	1.30	NA
	1330	X		0.2	3.32	20.33	NA	7.54	NA	0.526	NA	0.28	NA	-79.0	NA	1.25	NA
	1335	X		0.3	3.32	20.52	TRUE	7.53	TRUE	0.529	TRUE	0.25	FALSE	-82.0	TRUE	1.25	TRUE
	1340	X		0.4	3.32	20.55	TRUE	7.54	TRUE	0.530	TRUE	0.25	FALSE	-87.0	TRUE	1.20	TRUE
	1345		X	0.5	3.32	20.54	TRUE	7.54	TRUE	0.533	TRUE	0.28	FALSE	-84.0	TRUE	1.20	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-Point pH calibration.

Most Recent Calibration:	
Date	6/13/2016
Time	1045
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	MW-4D	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	3.30'	Comments: Sample well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	28'		
Well Screened Interval	23-28'	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1245	X		0.1	3.23	26.73	NA	7.53	NA	0.774	NA	0.00	NA	-108.0	NA	0.8	NA
	1250	X		0.2	3.23	25.30	NA	7.53	NA	0.774	NA	0.00	NA	-100.0	NA	0.7	NA
	1255	X		0.3	3.23	25.02	FALSE	7.43	FALSE	0.780	TRUE	0.00	#DIV/0!	-101.0	TRUE	0.7	FALSE
	1300	X		0.4	3.24	24.90	TRUE	7.38	FALSE	0.778	TRUE	0.00	#DIV/0!	-98.0	TRUE	0.7	TRUE
	1305	X		0.5	3.23	24.92	TRUE	7.36	TRUE	0.778	TRUE	0.00	#DIV/0!	-97.0	TRUE	0.7	TRUE
	1310		X	0.6	3.23	24.94	TRUE	7.37	TRUE	0.779	TRUE	0.00	#DIV/0!	-98.0	TRUE	0.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-4s**
Project Number:	0273018	Well Diameter:	2"
Date:	09/19/16	Static Water Level:	3.23'
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.57'
Well Screened Interval	7-12'	Pump Intake Depth	10'

Purge/Sampling Method: Low Flow Sampling
Stabilization Equipment: YSI/Peristaltic
Comments: Sampled well when all stabilization parameters successfully met criteria.

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1240	X		0.1	3.16	19.57	NA	6.09	NA	0.375	NA	0.00	NA	-80.0	NA	3.00	NA
	1245	X		0.2	3.16	19.53	NA	6.09	NA	0.376	NA	0.00	NA	-83.0	NA	2.90	NA
	1250	X		0.3	3.16	19.57	TRUE	6.05	TRUE	0.367	TRUE	0.00	#DIV/0!	-79.0	TRUE	2.90	TRUE
	1255	X		0.4	3.16	19.62	TRUE	6.09	TRUE	0.370	TRUE	0.00	#DIV/0!	-76.0	TRUE	2.80	TRUE
	1300	X		0.5	3.16	19.67	TRUE	6.08	TRUE	0.368	TRUE	0.00	#DIV/0!	-77.0	TRUE	2.72	TRUE
	1305		X	0.6	3.16	19.70	TRUE	6.10	TRUE	0.367	TRUE	0.00	#DIV/0!	-78.0	TRUE	2.70	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-5D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	5.60'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	27.76'		
Well Screened Interval	23-28'	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	955	X		0.1	5.53	19.38	NA	7.86	NA	0.571	NA	0.50	NA	-170.0	NA	4.15	NA
	1000	X		0.2	5.53	19.18	NA	7.89	NA	0.572	NA	0.48	NA	-172.0	NA	4.10	NA
	1005	X		0.3	5.53	19.05	TRUE	7.87	TRUE	0.570	TRUE	0.43	FALSE	-174.0	TRUE	4.00	TRUE
	1010	X		0.4	5.54	18.70	TRUE	7.91	TRUE	0.567	TRUE	0.37	FALSE	-172.0	TRUE	3.96	TRUE
	1015	X		0.5	5.53	18.71	TRUE	7.92	TRUE	0.570	TRUE	0.37	FALSE	-172.0	TRUE	2.90	FALSE
	1020	X		0.6	5.53	18.72	TRUE	7.92	TRUE	0.570	TRUE	0.34	TRUE	-173.0	TRUE	2.82	FALSE
	1030		X	0.7	5.53	18.81	TRUE	7.91	TRUE	0.571	TRUE	0.35	TRUE	-173.0	TRUE	2.72	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/ 250 mL	None
Total Metals	Plastic/ 250 mL	HNO3
Low Level Mercury	Clear Glass/ 250 mL	None
Dissolved Metals/Field Filtered	Plastic/ 250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:Performed 3-point pH calibration

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-5s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	5.09'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	13.90'		
Well Screened Interval	9-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	915	X		0.1	5.01	19.24	NA	7.70	NA	0.776	NA	0.40	NA	-49.7	NA	6.70	NA
	920	X		0.2	5.02	19.21	NA	7.71	NA	0.773	NA	0.32	NA	-47.6	NA	5.50	NA
	925	X		0.3	5.01	19.19	TRUE	7.72	TRUE	0.774	TRUE	0.30	FALSE	-50.3	TRUE	5.30	FALSE
	930	X		0.4	5.01	19.14	TRUE	7.71	TRUE	0.774	TRUE	0.29	TRUE	-53.0	TRUE	5.20	TRUE
	935	X		0.5	5.02	19.15	TRUE	7.70	TRUE	0.775	TRUE	0.27	TRUE	-52.0	TRUE	5.12	TRUE
	940	X		0.6	5.01	19.19	TRUE	7.69	TRUE	0.775	TRUE	0.25	FALSE	-53.0	TRUE	4.88	TRUE
	945		X	0.7	5.01	19.18	TRUE	7.69	TRUE	0.776	TRUE	0.26	TRUE	-53.0	TRUE	4.78	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/ 250 mL	None
Total Metals	Plastic/ 250 mL	HNO3
Low Level Mercury	Clear Glass/ 250 mL	None
Dissolved Metals/Field Filtered	Plastic/ 250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/14/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-6D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	3.86'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	29.41'		
Well Screened Interval	25-30'	Pump Intake Depth	27.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1035	X		0.1	3.79	16.67	NA	8.19	NA	0.550	NA	0.00	NA	-131.0	NA	0.80	NA
	1040	X		0.2	3.79	15.64	NA	8.18	NA	0.690	NA	0.00	NA	-132.0	NA	0.78	NA
	1045	X		0.3	3.79	15.43	FALSE	7.99	FALSE	0.691	FALSE	0.00	#DIV/0!	-123.0	TRUE	0.75	TRUE
	1050	X		0.4	3.78	15.45	TRUE	7.97	FALSE	0.693	TRUE	0.00	#DIV/0!	-120.0	FALSE	0.76	TRUE
	1055	X		0.5	3.79	15.43	TRUE	7.92	TRUE	0.700	TRUE	0.00	#DIV/0!	-121.0	TRUE	0.70	TRUE
	1100		X	0.6	3.79	15.45	TRUE	7.95	TRUE	0.701	TRUE	0.00	#DIV/0!	-124.0	TRUE	0.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	MW-6S	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/19/16	Static Water Level:	3.84'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	11.32'		
Well Screened Interval	7-12'	Pump Intake Depth	9.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/16	1035	X		0.1	3.78	19.30	NA	7.40	NA	0.739	NA	0.00	NA	45.0	NA	2.5	NA
	1040	X		0.2	3.78	19.31	NA	6.91	NA	0.731	NA	0.00	NA	54.0	NA	2.4	NA
	1045	X		0.3	3.78	19.32	TRUE	6.76	FALSE	0.730	TRUE	0.00	#DIV/0!	57.0	FALSE	2.4	TRUE
	1050	X		0.4	3.78	19.31	TRUE	6.78	FALSE	0.724	TRUE	0.00	#DIV/0!	55.0	TRUE	2.3	TRUE
	1055	X		0.5	3.78	19.35	TRUE	6.74	TRUE	0.721	TRUE	0.00	#DIV/0!	60.0	TRUE	2.2	TRUE
	1100		X	0.6	3.78	19.37	TRUE	6.78	TRUE	0.723	TRUE	0.00	#DIV/0!	63.0	TRUE	2.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/4 x 40 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-7D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0213018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/20/16	Static Water Level:	7.11'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	31.26'		
Well Screened Interval	27-32'	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/16	855	X		0.1	7.04	14.90	NA	6.85	NA	0.377	NA	0.00	NA	-30.0	NA	0.6	NA
	900	X		0.2	7.04	14.87	NA	6.84	NA	0.372	NA	0.00	NA	-27.0	NA	0.7	NA
	905	X		0.3	7.04	14.90	TRUE	6.86	TRUE	0.374	TRUE	0.00	#DIV/0!	-25.0	TRUE	0.7	FALSE
	910	X		0.4	7.04	14.89	TRUE	6.84	TRUE	0.377	TRUE	0.00	#DIV/0!	-26.0	TRUE	0.7	TRUE
	915		X	0.5	7.04	14.86	TRUE	6.86	TRUE	0.377	TRUE	0.00	#DIV/0!	-27.0	TRUE	0.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250mL	None
Total Metals	Plastic/250mL	HNO3
Low Level Mercury	Clear Glass/250mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-7s**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/20/16	Static Water Level:	7.20'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	16.46'		
Well Screened Interval	12-17'	Pump Intake Depth	14.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/16	850	X		0.1	7.13	17.19	NA	7.11	NA	0.638	NA	0.00	NA	-56.0	NA	1.7	NA
	855	X		0.2	7.13	17.17	NA	7.10	NA	0.638	NA	0.00	NA	-55.0	NA	1.5	NA
	900	X		0.3	7.13	17.15	TRUE	7.07	TRUE	0.635	TRUE	0.00	#DIV/0!	-57.0	TRUE	1.5	FALSE
	905	X		0.4	7.13	17.18	TRUE	7.08	TRUE	0.634	TRUE	0.00	#DIV/0!	-55.0	TRUE	1.5	TRUE
	910		X	0.5	7.13	17.20	TRUE	7.09	TRUE	0.633	TRUE	0.00	#DIV/0!	-50.0	TRUE	1.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes/IAW	Well ID:	**MW-8D**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	9/20/16	Static Water Level:	9.28'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	32.24'		
Well Screened Interval	28-33'	Pump Intake Depth	30.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/16	815	X		0.1	9.2	15.17	NA	7.76	NA	0.397	NA	0.00	NA	-80.0	NA	0.85	NA
	820	X		0.2	9.2	15.12	NA	7.78	NA	0.398	NA	0.00	NA	-85.0	NA	0.80	NA
	825	X		0.3	9.2	15.06	TRUE	7.86	FALSE	0.399	TRUE	0.00	#DIV/0!	-80.0	TRUE	0.65	FALSE
	830	X		0.4	9.2	15.08	TRUE	7.87	TRUE	0.399	TRUE	0.00	#DIV/0!	-75.0	TRUE	0.64	FALSE
	835		X	0.5	9.2	15.10	TRUE	7.84	TRUE	0.398	TRUE	0.00	#DIV/0!	-70.0	TRUE	0.62	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes/IAW	Well ID:	**MW-8S**	Purge/Sampling Method:	Low Flow Sampling
Project Number:	0273018	Well Diameter:	2"	Stabilization Equipment:	YSI/Peristaltic
Date:	09/20/16	Static Water Level:	9.45'	Comments: Sampled well when all stabilization parameters successfully met criteria.	
Samplers:	A. Alexander, T. Parker	Measured Well Depth:	13.41'		
Well Screened Interval	9-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/16	0815	X		0.1	9.39	20.64	NA	6.93	NA	0.398	NA	0.00	NA	-31.0	NA	1.5	NA
	0820	X		0.2	9.39	20.65	NA	6.95	NA	0.400	NA	0.00	NA	-31.0	NA	1.5	NA
	0825	X		0.3	9.39	20.72	TRUE	6.87	TRUE	0.406	TRUE	0.00	#DIV/0!	-27.0	TRUE	1.5	TRUE
	0830		X	0.4	9.39	20.76	TRUE	6.87	TRUE	0.407	TRUE	0.00	#DIV/0!	-27.0	TRUE	1.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group City/State Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Anions	Plastic/250 mL	None
Total Metals	Plastic/250 mL	HNO3
Low Level Mercury	Clear Glass/250 mL	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: Performed 3-point pH calibration.

Most Recent Calibration:	
Date	6/15/2016
Time	745
Meter	YSI-556

Standard	Reading
pH 4.0	4.00
pH 7.0	7.0
pH 10.0	10.0

Standard	Reading
Cond 1.419	1.419

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	BG-1D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	5.73	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	30		
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	810	x		0.1	5.73	11.37	NA	8.45	NA	0.190	NA	2.26	NA	-30.1	NA	7.2	NA
12/14/16	815	x		0.2	5.73	11.39	NA	8.30	NA	0.195	NA	1.06	NA	-43.9	NA	6.7	NA
12/14/16	820	x		0.3	5.73	11.30	TRUE	8.29	FALSE	0.197	FALSE	0.36	FALSE	-54.6	FALSE	2.4	FALSE
12/14/16	825	X		0.4	5.73	11.28	TRUE	8.28	TRUE	0.199	TRUE	0.48	FALSE	-58.6	FALSE	2.3	FALSE
12/14/16	830	X		0.5	5.73	11.26	TRUE	8.28	TRUE	0.200	TRUE	0.50	FALSE	-59.0	TRUE	2.2	TRUE
12/14/16	835		X	0.6	5.73	11.30	TRUE	8.28	TRUE	0.200	TRUE	0.46	TRUE	-61.2	TRUE	2.2	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	4.12
pH7.0	7.0
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**BG-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	5.91	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	10		
Well Screened Interval	5-10 feet	Pump Intake Depth	7.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	810	x		0	5.91	11.08	NA	6.59	NA	0.255	NA	3.25	NA	143.0	NA	3.4	NA
12/14/16	815	x		0.1	5.91	10.49	NA	6.46	NA	0.291	NA	2.16	NA	125.7	NA	2.9	NA
12/14/16	820	x		0.2	5.91	9.23	FALSE	6.41	FALSE	0.199	FALSE	1.85	FALSE	118.6	FALSE	2.7	FALSE
12/14/16	825	X		0.3	5.91	9.36	FALSE	6.39	TRUE	0.195	FALSE	1.81	FALSE	116.2	TRUE	2.2	FALSE
12/14/16	830	X		0.4	5.91	9.48	TRUE	6.33	TRUE	0.188	FALSE	1.47	FALSE	114.4	TRUE	2.5	FALSE
12/14/16	835	X		0.5	5.91	9.47	TRUE	6.38	TRUE	0.186	FALSE	1.44	FALSE	106.6	TRUE	2.4	FALSE
12/14/16	840		X	0.6	5.91	9.59	TRUE	6.38	TRUE	0.185	TRUE	1.42	TRUE	105.4	TRUE	2.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.1
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	MW-1D
Project Number:	346694	Well Diameter:	2"
Date:	12/14/2016	Static Water Level:	4.98
Samplers:	Sharkey/Alexander	Measured Well Depth:	32
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5 feet

Purge/Sampling Method: Low Flow by Peristaltic Pump
Stabilization Equipment: YSI
Comments:

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	1205	x		0.1	4.98	13.63	NA	7.91	NA	0.213	NA	0.01	NA	44.0	NA	4.2	NA
12/14/16	1210	x		0.2	4.98	13.88	NA	7.89	NA	0.217	NA	0.01	NA	39.2	NA		NA
12/14/16	1215		x	0.3	4.98	13.90	TRUE	7.86	TRUE	0.217	TRUE	0.01	TRUE	36.9	TRUE		
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	4.12
pH7.0	7.0
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	5.07	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	1150	x		0.1	5.07	7.46	NA	6.75	NA	0.395	NA	2.87	NA	88.1	NA	6.2	NA
12/14/16	1155	x		0.2	5.07	7.41	NA	6.78	NA	0.364	NA	2.56	NA	88.0	NA	4.8	NA
12/14/16	1200	x		0.3	5.07	7.38	TRUE	6.81	TRUE	0.325	FALSE	2.54	FALSE	87.9	TRUE	3.7	FALSE
12/14/16	1205	x		0.4	5.07	7.36	TRUE	6.82	TRUE	0.322	FALSE	2.46	TRUE	87.5	TRUE	3.6	FALSE
12/14/16	1210		x	0.5	5.07	7.52	TRUE	6.85	TRUE	0.319	TRUE	2.37	TRUE	86.6	TRUE	3.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.1
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-2D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	3.79	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	31		
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	1055	X		0.1	3.79	13.51	NA	7.68	NA	0.385	NA	0.73	NA	75.0	NA	1.8	NA
12/14/16	1100	X		0.2	3.79	12.30	NA	7.67	NA	0.386	NA	0.65	NA	72.8	NA	1.3	NA
12/14/16	1105	X		0.3	3.79	12.24	FALSE	7.67	TRUE	0.384	TRUE	0.61	FALSE	71.4	TRUE	1.2	FALSE
12/14/16	1110		X	0.4	3.79	12.20	TRUE	7.65	TRUE	0.384	TRUE	0.60	TRUE	70.5	TRUE	1.2	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	4.12
pH7.0	7.0
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	MW-2S	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	3.27	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	1055	X		0	3.27	8.94	NA	7.10	NA	0.254	NA	1.23	NA	139.8	NA	6.9	NA
12/14/16	1100	X		0.1	3.27	8.06	NA	6.71	NA	0.250	NA	0.93	NA	121.0	NA	4.8	NA
12/14/16	1105	X		0.2	3.27	7.79	FALSE	6.64	FALSE	0.248	TRUE	0.69	FALSE	102.7	FALSE	3.9	FALSE
12/14/16	1110	X		0.3	3.27	7.42	FALSE	6.60	FALSE	0.250	TRUE	0.39	FALSE	98.6	FALSE	3.3	FALSE
12/14/16	1115	X		0.4	3.27	7.38	FALSE	6.59	TRUE	0.247	TRUE	0.36	FALSE	91.3	FALSE	3.1	FALSE
12/14/16	1120		X	0.5	3.27	7.25	TRUE	6.57	TRUE	0.247	TRUE	0.36	TRUE	89.9	TRUE	3.2	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.1
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-3D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/13/2016	Static Water Level:	3.14	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:			
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/13/16	14:50	x		0.1	3.14	12.20	NA	6.33	NA	0.760	NA	0.45	NA	154.2	NA	2.9	NA
12/13/16	14:55	x		0.2	3.14	12.44	NA	6.45	NA	0.793	NA	0.38	NA	125.0	NA	2.5	NA
12/13/16	15:00	x		0.3	3.14	12.44	TRUE	6.52	FALSE	0.798	FALSE	0.35	FALSE	112.2	FALSE	2.8	FALSE
12/13/16	15:05	x		0.4	3.14	12.51	TRUE	6.55	TRUE	0.606	FALSE	0.32	FALSE	102.8	FALSE	2.5	FALSE
12/13/16	15:10	x		0.5	3.14	12.42	TRUE	6.56	TRUE	0.608	FALSE	0.31	FALSE	94.7	FALSE	2.4	FALSE
12/13/16	15:15	x		0.69	3.14	12.43	TRUE	6.57	TRUE	0.606	TRUE	0.29	TRUE	90.4	FALSE	2.6	TRUE
12/13/16	15:20		x	0.7	3.14	12.47	TRUE	6.58	TRUE	0.607	TRUE	0.28	TRUE	87.3	TRUE	2.6	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/13/2016
Time	740
Meter	YSI

Standard	Reading
pH4.0	4.08
pH7.0	7.01
pH10.0	10.0

Standard	Reading
Cond 1.409	1.412

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-3S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/13/2016	Static Water Level:	3.27	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/13/16	14:50	x		0.1	3.27	11.79	NA	7.96	NA	0.428	NA	0.12	NA	-3.8	NA	3.6	NA
12/13/16	14:55	x		0.2	3.27	11.61	NA	7.94	NA	0.408	NA	0.09	NA	-9.9	NA	3.4	NA
12/13/16	15:00	x		0.3	3.27	11.57	TRUE	7.94	TRUE	0.406	FALSE	0.12	FALSE	-12.5	TRUE	3.5	TRUE
12/13/16	1505	x		0.4	3.27	11.52	TRUE	7.94	TRUE	0.395	FALSE	0.27	FALSE	-14.5	TRUE	2.8	FALSE
12/13/16	1510	x		0.5	3.27	11.54	TRUE	7.93	TRUE	0.398	TRUE	0.29	FALSE	-14.2	TRUE	2.8	FALSE
12/13/16	1515		x	0.6	3.27	11.54	TRUE	7.93	TRUE	0.404	TRUE	0.28	TRUE	-15.0	TRUE	2.7	TRUE
					42717	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/13/2016
Time	735
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.04
pH10.0	10.0

Standard	Reading
Cond 1.409	1.402

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project: Ogden Dunes IWP
Project Number: 346694
Date: 12/13/2016
Samplers: Sharkey/Alexander
Well Screened Interval: 23-28 feet

Well ID: **MW-4D**
Well Diameter: 2"
Static Water Level: 3.18
Measured Well Depth: 28
Pump Intake Depth: 25.5

Purge/Sampling Method: Low Flow by Peristaltic Pump
Stabilization Equipment: YSI
Comments:

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/13/16	1545	X		0.1	3.18	10.81	NA	7.78	NA	0.721	NA	0.21	NA	5.3	NA	6.2	NA
12/13/16	1550	X		0.2	3.18	10.87	NA	7.80	NA	0.736	NA	0.21	NA	3.2	NA	4.3	NA
12/13/16	1555	X		0.3	3.18	10.73	TRUE	7.81	TRUE	0.729	TRUE	0.21	TRUE	1.4	TRUE	4.2	FALSE
12/13/16	1600	X		0.4	3.18	10.53	FALSE	7.82	TRUE	0.721	TRUE	0.21	TRUE	-1.6	TRUE	4.1	TRUE
12/13/16	1605		X	0.5	3.18	10.60	TRUE	7.82	TRUE	0.713	TRUE	0.19	TRUE	-4.5	TRUE	3.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/13/2016
Time	740
Meter	YSI

Standard	Reading
pH4.0	4.08
pH7.0	7.01
pH10.0	10.0

Standard	Reading
Cond 1.409	1.412

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-4S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/13/2016	Static Water Level:	3.11	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/13/16	1545	X		0.1	3.11	10.73	NA	6.57	NA	0.317	NA	2.21	NA	97.1	NA	3.8	NA
12/13/16	1550	X		0.2	3.11	7.62	NA	6.73	NA	0.271	NA	2.16	NA	87.3	NA	3.6	NA
12/13/16	1555	X		0.3	3.11	3.66	FALSE	6.75	FALSE	0.264	FALSE	2.22	TRUE	86.2	FALSE	3.4	FALSE
12/13/16	1600	X		0.4	3.11	0.49	FALSE	6.74	TRUE	0.282	FALSE	2.78	FALSE	82.0	TRUE	3.4	TRUE
12/13/16	1605	X		0.5	3.11	0.48	FALSE	6.78	TRUE	0.283	FALSE	2.90	FALSE	80.0	TRUE	3.2	TRUE
12/13/16	1610		x	0.6	3.11	0.48	TRUE	6.77	TRUE	0.287	TRUE	3.00	TRUE	79.7	TRUE	3.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/13/2016
Time	735
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.04
pH10.0	10.0

Standard	Reading
Cond 1.409	1.402

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-5D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/13/2016	Static Water Level:	5.48	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	28.25		
Well Screened Interval	23.25-28.25 feet	Pump Intake Depth	25.75 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/13/16	13:35	x		0.1	5.48	13.95	NA	7.82	NA	0.467	NA	0.31	NA	23.0	NA	5.8	NA
12/13/16	1340	x		0.2	5.48	13.16	NA	7.99	NA	0.459	NA	0.19	NA	-9.0	NA	2.8	NA
12/13/16	1345	x		0.3	5.48	13.42	FALSE	8.14	FALSE	0.460	TRUE	0.12	FALSE	-39.0	FALSE	2.8	FALSE
12/13/16	1350	x		0.4	5.48	13.47	TRUE	8.19	FALSE	0.460	TRUE	0.13	FALSE	-48.6	FALSE	2.7	TRUE
12/13/16	1355	x		0.5	5.48	13.26	TRUE	8.25	FALSE	0.457	TRUE	0.15	FALSE	-58.4	FALSE	2.6	TRUE
12/13/16	1400	x		0.6	5.48	13.09	TRUE	8.28	TRUE	0.454	TRUE	0.17	FALSE	-69.4	FALSE	2.6	TRUE
12/13/16	1405	x		0.7	5.48	13.06	TRUE	8.31	TRUE	0.453	TRUE	0.18	FALSE	-71.2	FALSE	2.5	TRUE
12/13/16	1410		x	0.8	5.48	13.34	TRUE	8.34	TRUE	0.456	TRUE	0.18	TRUE	-76.8	TRUE	2.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/13/2016
Time	740
Meter	YSI

Standard	Reading
pH4.0	4.08
pH7.0	7.01
pH10.0	10.0

Standard	Reading
Cond 1.409	1.412

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-5S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/13/2016	Static Water Level:	5.91'	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	14'		
Well Screened Interval	4-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/13/201	12:40	x		0	5.91	13.00	NA	9.32	NA	0.435	NA	0.34	NA	69.5	NA	13.1	NA
12/13/201	12:45	x		0.1	5.91	12.60	NA	9.06	NA	0.427	NA	0.28	NA	75.0	NA	8.8	NA
12/13/201	12:50	x		0.2	5.91	12.96	FALSE	8.97	FALSE	0.429	TRUE	0.23	FALSE	77.1	TRUE	7.8	FALSE
12/13/201	12:55	x		0.3	5.91	12.96	TRUE	8.93	FALSE	0.429	TRUE	0.21	FALSE	77.5	TRUE	7.2	FALSE
12/13/201	13:00	x		0.4	5.91	10.64	FALSE	7.45	FALSE	0.405	FALSE	0.23	TRUE	82.4	TRUE	3.7	FALSE
12/13/201	13:05	x		0.5	5.91	10.90	FALSE	7.50	FALSE	0.408	FALSE	0.22	TRUE	84.3	TRUE	3.6	FALSE
12/13/201	13:10		x	3	5.91	10.86	TRUE	7.50	TRUE	0.409	TRUE	0.24	TRUE	81.2	TRUE	3.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/13/2016
Time	735
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.04
pH10.0	10.0

Standard	Reading
Cond 1.409	1.402

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-6D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	3.93	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	30		
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	13:20	x		0.1	3.93	10.82	NA	6.71	NA	0.793	NA	0.64	NA	69.8	NA	2.2	NA
12/14/16	13:25	x		0.2	3.93	11.21	NA	6.47	NA	0.586	NA	0.63	NA	67.1	NA	2.2	NA
12/14/16	13:30	x		0.3	3.93	9.64	FALSE	6.05	FALSE	0.596	FALSE	0.56	FALSE	58.7	FALSE	2.3	TRUE
12/14/16	13:35	x		0.4	3.93	10.27	FALSE	6.06	FALSE	0.595	TRUE	0.32	FALSE	52.1	FALSE	2.1	TRUE
12/14/16	13:40	x		0.5	3.93	11.36	FALSE	6.13	TRUE	0.598	TRUE	0.33	FALSE	40.6	FALSE	1.9	FALSE
12/14/16	13:45	x		0.6	3.93	11.44	FALSE	6.15	TRUE	0.598	TRUE	0.31	TRUE	37.9	FALSE	2.0	TRUE
12/14/16	13:50		X	0.7	3.93	11.46	TRUE	6.16	TRUE	0.597	TRUE	0.30	TRUE	34.1	TRUE	2.0	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	4.12
pH7.0	7.0
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-6S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	3.94	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	12		
Well Screened Interval	7-12 feet	Pump Intake Depth	9.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	13:20	x		0.1	3.94	12.32	NA	7.84	NA	0.487	NA	0.90	NA	24.3	NA	2.2	NA
12/14/16	13:25	x		0.2	3.94	12.14	NA	7.83	NA	0.481	NA	0.72	NA	25.9	NA	2.0	NA
12/14/16	13:30	x		0.3	3.94	12.39	TRUE	7.77	TRUE	0.482	TRUE	0.32	FALSE	32.5	TRUE	1.7	FALSE
12/14/16	13:35	x		0.4	3.94	12.30	TRUE	7.75	TRUE	0.479	TRUE	0.11	FALSE	34.5	TRUE	1.6	FALSE
12/14/16	13:40	x		0.5	3.94	12.30	TRUE	7.74	TRUE	0.478	TRUE	0.11	FALSE	37.1	TRUE	1.6	TRUE
12/14/16	13:45		x	0.6	3.94	12.29	TRUE	7.73	TRUE	0.472	TRUE	0.10	TRUE	38.9	TRUE	1.6	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.1
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-7D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	7.23	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	32		
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	1240	X		0.1	7.23	11.50	NA	6.63	NA	0.339	NA	0.30	NA	92.7	NA	1.5	NA
12/14/16	1245	X		0.2	7.23	11.46	NA	6.59	NA	0.337	NA	0.29	NA	92.2	NA	1.5	NA
12/14/16	1250		X	0.3	7.23	11.38	TRUE	6.58	TRUE	0.334	TRUE	0.27	TRUE	85.0	TRUE	1.6	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	4.12
pH7.0	7.0
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-7S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	7.34	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	17		
Well Screened Interval	12-17 feet	Pump Intake Depth	14.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	12:40	X		0.1	7.34	12.23	NA	7.61	NA	0.506	NA	0.26	NA	60.1	NA	4.8	NA
12/14/16	12:45	X		0.2	7.34	12.47	NA	7.62	NA	0.503	NA	0.24	NA	57.4	NA	3.6	NA
12/14/16	12:50	X		0.3	7.34	12.23	TRUE	7.63	TRUE	0.498	TRUE	0.23	FALSE	53.7	TRUE	3.7	FALSE
12/14/16	1255		x	0.4	7.34	12.10	TRUE	7.63	TRUE	0.498	TRUE	0.24	TRUE	50.6	TRUE	3.5	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.1
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-8D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	9.50	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	33		
Well Screened Interval	28-33 feet	Pump Intake Depth	30.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	910	X		0.1	9.50	13.90	NA	6.72	NA	0.370	NA	0.42	NA	89.5	NA	0.3	NA
12/14/16	915	X		0.2	9.50	13.77	NA	6.68	NA	0.375	NA	0.41	NA	81.2	NA	0.2	NA
12/14/16	920	X		0.3	9.50	12.90	FALSE	6.65	TRUE	0.375	TRUE	0.23	FALSE	63.2	FALSE	0.4	FALSE
12/14/16	925	X		0.4	9.50	13.01	FALSE	6.67	TRUE	0.373	TRUE	0.24	FALSE	58.7	FALSE	0.4	FALSE
12/14/16	930		X	0.5	9.50	13.17	TRUE	6.71	TRUE	0.373	TRUE	0.22	TRUE	54.7	TRUE	0.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	4.12
pH7.0	7.0
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-8S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	12/14/2016	Static Water Level:	9.28	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	14		
Well Screened Interval	9-14 feet	Pump Intake Depth	11.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
12/14/16	910	X		0.1	9.28	15.75	NA	7.95	NA	0.348	NA	1.68	NA	-11.2	NA	1.8	NA
12/14/16	915	X		0.2	9.28	15.84	NA	7.95	NA	0.344	NA	1.84	NA	-13.8	NA	1.9	NA
12/14/16	920		X	0.3	9.28	15.79	TRUE	7.90	TRUE	0.343	TRUE	1.68	TRUE	-5.0	TRUE	1.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	12/14/2016
Time	730
Meter	YSI

Standard	Reading
pH4.0	3.98
pH7.0	7.1
pH10.0	10.1

Standard	Reading
Cond 1.409	1.398

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	BG-1D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/22/2017	Static Water Level:	5.13'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	30'		
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/22/17	1630	x		0.1	5.13	10.48	NA	7.81	NA	1.714	NA	1.72	NA	42.8	NA	3.7	NA
3/1/17	1635	x		0.2	5.14	10.65	NA	7.69	NA	1.710	NA	0.87	NA	29.6	NA	3.4	NA
3/1/17	1640	x		0.3	5.15	10.64	TRUE	7.65	FALSE	1.727	TRUE	0.72	FALSE	20.9	FALSE	2.9	FALSE
3/1/17	1645	x		0.4	5.14	10.67	TRUE	7.60	TRUE	1.732	TRUE	0.52	FALSE	13.7	FALSE	2.5	FALSE
3/1/17	1650	x		0.5	5.14	10.66	TRUE	7.61	TRUE	1.728	TRUE	0.50	FALSE	14.1	TRUE	2.4	FALSE
3/1/17	1655		x	0.6	5.14	10.58	TRUE	7.57	TRUE	1.731	TRUE	0.53	TRUE	15.3	TRUE	2.5	TRUE
	*Did not sample until 17:11 due to equipment collection																
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/22/2017
Time	815
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**BG-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/22/2017	Static Water Level:	5.11'	Comments:	Sampled when all stabilization parameters successfully met criteria.
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	9.6'		
Well Screened Interval	5-10 feet	Pump Intake Depth	7.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/22/17	1640	X		0.1	5.11	7.44	NA	8.23	NA	0.320	NA	3.12	NA	215.3	NA	3.7	NA
3/22/17	1645	X		0.2	5.2	7.45	NA	8.31	NA	0.318	NA	1.78	NA	173.1	NA	6.99	NA
3/22/17	1650	X		0.3	5.21	7.47	TRUE	7.19	FALSE	0.307	FALSE	1.58	FALSE	150.6	FALSE	4.1	FALSE
3/22/17	1655	X		0.4	5.22	7.33	TRUE	6.93	FALSE	0.313	FALSE	1.28	FALSE	149.7	FALSE	3.7	FALSE
3/22/17	1700	X		0.5	5.21	7.41	TRUE	6.83	FALSE	0.308	TRUE	1.23	FALSE	143.3	TRUE	3.6	FALSE
3/22/17	1705	X		0.6	5.21	7.47	TRUE	6.68	FALSE	0.312	TRUE	1.22	TRUE	139.0	FALSE	3.5	TRUE
3/22/17	1710	X		0.7	5.22	7.46	TRUE	6.57	FALSE	0.315	TRUE	1.15	TRUE	136.4	TRUE	3.4	TRUE
3/22/17	1715	X		0.8	5.21	7.42	TRUE	6.49	FALSE	0.322	FALSE	1.12	TRUE	133.7	TRUE	3.3	TRUE
3/22/17	1720		X	0.9	5.23	7.50	TRUE	6.50	TRUE	0.320	TRUE	1.10	TRUE	135.6	TRUE	3.4	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/22/2017
Time	815
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-1D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	4.32'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	32'		
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	1550	x		0.1	4.32	9.46	NA	7.09	NA	2.065	NA	0.62	NA	195.1	NA	73.0	NA
3/23/17	1555	x		0.2	4.36	9.57	NA	7.34	NA	2.074	NA	0.41	NA	117.8	NA	68.0	NA
3/23/17	1600	x		0.3	4.41	9.80	FALSE	7.36	FALSE	2.066	TRUE	0.33	FALSE	100.9	FALSE	61.0	FALSE
3/23/17	1605	x		0.4	4.41	9.51	TRUE	7.32	TRUE	2.076	TRUE	0.29	FALSE	87.3	FALSE	52.0	FALSE
3/23/17	1610	x		0.5	4.42	9.96	FALSE	7.28	TRUE	2.059	TRUE	0.27	FALSE	71.5	FALSE	48.7	FALSE
3/23/17	1615	x		0.6	4.43	10.07	FALSE	7.25	TRUE	2.050	TRUE	0.45	FALSE	62.1	FALSE	37.0	FALSE
3/23/17	1620	x		0.7	4.42	9.92	TRUE	7.21	TRUE	2.105	TRUE	0.36	FALSE	49.8	FALSE	18.0	FALSE
3/23/17	1625	x		0.8	4.42	10.07	TRUE	7.25	TRUE	2.094	TRUE	0.35	FALSE	47.6	FALSE	17.1	FALSE
3/23/17	1630		x	0.9	4.43	10.18	TRUE	7.24	TRUE	2.090	TRUE	0.36	TRUE	44.0	TRUE	16.6	TRUE
					42817	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	4.73'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	9.60'		
Well Screened Interval	27-32 feet	Pump Intake Depth	7'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	1550	X		0.1	4.73	5.40	NA	6.51	NA	0.671	NA	1.74	NA	157.2	NA	82.6	NA
3/23/17	1555	X		0.2	4.73	5.15	NA	6.25	NA	0.650	NA	1.43	NA	158.4	NA	59.7	NA
3/23/17	1600	X		0.3	4.74	5.33	FALSE	6.31	FALSE	0.647	FALSE	1.12	FALSE	151.8	TRUE	46.2	FALSE
3/23/17	1605	X		0.4	4.73	5.02	FALSE	6.53	FALSE	0.599	FALSE	0.84	FALSE	138.4	FALSE	39.5	FALSE
3/23/17	1610	X		0.5	4.73	5.11	FALSE	6.65	FALSE	0.561	FALSE	0.62	FALSE	130.8	FALSE	33.4	FALSE
3/23/17	1615	X		0.6	4.74	5.05	TRUE	6.78	FALSE	0.557	FALSE	0.71	FALSE	122.8	FALSE	25.7	FALSE
3/23/17	1620	X		0.7	4.74	5.12	TRUE	6.76	FALSE	0.553	TRUE	0.68	FALSE	118.8	FALSE	13.0	FALSE
3/23/17	1625	X		0.8	4.75	5.18	TRUE	6.81	TRUE	0.549	TRUE	0.64	TRUE	118.0	TRUE	12.1	FALSE
3/23/17	1631		X	0.9	4.75	5.10	TRUE	6.85	TRUE	0.537	TRUE	0.62	TRUE	117.4	TRUE	11.9	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-2D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/24/2017	Static Water Level:	3.06'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	30.62'		
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/24/17	1008	X		0.1	3.06	10.08	NA	7.53	NA	1.930	NA	0.37	NA	91.8	NA	14.6	NA
3/24/17	1013	X		0.2	3.06	10.20	NA	7.81	NA	1.933	NA	0.17	NA	81.7	NA	12.6	NA
3/24/17	1018	X		0.3	3.07	10.31	TRUE	7.78	FALSE	1.933	TRUE	0.15	FALSE	74.0	FALSE	18.4	FALSE
3/24/17	1023	X		0.4	3.07	10.49	TRUE	7.80	TRUE	1.938	TRUE	0.26	FALSE	70.0	FALSE	21.1	FALSE
3/24/17	1028	X		0.5	3.07	10.49	TRUE	7.78	TRUE	1.940	TRUE	0.16	FALSE	59.8	FALSE	25.4	FALSE
3/24/17	1033	X		0.6	3.06	10.55	TRUE	7.80	TRUE	1.944	TRUE	0.23	FALSE	52.7	FALSE	24.5	FALSE
3/24/17	1038	X		0.7	3.06	10.65	TRUE	7.74	TRUE	1.946	TRUE	0.25	FALSE	44.6	FALSE	15.9	FALSE
3/24/17	1043	X		0.8	3.06	10.69	TRUE	7.70	TRUE	1.951	TRUE	0.28	FALSE	35.1	FALSE	10.2	FALSE
3/24/17	1048	X		0.9	3.06	10.97	FALSE	7.69	TRUE	1.948	TRUE	0.29	FALSE	32.4	FALSE	9.8	FALSE
3/24/17	1053		X	1	3.06	10.98	TRUE	7.66	TRUE	1.956	TRUE	0.30	TRUE	28.7	TRUE	9.5	TRUE
						FIELD FILTERED											
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/24/2017
Time	805
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-2S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/24/2017	Static Water Level:	2.78'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	11.75'		
Well Screened Interval	2-12 feet	Pump Intake Depth	7'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/24/17	1008	X		0.1	2.78	5.78	NA	6.14	NA	0.380	NA	0.75	NA	171.0	NA	659.0	NA
3/24/17	1013	X		0.2	2.79	5.98	NA	6.12	NA	0.381	NA	0.99	NA	149.1	NA	102.3	NA
3/24/17	1018	X		0.3	2.79	5.77	FALSE	6.29	FALSE	0.384	TRUE	1.34	FALSE	127.8	FALSE	23.3	FALSE
3/24/17	1023	X		0.4	2.79	6.11	FALSE	6.45	FALSE	0.386	TRUE	0.99	FALSE	107.9	FALSE	15.4	FALSE
3/24/17	1028	X		0.5	2.79	6.13	FALSE	6.48	FALSE	0.388	TRUE	1.05	FALSE	93.5	FALSE	11.3	FALSE
3/24/17	1033	X		0.6	2.8	5.82	FALSE	6.82	FALSE	0.388	TRUE	0.96	TRUE	78.0	FALSE	6.4	FALSE
3/24/17	1038	X		0.7	2.8	5.98	FALSE	6.95	FALSE	0.387	TRUE	0.94	FALSE	66.1	FALSE	4.6	FALSE
3/24/17	1043	X		0.8	2.79	6.14	FALSE	6.95	FALSE	0.386	TRUE	0.99	TRUE	60.3	FALSE	4.7	FALSE
3/24/17	1048	X		0.9	2.79	6.13	TRUE	7.05	TRUE	0.386	TRUE	0.92	TRUE	56.8	TRUE	4.8	TRUE
3/24/17	1053		X	1	2.79	6.18	TRUE	7.04	TRUE	0.385	TRUE	0.97	TRUE	56.7	TRUE	4.9	TRUE
*sample marked 10:54																	
						3 bottles only for LL Hg											
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	8/24/2017
Time	805
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-3D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/24/2017	Static Water Level:	3.14'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	31.00'		
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/24/17	830	X		0.1	2.53	11.25	NA	7.58	NA	1.775	NA	2.70	NA	212.7	NA	21.5	NA
3/24/17	835	X		0.2	2.53	11.46	NA	7.48	NA	1.779	NA	1.90	NA	142.3	NA	18.7	NA
3/24/17	840	X		0.3	2.55	11.64	FALSE	7.42	FALSE	1.773	TRUE	0.99	FALSE	120.9	FALSE	12.6	FALSE
3/24/17	845	X		0.4	2.55	11.80	TRUE	7.52	TRUE	1.861	FALSE	0.94	FALSE	92.9	FALSE	6.4	FALSE
3/24/17	850	X		0.5	2.55	11.91	TRUE	7.79	FALSE	1.868	FALSE	0.74	FALSE	74.7	FALSE	2.7	FALSE
3/24/17	855	X		0.6	2.54	11.87	TRUE	7.97	FALSE	1.865	TRUE	0.24	FALSE	54.7	FALSE	2.7	FALSE
3/24/17	900	X		0.7	2.54	12.00	TRUE	8.11	FALSE	1.858	TRUE	0.21	FALSE	35.4	FALSE	2.5	TRUE
3/24/17	905	x		0.8	2.55	12.28	FALSE	8.13	FALSE	1.859	TRUE	0.19	FALSE	31.7	FALSE	2.6	TRUE
3/24/17	910		x	0.9	2.55	12.28	TRUE	8.17	TRUE	1.896	TRUE	0.20	TRUE	26.4	TRUE	2.5	TRUE
					42818	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/24/2017
Time	805
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-3S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/24/2017	Static Water Level:	2.6'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	11.66'		
Well Screened Interval	2-12 feet	Pump Intake Depth	7'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/24/17	830	X		0.1	2.6	7.58	NA	6.64	NA	0.636	NA	0.79	NA	29.6	NA	51.6	NA
3/24/17	835	X		0.2	2.6	7.64	NA	6.57	NA	0.634	NA	0.72	NA	97.0	NA	42.1	NA
3/24/17	840	X		0.3	2.61	7.62	TRUE	6.62	TRUE	0.623	TRUE	0.69	FALSE	67.5	FALSE	23.7	FALSE
3/24/17	845	X		0.4	2.6	7.68	TRUE	6.73	FALSE	0.616	TRUE	0.71	TRUE	48.3	FALSE	17.2	FALSE
3/24/17	850	X		0.5	2.61	7.64	TRUE	6.91	FALSE	0.606	TRUE	0.68	TRUE	26.9	FALSE	12.1	FALSE
3/24/17	855	X		0.6	2.61	7.64	TRUE	6.92	FALSE	0.606	TRUE	0.69	TRUE	25.8	FALSE	6.4	FALSE
3/24/17	900	X		0.7	2.6	7.89	FALSE	7.11	FALSE	0.605	TRUE	0.64	TRUE	14.8	FALSE	4.3	FALSE
3/24/17	905	x		0.8	2.6	7.79	FALSE	7.15	FALSE	0.603	TRUE	0.63	TRUE	8.4	FALSE	2.8	FALSE
3/24/17	910	x		0.9	2.6	7.76	TRUE	7.20	TRUE	0.598	TRUE	0.60	TRUE	3.3	FALSE	2.6	FALSE
3/24/17	915		x	1	2.61	7.73	TRUE	7.24	TRUE	0.599	TRUE	0.61	TRUE	-1.5	TRUE	2.6	TRUE
					42717	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/24/2017
Time	805
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-4D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	2.69'	Comments: Field Filtered	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	28'		
Well Screened Interval	23-28 feet	Pump Intake Depth	25.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	1410	X		0.1	2.69	10.12	NA	7.78	NA	1.088	NA	2.64	NA	-15.1	NA	178.0	NA
3/23/17	1415	X		0.2	2.7	10.21	NA	6.84	NA	1.063	NA	1.20	NA	98.3	NA	159.0	NA
3/23/17	1420	X		0.3	2.7	10.29	TRUE	6.84	FALSE	1.094	TRUE	0.89	FALSE	54.2	FALSE	78.4	FALSE
3/23/17	1425	X		0.4	2.71	10.39	TRUE	6.86	TRUE	1.144	FALSE	0.53	FALSE	28.5	FALSE	53.9	FALSE
3/23/17	1430	X		0.5	2.71	10.46	TRUE	6.92	TRUE	1.141	FALSE	0.73	FALSE	12.3	FALSE	36.7	FALSE
3/23/17	1435	X		0.6	2.71	10.59	TRUE	6.97	FALSE	1.133	TRUE	0.78	FALSE	4.2	FALSE	24.2	FALSE
3/23/17	1440	X		0.7	2.71	10.53	TRUE	6.95	TRUE	1.140	TRUE	0.59	FALSE	3.9	TRUE	26.9	FALSE
3/23/17	1445	X		0.8	2.72	10.57	TRUE	7.01	TRUE	1.144	TRUE	0.57	FALSE	-1.0	TRUE	33.5	FALSE
3/23/17	1450	X		0.9	2.69	10.54	TRUE	7.04	TRUE	1.131	TRUE	0.58	TRUE	-1.1	TRUE	32.5	FALSE
3/23/17	1455	X		1	2.7	10.74	TRUE	7.06	TRUE	1.136	TRUE	0.54	TRUE	-2.5	TRUE	30.1	FALSE
3/23/17	1500		X	1.1	2.7	10.76	TRUE	7.07	TRUE	1.133	TRUE	0.56	TRUE	-2.7	TRUE	29.6	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-4S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	2.42'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	11.57'		
Well Screened Interval	2-12 feet	Pump Intake Depth	7'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	1408	x		0.1	2.42	7.73	NA	7.28	NA	2.212	NA	2.20	NA	82.9	NA	120.0	NA
3/23/17	1413	x		0.2	2.43	7.65	NA	7.48	NA	2.211	NA	1.08	NA	64.3	NA	67.6	NA
3/23/17	1418	x		0.3	2.43	7.64	TRUE	7.41	FALSE	2.196	TRUE	1.14	FALSE	57.3	FALSE	36.1	FALSE
3/23/17	1423	x		0.4	2.43	7.70	TRUE	7.34	FALSE	2.180	TRUE	1.00	FALSE	53.3	FALSE	21.3	FALSE
3/23/17	1428	x		0.5	2.44	7.64	TRUE	7.32	TRUE	2.183	TRUE	0.78	FALSE	48.1	TRUE	18.9	FALSE
3/23/17	1433	x		0.6	2.43	7.78	TRUE	7.30	TRUE	2.166	TRUE	0.73	FALSE	43.1	FALSE	12.4	FALSE
3/23/17	1438	x		0.7	2.43	7.78	TRUE	7.28	TRUE	2.170	TRUE	0.70	FALSE	41.7	TRUE	10.3	FALSE
3/23/17	1443	X		0.8	2.42	7.74	TRUE	7.21	TRUE	2.177	TRUE	0.62	FALSE	39.6	TRUE	6.2	FALSE
3/23/17	1448	X		0.9	2.43	7.78	TRUE	7.17	FALSE	2.171	TRUE	0.43	FALSE	38.0	TRUE	7.4	FALSE
3/23/17	1453	X		1	2.44	7.80	TRUE	7.14	TRUE	2.167	TRUE	0.45	FALSE	36.8	TRUE	7.2	FALSE
3/23/17	1458		X	1.1	2.44	7.89	TRUE	7.12	TRUE	2.163	TRUE	0.42	TRUE	35.0	TRUE	7.0	TRUE
						field filtered											
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-5D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	4.97'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	27.76'		
Well Screened Interval	23.25-28.25 feet	Pump Intake Depth	25.75'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	1245	X		0.1	4.97	11.34	NA	6.83	NA	0.696	NA	1.70	NA	157.5	NA	10.4	NA
3/23/17	1250	X		0.2	4.99	11.13	NA	7.17	NA	0.701	NA	1.30	NA	105.1	NA	9.7	NA
3/23/17	1255	X		0.3	4.99	11.20	TRUE	6.74	FALSE	0.701	TRUE	1.50	FALSE	69.1	FALSE	10.2	TRUE
3/23/17	1300	X		0.4	5	11.15	TRUE	6.96	FALSE	0.699	TRUE	1.30	FALSE	24.6	FALSE	11.2	FALSE
3/23/17	1305	X		0.5	5	11.24	TRUE	7.20	FALSE	0.699	TRUE	1.40	FALSE	-7.9	FALSE	9.7	FALSE
3/23/17	1310	X		0.6	5.02	11.25	TRUE	7.42	FALSE	0.698	TRUE	1.20	FALSE	-31.5	FALSE	9.5	FALSE
3/23/17	1315	X		0.7	5.01	11.38	TRUE	7.46	FALSE	0.698	TRUE	1.30	FALSE	-37.6	FALSE	7.3	FALSE
3/23/17	1320	X		0.8	5.02	11.39	TRUE	7.57	FALSE	0.699	TRUE	1.40	FALSE	-45.5	FALSE	4.3	FALSE
3/23/17	1325	X		0.9	5.02	11.36	TRUE	7.62	FALSE	0.701	TRUE	1.40	TRUE	-51.9	FALSE	3.6	FALSE
3/23/17	1330	X		1	5.02	11.45	TRUE	7.66	TRUE	0.701	TRUE	1.20	FALSE	-56.1	FALSE	2.3	FALSE
3/23/17	1335	X		1.1	5.01	11.39	TRUE	7.68	TRUE	0.704	TRUE	1.20	FALSE	-55.8	TRUE	2.0	FALSE
3/23/17	1340	X		1.2	5.01	11.39	TRUE	7.68	TRUE	0.706	TRUE	1.10	TRUE	-58.4	TRUE	1.9	FALSE
3/23/17	1345		X	1.3	5.02	11.38	TRUE	7.66	TRUE	0.708	TRUE	1.11	TRUE	-58.4	TRUE	1.9	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-5S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	4.2	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	14'		
Well Screened Interval	4-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	1240	x		0.1	4.2	9.19	NA	8.27	NA	1.985	NA	4.20	NA	86.5	NA	17.7	NA
3/23/17	1245	x		0.2	4.2	8.90	NA	9.06	NA	2.068	NA	0.94	NA	77.0	NA	15.5	NA
3/23/17	1250	x		0.3	4.21	8.85	FALSE	9.28	FALSE	1.439	FALSE	0.58	FALSE	70.3	FALSE	7.7	FALSE
3/23/17	1255	x		0.4	4.21	8.76	TRUE	9.55	FALSE	1.385	FALSE	0.50	FALSE	62.4	FALSE	5.3	FALSE
3/23/17	1300	x		0.5	4.21	8.72	TRUE	10.34	FALSE	1.470	FALSE	0.55	FALSE	55.2	FALSE	4.2	FALSE
3/23/17	1305	x		0.6	4.2	8.55	TRUE	10.00	FALSE	1.463	FALSE	0.42	FALSE	47.2	FALSE	3.9	FALSE
3/23/17	1310	x		0.7	4.21	8.64	TRUE	9.87	FALSE	1.396	FALSE	0.54	FALSE	45.6	TRUE	2.3	FALSE
3/23/17	1315	x		0.8	4.21	8.71	TRUE	9.80	FALSE	1.387	FALSE	0.41	FALSE	37.3	TRUE	1.4	FALSE
3/23/17	1320	x		0.9	4.21	8.75	TRUE	9.70	FALSE	1.382	TRUE	0.33	FALSE	32.4	FALSE	1.3	FALSE
3/23/17	1325	x		1	4.2	8.77	TRUE	9.51	FALSE	1.384	TRUE	0.31	FALSE	27.7	TRUE	1.2	TRUE
3/23/17	1330	x		1.1	4.2	8.72	TRUE	9.46	FALSE	1.382	TRUE	0.28	FALSE	23.4	TRUE	1.3	TRUE
3/23/17	1335		x	1.2	4.2	8.66	TRUE	9.42	TRUE	1.395	TRUE	0.30	TRUE	20.7	TRUE	1.2	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-6D**
Project Number:	346694	Well Diameter:	2"
Date:	3/22/2017	Static Water Level:	3.21
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	29.41'
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5'

Purge/Sampling Method: Low Flow by Peristaltic Pump
Stabilization Equipment: YSI
Comments: Sampled when all stabilization parameters successfully met criteria.

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/22/17	1045	X		0.1	3.21	10.13	NA	7.95	NA	0.771	NA	1.30	NA	81.1	NA	6.8	NA
3/22/17	1050	X		0.2	3.35	10.32	NA	7.63	NA	0.805	NA	1.02	NA	71.0	NA	5.2	NA
3/22/17	1055	X		0.3	3.49	10.45	FALSE	7.49	FALSE	0.853	FALSE	0.56	FALSE	52.7	FALSE	5.0	FALSE
3/22/17	1100	X		0.4	3.48	10.64	FALSE	7.28	FALSE	0.887	FALSE	2.60	FALSE	22.1	FALSE	4.1	FALSE
3/22/17	1005	X		0.5	3.49	10.66	TRUE	7.30	FALSE	0.890	FALSE	3.20	FALSE	12.6	FALSE	3.7	FALSE
3/22/17	1110	X		0.6	3.5	10.72	TRUE	7.26	TRUE	0.900	TRUE	2.00	FALSE	-12.5	FALSE	3.5	FALSE
3/22/17	1115	X		0.7	3.49	10.82	TRUE	7.36	FALSE	0.905	TRUE	1.90	FALSE	-27.1	FALSE	3.4	TRUE
3/22/17	1120	X		0.8	3.5	10.97	TRUE	7.36	FALSE	0.910	TRUE	1.90	TRUE	-27.6	FALSE	2.0	FALSE
3/22/17	1125	X		0.9	3.5	11.02	TRUE	7.41	TRUE	0.911	TRUE	1.80	TRUE	-29.5	TRUE	1.8	FALSE
3/22/17	1130		X	1	3.51	10.95	TRUE	7.36	TRUE	0.911	TRUE	1.80	TRUE	-33.6	TRUE	1.9	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/22/2017
Time	815
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-6S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	2.91'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12'		
Well Screened Interval	7-12 feet	Pump Intake Depth	9.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	1042	x		0.1	2.91	7.83	NA	7.85	NA	2.235	NA	1.13	NA	81.4	NA	3.9	NA
3/23/17	1047	X		0.2	2.9	7.94	NA	7.62	NA	2.239	NA	0.65	NA	61.4	NA	3.9	NA
3/23/17	1052	X		0.3	2.9	8.10	FALSE	7.73	FALSE	2.241	TRUE	0.62	FALSE	52.2	FALSE	4.1	TRUE
3/23/17	1057	X		0.4	2.9	8.10	TRUE	7.85	FALSE	2.257	TRUE	0.33	FALSE	49.9	FALSE	3.1	FALSE
3/23/17	1102	X		0.5	2.91	8.13	TRUE	7.42	FALSE	2.259	TRUE	0.45	FALSE	47.6	TRUE	2.9	FALSE
3/23/17	1107	X		0.6	2.91	8.20	TRUE	7.49	FALSE	2.308	TRUE	0.34	FALSE	47.3	TRUE	2.7	FALSE
3/23/17	1112	X		0.7	2.91	8.18	TRUE	7.48	TRUE	2.317	TRUE	0.32	FALSE	45.5	TRUE	2.7	TRUE
3/23/17	1117		X	0.8	2.9	8.26	TRUE	7.45	TRUE	2.262	TRUE	0.31	TRUE	42.8	TRUE	2.5	TRUE
						DUP_04											
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/22/2017
Time	815
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-7D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	6.35'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	31.26'		
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	927	X		0.1	6.35	11.03	NA	7.59	NA	0.514	NA	1.40	NA	75.8	NA	6.7	NA
3/23/17	932	X		0.2	6.34	11.28	NA	7.56	NA	0.515	NA	0.60	NA	58.8	NA	6.5	NA
3/23/17	937	X		0.3	6.36	11.29	TRUE	7.57	TRUE	0.517	TRUE	0.90	FALSE	45.8	FALSE	3.4	FALSE
3/23/17	942	X		0.4	6.35	11.33	TRUE	7.48	TRUE	0.515	TRUE	0.90	FALSE	42.4	FALSE	4.9	FALSE
3/23/17	947	X		0.5	6.36	11.29	TRUE	7.54	TRUE	0.517	TRUE	0.80	FALSE	41.0	TRUE	4.2	FALSE
3/23/17	952	X		0.6	6.36	11.38	TRUE	7.58	TRUE	0.517	TRUE	0.84	FALSE	25.3	FALSE	2.1	FALSE
3/23/17	957	X		0.7	6.36	11.37	TRUE	7.59	TRUE	0.516	TRUE	0.86	TRUE	17.8	FALSE	2.1	FALSE
3/23/17	1002		X	0.8	6.37	11.35	TRUE	7.61	TRUE	0.515	TRUE	0.90	TRUE	16.9	TRUE	1.9	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-7S	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	7.21'	Comments: Sampled when all stabilization parameters successfully met criteria.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	17'		
Well Screened Interval	12-17 feet	Pump Intake Depth	14.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	927	x		0.1	6.84	9.21	NA	7.43	NA	2.103	NA	0.86	NA	78.0	NA	546.0	NA
3/23/17	932	x		0.2	7.38	9.25	NA	7.48	NA	2.114	NA	0.51	NA	58.5	NA	82.1	NA
3/23/17	937	x		0.3	7.21	9.26	TRUE	7.42	TRUE	2.118	TRUE	0.53	FALSE	46.2	FALSE	40.1	FALSE
3/23/17	942	x		0.4	7.26	9.28	TRUE	7.36	FALSE	2.129	TRUE	0.62	FALSE	34.6	FALSE	51.3	FALSE
3/23/17	947	x		0.5	7.24	9.42	TRUE	7.30	FALSE	2.131	TRUE	0.34	FALSE	26.8	FALSE	42.2	FALSE
3/23/17	952	x		0.6	7.21	9.40	TRUE	7.26	FALSE	2.134	TRUE	0.43	FALSE	21.0	FALSE	40.5	FALSE
3/23/17	957	x		0.7	7.21	9.35	TRUE	7.21	TRUE	2.140	TRUE	0.42	FALSE	17.0	TRUE	34.2	FALSE
3/23/17	1002	x		0.8	7.23	9.42	TRUE	7.18	TRUE	2.146	TRUE	0.45	TRUE	14.2	TRUE	34.7	FALSE
3/23/17	1007		x	0.9	7.21	9.55	TRUE	7.18	TRUE	2.140	TRUE	0.46	TRUE	10.8	TRUE	33.9	TRUE
						FIELD FILTERED											
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	815
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-8D**
Project Number:	346694	Well Diameter:	2"
Date:	3/23/2017	Static Water Level:	5.58'
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	32.24'
Well Screened Interval	28-33 feet	Pump Intake Depth	30.5'

Purge/Sampling Method: Low Flow by Peristaltic Pump
Stabilization Equipment: YSI
Comments: Sampled when all stabilization parameters successfully met criteria.

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	811	X		0.1	5.58	11.96	NA	7.41	NA	0.211	NA	5.54	NA	173.3	NA	4.4	NA
3/23/17	816	X		0.2	5.6	12.28	NA	7.21	NA	0.489	NA	5.80	NA	144.8	NA	4.2	NA
3/23/17	821	X		0.3	5.6	12.49	FALSE	7.30	FALSE	0.539	FALSE	3.00	FALSE	107.9	FALSE	3.1	FALSE
3/23/17	826	X		0.4	5.59	12.62	TRUE	7.35	FALSE	0.541	FALSE	2.00	FALSE	84.9	FALSE	2.1	FALSE
3/23/17	831	X		0.5	5.59	12.67	TRUE	7.37	TRUE	0.542	TRUE	2.00	FALSE	81.4	FALSE	2.1	FALSE
3/23/17	836	X		0.6	5.6	12.64	TRUE	7.39	TRUE	0.541	TRUE	1.50	FALSE	50.3	FALSE	1.6	FALSE
3/23/17	841	X		0.7	5.62	12.70	TRUE	7.40	TRUE	0.542	TRUE	1.60	FALSE	42.4	FALSE	1.0	FALSE
3/23/17	846	X		0.8	5.61	12.61	TRUE	7.43	TRUE	0.543	TRUE	1.41	FALSE	26.2	FALSE	1.1	FALSE
3/23/17	851	X		0.9	5.62	12.65	TRUE	7.48	TRUE	0.542	TRUE	1.34	FALSE	25.9	FALSE	1.1	TRUE
3/23/17	856		X	1	5.61	12.67	TRUE	7.48	TRUE	0.542	TRUE	1.30	TRUE	24.1	TRUE	1.1	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	745
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-8S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	3/23/2017	Static Water Level:	5.7'	Comments: Sampled when all stabilization parameters successfully met criteria. Field Filtered	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	14'		
Well Screened Interval	9-14 feet	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
3/23/17	808	x		0.1	5.7	10.01	NA	7.70	NA	1.439	NA	4.33	NA	34.8	NA	10.4	NA
3/23/17	813	x		0.2	5.7	10.56	NA	7.97	NA	1.328	NA	3.09	NA	26.3	NA	7.9	NA
3/23/17	818	x		0.3	5.69	10.60	FALSE	7.91	FALSE	1.912	FALSE	2.70	FALSE	30.4	TRUE	6.7	FALSE
3/23/17	823	x		0.4	5.69	10.68	TRUE	8.43	FALSE	1.916	FALSE	2.57	FALSE	30.8	TRUE	6.5	FALSE
3/23/17	828	x		0.5	5.7	10.71	TRUE	8.44	FALSE	1.930	TRUE	2.59	TRUE	33.4	TRUE	6.4	TRUE
3/23/17	833	x		0.6	5.7	10.67	TRUE	8.55	FALSE	1.948	TRUE	2.67	TRUE	36.2	TRUE	5.9	TRUE
3/23/17	838	x		0.7	5.7	10.64	TRUE	8.60	FALSE	1.954	TRUE	2.68	TRUE	38.2	TRUE	5.1	FALSE
3/23/17	843	x		0.8	5.7	10.67	TRUE	8.32	FALSE	1.944	TRUE	2.80	TRUE	41.2	TRUE	5.2	FALSE
3/23/17	847	X		0.9	5.69	10.71	TRUE	8.26	FALSE	1.948	TRUE	2.84	TRUE	42.2	TRUE	5.0	TRUE
3/23/17	852		X	1	5.67	10.74	TRUE	8.23	TRUE	1.954	TRUE	2.68	TRUE	43.6	TRUE	5.2	TRUE
					FIELD FILTERED												
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment: 2 Point Calibration

Most Recent Calibration:	
Date	3/23/2017
Time	815
Meter	YSI

Standard	Reading
pH 7.0	7.01
pH 10.0	10.0
Cond 1.413	1.413

Standard	Reading

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**BG-1D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	5.27	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	30		
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	710	x		0.1	5.27	12.61	NA	6.96	NA	0.242	NA	0.20	NA	78.3	NA	11.7	NA
	715	x		0.2	5.27	12.77	NA	7.03	NA	0.241	NA	0.08	NA	24.4	NA	11.4	NA
	720	x		0.3	5.27	13.37	FALSE	7.30	FALSE	0.242	TRUE	0.07	FALSE	-14.8	FALSE	10.8	TRUE
	725	x		0.4	5.27	14.37	FALSE	7.40	FALSE	0.242	TRUE	0.13	FALSE	-19.8	FALSE	9.4	FALSE
	730	x		0.5	5.27	14.61	FALSE	7.42	FALSE	0.242	TRUE	0.06	FALSE	-28.3	FALSE	10.1	FALSE
	735	x		0.6	5.27	12.96	FALSE	7.41	TRUE	0.241	TRUE	0.12	FALSE	-37.8	FALSE	8.9	FALSE
	740	x		0.7	5.27	13.17	FALSE	7.42	TRUE	0.242	TRUE	0.11	FALSE	-44.6	FALSE	6.7	FALSE
	745	x		0.8	5.27	12.77	FALSE	7.36	TRUE	0.242	TRUE	0.10	FALSE	-49.9	FALSE	4.8	FALSE
	750	x		0.9	5.27	13.18	FALSE	7.52	FALSE	0.246	TRUE	0.10	TRUE	-67.9	FALSE	4.3	FALSE
	755	x		1	5.27	13.05	FALSE	7.51	FALSE	0.246	TRUE	0.10	TRUE	-67.8	FALSE	4.1	FALSE
	800		x	1.1	5.27	13.32	TRUE	7.53	TRUE	0.250	TRUE	0.09	TRUE	-76.9	TRUE	4.0	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/13/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	7.00
pH4.0	3.98
pH10	10.02

Standard	Reading
Cond 1.409	1.417

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**BG-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	5.41	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	10		
Well Screened Interval	5-10 feet	Pump Intake Depth	7.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	710	x		0.1	5.41	11.98	NA	6.97	NA	0.298	NA	1.07	NA	87.3	NA	2.1	NA
	715	x		0.2	5.41	12.01	NA	6.72	NA	0.290	NA	0.89	NA	32.2	NA	1.8	NA
	720	x		0.3	5.41	12.00	TRUE	6.69	FALSE	0.284	FALSE	0.83	FALSE	13.2	FALSE	1.6	FALSE
	725	x		0.4	5.41	12.02	TRUE	6.64	TRUE	0.275	FALSE	0.70	FALSE	10.0	FALSE	1.5	FALSE
	730	x		0.5	5.41	12.13	TRUE	6.65	TRUE	0.277	FALSE	0.74	FALSE	4.4	TRUE	1.5	TRUE
	735		x	0.6	5.41	12.11	TRUE	6.63	TRUE	0.277	TRUE	0.71	TRUE	3.4	TRUE	1.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.10
pH4.0	3.99
pH10.0	9.94

Standard	Reading
Cond 1.409	1.411

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-1D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	4.01	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	32		
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1530	x		0.1	4.01	13.77	NA	7.22	NA	0.633	NA	0.20	NA	-47.7	NA	6.9	NA
	1535	x		0.2	4.01	13.90	NA	7.01	NA	0.634	NA	0.08	NA	-53.2	NA	4.6	NA
	1540	x		0.3	4.01	13.92	TRUE	7.10	FALSE	0.632	TRUE	0.08	FALSE	-62.7	FALSE	1.8	FALSE
	1545	x		0.4	4.01	13.91	TRUE	7.16	FALSE	0.633	TRUE	0.08	TRUE	-69.9	FALSE	1.7	FALSE
	1550		x	0.5	4.01	13.99	TRUE	7.18	TRUE	0.635	TRUE	0.08	TRUE	-71.9	TRUE	1.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	6.97
pH4.0	4.08
pH10	10.02

Standard	Reading
Cond 1.409	1.388

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:		Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1530	x		0.1	4.26	15.00	NA	7.32	NA	0.544	NA	1.40	NA	23.9	NA		NA
	1535	x		0.2	4.26	14.96	NA	7.25	NA	0.520	NA	0.83	NA	23.9	NA		NA
	1540	x		0.3	4.26	15.21	TRUE	7.23	TRUE	0.502	FALSE	0.73	FALSE	24.0	TRUE		
	1545	x		0.4	4.26	15.17	TRUE	7.22	TRUE	0.485	FALSE	0.57	FALSE	23.4	TRUE		
	1550	x		0.5	4.26	15.27	TRUE	7.23	TRUE	0.474	FALSE	0.50	FALSE	22.5	TRUE	11.8	#DIV/0!
	1555	x		0.6	4.26	15.21	TRUE	7.22	TRUE	0.465	FALSE	0.40	FALSE	17.3	TRUE		
	1600	x		0.7	4.26	15.65	TRUE	7.25	TRUE	0.455	FALSE	0.40	FALSE	9.8	FALSE		
	105	x		0.8	4.26	16.36	FALSE	7.22	TRUE	0.452	TRUE	0.28	FALSE	3.5	FALSE		
	1610	x		0.9	4.26	16.40	FALSE	7.22	TRUE	0.450	TRUE	0.27	FALSE	-0.3	FALSE		
	1615		x	1	4.26	16.29	TRUE	7.24	TRUE	0.440	TRUE	0.26	TRUE	-0.6	TRUE	9.6	#DIV/0!
																FILTERED	
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.01
pH4.0	4.10
pH10.0	9.97

Standard	Reading
Cond 1.409	1.399

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-2D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	2.77	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	31		
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	1030	x		0.1	2.77	12.40	NA	7.24	NA	0.545	NA	0.18	NA	-44.2	NA	10.9	NA
	1035	x		0.1	2.77	12.49	NA	7.19	NA	0.517	NA	0.06	NA	-51.2	NA	4.8	NA
	1040	x		0.1	2.77	12.42	TRUE	7.22	TRUE	0.498	FALSE	0.05	FALSE	-56.7	FALSE	4.6	FALSE
	1045	x		0.1	2.77	12.42	TRUE	7.23	TRUE	0.522	FALSE	0.03	FALSE	-60.3	TRUE	4.4	TRUE
	1050	x		0.1	2.77	12.50	TRUE	7.23	TRUE	0.524	FALSE	0.02	FALSE	-62.5	TRUE	3.9	FALSE
	1055	x		0.1	2.77	12.45	TRUE	7.23	TRUE	0.516	TRUE	0.02	FALSE	-64.6	TRUE	3.8	FALSE
	1100		x	0.1	2.77	12.57	TRUE	7.23	TRUE	0.513	TRUE	0.02	TRUE	-65.4	TRUE	3.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/13/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	7.00
pH4.0	3.98
pH10	10.02

Standard	Reading
Cond 1.409	1.417

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-2S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	2.52	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	1030	x		0.1	2.52	17.65	NA	7.10	NA	0.317	NA	1.89	NA	-24.3	NA	15.1	NA
	1035	x		0.2	2.52	17.99	NA	6.91	NA	0.301	NA	1.14	NA	-34.1	NA	14.8	NA
	1040	x		0.3	2.52	17.85	TRUE	6.88	FALSE	0.289	FALSE	0.88	FALSE	-40.2	FALSE	13.6	TRUE
	1045	x		0.4	2.52	17.84	TRUE	6.85	TRUE	0.288	FALSE	0.59	FALSE	-40.2	TRUE	12.8	FALSE
	1050	x		0.5	2.52	17.92	TRUE	6.86	TRUE	0.284	TRUE	0.37	FALSE	-42.5	TRUE	11.4	FALSE
	1055	x		0.6	2.52	17.92	TRUE	6.85	TRUE	0.281	TRUE	0.47	FALSE	-44.9	TRUE	11.1	FALSE
	1100	x		0.7	2.52	18.32	TRUE	6.85	TRUE	0.284	TRUE	0.27	FALSE	-45.6	TRUE	8.6	FALSE
	1105	x		0.8	2.52	18.29	TRUE	6.83	TRUE	0.282	TRUE	0.26	FALSE	-45.1	TRUE	7.8	FALSE
	1110		x	0.9	2.52	18.44	TRUE	6.84	TRUE	0.278	TRUE	0.25	TRUE	-46.4	TRUE	8.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.10
pH4.0	3.99
pH10.0	9.94

Standard	Reading
Cond 1.409	1.411

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-3D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	2.25	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	31		
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	935	x		0.1	2.25	15.20	NA	7.26	NA	0.642	NA	1.01	NA	-115.5	NA	2.1	NA
	940	x		0.2	2.25	15.40	NA	7.20	NA	0.644	NA	0.49	NA	-117.5	NA	2.0	NA
	945	x		0.3	2.25	15.52	TRUE	7.20	TRUE	0.643	TRUE	0.48	FALSE	-118.8	TRUE	1.9	TRUE
	950		x	0.4	2.25	15.40	TRUE	7.18	TRUE	0.645	TRUE	0.45	TRUE	-118.4	TRUE	1.9	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/13/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	7.00
pH4.0	3.98
pH10	10.02

Standard	Reading
Cond 1.409	1.417

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-3S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	2.37	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	935	x		0.1	2.37	14.69	NA	7.26	NA	0.556	NA	0.06	NA	-99.9	NA	9.1	NA
	940	x		0.2	2.37	14.69	NA	7.25	NA	0.541	NA	0.06	NA	-99.8	NA	8.9	NA
	945	x		0.3	2.37	14.97	TRUE	7.16	TRUE	0.525	FALSE	0.06	TRUE	-101.9	TRUE	6.3	FALSE
	950	x		0.4	2.37	14.86	TRUE	7.25	TRUE	0.538	TRUE	0.06	TRUE	-102.8	TRUE	5.2	FALSE
	955	x		0.5	2.37	14.81	TRUE	7.25	TRUE	0.539	TRUE	0.04	FALSE	-103.2	TRUE	4.8	FALSE
	1000	x		0.6	2.37	14.80	TRUE	7.25	TRUE	0.549	TRUE	0.04	FALSE	-103.0	TRUE	4.6	FALSE
	1005		x	0.7	2.37	14.95	TRUE	7.23	TRUE	0.541	TRUE	0.04	TRUE	-103.5	TRUE	4.6	TRUE
					42717	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.10
pH4.0	3.99
pH10.0	9.94

Standard	Reading
Cond 1.409	1.411

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-4D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	2.32	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	28		
Well Screened Interval	23-28 feet	Pump Intake Depth	25.5		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	830	x		0.1	2.32	13.79	NA	7.14	NA	0.823	NA	1.13	NA	-78.3	NA	16.2	NA
	835	x		0.2	2.32	14.16	NA	6.95	NA	0.808	NA	0.36	NA	-87.9	NA	14.1	NA
	840	x		0.3	2.32	14.15	TRUE	6.94	FALSE	0.801	TRUE	0.24	FALSE	-90.4	FALSE	11.9	FALSE
	845	x		0.4	2.32	13.76	TRUE	6.95	TRUE	0.806	TRUE	0.21	FALSE	-94.5	TRUE	12.6	FALSE
	850	x		0.5	2.32	14.15	TRUE	6.95	TRUE	0.834	FALSE	0.23	FALSE	-100.0	TRUE	8.4	FALSE
	855	x		0.6	2.32	14.31	FALSE	6.96	TRUE	0.833	FALSE	0.23	TRUE	-101.1	TRUE	4.5	FALSE
	900	x		0.7	2.32	14.52	TRUE	6.95	TRUE	0.845	TRUE	0.25	TRUE	-105.1	TRUE	4.4	FALSE
	905		x	0.8	2.32	14.52	TRUE	6.95	TRUE	0.849	TRUE	0.23	TRUE	-105.3	TRUE	4.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation	Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3			
Mercury in Water	500 mL glass	None			
Anions by Ion Chrom.	500 mL plastic	None			

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/13/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	7.00
pH4.0	3.98
pH10	10.02

Standard	Reading
Cond 1.409	1.417

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-4S	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/13/2017	Static Water Level:	2.17	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/13/17	835	x		0.1	2.17	12.80	NA	7.17	NA	0.594	NA	0.22	NA	-35.4	NA	9.2	NA
	840	x		0.2	2.17	13.17	NA	7.15	NA	0.574	NA	0.13	NA	-38.1	NA	8.7	NA
	845	x		0.3	2.17	13.20	FALSE	7.16	TRUE	0.559	FALSE	0.14	FALSE	-38.3	TRUE	7.3	FALSE
	850	x		0.4	2.17	13.25	TRUE	7.15	TRUE	0.554	FALSE	0.08	FALSE	-36.9	TRUE	4.1	FALSE
	855	x		0.5	2.17	13.35	TRUE	7.13	TRUE	0.548	TRUE	0.08	FALSE	-38.3	TRUE	3.9	FALSE
	900		x	0.6	2.17	13.48	TRUE	7.12	TRUE	0.547	TRUE	0.08	TRUE	-39.5	TRUE	3.9	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.10
pH4.0	3.99
pH10.0	9.94

Standard	Reading
Cond 1.409	1.411

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-5D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	4.29	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	28.25		
Well Screened Interval	23.25-28.25 feet	Pump Intake Depth	25.75 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1035	x		0.1	4.29	14.08	NA	6.97	NA	0.577	NA	0.22	NA	122.2	NA	7.2	NA
	1040	x		0.2	4.29	14.21	NA	7.13	NA	0.578	NA	0.17	NA	71.1	NA	6.9	NA
	1045	x		0.3	4.29	14.27	TRUE	7.31	FALSE	0.582	TRUE	0.31	FALSE	-3.5	FALSE	6.1	FALSE
	1050	x		0.4	4.29	14.28	TRUE	7.43	FALSE	0.582	TRUE	0.59	FALSE	-60.9	FALSE	5.4	FALSE
	1055	x		0.5	4.29	14.48	TRUE	7.55	FALSE	0.584	TRUE	0.68	FALSE	-96.1	FALSE	5.2	FALSE
	1100	x		0.6	4.29	14.24	TRUE	7.60	FALSE	0.583	TRUE	0.66	FALSE	-111.4	FALSE	5.0	TRUE
	1105	x		0.7	4.29	14.14	TRUE	7.63	TRUE	0.585	TRUE	0.55	FALSE	-120.8	FALSE	4.8	TRUE
	1110	x		0.8	4.29	14.19	TRUE	7.66	TRUE	0.588	TRUE	0.45	FALSE	-128.6	FALSE	5.0	TRUE
	1115	x		0.9	4.29	13.95	TRUE	7.67	TRUE	0.587	TRUE	0.44	FALSE	-133.7	FALSE	4.9	TRUE
	1120		x	1	4.29	14.28	TRUE	7.70	TRUE	0.587	TRUE	0.41	TRUE	-138.1	TRUE	4.8	TRUE
					4.29												
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	6.97
pH4.0	4.08
pH10	10.02

Standard	Reading
Cond 1.409	1.388

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-5S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	3.86	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	14'		
Well Screened Interval	4-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1035	x		0.1	3.86	13.59	NA	6.43	NA	0.562	NA	1.64	NA	118.2	NA	4.1	NA
	1040	x		0.2	3.86	13.73	NA	6.47	NA	0.557	NA	1.01	NA	114.2	NA	3.8	NA
	1045	x		0.3	3.86	13.94	TRUE	6.58	FALSE	0.546	TRUE	0.91	FALSE	98.7	FALSE	3.2	FALSE
	1050	x		0.4	3.86	14.34	FALSE	6.67	FALSE	0.532	FALSE	0.64	FALSE	83.3	FALSE	3.1	FALSE
	1055	x		0.5	3.86	14.40	FALSE	6.71	FALSE	0.530	TRUE	0.53	FALSE	76.0	FALSE	3.0	TRUE
	1100	x		0.6	3.86	14.30	TRUE	6.75	TRUE	0.528	TRUE	0.41	FALSE	66.6	FALSE	2.9	TRUE
	1105	x		0.7	3.86	14.35	TRUE	6.77	TRUE	0.526	TRUE	0.36	FALSE	63.8	FALSE	2.7	FALSE
	1110	x		0.8	3.86	14.27	TRUE	6.77	TRUE	0.523	TRUE	0.29	FALSE	59.1	TRUE	2.8	TRUE
	1115	x		0.9	3.86	14.24	TRUE	6.78	TRUE	0.521	TRUE	0.29	FALSE	57.1	TRUE	2.8	TRUE
	1120		x	1	3.86	14.37	TRUE	6.83	TRUE	0.518	TRUE	0.27	TRUE	51.8	TRUE	2.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.10
pH4.0	3.99
pH10.0	9.94

Standard	Reading
Cond 1.409	1.411

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-6D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	2.11	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	30		
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1155	x		0.1	2.11	12.83	NA	7.33	NA	0.533	NA	3.56	NA	75.2	NA	16.5	NA
	1200	x		0.2	2.11	12.57	NA	7.21	NA	0.458	NA	1.10	NA	-39.9	NA	14.3	NA
	1205	x		0.3	2.11	12.65	TRUE	7.24	FALSE	0.418	FALSE	0.43	FALSE	-115.2	FALSE	8.2	FALSE
	1210	x		0.4	2.11	12.56	TRUE	7.26	TRUE	0.411	FALSE	0.44	FALSE	-120.0	FALSE	5.6	FALSE
	1215	x		0.5	2.11	12.87	TRUE	7.25	TRUE	0.402	FALSE	0.49	FALSE	-124.6	TRUE	5.3	FALSE
	1220	x		0.6	2.11	12.55	TRUE	7.28	TRUE	0.402	TRUE	0.42	FALSE	-126.7	TRUE	6.0	FALSE
	1225	x		0.7	2.11	12.71	TRUE	7.28	TRUE	0.398	TRUE	0.40	FALSE	-129.1	TRUE	6.2	FALSE
	1230	x		0.8	2.11	12.90	TRUE	7.27	TRUE	0.400	TRUE	0.36	FALSE	-130.4	TRUE	4.4	FALSE
	1235	x		0.9	2.11	12.60	TRUE	7.29	TRUE	0.404	TRUE	0.35	FALSE	-132.0	TRUE	3.9	FALSE
	1240		x	1	2.11	12.43	FALSE	7.29	TRUE	0.404	TRUE	0.34	TRUE	-132.0	TRUE	3.3	FALSE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	7.00
pH4.0	3.98
pH10	10.02

Standard	Reading
Cond 1.409	1.417

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-6S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	2.13	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	7-12 feet	Pump Intake Depth	9.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^{o}C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1200	x		0.1	2.13	18.32	NA	6.80	NA	0.141	NA	10.47	NA	105.2	NA	14.3	NA
	1205	x		0.2	2.13	16.03	NA	6.92	NA	0.508	NA	3.40	NA	36.1	NA	12.6	NA
	1210	x		0.3	2.13	15.20	FALSE	6.86	FALSE	0.504	FALSE	0.07	FALSE	46.4	FALSE	12.3	FALSE
	1215	x		0.4	2.13	15.51	FALSE	6.78	FALSE	0.498	TRUE	0.08	FALSE	50.2	FALSE	9.0	FALSE
	1220	x		0.5	2.13	15.43	TRUE	6.78	TRUE	0.498	TRUE	0.07	FALSE	51.7	TRUE	7.3	FALSE
	1225	x		0.6	2.13	15.34	TRUE	6.79	TRUE	0.495	TRUE	0.08	FALSE	52.2	TRUE	6.8	FALSE
	1230	x		0.7	2.13	15.46	TRUE	6.80	TRUE	0.496	TRUE	0.08	FALSE	52.4	TRUE	4.6	FALSE
	1235	x		0.8	2.13	15.84	FALSE	6.81	TRUE	0.496	TRUE	0.08	TRUE	53.7	TRUE	4.4	FALSE
	1240		x	0.9	2.13	15.38	TRUE	6.78	TRUE	0.497	TRUE	0.08	TRUE	56.3	TRUE	4.3	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.01
pH4.0	4.10
pH10.0	9.97

Standard	Reading
Cond 1.409	1.399

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-7D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	5.52	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	32		
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	14:10	x		0.1	5.52	14.55	NA	7.66	NA	0.384	NA	0.12	NA	-68.3	NA	4.2	NA
	14:15	x		0.2	5.52	14.27	NA	7.64	NA	0.380	NA	0.07	NA	-78.2	NA	4.1	NA
	14:20	x		0.3	5.52	14.52	TRUE	7.65	TRUE	0.380	TRUE	0.07	FALSE	-86.1	FALSE	3.6	FALSE
	14:25	x		0.4	5.52	14.50	TRUE	7.65	TRUE	0.377	TRUE	0.31	FALSE	-91.9	FALSE	2.2	FALSE
	14:30	x		0.5	5.52	14.49	TRUE	7.66	TRUE	0.380	TRUE	0.28	FALSE	-95.6	TRUE	2.1	FALSE
	14:35	x		0.6	5.52	14.55	TRUE	7.67	TRUE	0.379	TRUE	0.16	FALSE	-99.2	TRUE	2.7	FALSE
	14:40	x		0.7	5.52	14.40	TRUE	7.68	TRUE	0.379	TRUE	0.06	FALSE	-101.1	TRUE	2.3	FALSE
	14:45	x		0.8	5.52	14.42	TRUE	7.69	TRUE	0.378	TRUE	0.04	FALSE	-103.3	TRUE	2.4	FALSE
	1450	x		0.9	5.52	14.59	TRUE	7.70	TRUE	0.375	TRUE	0.04	FALSE	-101.6	TRUE	2.2	TRUE
	1455		x	1	5.52	14.40	TRUE	7.67	TRUE	0.376	TRUE	0.04	TRUE	-104.8	TRUE	2.2	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	6.97
pH4.0	4.08
pH10	10.02

Standard	Reading
Cond 1.409	1.388

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-7S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	5.61	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	17		
Well Screened Interval	12-17 feet	Pump Intake Depth	14.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	14:10	x		0.1	5.61	13.84	NA	7.03	NA	0.437	NA	2.01	NA	-80.2	NA	4.8	NA
	14:15	x		0.2	5.61	15.53	NA	6.92	NA	0.590	NA	1.08	NA	-82.4	NA	4.6	NA
	14:20	x		0.3	5.61	13.66	FALSE	6.89	FALSE	0.550	FALSE	0.65	FALSE	-85.7	TRUE	2.8	FALSE
	14:25	x		0.4	5.61	13.75	FALSE	6.87	TRUE	0.595	FALSE	0.51	FALSE	-86.0	TRUE	3.2	FALSE
	14:30	x		0.5	5.61	13.60	TRUE	6.83	TRUE	0.596	FALSE	0.38	FALSE	-85.2	TRUE	3.1	FALSE
	14:35	x		0.6	5.61	14.37	FALSE	6.85	TRUE	0.594	TRUE	0.29	FALSE	-85.1	TRUE	3.1	TRUE
	14:40	x		0.7	5.61	14.56	FALSE	6.85	TRUE	0.595	TRUE	0.28	FALSE	-86.5	TRUE	3.2	TRUE
	14:45		x	0.8	5.61	14.52	TRUE	6.82	TRUE	0.598	TRUE	0.27	TRUE	-83.6	TRUE	3.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.01
pH4.0	4.10
pH10.0	9.97

Standard	Reading
Cond 1.409	1.399

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-8D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	7.94	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	33		
Well Screened Interval	28-33 feet	Pump Intake Depth	30.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1315	x		0.1	7.94	14.94	NA	7.34	NA	0.311	NA	0.84	NA	11.4	NA	3.3	NA
	1320	x		0.2	7.94	14.93	NA	7.32	NA	0.324	NA	0.62	NA	-1.2	NA	3.1	NA
	1325	x		0.3	7.94	15.12	TRUE	7.30	TRUE	0.356	FALSE	0.57	FALSE	-73.4	FALSE	2.7	FALSE
	1330	x		0.4	7.94	15.02	TRUE	7.36	TRUE	0.370	FALSE	0.47	FALSE	-101.1	FALSE	2.6	FALSE
	1335	x		0.5	7.94	15.07	TRUE	7.35	TRUE	0.303	FALSE	0.44	FALSE	-106.7	FALSE	2.4	FALSE
	1340	x		0.6	7.94	15.15	TRUE	7.37	TRUE	0.374	FALSE	0.38	FALSE	-112.9	FALSE	2.5	TRUE
	1345	x		0.7	7.94	15.03	TRUE	7.37	TRUE	0.374	FALSE	0.37	FALSE	-114.3	TRUE	2.4	TRUE
	1350		x	0.8	7.94	15.25	TRUE	7.38	TRUE	0.375	TRUE	0.35	TRUE	-116.4	TRUE	2.4	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
ph7.0	6.97
pH4.0	4.08
pH10	10.02

Standard	Reading
Cond 1.409	1.388

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-8S	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	6/12/2017	Static Water Level:	8.09	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	14		
Well Screened Interval	9-14 feet	Pump Intake Depth	11.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/12/17	1315	x		0.1	8.09	13.96	NA	7.24	NA	0.450	NA	6.19	NA	78.9	NA	2.6	NA
	1320	x		0.2	8.09	13.86	NA	7.20	NA	0.458	NA	6.08	NA	63.0	NA	2.4	NA
	1325	x		0.3	8.09	13.97	TRUE	7.20	TRUE	0.460	TRUE	6.04	TRUE	61.6	FALSE	2.3	FALSE
	1330		x	0.4	8.09	13.94	TRUE	7.19	TRUE	0.458	TRUE	6.02	TRUE	62.8	TRUE	2.2	TRUE
					Stabilization Criteria	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory **City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/12/2017
Time	930
Meter	YSI

Standard	Reading
pH7.0	7.01
pH4.0	4.10
pH10.0	9.97

Standard	Reading
Cond 1.409	1.399

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**BG-1D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/21/2017	Static Water Level:	6.31	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	30		
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/21/17	740	x		0.1	6.31	12.82	NA	7.66	NA	0.201	NA	1.96	NA	92.1	NA	9.5	NA
	745	x		0.2	6.31	12.63	NA	6.81	NA	0.214	NA	0.40	NA	88.5	NA	6.6	NA
	750	x		0.3	6.31	13.40	FALSE	6.92	FALSE	0.216	FALSE	0.24	FALSE	56.5	FALSE	4.5	FALSE
	755	x		0.4	6.31	12.86	FALSE	7.07	FALSE	0.210	TRUE	0.10	FALSE	37.3	FALSE	4.2	FALSE
	800	x		0.5	6.31	12.77	FALSE	7.12	FALSE	0.209	FALSE	0.08	FALSE	25.0	FALSE	3.7	FALSE
	805	x		0.6	6.31	12.83	TRUE	7.17	TRUE	0.209	TRUE	0.08	FALSE	13.8	FALSE	3.5	FALSE
	810	x		0.7	6.31	13.31	FALSE	7.22	TRUE	0.210	TRUE	0.08	TRUE	-3.8	FALSE	3.3	TRUE
	815	x		0.8	6.31	13.43	FALSE	7.27	TRUE	0.211	TRUE	0.08	TRUE	-11.4	FALSE	3.3	TRUE
	820	x		0.9	6.31	13.47	TRUE	7.31	TRUE	0.211	TRUE	0.08	TRUE	-20.3	FALSE	3.2	TRUE
	825	x		1	6.31	13.51	TRUE	7.33	TRUE	0.210	TRUE	0.08	TRUE	-27.9	FALSE	3.1	TRUE
	830		x	1.1	6.31	13.66	TRUE	7.33	TRUE	0.213	TRUE	0.08	TRUE	-30.3	TRUE	3.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/21/2017
Time	720
Meter	YSI

Standard	Reading
pH7.0	7.08
pH4.0	4.02
pH10.0	9.98

Standard	Reading
Cond1.409	1.394

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**BG-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/21/2017	Static Water Level:	6.51	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	10		
Well Screened Interval	5-10 feet	Pump Intake Depth	7.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/21/17	740	x		0.1	6.51	60.08	NA	7.57	NA	0.199	NA	2.42	NA	-17.3	NA	9.4	NA
	745	x		0.2	6.51	59.57	NA	6.51	NA	0.196	NA	1.02	NA	-37.4	NA	7.8	NA
	750	x		0.3	6.51	59.79	TRUE	6.36	FALSE	0.194	TRUE	0.92	FALSE	-48.1	FALSE	7.1	FALSE
	755	x		0.4	6.51	59.81	TRUE	6.30	FALSE	0.193	TRUE	0.85	FALSE	-51.6	FALSE	7.0	TRUE
	800	x		0.5	6.51	59.91	TRUE	6.36	TRUE	0.194	TRUE	0.91	TRUE	-58.2	FALSE	6.5	TRUE
	805	x		0.6	6.51	59.86	TRUE	6.36	TRUE	0.194	TRUE	0.90	TRUE	-62.9	FALSE	6.3	TRUE
	810		x	0.7	6.51	59.92	TRUE	6.35	TRUE	0.195	TRUE	0.82	TRUE	-67.2	TRUE	6.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/21/2017
Time	720
Meter	YSI

Standard	Reading
pH7.0	7.15
pH4.0	4.06
pH10.0	9.94

Standard	Reading
Cond1.409	1.388

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-1D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/19/2017	Static Water Level:	4.9	Comments: Turbidimeter error. Purged well additional 15 minutes after stability parameters met to lower turbidity.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	32		
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/17	1540	x		0.1	4.96	17.12	NA	6.94	NA	0.561	NA	0.96	NA	88.1	NA	-	NA
	1545	x		0.2	4.96	16.85	NA	6.71	NA	0.558	NA	0.77	NA	88.8	NA	-	NA
	1550	x		0.3	4.96	16.87	TRUE	6.81	FALSE	0.558	TRUE	0.79	FALSE	80.3	TRUE	-	NA
	1555	x		0.4	4.96	16.75	TRUE	6.82	FALSE	0.556	TRUE	0.67	FALSE	80.1	TRUE	-	NA
	1600	X		0.5	4.96	16.63	TRUE	6.80	TRUE	0.553	TRUE	0.57	FALSE	80.5	TRUE	-	NA
	1605	X		0.6	4.96	16.64	TRUE	6.79	TRUE	0.553	TRUE	0.53	FALSE	80.7	TRUE	-	NA
	1610		X	0.7	4.96	16.51	TRUE	6.80	TRUE	0.551	TRUE	0.53	TRUE	80.6	TRUE	-	NA
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/19/2017
Time	830
Meter	YSI

Standard	Reading
pH7.0	7.02
pH4.0	4.05
pH10.0	9.97

Standard	Reading
Cond1.409	1.402

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-1S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/19/2017	Static Water Level:	5.19	Comments: Turbidimeter error. Purged well additional 15 minutes after stability parameters met to lower turbidity.	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oF)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/17	1540	x		0.1	5.28	68.34	NA	7.50	NA	0.389	NA	0.67	NA	39.8	NA	-	NA
	1545	x		0.2	5.28	68.30	NA	7.52	NA	0.376	NA	0.48	NA	31.0	NA	-	NA
	1550	x		0.3	5.28	68.28	TRUE	7.50	TRUE	0.371	FALSE	0.45	FALSE	28.2	FALSE	-	NA
	1555	x		0.4	5.28	68.21	TRUE	7.50	TRUE	0.372	TRUE	0.50	FALSE	26.5	TRUE	-	NA
	1600	x		0.5	5.28	68.27	TRUE	7.50	TRUE	0.376	TRUE	0.62	FALSE	25.0	TRUE	-	NA
	1605	X		0.6	5.28	68.23	TRUE	7.50	TRUE	0.377	TRUE	0.73	FALSE	24.0	TRUE	-	NA
	1610	X		0.7	5.28	68.16	TRUE	7.51	TRUE	0.380	TRUE	0.76	FALSE	23.2	TRUE	-	NA
	1615		X	0.8	5.28	68.14	TRUE	7.52	TRUE	0.383	TRUE	0.77	TRUE	22.8	TRUE	-	NA
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/19/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.08
pH4.0	4.09
pH10.0	10.07

Standard	Reading
Cond1.409	1.416

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-2D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	3.61	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	31		
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
	1550	x		0.1	3.74	19.33	NA	7.09	NA	0.392	NA	0.60	NA	50.2	NA	9.1	NA
	1555	x		0.2	3.74	18.79	NA	6.82	NA	0.524	NA	0.43	NA	53.3	NA	8.9	NA
	1600	x		0.3	3.74	18.92	TRUE	6.85	FALSE	0.537	FALSE	0.64	FALSE	45.1	TRUE	7.3	FALSE
	1605	x		0.4	3.75	19.12	TRUE	7.01	FALSE	0.543	FALSE	0.71	FALSE	23.2	FALSE	6.8	FALSE
	1610	x		0.5	3.76	19.13	TRUE	6.95	FALSE	0.521	FALSE	0.40	FALSE	9.0	FALSE	6.2	FALSE
	1615	x		0.6	3.76	18.83	TRUE	6.89	FALSE	0.513	FALSE	0.45	FALSE	6.2	FALSE	5.4	FALSE
	1620	x		0.7	3.76	18.72	TRUE	6.86	TRUE	0.500	FALSE	0.42	FALSE	-3.5	FALSE	5.2	FALSE
	1625	x		0.8	3.77	18.62	TRUE	6.86	TRUE	0.511	TRUE	0.41	TRUE	-9.4	FALSE	5.0	TRUE
	1630		x	0.9	3.77	18.60	TRUE	6.85	TRUE	0.515	TRUE	0.40	TRUE	-10.7	TRUE	4.9	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.04
pH4.0	4.02
pH10.0	9.86

Standard	Reading
Cond1.409	1.418

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-2S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	3.43	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
	1600	x		0.1	3.43	70.75	NA	7.66	NA	0.298	NA	0.59	NA	54.7	NA	22.9	NA
	1605	x		0.2	3.43	71.46	NA	7.72	NA	0.294	NA	0.57	NA	-65.2	NA	10.7	NA
	1610	x		0.3	3.43	71.53	TRUE	7.76	TRUE	0.295	TRUE	0.50	FALSE	-73.2	FALSE	9.7	FALSE
	1615	x		0.4	3.43	71.58	TRUE	7.73	TRUE	0.296	TRUE	0.52	FALSE	-77.8	FALSE	8.8	FALSE
	1620	x		0.5	3.43	71.65	TRUE	7.69	TRUE	0.297	TRUE	0.76	FALSE	-77.4	TRUE	8.5	FALSE
	1625	x		0.6	3.43	71.84	TRUE	7.67	TRUE	0.298	TRUE	1.29	FALSE	-41.8	FALSE	8.6	TRUE
	1630	x		0.7	3.43	71.82	TRUE	7.65	TRUE	0.299	TRUE	1.39	FALSE	-43.5	FALSE	8.0	TRUE
	1635		x	0.8	3.43	71.85	TRUE	7.65	TRUE	0.299	TRUE	1.41	TRUE	-43.3	TRUE	7.9	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.05
pH4.0	3.98
pH10.0	10.02

Standard	Reading
Cond1.409	1.408

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-3D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	3.09	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	31		
Well Screened Interval	26-31 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1445	x		0.1	3.23	61.52	NA	7.32	NA	0.652	NA	1.87	NA	-6.9	NA	5.7	NA
	1450	x		0.2	3.23	60.52	NA	7.27	NA	0.621	NA	0.57	NA	-54.9	NA	5.2	NA
	1455	x		0.3	3.23	60.37	TRUE	7.31	TRUE	0.621	FALSE	0.58	FALSE	-72.6	FALSE	4.8	FALSE
	1500	x		0.4	3.23	59.96	TRUE	7.36	TRUE	0.622	TRUE	0.54	TRUE	-87.2	FALSE	3.1	FALSE
	1505	x		0.5	3.23	60.00	TRUE	7.39	TRUE	0.624	TRUE	0.51	FALSE	-96.2	FALSE	2.2	FALSE
	1510	x		0.6	3.23	59.85	TRUE	7.41	TRUE	0.627	TRUE	0.52	TRUE	-101.8	FALSE	2.3	FALSE
	1515		x	0.7	3.23	59.70	TRUE	7.43	TRUE	0.629	TRUE	0.51	TRUE	-105.1	TRUE	2.3	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.05
pH4.0	3.98
pH10.0	10.02

Standard	Reading
Cond1.409	1.408

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-3S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	3.21	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1445	x		0.1	3.28	19.75	NA	7.36	NA	0.510	NA	4.40	NA	39.1	NA	8.9	NA
	1450	x		0.2	3.28	18.45	NA	6.80	NA	0.490	NA	0.62	NA	1.6	NA	8.2	NA
	1455	x		0.3	3.28	18.54	FALSE	6.86	FALSE	0.489	FALSE	0.50	FALSE	-18.1	FALSE	7.6	FALSE
	1500	x		0.4	3.28	18.56	TRUE	6.89	TRUE	0.488	TRUE	0.43	FALSE	-29.0	FALSE	6.9	FALSE
	1505	x		0.5	3.28	18.66	TRUE	6.89	TRUE	0.488	TRUE	0.40	FALSE	-33.6	FALSE	6.1	FALSE
	1510	x		0.6	3.28	18.64	TRUE	6.90	TRUE	0.488	TRUE	0.38	FALSE	-42.7	FALSE	5.4	FALSE
	1515	x		0.7	3.28	18.66	TRUE	6.90	TRUE	0.488	TRUE	0.39	TRUE	-45.0	FALSE	5.2	FALSE
	1520		x	0.8	3.28	18.65	TRUE	6.90	TRUE	0.489	TRUE	0.38	TRUE	-46.4	TRUE	4.9	TRUE
					42717	± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.04
pH4.0	4.02
pH10.0	9.86

Standard	Reading
Cond1.409	1.418

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-4D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	3.12	Comments:	
Samplers:	Sharkey/Alexander	Measured Well Depth:	28		
Well Screened Interval	23-28 feet	Pump Intake Depth	25.5		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1330	x		0.1	3.35	18.84	NA	7.24	NA	0.765	NA	5.25	NA	45.9	NA	5.5	NA
	1335	x		0.2	3.35	16.62	NA	6.89	NA	0.714	NA	0.79	NA	19.7	NA	5.1	NA
	1340	x		0.3	3.35	16.38	FALSE	6.57	FALSE	0.704	FALSE	0.76	FALSE	12.1	FALSE	4.9	FALSE
	1345	x		0.4	3.35	16.41	TRUE	6.65	FALSE	0.744	FALSE	0.66	FALSE	-12.3	FALSE	4.6	TRUE
	1350	x		0.5	3.35	16.39	TRUE	6.82	FALSE	0.728	FALSE	0.59	FALSE	-41.7	FALSE	4.2	FALSE
	1355	x		0.6	3.35	16.24	TRUE	6.66	FALSE	0.759	FALSE	0.52	FALSE	-32.2	FALSE	3.9	FALSE
	1400	x		0.7	3.35	16.28	TRUE	6.59	FALSE	0.777	FALSE	0.51	FALSE	-34.7	TRUE	3.7	FALSE
	1405	x		0.8	3.35	16.27	TRUE	6.85	FALSE	0.771	TRUE	0.46	FALSE	-52.1	FALSE	3.5	FALSE
	1410	x		0.9	3.35	15.85	TRUE	6.73	FALSE	0.761	TRUE	0.40	FALSE	-48.2	FALSE	2.8	FALSE
	1415	x		1	3.35	16.03	TRUE	6.81	FALSE	0.761	TRUE	0.39	FALSE	-54.4	TRUE	2.7	FALSE
	1420		x	1.1	3.35	16.26	TRUE	6.84	FALSE	0.771	TRUE	0.36	TRUE	-57.8	TRUE	2.6	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.04
pH4.0	4.02
pH10.0	9.86

Standard	Reading
Cond1.409	1.418

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-4S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	3.00	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	12		
Well Screened Interval	2-12 feet	Pump Intake Depth	7 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1325	x		0.1	3.00	64.63	NA	7.30	NA	0.475	NA	2.41	NA	0.6	NA	10.3	NA
	1330	x		0.2	3.00	63.30	NA	7.29	NA	0.453	NA	0.65	NA	-67.3	NA	9.7	NA
	1335	x		0.3	3.00	63.55	TRUE	6.99	FALSE	0.469	FALSE	0.66	FALSE	-79.9	FALSE	8.6	FALSE
	1340	x		0.4	3.00	63.74	TRUE	6.92	FALSE	0.481	FALSE	0.71	TRUE	-91.9	FALSE	8.5	FALSE
	1345	x		0.5	3.00	63.56	TRUE	6.92	TRUE	0.480	TRUE	0.69	TRUE	-99.4	FALSE	5.8	FALSE
	1350	x		0.6	3.00	63.59	TRUE	6.92	TRUE	0.480	TRUE	0.73	TRUE	-105.6	FALSE	3.5	FALSE
	`355	x		0.7	3.00	63.67	TRUE	6.94	TRUE	0.477	TRUE	0.82	FALSE	-105.6	TRUE	3.5	FALSE
	1400	x		0.8	3.00	63.67	TRUE	6.95	TRUE	0.476	TRUE	0.91	FALSE	-97.6	TRUE	3.4	TRUE
	1405	x		0.9	3.00	63.42	TRUE	6.99	TRUE	0.475	TRUE	1.07	FALSE	-95.7	TRUE	3.0	FALSE
	1410	x		1	3.00	63.59	TRUE	7.02	TRUE	0.475	TRUE	1.09	FALSE	-100.6	TRUE	2.8	FALSE
	1415		x	1.1	3.00	63.59	TRUE	7.04	TRUE	0.473	TRUE	1.12	TRUE	-103.5	TRUE	2.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.05
pH4.0	3.98
pH10.0	10.02

Standard	Reading
Cond1.409	1.408

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-5D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	5.21	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	28.25		
Well Screened Interval	23.25-28.25 feet	Pump Intake Depth	25.75 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1210	x		0.1	5.21	16.47	NA	7.28	NA	0.507	NA	1.45	NA	71.0	NA	36.2	NA
	1215	x		0.2	5.21	15.61	NA	6.88	NA	0.498	NA	0.55	NA	88.7	NA	28.1	NA
	1220	x		0.3	5.21	15.60	FALSE	7.08	FALSE	0.494	TRUE	0.45	FALSE	64.5	FALSE	24.9	FALSE
	1225	x		0.4	5.21	15.60	TRUE	7.08	FALSE	0.494	TRUE	0.35	FALSE	52.4	FALSE	25.2	FALSE
	1230	x		0.5	5.21	15.87	TRUE	7.15	TRUE	0.498	TRUE	0.33	FALSE	34.0	FALSE	25.1	TRUE
	1235	x		0.6	5.21	15.85	TRUE	7.31	FALSE	0.496	TRUE	0.31	FALSE	13.2	FALSE	19.4	FALSE
	1240	x		0.7	5.21	16.23	TRUE	7.38	FALSE	0.500	TRUE	0.27	FALSE	-5.9	FALSE	18.1	FALSE
	1245	x		0.8	5.21	16.10	TRUE	7.36	TRUE	0.499	TRUE	0.24	FALSE	-17.1	FALSE	17.6	TRUE
	1250	x		0.9	5.21	16.33	TRUE	7.42	TRUE	0.501	TRUE	0.23	FALSE	-34.1	FALSE	16.5	TRUE
	1255	x		1	5.21	16.23	TRUE	7.43	TRUE	0.499	TRUE	0.22	TRUE	-48.6	FALSE	5.7	FALSE
	1300	x		1.1	5.21	16.81	FALSE	7.50	TRUE	0.506	TRUE	0.21	TRUE	-62.7	FALSE	6.8	FALSE
	1305	x		1.2	5.21	16.79	FALSE	7.52	TRUE	0.505	TRUE	0.21	TRUE	-70.5	FALSE	7.1	FALSE
	1310		x	1.3	5.21	16.91	TRUE	7.50	TRUE	0.507	TRUE	0.22	TRUE	-72.6	TRUE	7.4	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.04
pH4.0	4.02
pH10.0	9.86

Standard	Reading
Cond1.409	1.418

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-5S	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	4.69	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	14'		
Well Screened Interval	4-14'	Pump Intake Depth	11.5'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1210	x		0.1	4.69	68.84	NA	7.55	NA	0.539	NA	3.60	NA	-1.7	NA	25.1	NA
	1215	x		0.2	4.69	67.98	NA	7.49	NA	0.554	NA	2.35	NA	-70.6	NA	19.6	NA
	1220	x		0.3	4.69	68.12	TRUE	7.47	TRUE	0.597	FALSE	1.68	FALSE	-68.2	FALSE	18.4	FALSE
	1225	x		0.4	4.69	67.80	TRUE	7.44	TRUE	0.601	FALSE	1.51	FALSE	-68.6	TRUE	13.4	FALSE
	1230	x		0.5	4.69	67.57	TRUE	7.39	TRUE	0.621	FALSE	1.36	FALSE	-70.6	TRUE	11.2	FALSE
	1235	x		0.6	4.69	67.69	TRUE	7.11	FALSE	0.641	FALSE	1.20	FALSE	-73.6	TRUE	9.8	FALSE
	1240	x		0.7	4.69	68.19	TRUE	7.13	FALSE	0.645	FALSE	1.32	FALSE	-88.7	FALSE	6.7	FALSE
	1245	x		0.8	4.69	68.05	TRUE	7.12	TRUE	0.647	TRUE	1.16	FALSE	-89.5	FALSE	6.2	FALSE
	1250	x		0.9	4.69	68.36	TRUE	7.13	TRUE	0.646	TRUE	1.38	FALSE	-87.0	TRUE	5.3	FALSE
	1255	x		1	4.69	68.27	TRUE	7.13	TRUE	0.657	TRUE	1.30	FALSE	-85.9	TRUE	5.1	FALSE
	1300		x	1.1	4.69	68.11	TRUE	7.13	TRUE	0.650	TRUE	1.29	TRUE	-90.7	TRUE	4.9	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.05
pH4.0	3.98
pH10.0	10.02

Standard	Reading
Cond1.409	1.408

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-6D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/19/2017	Static Water Level:	3.33	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	30		
Well Screened Interval	25-30 feet	Pump Intake Depth	27.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/17	1320	x		0.1	3.33	15.38	NA	5.21	NA	0.396	NA	2.16	NA	179.7	NA	30.8	NA
	1325	x		0.2	3.33	14.93	NA	5.50	NA	0.407	NA	0.72	NA	164.3	NA	26.2	NA
	1330	x		0.3	3.33	14.65	FALSE	5.93	FALSE	0.404	TRUE	0.68	FALSE	142.5	FALSE	21.1	FALSE
	1335	x		0.4	3.33	14.71	TRUE	6.10	FALSE	0.402	TRUE	0.74	TRUE	133.3	FALSE	17.9	FALSE
	1340	x		0.5	3.33	14.68	TRUE	6.22	FALSE	0.401	TRUE	0.70	TRUE	128.8	FALSE	15.7	FALSE
	1345	x		0.6	3.33	14.82	TRUE	6.39	FALSE	0.403	TRUE	0.69	TRUE	117.9	FALSE	13.1	FALSE
	1350	x		0.7	3.33	15.00	TRUE	6.65	FALSE	0.405	TRUE	0.60	FALSE	104.0	FALSE	12.5	FALSE
	1355	x		0.8	3.33	14.81	TRUE	6.74	FALSE	0.404	TRUE	0.51	FALSE	98.8	FALSE	11.4	FALSE
	1400	x		0.9	3.33	14.66	TRUE	6.77	FALSE	0.402	TRUE	0.49	FALSE	100.0	TRUE	11.1	FALSE
	1405	x		1	3.33	14.72	TRUE	6.82	TRUE	0.401	TRUE	0.43	FALSE	90.8	TRUE	10.4	TRUE
	1410	x		1.1	3.33	14.60	TRUE	6.82	TRUE	0.400	TRUE	0.41	FALSE	87.8	FALSE	8.9	FALSE
	1415	x		1.2	3.33	14.74	TRUE	6.88	TRUE	0.402	TRUE	0.39	TRUE	85.1	TRUE	8.2	FALSE
	1420		x	1.3	3.33	14.64	TRUE	6.90	TRUE	0.401	TRUE	0.38	TRUE	83.7	TRUE	8.1	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/19/2017
Time	830
Meter	YSI

Standard	Reading
pH7.0	7.02
pH4.0	4.05
pH10.0	9.97

Standard	Reading
Cond1.409	1.402

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-6S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/19/2017	Static Water Level:	3.32	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	11.67		
Well Screened Interval	7-12 feet	Pump Intake Depth	9.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^{o}F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/17	1315	x		0.1	3.32	63.37	NA	6.15	NA	0.267	NA	0.88	NA	91.3	NA	5.5	NA
	1320	x		0.2	3.32	63.35	NA	6.37	NA	0.264	NA	0.85	NA	73.4	NA	3.9	NA
	1325	x		0.3	3.33	63.57	TRUE	6.59	FALSE	0.263	TRUE	0.79	FALSE	58.5	FALSE	3.7	FALSE
	1330	x		0.4	3.35	63.47	TRUE	6.66	FALSE	0.263	TRUE	0.98	FALSE	57.0	FALSE	3.5	FALSE
	1335	x		0.5	3.37	62.98	TRUE	6.69	FALSE	0.261	TRUE	0.91	FALSE	56.4	TRUE	3.3	FALSE
	1340	x		0.6	3.39	63.03	TRUE	6.75	TRUE	0.261	TRUE	0.87	FALSE	55.0	TRUE	3.1	FALSE
	1345	x		0.7	3.4	63.21	TRUE	6.82	FALSE	0.262	TRUE	0.85	TRUE	50.3	TRUE	2.9	FALSE
	1350		x	0.8	3.4	63.04	TRUE	6.84	TRUE	0.260	TRUE	0.85	TRUE	49.1	TRUE	2.8	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/19/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.08
pH4.0	4.09
pH10.0	10.07

Standard	Reading
Cond1.409	1.416

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-7S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	6.72	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	17		
Well Screened Interval	12-17 feet	Pump Intake Depth	14.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1105	x		0.1	6.72	17.95	NA	6.90	NA	0.680	NA	3.23	NA	108.0	NA	9.1	NA
	1110	x		0.2	6.72	18.64	NA	6.61	NA	0.582	NA	0.63	NA	109.6	NA	7.7	NA
	1115	x		0.3	6.72	18.99	FALSE	6.72	FALSE	0.589	FALSE	1.19	FALSE	95.5	FALSE	3.5	FALSE
	1120	x		0.4	6.72	18.87	TRUE	6.65	FALSE	0.591	TRUE	1.14	FALSE	94.5	FALSE	3.8	FALSE
	1125	x		0.5	6.72	18.87	TRUE	6.65	TRUE	0.588	TRUE	0.96	FALSE	91.3	TRUE	4.6	FALSE
	1130	x		0.6	6.72	19.27	TRUE	6.73	TRUE	0.594	TRUE	0.83	FALSE	82.2	FALSE	3.9	FALSE
	1135	x		0.7	6.72	18.91	TRUE	6.74	TRUE	0.589	TRUE	0.72	FALSE	78.8	FALSE	2.7	FALSE
	1140	x		0.8	6.72	18.80	TRUE	6.70	TRUE	0.588	TRUE	0.64	FALSE	76.2	TRUE	2.7	FALSE
	1145	x		0.9	6.72	18.81	TRUE	6.69	TRUE	0.585	TRUE	0.60	FALSE	72.3	TRUE	2.7	TRUE
	1150		x	1.0	6.72	18.99	TRUE	6.68	TRUE	0.587	TRUE	0.59	TRUE	69.3	TRUE	2.7	TRUE
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.04
pH4.0	4.02
pH10.0	9.86

Standard	Reading
Cond1.409	1.418

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	MW-7D	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/20/2017	Static Water Level:	6.64	Comments:	
Samplers:	Sharkey/Ohmberger	Measured Well Depth:	32		
Well Screened Interval	27-32 feet	Pump Intake Depth	29.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/20/17	1105	x		0.1	6.66	59.20	NA	7.67	NA	0.302	NA	2.03	NA	-7.8	NA	6.7	NA
	1110	x		0.2	6.66	58.61	NA	7.47	NA	0.298	NA	1.22	NA	-73.5	NA	4.9	NA
	1115	x		0.3	6.67	58.78	TRUE	7.57	FALSE	0.299	TRUE	1.19	FALSE	-82.9	FALSE	4.6	FALSE
	1120	x		0.4	6.68	58.93	TRUE	7.57	FALSE	0.300	TRUE	1.07	FALSE	-93.0	FALSE	4.5	TRUE
	1125	x		0.5	6.68	59.60	TRUE	7.62	TRUE	0.302	TRUE	1.01	FALSE	-102.6	FALSE	4.0	FALSE
	1130	x		0.6	6.68	59.64	TRUE	7.57	TRUE	0.302	TRUE	0.94	FALSE	-108.9	FALSE	3.3	FALSE
	1135	x		0.7	6.68	59.34	TRUE	7.49	FALSE	0.309	TRUE	0.90	FALSE	-111.2	TRUE	3.2	FALSE
	1140		x	0.8	6.68	58.91	TRUE	7.53	TRUE	0.300	TRUE	0.90	TRUE	-114.7	TRUE	3.2	TRUE
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/20/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.05
pH4.0	3.98
pH10.0	10.02

Standard	Reading
Cond1.409	1.408

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

ERM®

Project:	Ogden Dunes IWP	Well ID:	**MW-8D**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/19/2017	Static Water Level:	8.82	Comments: Turbidimeter error. Purged well additional 15 minutes after stability parameters met to lower turbidity.	
Samplers:	Sharkey/Alexander	Measured Well Depth:	33		
Well Screened Interval	28-33 feet	Pump Intake Depth	30.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°F)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/17	1440	x		0.1	8.84	61.93	NA	7.18	NA	0.343	NA	2.03	NA	74.5	NA	-	NA
	1445	x		0.2	8.84	60.26	NA	7.05	NA	0.352	NA	0.88	NA	71.1	NA	-	NA
	1450	x		0.3	8.84	59.84	FALSE	7.18	FALSE	0.378	FALSE	0.70	FALSE	59.6	FALSE	-	NA
	1455	x		0.4	8.84	59.72	TRUE	7.29	FALSE	0.383	FALSE	0.63	FALSE	50.6	FALSE	-	NA
	1500	x		0.5	8.84	59.30	TRUE	7.33	FALSE	0.379	TRUE	0.61	FALSE	46.2	FALSE	-	NA
	1505	x		0.6	8.84	59.26	TRUE	7.38	TRUE	0.378	TRUE	0.60	TRUE	41.9	TRUE	-	NA
	1510	x		0.7	8.84	59.31	TRUE	7.39	TRUE	0.377	TRUE	0.60	TRUE	39.9	TRUE	-	NA
	1515	x		0.8	8.84	59.31	TRUE	7.43	TRUE	0.377	TRUE	0.60	TRUE	34.6	TRUE	-	NA
	1520		x	0.9	8.84	59.22	TRUE	7.44	TRUE	0.377	TRUE	0.60	TRUE	34.4	TRUE	-	NA
Stabilization Criteria						± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/19/2017
Time	730
Meter	YSI

Standard	Reading
pH7.0	7.08
pH4.0	4.09
pH10.0	10.07

Standard	Reading
Cond1.409	1.416

ERM®

Environmental Resources Management
Low Flow Groundwater Sampling Field Data form

Project:	Ogden Dunes IWP	Well ID:	**MW-8S**	Purge/Sampling Method:	Low Flow by Peristaltic Pump
Project Number:	346694	Well Diameter:	2"	Stabilization Equipment:	YSI
Date:	9/19/2017	Static Water Level:	8.91	Comments: Turbidimeter error. Purged well additional 15 minutes after stability parameters met to lower turbidity.	
Samplers:	Sharkey/Alexander	Measured Well Depth:	14		
Well Screened Interval	9-14 feet	Pump Intake Depth	11.5 feet		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (^oC)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
9/19/17	1440	x		0.1	8.93	18.83	NA	7.19	NA	0.418	NA	4.83	NA	71.0	NA	-	NA
	1445	x		0.2	8.93	18.90	NA	7.21	NA	0.418	NA	4.36	NA	61.9	NA	-	NA
	1450	x		0.3	8.93	18.87	TRUE	7.18	TRUE	0.423	TRUE	4.46	TRUE	56.0	FALSE	-	NA
	1455	x		0.4	8.93	18.94	TRUE	7.20	TRUE	0.430	TRUE	4.92	FALSE	53.8	TRUE	-	NA
	1500	x		0.5	8.95	18.84	TRUE	7.18	TRUE	0.427	TRUE	5.06	FALSE	54.2	TRUE	-	NA
	1505	x		0.6	8.95	18.82	TRUE	7.17	TRUE	0.430	TRUE	5.05	TRUE	54.5	TRUE	-	NA
	1510	x		0.7	8.95	18.84	TRUE	7.17	TRUE	0.429	TRUE	5.10	TRUE	54.5	TRUE	-	NA
	1515		x	0.8	8.95	18.84	TRUE	7.19	TRUE	0.430	TRUE	5.24	TRUE	54.5	TRUE	-	NA
				Stabilization Criteria		± 3%		± 0.1		± 3%		± 10%		± 10 mV		± 10%	

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory ALS Group, USA **City/State** Holland, MI

Analysis/Parameter	Container/Volume	Preservative/Preparation
Metals by ICP-MS	250 mL plastic	HNO3
Mercury in Water	500 mL glass	None
Anions by Ion Chrom.	500 mL plastic	None

Analysis/Parameter	Container/Volume	Preservative/Preparation

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	9/19/2017
Time	830
Meter	YSI

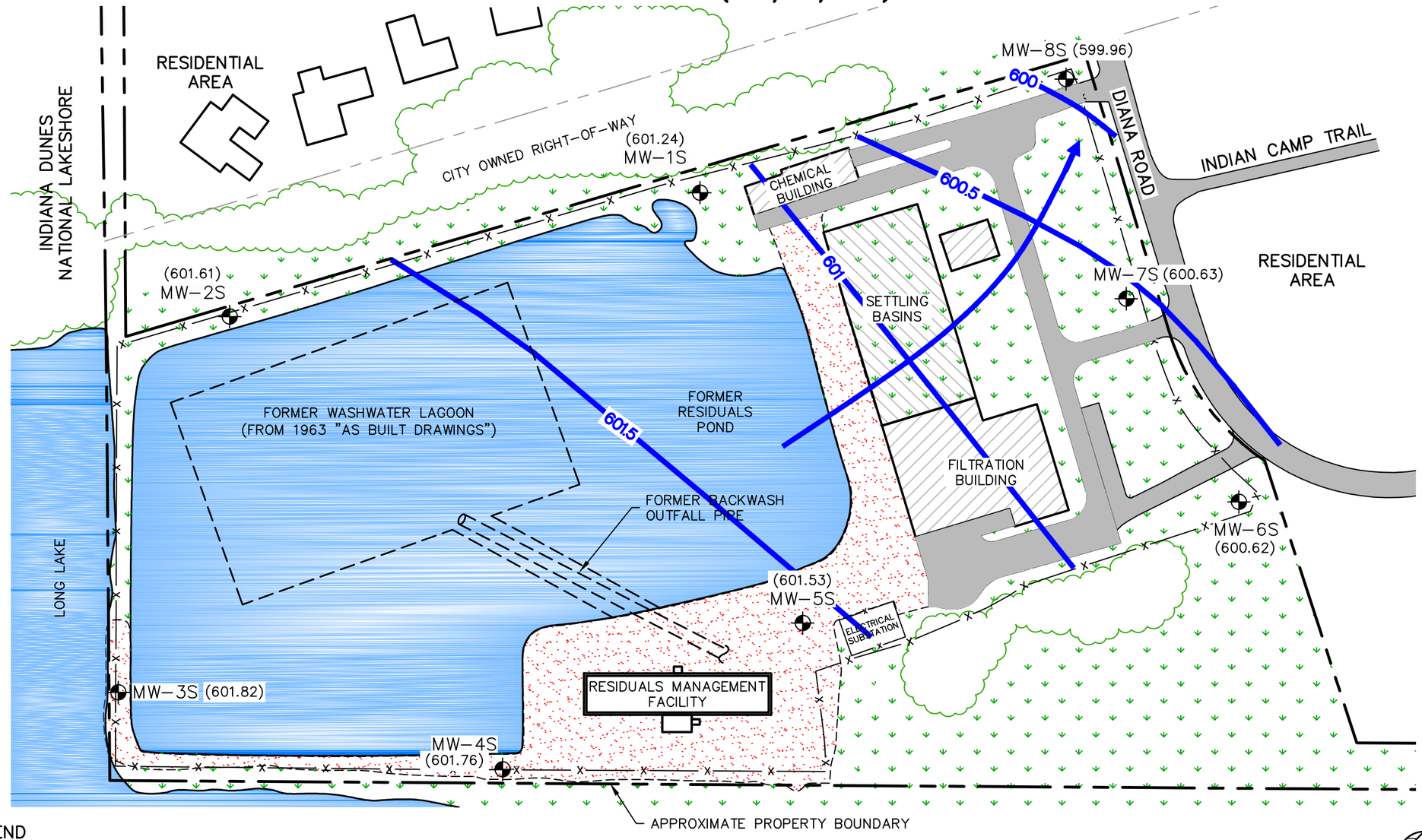
Standard	Reading
pH7.0	7.02
pH4.0	4.05
pH10.0	9.97

Standard	Reading
Cond1.409	1.402

Appendix C

Groundwater Potentiometric Maps

POTENTIOMETRIC SURFACE (12/7/15)–SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- 600.25 — GROUNDWATER CONTOUR
- (601.50) — GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

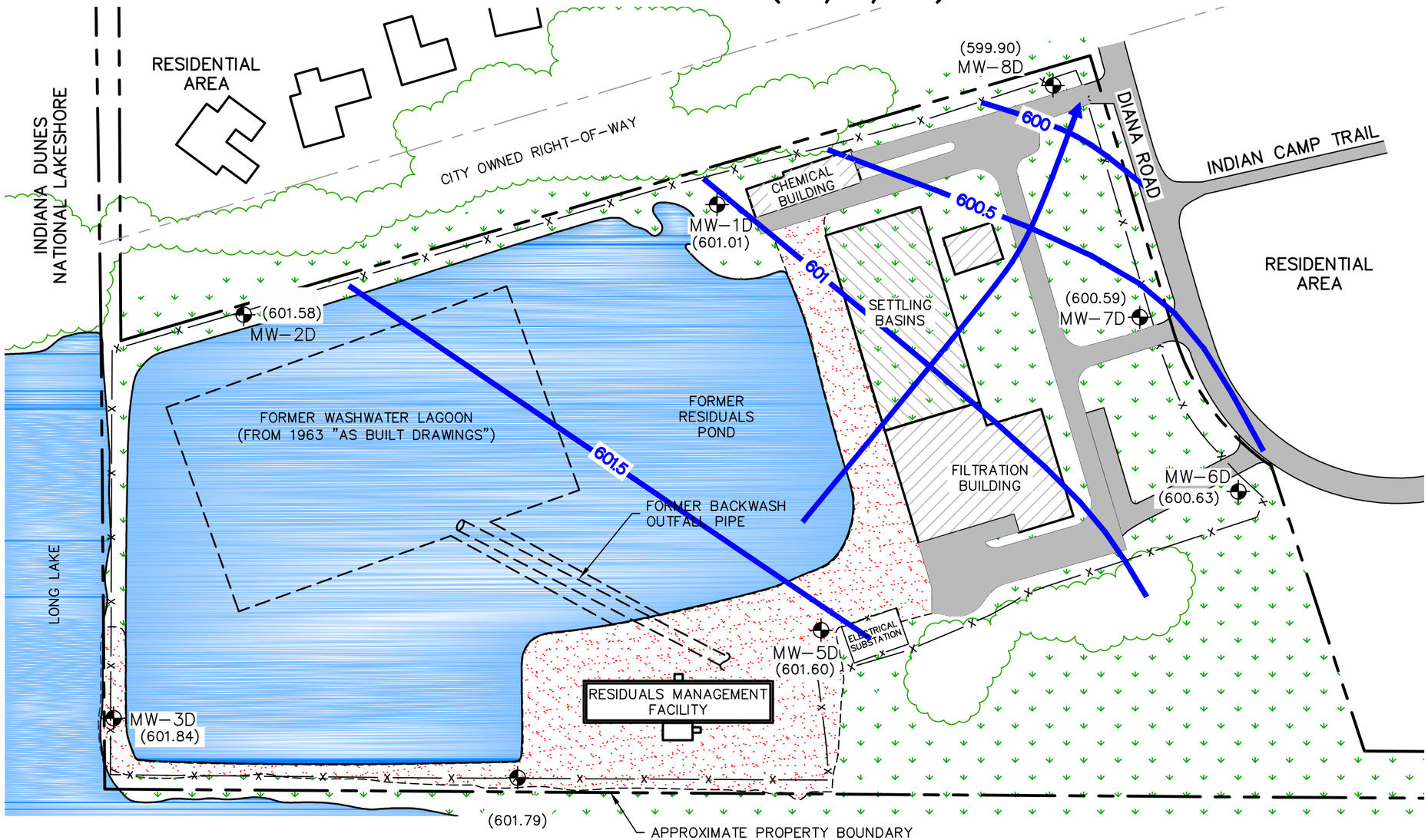
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SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 1

Q:\Team\CSM\Cadd\Indiana American Water\0273018-01 (2).dwg, POT SURF SHALLOW 12-7-15

POTENTIOMETRIC SURFACE MAP(12/7/15)–DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 600.25 GROUNDWATER CONTOUR
- (601.58) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

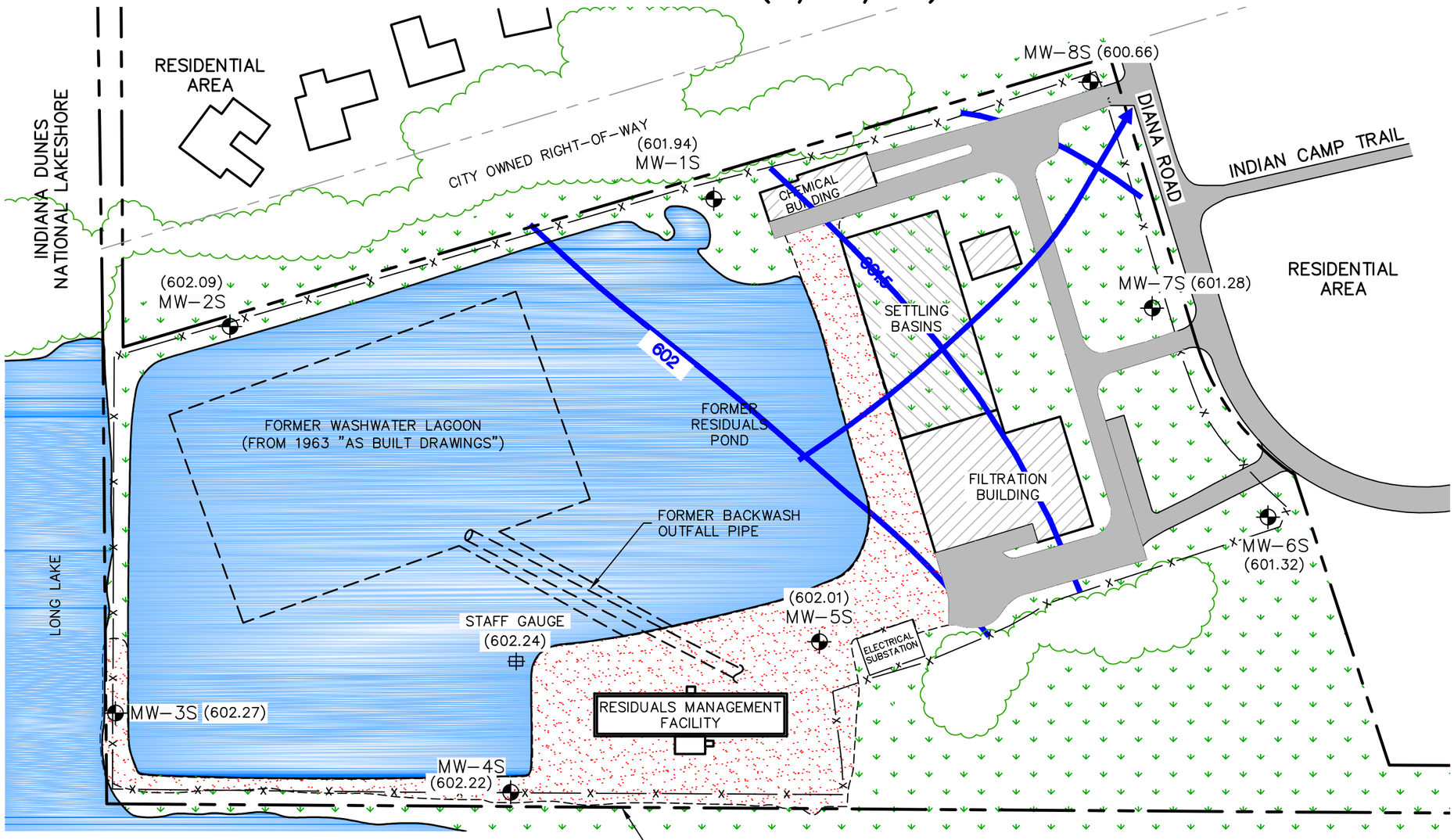
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SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 2

Q:\Team\CSM\Cadd\Indiana American Water\0273018-01 (2).dwg, POT SURF DEEP 12-7-15

POTENTIOMETRIC SURFACE MAP (9/19/16) – SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- GROUNDWATER CONTOUR
- (601.50) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

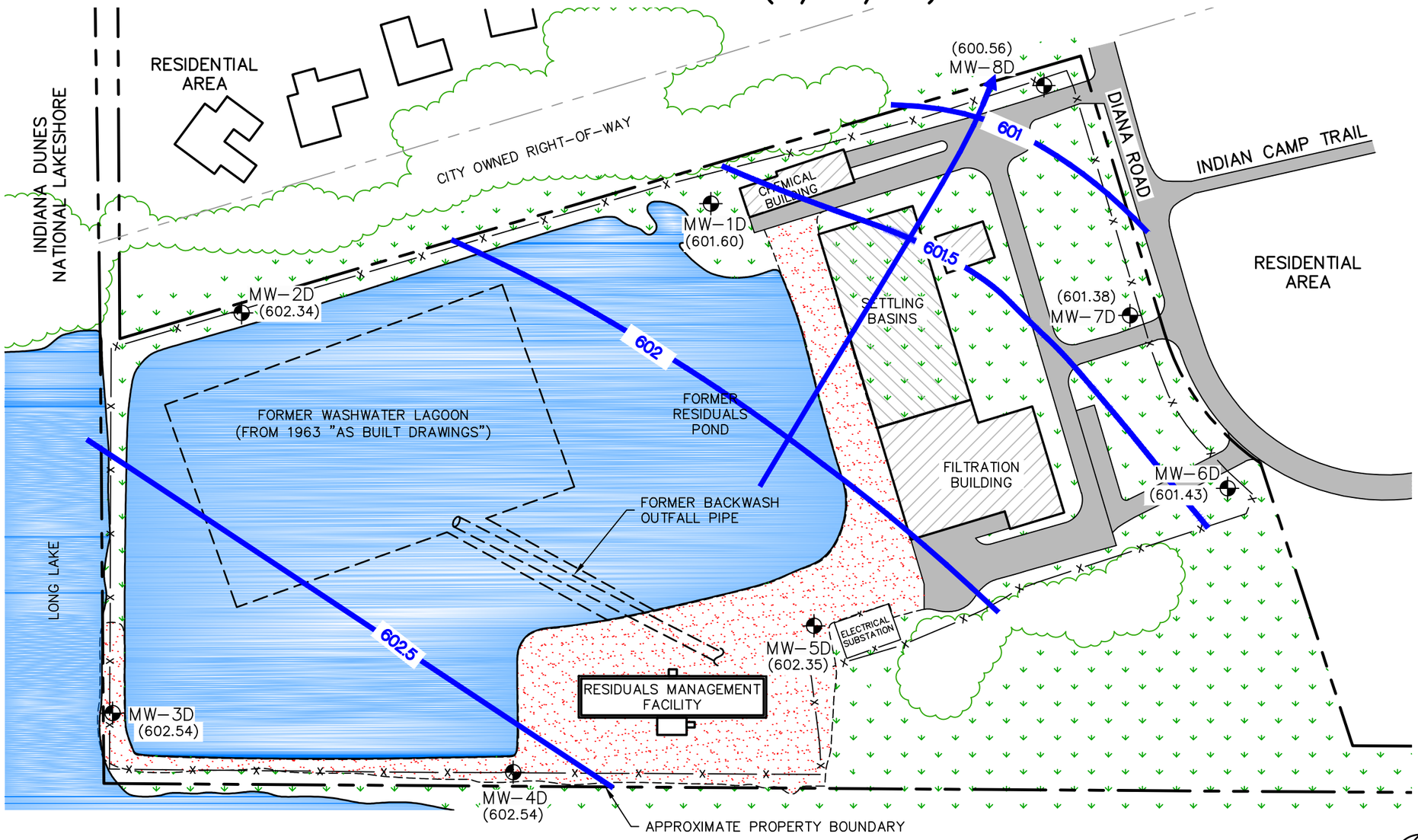
0 120 240

SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 5

Q:\Team\CSM\Cadd\Indiana American Water\0273018-01 (3).dwg, POT SURF SHALLOW 9-19-16

POTENTIOMETRIC SURFACE MAP(3/15/16)–DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 600.25 GROUNDWATER CONTOUR
- (602.34) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

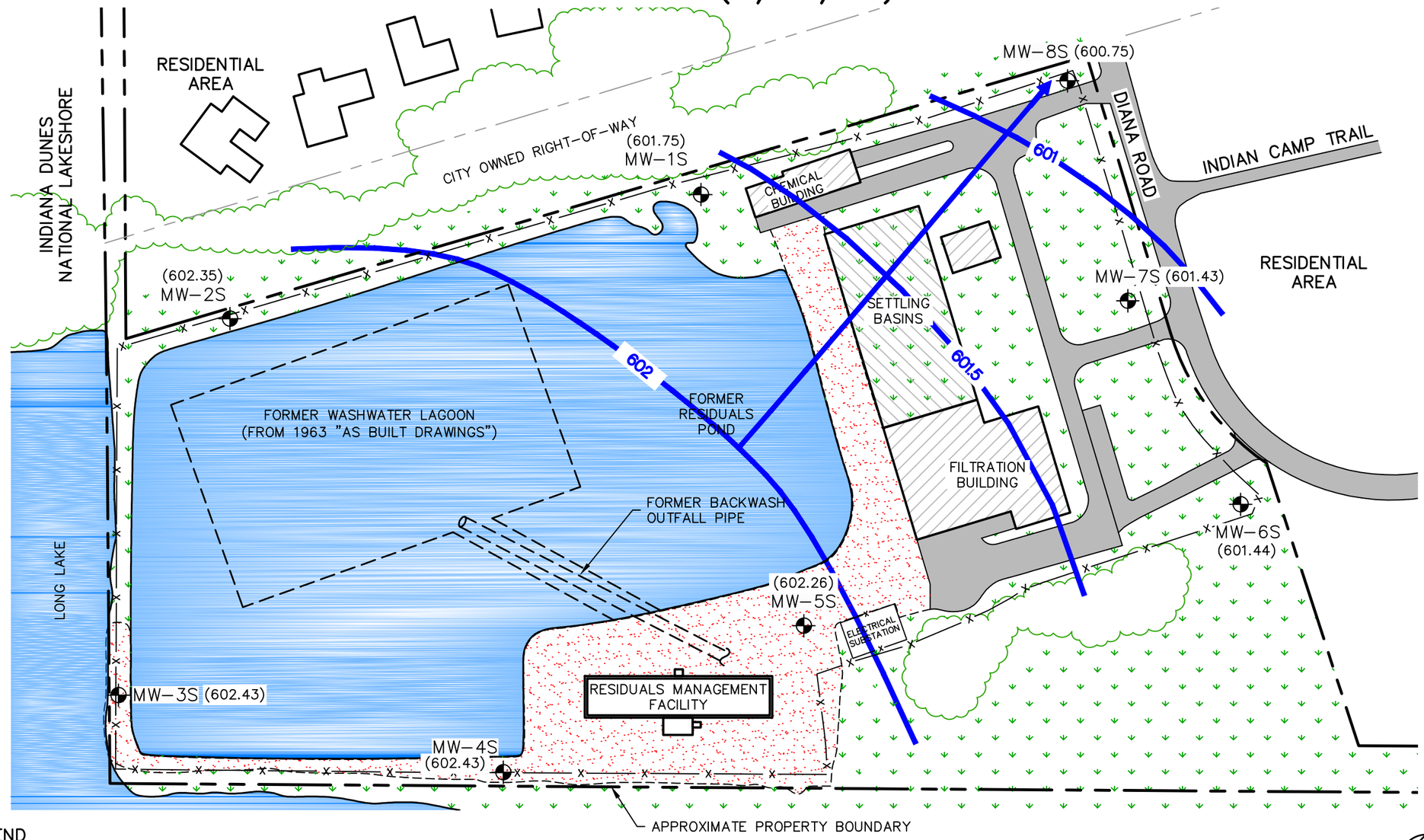
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SCALE (IN FEET)

Drawn By GML	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK		0273018
Date Drawn/Rev'd 01/29/15–12/17/15	Environmental Resources Management	FIGURE 4

T:\Cadd\Indiana American Water\0273018-01 (3).dwg, POT SURF DEEP 3-15-16

POTENTIOMETRIC SURFACE (6/13/16)–SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- 600.25 GROUNDWATER CONTOUR
- (602.35) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

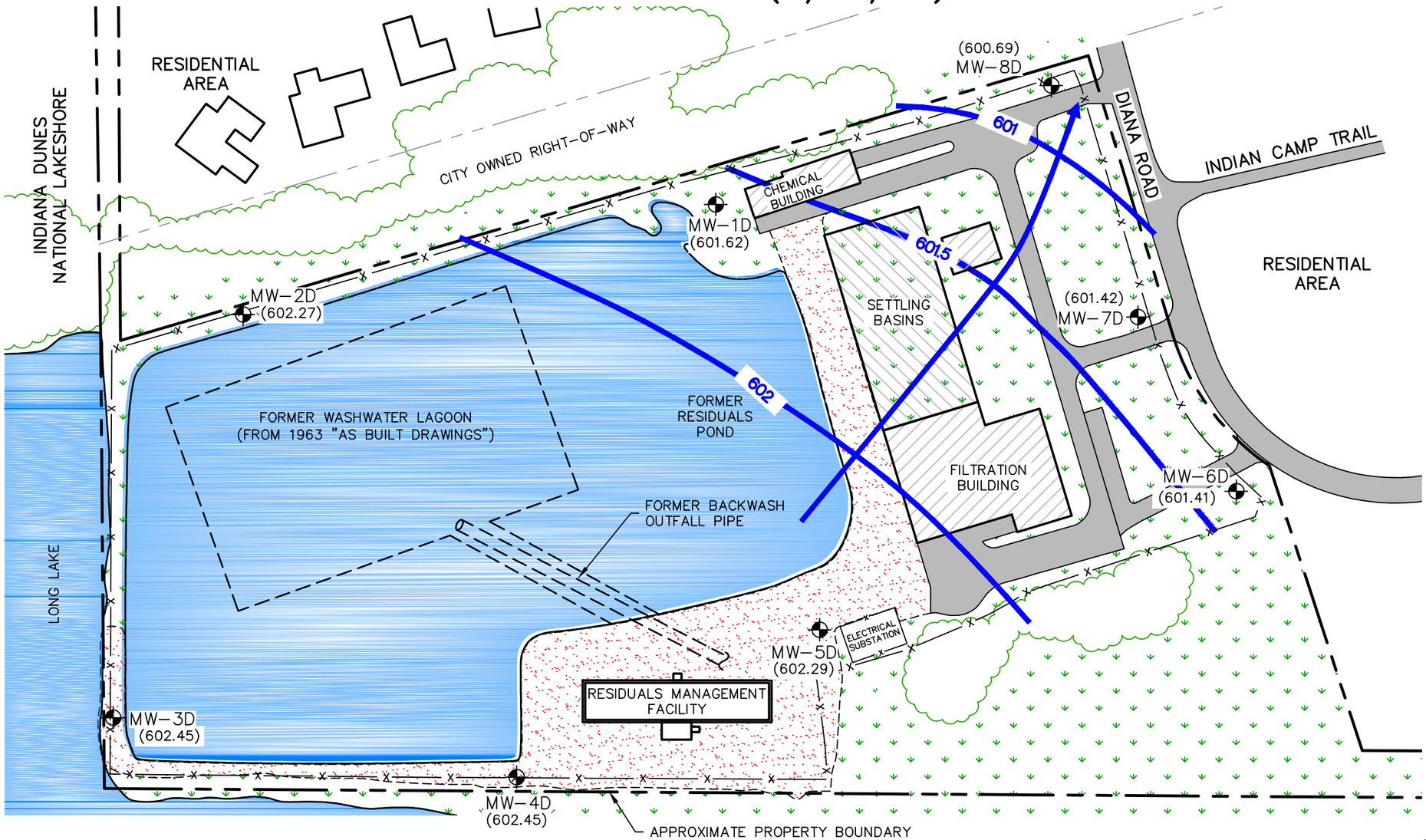
0 120 240

SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 5

T:\Cadd\Indiana American Water\0273018-01 (3).dwg, POT SURF SHALLOW 6-13-16

POTENTIOMETRIC SURFACE MAP(6/13/16)–DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 600.25 GROUNDWATER CONTOUR
- (601.58) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

* FROM USGS 2013–5003, MARCH 2011 WATER TABLE CONTOUR MAP (FIG. 13)

N

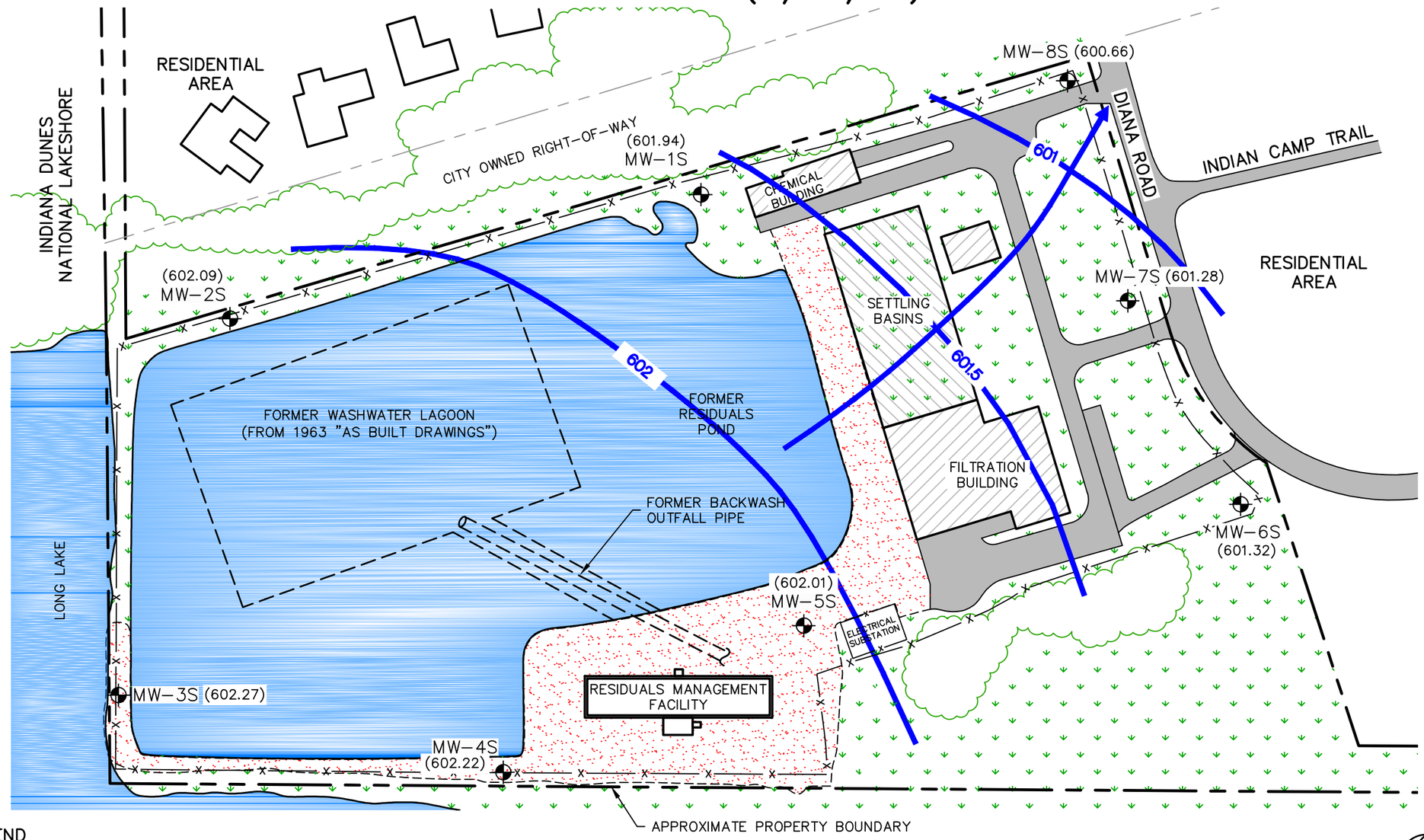
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SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 6

Q:\Team\CSM\Cadd\Indiana American Water\JO 0273018-01 (1) CRB.dwg, POT SURF DEEP 6-13-16

POTENTIOMETRIC SURFACE MAP (9/19/16) – SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- 600.25 GROUNDWATER CONTOUR
- (601.50) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

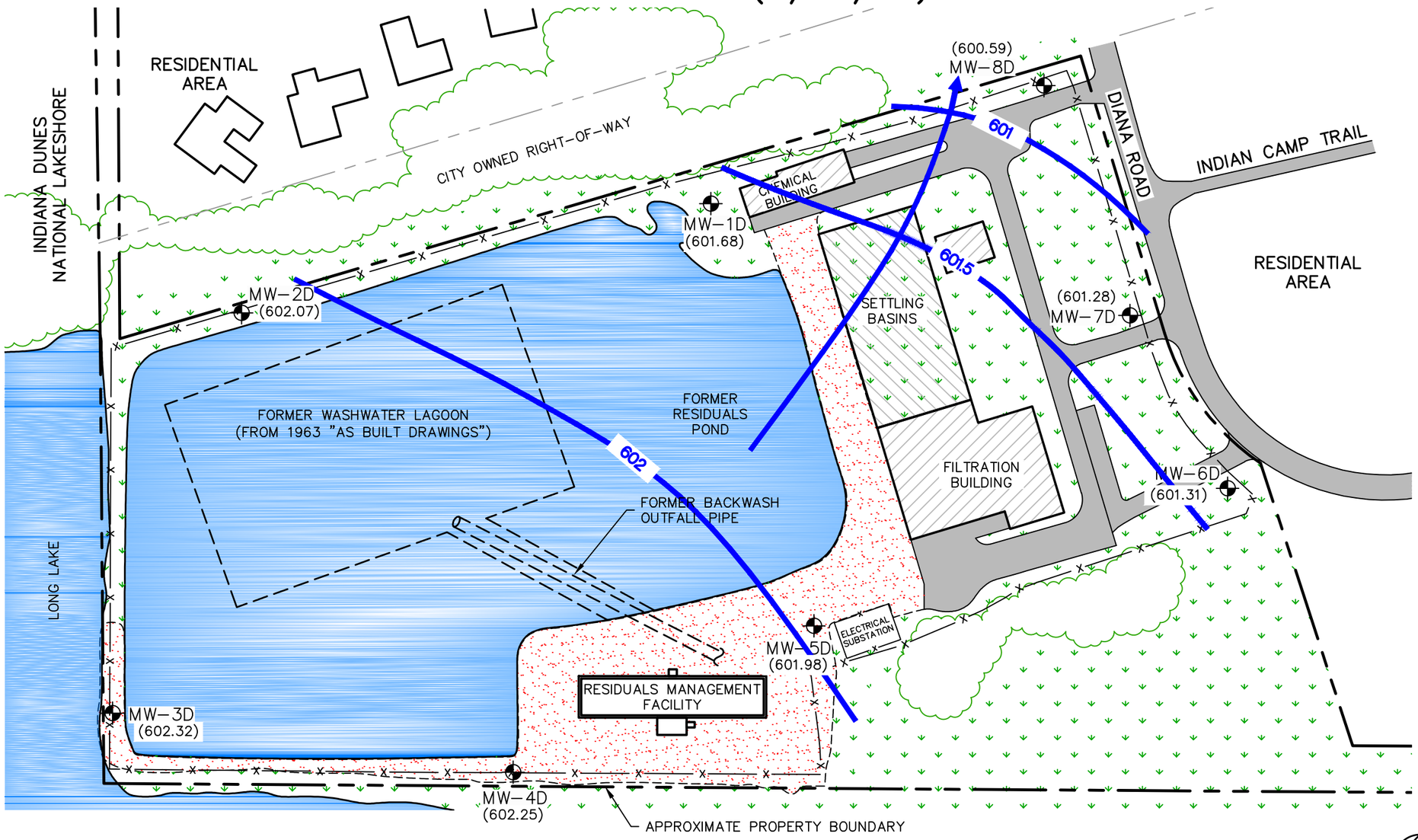
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SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 7

T:\Cadd\Indiana American Water\0273018-01 (3).dwg, POT SURF SHALLOW 9-19-16

POTENTIOMETRIC SURFACE MAP (9/19/16) – DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 600.25 — GROUNDWATER CONTOUR
- (601.58) — GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

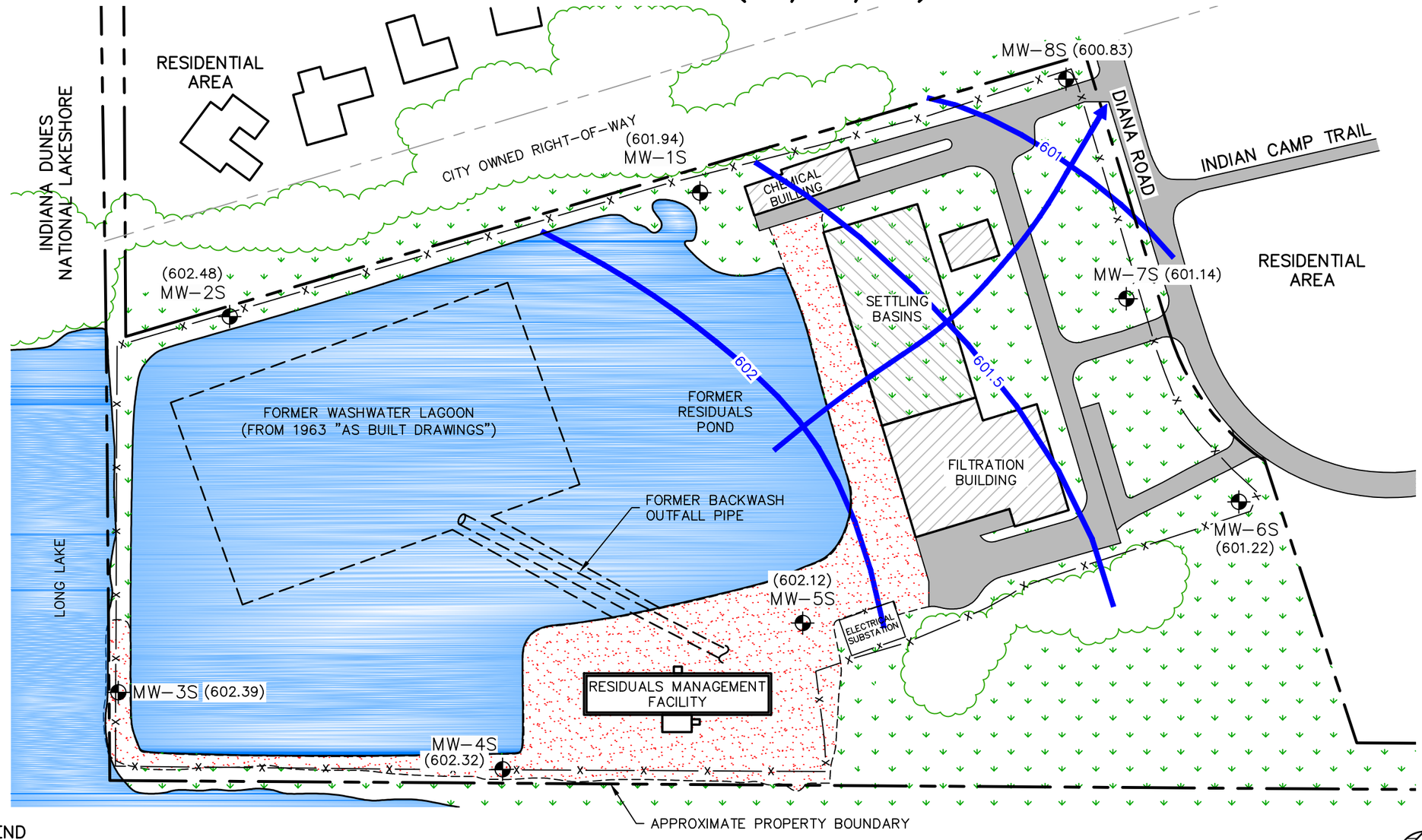
0 120 240

SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 8

Q:\Team\CSM\Cadd\Indiana American Water\0273018-01 (3).dwg, POT SURF DEEP 9-19-16

POTENTIOMETRIC SURFACE MAP (12/13/16) – SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- 600.25 — GROUNDWATER CONTOUR
- (601.50) — GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

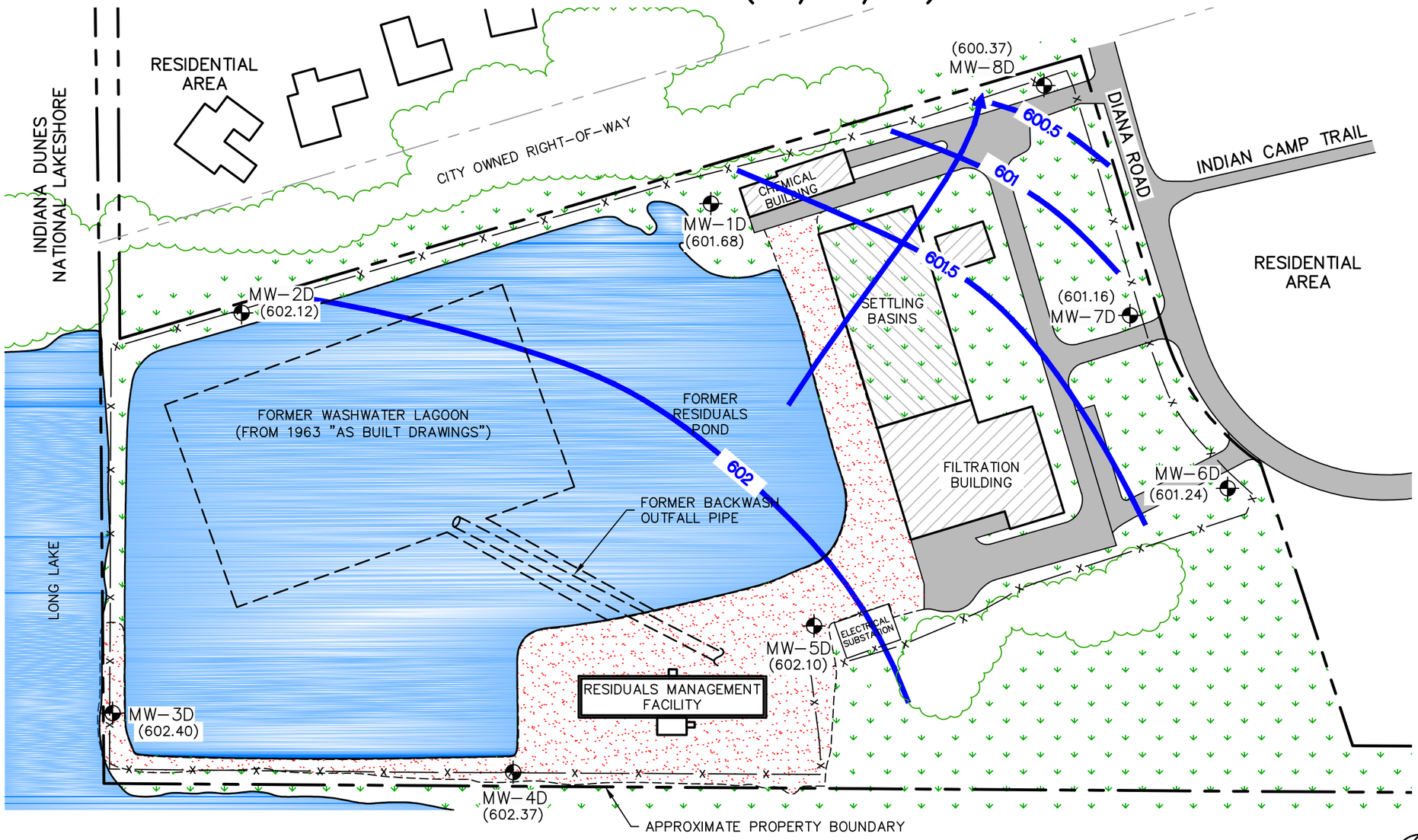
0 120 240

SCALE (IN FEET)

Drawn By GML	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK		0273018
Date Drawn/Rev'd 01/29/15–12/17/15	Environmental Resources Management	FIGURE 9

T:\Cadd\Indiana American Water\0273018-01 (3).dwg, POT SURF SHALLOW 12-13-16

POTENTIOMETRIC SURFACE MAP (12/13/16) – DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 600.25 — GROUNDWATER CONTOUR
- (601.58) — GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

0 120 240

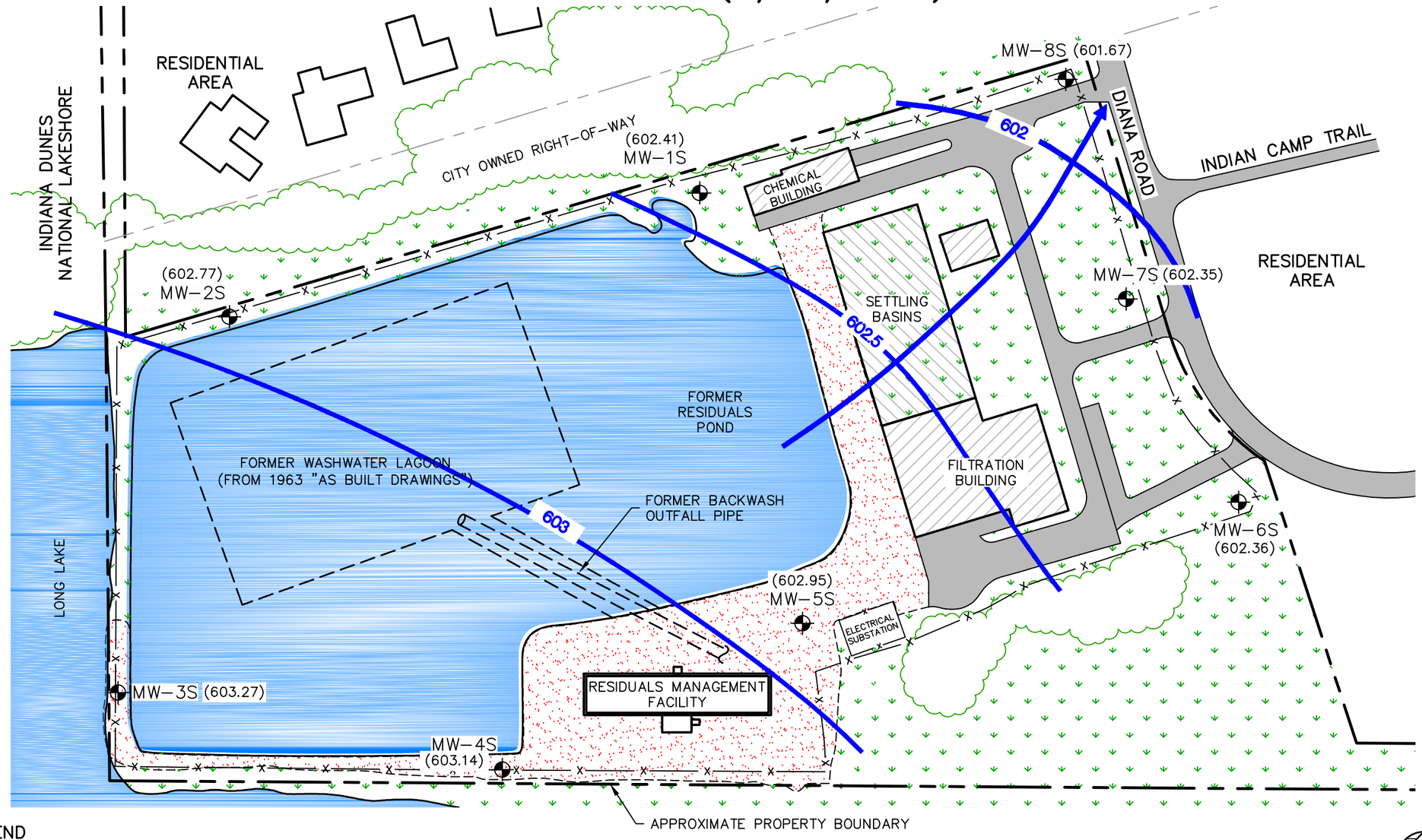
SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA
CADD Review RMK		Environmental Resources Management
Date Drawn/Rev'd 01/29/15–12/17/15		

CHK'D	MR
	0273018
	FIGURE 10

T:\Cadd\Indiana American Water\0273018-01 (3).dwg, POT SURF DEEP 12-13-16

POTENTIOMETRIC SURFACE MAP (3/20/2017) – SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- 602 — GROUNDWATER CONTOUR
- (601.50) — GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

0 120 240

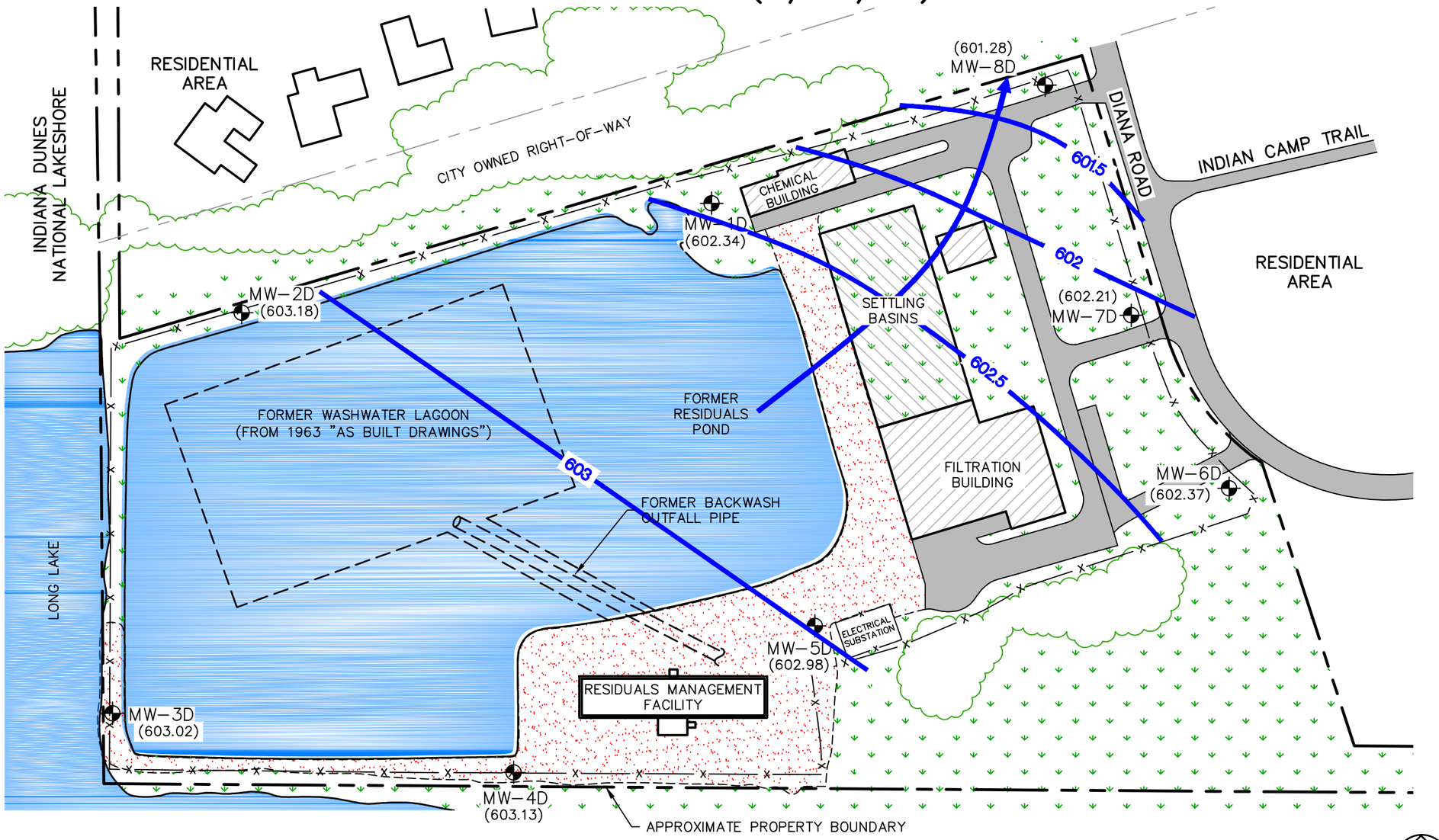
SCALE (IN FEET)

Drawn By GML	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK		0273018
Date Drawn/Rev'd 01/29/15–12/17/15	Environmental Resources Management	FIGURE 11

ERM®

Q:\Team\CSM\Cadd\Indiana American Water\JO 0273018-01 (1) CRB.dwg, POT SURF SHALLOW 3-20-17

POTENTIOMETRIC SURFACE MAP (3/20/17) – DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 603 — GROUNDWATER CONTOUR
- (601.58) — GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

0 120 240

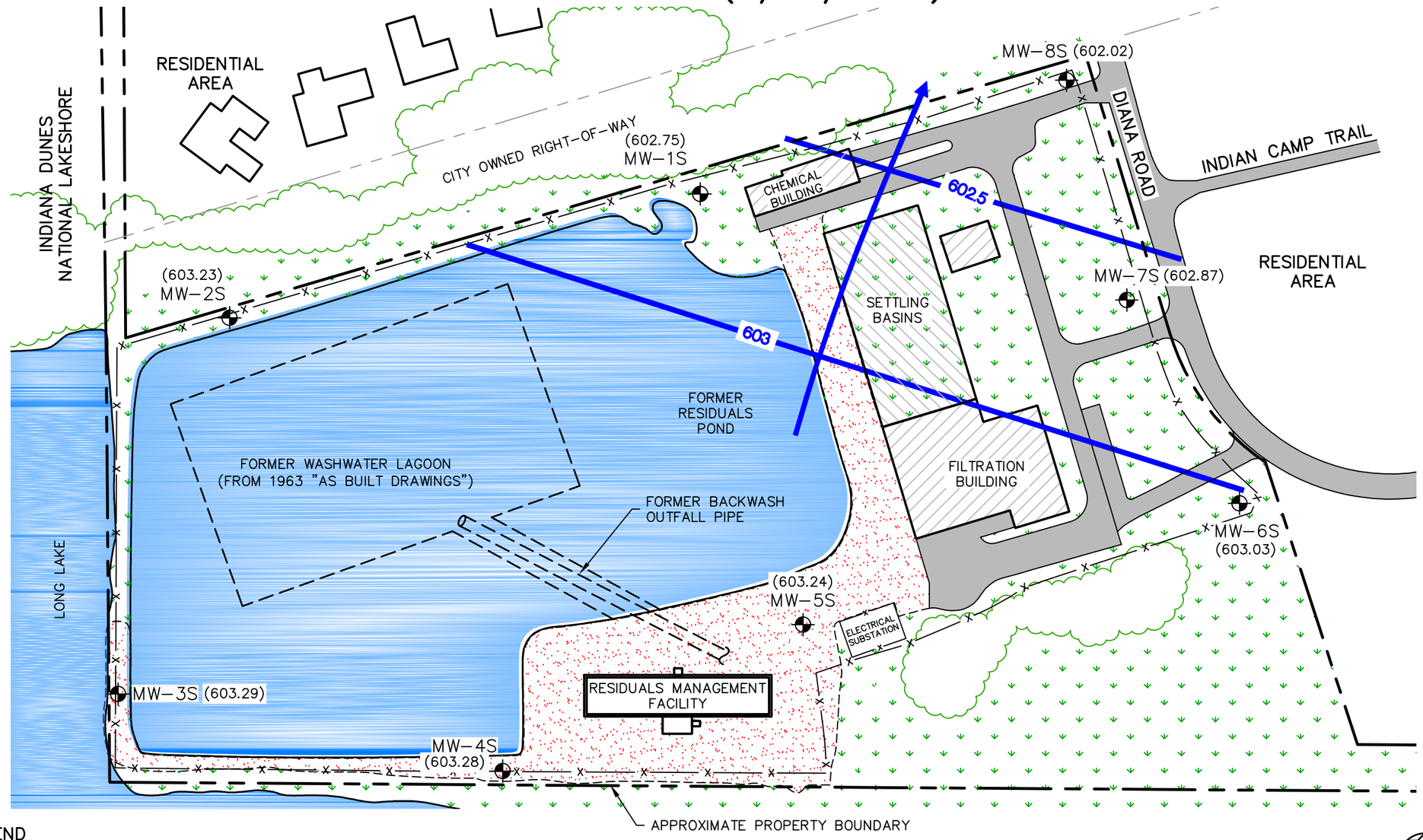
SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA
CADD Review RMK		Environmental Resources Management
Date Drawn/Rev'd 01/29/15–12/17/15		

CHK'D	MR
	0273018
	FIGURE 12

T:\Cadd\Indiana American Water\JO 0273018-01 (1) CRB.dwg, POT SURF DEEP 3-20-17

POTENTIOMETRIC SURFACE MAP (6/12/2017) – SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- 602 — GROUNDWATER CONTOUR
- (601.50) — GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

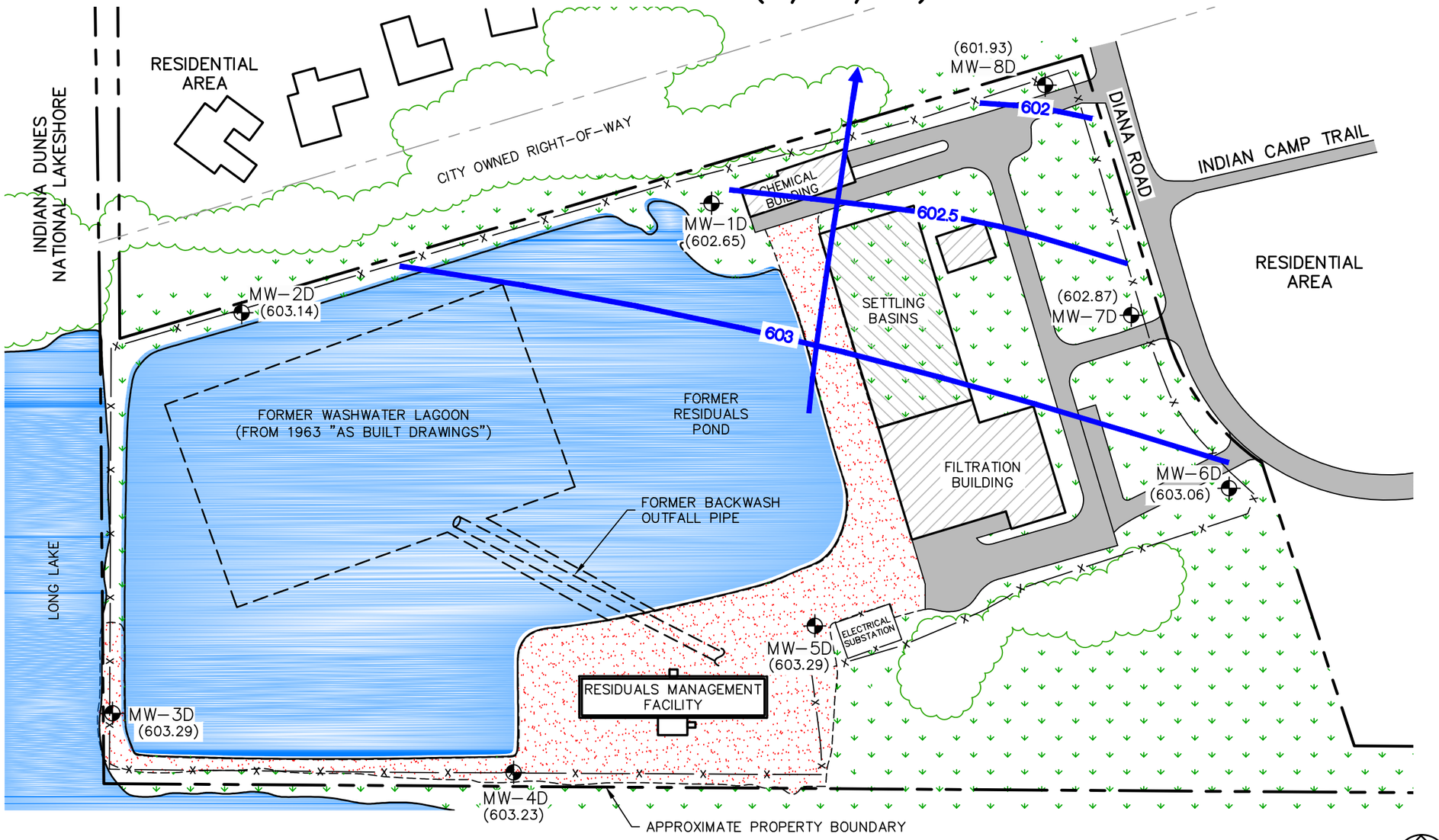
0 120 240

SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 13

Q:\Team\CSM\Cadd\Indiana American Water\JO 0273018-01 (J).CRB.dwg, POT SURF SHALLOW 6-12-17

POTENTIOMETRIC SURFACE MAP (6/12/17) – DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 603 GROUNDWATER CONTOUR
- (601.58) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

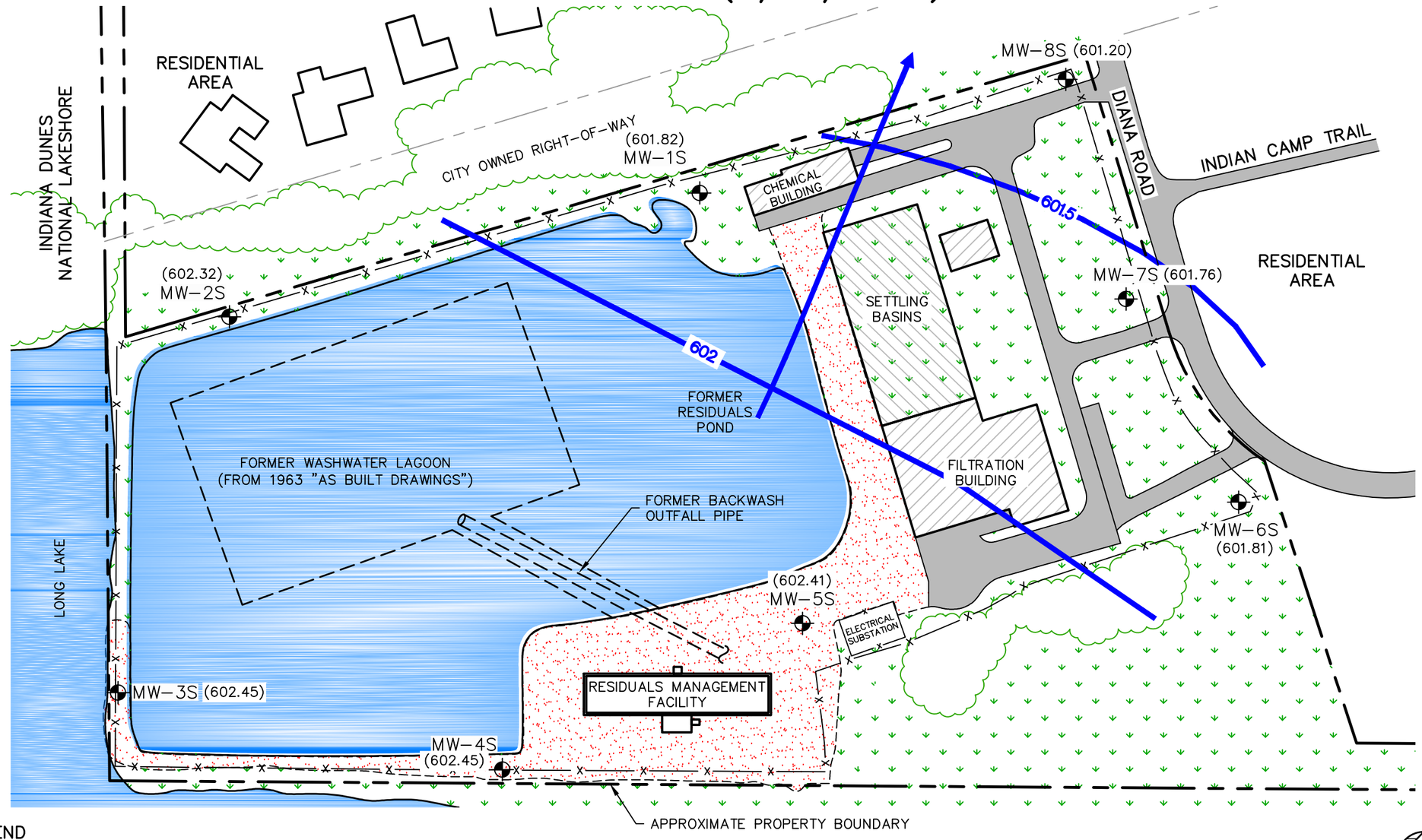
0 120 240

SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 14

Q:\Team\CSM\Cadd\Indiana American Water\JO 0273018-01 (1) CRB.dwg, POT SURF DEEP 6-12-17

POTENTIOMETRIC SURFACE MAP (9/19/2017) – SHALLOW ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- SHALLOW ZONE GROUNDWATER FLOW DIRECTION
- 602 GROUNDWATER CONTOUR
- (601.50) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

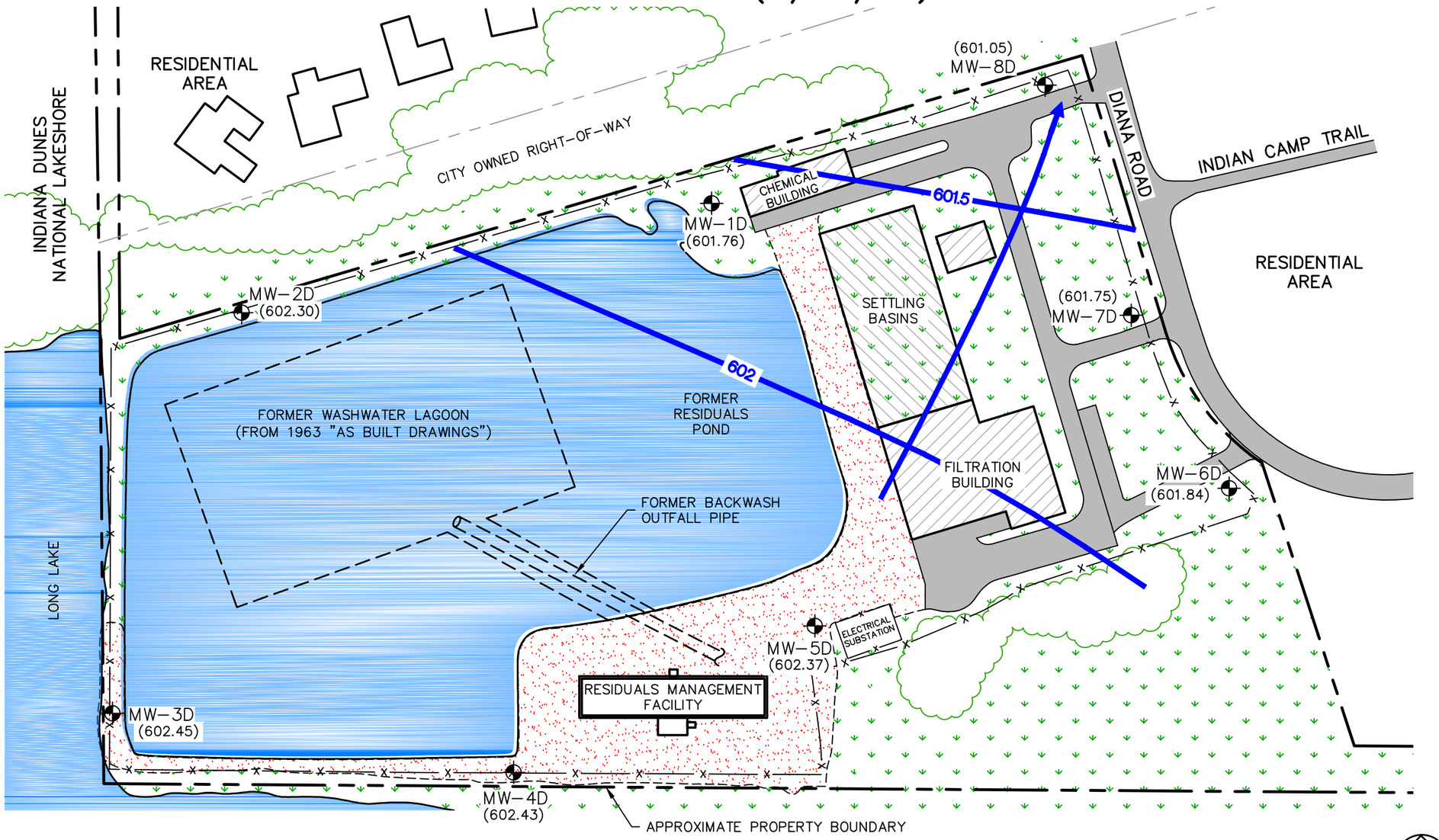
0 120 240

SCALE (IN FEET)

Drawn By GML	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK		0273018
Date Drawn/Rev'd 01/29/15–12/17/15	Environmental Resources Management	FIGURE 15

Q:\Team\CSM\Cadd\Indiana American Water\JO 0273018-01 (1) CRB.dwg, POT SURF SHALLOW 9-19-17

POTENTIOMETRIC SURFACE MAP (9/19/17) – DEEPER ZONE



LEGEND

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- PERIMETER FENCE
- PAVEMENT
- GRAVEL
- TREES
- GRASS
- DEEPER ZONE GROUNDWATER FLOW DIRECTION
- 603 GROUNDWATER CONTOUR
- (601.58) GROUNDWATER STATIC ELEVATION (IN FEET ABOVE NAVD 88)

N

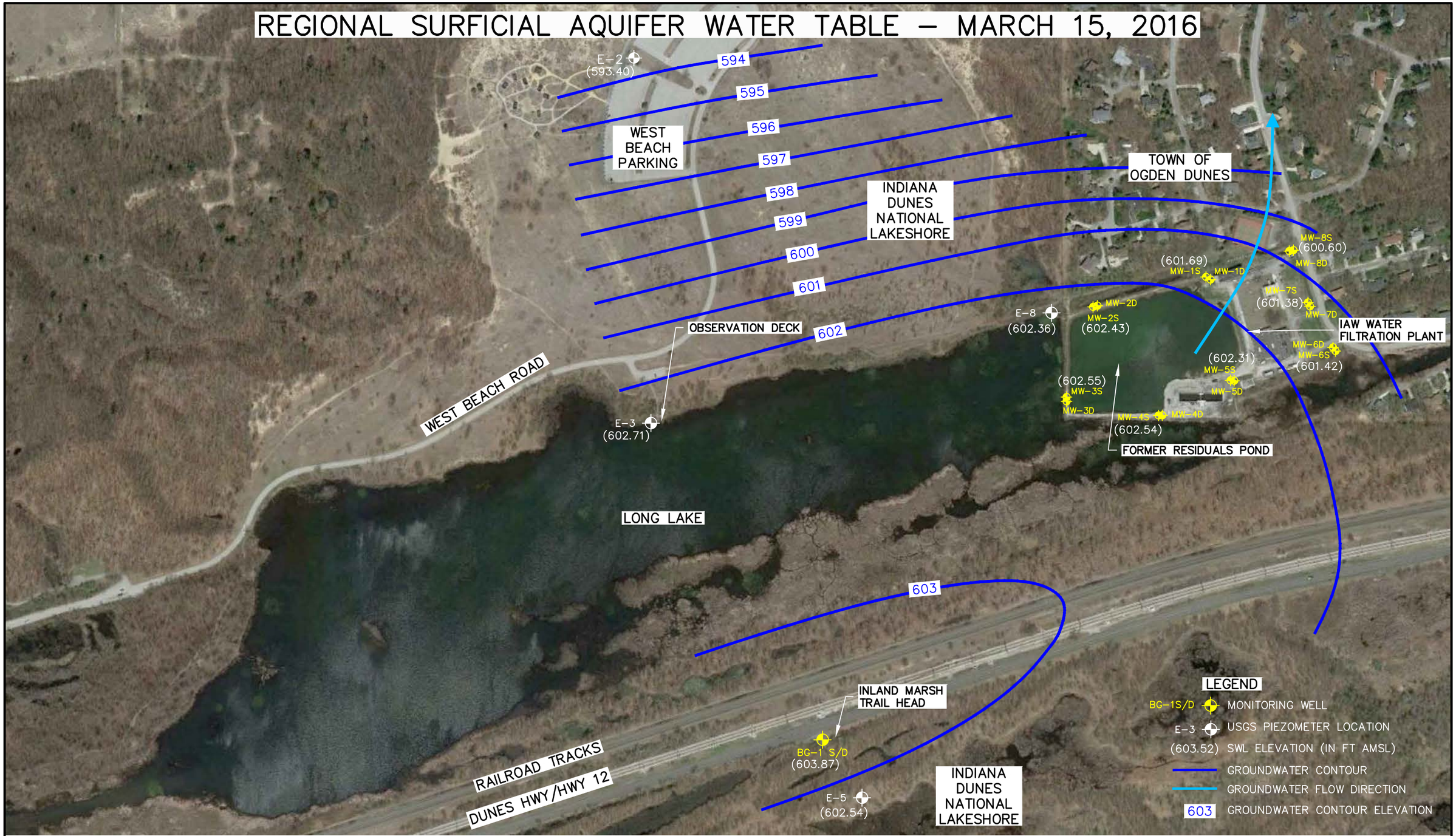
0 120 240

SCALE (IN FEET)

Drawn By GML	ERM®	INDIANA AMERICAN WATER COMPANY 84 DIANA ROAD OGDEN DUNES, INDIANA	CHK'D MR
CADD Review RMK			0273018
Date Drawn/Rev'd 01/29/15–12/17/15		Environmental Resources Management	FIGURE 16

T:\Cadd\Indiana American Water\JO 0273018-01 (1) CRB.dwg, POT SURF DEEP 9-19-17

REGIONAL SURFICIAL AQUIFER WATER TABLE – MARCH 15, 2016



N

0 120 240

SCALE (IN FEET)
APPROXIMATE SCALE

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

ERM®

INDIANA AMERICAN WATER COMPANY

84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 17

T:\Cadd\Indiana American Water\November 2016\0346694-06 (GWC).dwg, GWC MARCH 2016

REGIONAL SURFICIAL AQUIFER WATER TABLE – JUNE 13, 2016

E-2 (593.88)
WEST BEACH PARKING
INDIANA DUNES NATIONAL LAKESHORE
TOWN OF OGDEN DUNES
OBSERVATION DECK
WEST BEACH ROAD
E-3 (602.84)
E-8 (602.23)
MW-2D
MW-2S (602.35)
MW-1S (601.75)
MW-1D
MW-8S (600.75)
MW-8D
IAW WATER FILTRATION PLANT
MW-7S (601.43)
MW-7D
MW-6D
MW-6S (601.44)
MW-5S (602.26)
MW-5D
MW-3S (602.43)
MW-3D
MW-4S
MW-4D
(602.43)
FORMER RESIDUALS POND
LONG LAKE
INLAND MARSH TRAIL HEAD
BG-1 S/D (603.52)
E-5 (602.56)
RAILROAD TRACKS
DUNES HWY/HWY 12
INDIANA DUNES NATIONAL LAKESHORE

594 595 596 597 598 599 600 601 602 603

LEGEND

- BG-1S/D — MONITORING WELL
- E-3 — USGS PIEZOMETER LOCATION
- (603.52) — SWL ELEVATION (IN FT AMSL)
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- 603 — GROUNDWATER CONTOUR ELEVATION

N

0 120 240

SCALE (IN FEET)
APPROXIMATE SCALE

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

ERM®

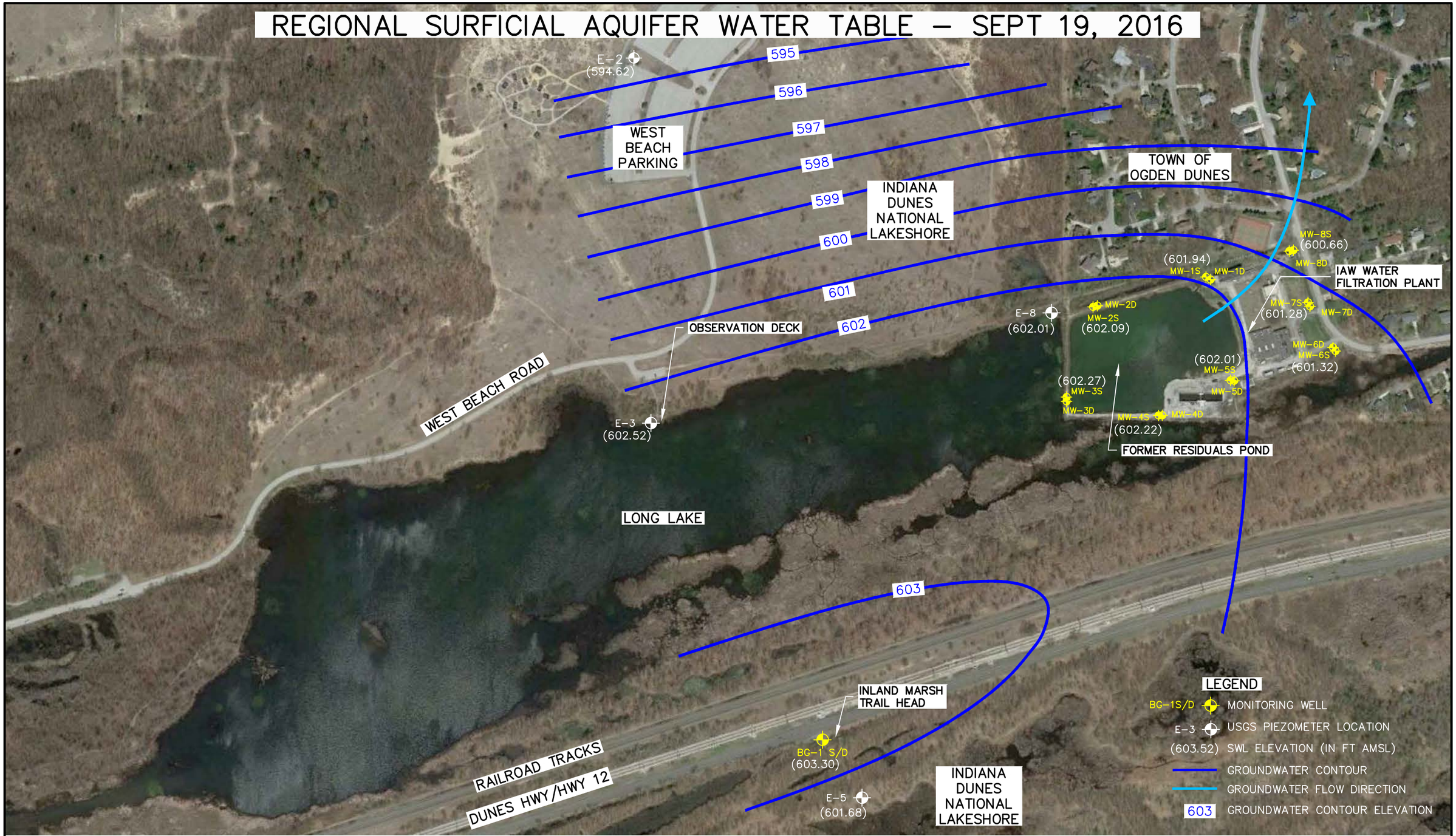
INDIANA AMERICAN WATER COMPANY
84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 18

T:\Cadd\Indiana American Water\November 2016\0346694-06 (GWC).dwg, GWC JUNE 2016

REGIONAL SURFICIAL AQUIFER WATER TABLE – SEPT 19, 2016



N

0 120 240

SCALE (IN FEET)
APPROXIMATE SCALE

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

ERM®

INDIANA AMERICAN WATER COMPANY

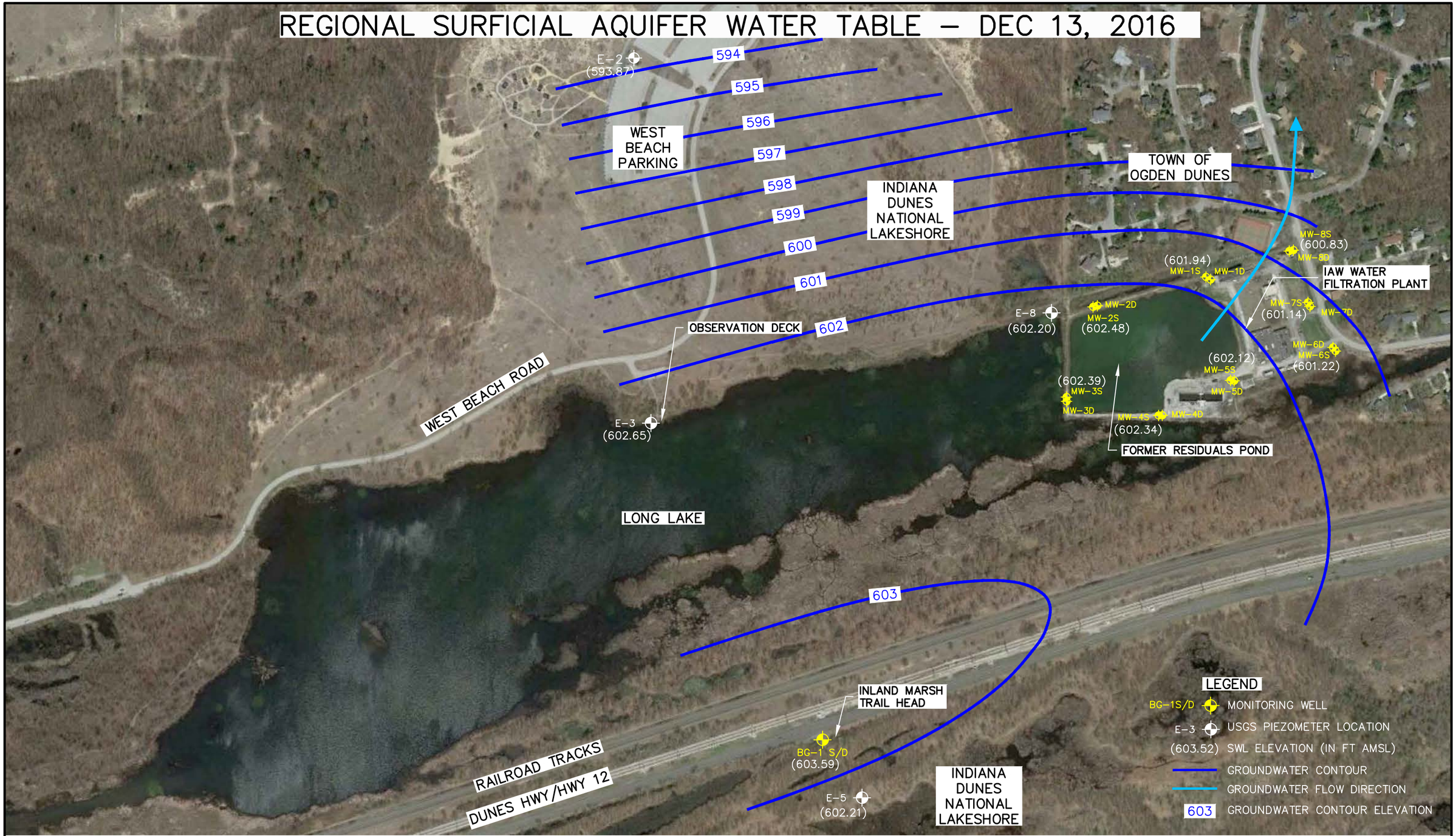
84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 19

T:\Cadd\Indiana American Water\November 2016\0346694-06 (GWC).dwg, GWC SEPT 2016

REGIONAL SURFICIAL AQUIFER WATER TABLE – DEC 13, 2016



N

0 120 240

SCALE (IN FEET)
APPROXIMATE SCALE

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

ERM®

INDIANA AMERICAN WATER COMPANY

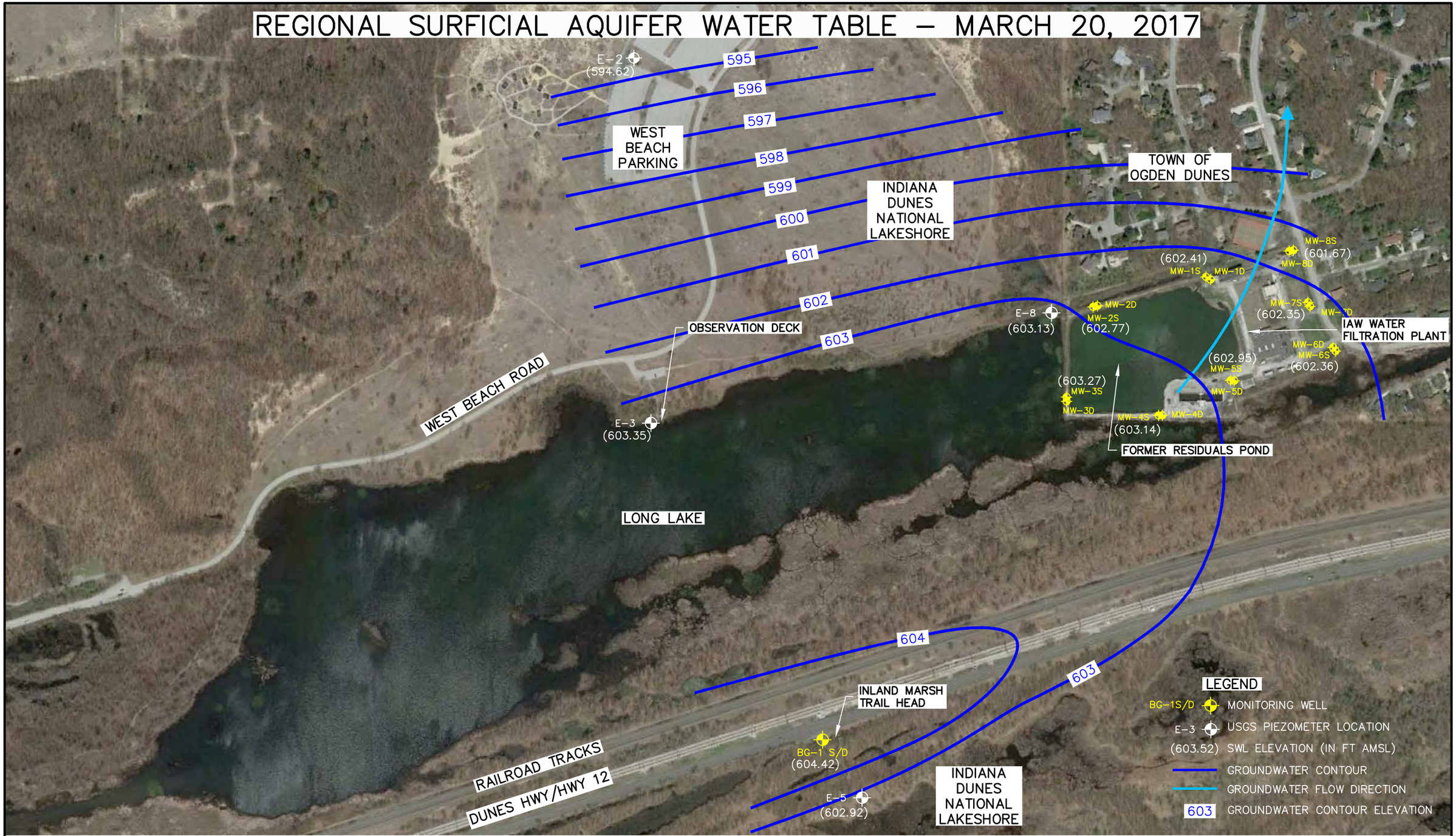
84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 20

T:\Cadd\Indiana American Water\November 2016\0346694-06 (GWC).dwg, GWC DEC 2016

REGIONAL SURFICIAL AQUIFER WATER TABLE – MARCH 20, 2017



N

0 120 240

SCALE (IN FEET)
APPROXIMATE SCALE

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

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INDIANA AMERICAN WATER COMPANY

84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 21

T:\Cadd\Indiana American Water\November 2016\0346694-06 (GWC).dwg, GWC MARCH 2017

REGIONAL SURFICIAL AQUIFER WATER TABLE – JUNE 12, 2017

595
596
597
598
599
600
601
602
603
604

E-2
(594.80)

WEST BEACH PARKING

INDIANA DUNES NATIONAL LAKESHORE

TOWN OF OGDEN DUNES

MW-8S
(602.02)
MW-8D

IAW WATER FILTRATION PLANT

(602.75)
MW-1S
MW-1D

(602.87)
MW-7S
MW-7D

E-8
(603.32)

MW-2D
MW-2S
(603.23)

OBSERVATION DECK

MW-6D
MW-6S
(603.03)

(603.24)
MW-5S
MW-5D

(603.29)
MW-3S
MW-3D

MW-4S
MW-4D
(603.28)

FORMER RESIDUALS POND

WEST BEACH ROAD

E-3
(NM)

LONG LAKE

INLAND MARSH TRAIL HEAD

BG-1 S/D
(604.09)

E-5
(602.81)

RAILROAD TRACKS

DUNES HWY/HWY 12

INDIANA DUNES NATIONAL LAKESHORE

LEGEND

- BG-1S/D — MONITORING WELL
- E-3 — USGS PIEZOMETER LOCATION
- (603.52) — SWL ELEVATION (IN FT AMSL)
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- 603 — GROUNDWATER CONTOUR ELEVATION

N

0 120 240

SCALE (IN FEET)
APPROXIMATE SCALE

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15-4/29/15

ERM®

INDIANA AMERICAN WATER COMPANY

84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 22

T:\Cadd\Indiana American Water\November 2016\0346694-06 (GWC).dwg, GWC JUNE 2017

REGIONAL SURFICIAL AQUIFER WATER TABLE – SEPT 19, 2017

E-2 (594.00)
594
595
596
597
598
599
600
601
602
WEST BEACH PARKING
INDIANA DUNES NATIONAL LAKESHORE
TOWN OF OGDEN DUNES
MW-8D MW-8S (601.20)
(601.82) MW-1S MW-1D
IAW WATER FILTRATION PLANT
MW-7S (601.76) MW-7D
E-8 (602.24)
MW-2D MW-2S (602.32)
OBSERVATION DECK
MW-6D MW-6S (601.81)
(602.41) MW-5S MW-5D
(602.45) MW-3S MW-3D
MW-4S MW-4D (602.45)
FORMER RESIDUALS POND
WEST BEACH ROAD
E-3 (602.65)
LONG LAKE
INLAND MARSH TRAIL HEAD
BG-1 S/D (602.99)
E-5 (601.66)
RAILROAD TRACKS
DUNES HWY/HWY 12
INDIANA DUNES NATIONAL LAKESHORE

LEGEND
- BG-1S/D — MONITORING WELL
- E-3 — USGS PIEZOMETER LOCATION
- (603.52) — SWL ELEVATION (IN FT AMSL)
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- 603 — GROUNDWATER CONTOUR ELEVATION

N

0 120 240

SCALE (IN FEET)
APPROXIMATE SCALE

Drawn By	GML
CADD Review	RMK
Date Drawn/Rev'd	1/28/15–4/29/15

ERM®

INDIANA AMERICAN WATER COMPANY
84 DIANA ROAD
OGDEN DUNES, INDIANA

Environmental Resources Management

CHK'D	AA
	0273018
	FIGURE 23

T:\Cadd\Indiana American Water\November 2016\0346694-06 (GWC).dwg, GWC SEPT 2017

Appendix D

Laboratory Analytical Reports

30-Nov-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1511945**

Dear Marty,

ALS Environmental received 16 samples on 17-Nov-2015 03:00 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 33.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

ALS Group USA, Corp

Date: 30-Nov-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1511945**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1511945-01	SW-BG-2	Water		11/16/2015 10:56	11/17/2015 15:00	☐
1511945-02	Sed- BG- 2	Sediment		11/16/2015 10:58	11/17/2015 15:00	☐
1511945-03	SW-BG-4	Water		11/16/2015 11:43	11/17/2015 15:00	☐
1511945-04	Sed- BG- 4	Sediment		11/16/2015 11:47	11/17/2015 15:00	☐
1511945-05	SW- BG- 5	Water		11/16/2015 12:18	11/17/2015 15:00	☐
1511945-06	Sed- BG- 5	Sediment		11/16/2015 12:20	11/17/2015 15:00	☐
1511945-07	SW- BG- 3	Water		11/16/2015 12:38	11/17/2015 15:00	☐
1511945-08	Sed- BG- 3	Sediment		11/16/2015 12:42	11/17/2015 15:00	☐
1511945-09	SW- BG- 1	Water		11/16/2015 13:05	11/17/2015 15:00	☐
1511945-10	Sed- BG- 1	Sediment		11/16/2015 13:10	11/17/2015 15:00	☐
1511945-11	EB-1	Water		11/16/2015 13:45	11/17/2015 15:00	☐
1511945-12	SG- BG-1	Soil		11/16/2015 15:14	11/17/2015 15:00	☐
1511945-13	SG- BG- 2	Soil		11/16/2015 15:33	11/17/2015 15:00	☐
1511945-14	SG- BG- 3	Soil		11/16/2015 15:44	11/17/2015 15:00	☐
1511945-15	SG- BG- 4	Soil		11/16/2015 16:06	11/17/2015 15:00	☐
1511945-16	Dup- SG- 1	Soil		11/16/2015	11/17/2015 15:00	☐

ALS Group USA, Corp

Date: 30-Nov-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1511945**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/L	Micrograms per Liter
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: 30-Nov-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1511945

Case Narrative

Batch 79068, Method ICP_6010_S, Sample 1511945-12AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Fe,Mn,Zn

Batch 79068, Method ICP_6010_S, Sample 1511945-12AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Fe,Mn,Zn

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-2
Collection Date: 11/16/2015 10:56 AM

Work Order: 1511945
Lab ID: 1511945-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/19/15		Analyst: **JEC**
Mercury	**0.00044**	J	**0.00020**	**0.00050**	**µg/L**	1	11/19/2015 14:08
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/18/15		Analyst: **RH**
Aluminum	**5.5**	J	**1.1**	**10**	**µg/L**	1	11/19/2015 04:54
Arsenic	**0.75**	J	**0.70**	**5.0**	**µg/L**	1	11/19/2015 04:54
Barium	**18**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 04:54
Cadmium	U		0.10	2.0	µg/L	1	11/19/2015 04:54
Chromium	U		0.10	5.0	µg/L	1	11/19/2015 04:54
Copper	**0.49**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 04:54
Hardness (Calculation)	**93,000**		**1,000**	**2,000**	**µg/L**	1	11/19/2015 04:54
Iron	**180**		**10**	**80**	**µg/L**	1	11/19/2015 04:54
Lead	**0.21**	J	**0.10**	**5.0**	**µg/L**	1	11/19/2015 04:54
Manganese	**20**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 04:54
Potassium	**1,100**		**34**	**200**	**µg/L**	1	11/19/2015 04:54
Selenium	U		1.0	5.0	µg/L	1	11/19/2015 04:54
Silver	U		0.10	5.0	µg/L	1	11/19/2015 04:54
Zinc	**5.6**	J	**2.4**	**10**	**µg/L**	1	11/19/2015 04:54
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/18/2015 14:14
Sulfate	**1,300**		**140**	**1,000**	**µg/L**	1	11/18/2015 14:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed- BG- 2
Collection Date: 11/16/2015 10:58 AM

Work Order: 1511945
Lab ID: 1511945-02
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.31**		**0.012**	**0.14**	**mg/Kg-dry**	1	11/24/2015 01:21
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**4,700**		**1.5**	**8.5**	**mg/Kg-dry**	1	11/20/2015 02:05
Arsenic	**11**		**1.0**	**4.3**	**mg/Kg-dry**	1	11/20/2015 02:05
Barium	**79**		**2.0**	**4.3**	**mg/Kg-dry**	1	11/20/2015 02:05
Cadmium	**2.1**	J	**0.66**	**8.5**	**mg/Kg-dry**	1	11/20/2015 02:05
Chromium	**26**		**0.14**	**4.3**	**mg/Kg-dry**	1	11/20/2015 02:05
Copper	**35**		**0.46**	**8.5**	**mg/Kg-dry**	1	11/20/2015 02:05
Iron	**9,700**		**6.5**	**68**	**mg/Kg-dry**	1	11/20/2015 02:05
Lead	**180**		**0.51**	**4.3**	**mg/Kg-dry**	1	11/20/2015 02:05
Manganese	**410**		**0.29**	**4.3**	**mg/Kg-dry**	1	11/20/2015 02:05
Potassium	**420**		**38**	**170**	**mg/Kg-dry**	1	11/23/2015 17:23
Selenium	**5.3**	J	**2.6**	**8.5**	**mg/Kg-dry**	1	11/20/2015 02:05
Silver	U		0.43	4.3	mg/Kg-dry	1	11/20/2015 02:05
Zinc	**240**		**1.4**	**8.5**	**mg/Kg-dry**	1	11/20/2015 02:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		2.4	12	mg/Kg-dry	1	11/23/2015 22:59
Sulfate	**43**	J	**7.4**	**120**	**mg/Kg-dry**	1	11/23/2015 22:59
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**91**		**0.025**	**0.050**	**% of sample**	1	11/20/2015 17:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-4
Collection Date: 11/16/2015 11:43 AM

Work Order: 1511945
Lab ID: 1511945-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/19/15		Analyst: **JEC**
Mercury	**0.00050**		**0.00020**	**0.00050**	**µg/L**	1	11/19/2015 14:15
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/18/15		Analyst: **RH**
Aluminum	**4.2**	J	**1.1**	**10**	**µg/L**	1	11/19/2015 04:59
Arsenic	U		0.70	5.0	µg/L	1	11/19/2015 04:59
Barium	**11**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 04:59
Cadmium	U		0.10	2.0	µg/L	1	11/19/2015 04:59
Chromium	U		0.10	5.0	µg/L	1	11/19/2015 04:59
Copper	**0.31**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 04:59
Hardness (Calculation)	**78,000**		**1,000**	**2,000**	**µg/L**	1	11/19/2015 04:59
Iron	**96**		**10**	**80**	**µg/L**	1	11/19/2015 04:59
Lead	U		0.10	5.0	µg/L	1	11/19/2015 04:59
Manganese	**3.5**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 04:59
Potassium	**860**		**34**	**200**	**µg/L**	1	11/19/2015 04:59
Selenium	U		1.0	5.0	µg/L	1	11/19/2015 04:59
Silver	U		0.10	5.0	µg/L	1	11/19/2015 04:59
Zinc	**5.6**	J	**2.4**	**10**	**µg/L**	1	11/19/2015 04:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/18/2015 14:34
Sulfate	**1,600**		**140**	**1,000**	**µg/L**	1	11/18/2015 14:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed- BG- 4
Collection Date: 11/16/2015 11:47 AM

Work Order: 1511945
Lab ID: 1511945-04
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.12**		**0.0061**	**0.071**	**mg/Kg-dry**	1	11/24/2015 01:24
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**2,800**		**0.62**	**3.5**	**mg/Kg-dry**	1	11/20/2015 02:11
Arsenic	**4.5**		**0.43**	**1.8**	**mg/Kg-dry**	1	11/20/2015 02:11
Barium	**38**		**0.81**	**1.8**	**mg/Kg-dry**	1	11/20/2015 02:11
Cadmium	**0.65**	J	**0.27**	**3.5**	**mg/Kg-dry**	1	11/20/2015 02:11
Chromium	**11**		**0.056**	**1.8**	**mg/Kg-dry**	1	11/20/2015 02:11
Copper	**16**		**0.19**	**3.5**	**mg/Kg-dry**	1	11/20/2015 02:11
Iron	**6,300**		**2.7**	**28**	**mg/Kg-dry**	1	11/20/2015 02:11
Lead	**55**		**0.21**	**1.8**	**mg/Kg-dry**	1	11/20/2015 02:11
Manganese	**200**		**0.12**	**1.8**	**mg/Kg-dry**	1	11/20/2015 02:11
Potassium	**200**		**16**	**70**	**mg/Kg-dry**	1	11/23/2015 17:28
Selenium	**2.6**	J	**1.1**	**3.5**	**mg/Kg-dry**	1	11/20/2015 02:11
Silver	U		0.18	1.8	mg/Kg-dry	1	11/20/2015 02:11
Zinc	**93**		**0.56**	**3.5**	**mg/Kg-dry**	1	11/20/2015 02:11
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.1	5.2	mg/Kg-dry	1	11/23/2015 23:20
Sulfate	**82**		**3.3**	**52**	**mg/Kg-dry**	1	11/23/2015 23:20
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**81**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW- BG- 5
Collection Date: 11/16/2015 12:18 PM

Work Order: 1511945
Lab ID: 1511945-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/19/15		Analyst: **JEC**
Mercury	**0.00041**	J	**0.00020**	**0.00050**	**µg/L**	1	11/19/2015 14:23
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/18/15		Analyst: **RH**
Aluminum	**8.6**	J	**1.1**	**10**	**µg/L**	1	11/19/2015 05:21
Arsenic	**1.0**	J	**0.70**	**5.0**	**µg/L**	1	11/19/2015 05:21
Barium	**13**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:21
Cadmium	U		0.10	2.0	µg/L	1	11/19/2015 05:21
Chromium	**0.35**	J	**0.10**	**5.0**	**µg/L**	1	11/19/2015 05:21
Copper	**0.51**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:21
Hardness (Calculation)	**180,000**		**1,000**	**2,000**	**µg/L**	1	11/19/2015 05:21
Iron	**100**		**10**	**80**	**µg/L**	1	11/19/2015 05:21
Lead	U		0.10	5.0	µg/L	1	11/19/2015 05:21
Manganese	**5.5**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:21
Potassium	**770**		**34**	**200**	**µg/L**	1	11/19/2015 05:21
Selenium	U		1.0	5.0	µg/L	1	11/19/2015 05:21
Silver	U		0.10	5.0	µg/L	1	11/19/2015 05:21
Zinc	**7.3**	J	**2.4**	**10**	**µg/L**	1	11/19/2015 05:21
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/18/2015 14:54
Sulfate	**9,400**		**140**	**1,000**	**µg/L**	1	11/18/2015 14:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed- BG- 5
Collection Date: 11/16/2015 12:20 PM

Work Order: 1511945
Lab ID: 1511945-06
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.073**	J	**0.0062**	**0.073**	**mg/Kg-dry**	1	11/24/2015 01:26
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**2,700**		**0.80**	**4.6**	**mg/Kg-dry**	1	11/20/2015 02:17
Arsenic	**5.2**		**0.56**	**2.3**	**mg/Kg-dry**	1	11/20/2015 02:17
Barium	**36**		**1.1**	**2.3**	**mg/Kg-dry**	1	11/20/2015 02:17
Cadmium	U		0.36	4.6	mg/Kg-dry	1	11/20/2015 02:17
Chromium	**7.7**		**0.073**	**2.3**	**mg/Kg-dry**	1	11/20/2015 02:17
Copper	**9.9**		**0.25**	**4.6**	**mg/Kg-dry**	1	11/20/2015 02:17
Iron	**12,000**		**3.5**	**37**	**mg/Kg-dry**	1	11/20/2015 02:17
Lead	**3.3**		**0.27**	**2.3**	**mg/Kg-dry**	1	11/20/2015 02:17
Manganese	**90**		**0.16**	**2.3**	**mg/Kg-dry**	1	11/20/2015 02:17
Potassium	**130**		**20**	**91**	**mg/Kg-dry**	1	11/23/2015 17:34
Selenium	**3.7**	J	**1.4**	**4.6**	**mg/Kg-dry**	1	11/20/2015 02:17
Silver	U		0.23	2.3	mg/Kg-dry	1	11/20/2015 02:17
Zinc	**19**		**0.73**	**4.6**	**mg/Kg-dry**	1	11/20/2015 02:17
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	**18**		**1.2**	**5.6**	**mg/Kg-dry**	1	11/23/2015 23:40
Sulfate	**150**		**3.6**	**56**	**mg/Kg-dry**	1	11/23/2015 23:40
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**83**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW- BG- 3
Collection Date: 11/16/2015 12:38 PM

Work Order: 1511945
Lab ID: 1511945-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/19/15		Analyst: **JEC**
Mercury	**0.00048**	J	**0.00020**	**0.00050**	**µg/L**	1	11/19/2015 14:30
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/18/15		Analyst: **RH**
Aluminum	**5.6**	J	**1.1**	**10**	**µg/L**	1	11/19/2015 05:27
Arsenic	**0.85**	J	**0.70**	**5.0**	**µg/L**	1	11/19/2015 05:27
Barium	**15**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:27
Cadmium	U		0.10	2.0	µg/L	1	11/19/2015 05:27
Chromium	**0.19**	J	**0.10**	**5.0**	**µg/L**	1	11/19/2015 05:27
Copper	**0.41**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:27
Hardness (Calculation)	**110,000**		**1,000**	**2,000**	**µg/L**	1	11/19/2015 05:27
Iron	**140**		**10**	**80**	**µg/L**	1	11/19/2015 05:27
Lead	**0.12**	J	**0.10**	**5.0**	**µg/L**	1	11/19/2015 05:27
Manganese	**12**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:27
Potassium	**930**		**34**	**200**	**µg/L**	1	11/19/2015 05:27
Selenium	U		1.0	5.0	µg/L	1	11/19/2015 05:27
Silver	U		0.10	5.0	µg/L	1	11/19/2015 05:27
Zinc	**5.3**	J	**2.4**	**10**	**µg/L**	1	11/19/2015 05:27
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/18/2015 15:15
Sulfate	**3,900**		**140**	**1,000**	**µg/L**	1	11/18/2015 15:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed- BG- 3
Collection Date: 11/16/2015 12:42 PM

Work Order: 1511945
Lab ID: 1511945-08
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.17**		**0.0092**	**0.11**	**mg/Kg-dry**	1	11/24/2015 01:28
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**4,200**		**1.3**	**7.2**	**mg/Kg-dry**	1	11/20/2015 02:22
Arsenic	**12**		**0.88**	**3.6**	**mg/Kg-dry**	1	11/20/2015 02:22
Barium	**62**		**1.7**	**3.6**	**mg/Kg-dry**	1	11/20/2015 02:22
Cadmium	**1.8**	J	**0.56**	**7.2**	**mg/Kg-dry**	1	11/20/2015 02:22
Chromium	**25**		**0.12**	**3.6**	**mg/Kg-dry**	1	11/20/2015 02:22
Copper	**32**		**0.39**	**7.2**	**mg/Kg-dry**	1	11/20/2015 02:22
Iron	**15,000**		**5.5**	**58**	**mg/Kg-dry**	1	11/20/2015 02:22
Lead	**160**		**0.43**	**3.6**	**mg/Kg-dry**	1	11/20/2015 02:22
Manganese	**300**		**0.25**	**3.6**	**mg/Kg-dry**	1	11/20/2015 02:22
Potassium	**350**		**32**	**140**	**mg/Kg-dry**	1	11/23/2015 17:39
Selenium	**4.2**	J	**2.2**	**7.2**	**mg/Kg-dry**	1	11/20/2015 02:22
Silver	U		0.36	3.6	mg/Kg-dry	1	11/20/2015 02:22
Zinc	**250**		**1.2**	**7.2**	**mg/Kg-dry**	1	11/20/2015 02:22
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		2.1	10	mg/Kg-dry	1	11/24/2015
Sulfate	**95**	J	**6.5**	**100**	**mg/Kg-dry**	1	11/24/2015
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**90**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW- BG- 1
Collection Date: 11/16/2015 01:05 PM

Work Order: 1511945
Lab ID: 1511945-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/19/15		Analyst: **JEC**
Mercury	**0.00055**		**0.00020**	**0.00050**	**µg/L**	1	11/19/2015 14:38
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/18/15		Analyst: **RH**
Aluminum	**6.5**	J	**1.1**	**10**	**µg/L**	1	11/19/2015 05:32
Arsenic	**0.87**	J	**0.70**	**5.0**	**µg/L**	1	11/19/2015 05:32
Barium	**18**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:32
Cadmium	U		0.10	2.0	µg/L	1	11/19/2015 05:32
Chromium	**0.10**	J	**0.10**	**5.0**	**µg/L**	1	11/19/2015 05:32
Copper	**0.66**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:32
Hardness (Calculation)	**92,000**		**1,000**	**2,000**	**µg/L**	1	11/19/2015 05:32
Iron	**190**		**10**	**80**	**µg/L**	1	11/19/2015 05:32
Lead	**0.34**	J	**0.10**	**5.0**	**µg/L**	1	11/19/2015 05:32
Manganese	**21**		**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:32
Potassium	**1,100**		**34**	**200**	**µg/L**	1	11/19/2015 05:32
Selenium	U		1.0	5.0	µg/L	1	11/19/2015 05:32
Silver	U		0.10	5.0	µg/L	1	11/19/2015 05:32
Zinc	**5.5**	J	**2.4**	**10**	**µg/L**	1	11/19/2015 05:32
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/18/2015 15:35
Sulfate	**2,300**		**140**	**1,000**	**µg/L**	1	11/18/2015 15:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed- BG- 1
Collection Date: 11/16/2015 01:10 PM

Work Order: 1511945
Lab ID: 1511945-10
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.17**		**0.0065**	**0.076**	**mg/Kg-dry**	1	11/24/2015 01:31
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**3,600**		**0.96**	**5.4**	**mg/Kg-dry**	1	11/20/2015 02:28
Arsenic	**5.8**		**0.66**	**2.7**	**mg/Kg-dry**	1	11/20/2015 02:28
Barium	**52**		**1.3**	**2.7**	**mg/Kg-dry**	1	11/20/2015 02:28
Cadmium	**1.3**	J	**0.43**	**5.4**	**mg/Kg-dry**	1	11/20/2015 02:28
Chromium	**18**		**0.087**	**2.7**	**mg/Kg-dry**	1	11/20/2015 02:28
Copper	**23**		**0.29**	**5.4**	**mg/Kg-dry**	1	11/20/2015 02:28
Iron	**6,700**		**4.2**	**44**	**mg/Kg-dry**	1	11/20/2015 02:28
Lead	**110**		**0.33**	**2.7**	**mg/Kg-dry**	1	11/20/2015 02:28
Manganese	**270**		**0.19**	**2.7**	**mg/Kg-dry**	1	11/20/2015 02:28
Potassium	**290**		**24**	**110**	**mg/Kg-dry**	1	11/23/2015 17:45
Selenium	**2.6**	J	**1.6**	**5.4**	**mg/Kg-dry**	1	11/20/2015 02:28
Silver	U		0.27	2.7	mg/Kg-dry	1	11/20/2015 02:28
Zinc	**200**		**0.87**	**5.4**	**mg/Kg-dry**	1	11/20/2015 02:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.6	7.8	mg/Kg-dry	1	11/24/2015 00:20
Sulfate	**110**		**5.0**	**78**	**mg/Kg-dry**	1	11/24/2015 00:20
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**88**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: EB-1
Collection Date: 11/16/2015 01:45 PM

Work Order: 1511945
Lab ID: 1511945-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/19/15		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	11/19/2015 14:45
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/18/15		Analyst: **RH**
Aluminum	U		1.1	10	µg/L	1	11/19/2015 05:37
Arsenic	U		0.70	5.0	µg/L	1	11/19/2015 05:37
Barium	**0.27**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:37
Cadmium	U		0.10	2.0	µg/L	1	11/19/2015 05:37
Chromium	U		0.10	5.0	µg/L	1	11/19/2015 05:37
Copper	**2.0**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:37
Hardness (Calculation)	U		1,000	2,000	µg/L	1	11/19/2015 05:37
Iron	U		10	80	µg/L	1	11/19/2015 05:37
Lead	U		0.10	5.0	µg/L	1	11/19/2015 05:37
Manganese	**0.40**	J	**0.20**	**5.0**	**µg/L**	1	11/19/2015 05:37
Potassium	U		34	200	µg/L	1	11/19/2015 05:37
Selenium	U		1.0	5.0	µg/L	1	11/19/2015 05:37
Silver	U		0.10	5.0	µg/L	1	11/19/2015 05:37
Zinc	**7.5**	J	**2.4**	**10**	**µg/L**	1	11/19/2015 05:37
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**92**	J	**27**	**100**	**µg/L**	1	11/18/2015 15:55
Sulfate	U		140	1,000	µg/L	1	11/18/2015 15:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG- BG-1
Collection Date: 11/16/2015 03:14 PM

Work Order: 1511945
Lab ID: 1511945-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.010**	J	**0.0012**	**0.014**	**mg/Kg-dry**	1	11/24/2015 01:33
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**1,300**		**0.16**	**0.88**	**mg/Kg-dry**	1	11/20/2015 02:33
Arsenic	**2.4**		**0.11**	**0.44**	**mg/Kg-dry**	1	11/20/2015 02:33
Barium	**14**		**0.20**	**0.44**	**mg/Kg-dry**	1	11/20/2015 02:33
Cadmium	**0.22**	J	**0.069**	**0.88**	**mg/Kg-dry**	1	11/20/2015 02:33
Chromium	**3.9**		**0.014**	**0.44**	**mg/Kg-dry**	1	11/20/2015 02:33
Copper	**4.7**		**0.048**	**0.88**	**mg/Kg-dry**	1	11/20/2015 02:33
Iron	**4,000**		**0.68**	**7.1**	**mg/Kg-dry**	1	11/20/2015 02:33
Lead	**24**		**0.053**	**0.44**	**mg/Kg-dry**	1	11/20/2015 02:33
Manganese	**130**		**0.030**	**0.44**	**mg/Kg-dry**	1	11/20/2015 02:33
Potassium	**110**		**3.9**	**18**	**mg/Kg-dry**	1	11/23/2015 17:51
Selenium	**0.41**	J	**0.26**	**0.88**	**mg/Kg-dry**	1	11/20/2015 02:33
Silver	U		0.044	0.44	mg/Kg-dry	1	11/20/2015 02:33
Zinc	**41**		**0.14**	**0.88**	**mg/Kg-dry**	1	11/20/2015 02:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.23	1.1	mg/Kg-dry	1	11/24/2015 01:21
Sulfate	**12**		**0.70**	**11**	**mg/Kg-dry**	1	11/24/2015 01:21
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**9.7**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG- BG- 2
Collection Date: 11/16/2015 03:33 PM

Work Order: 1511945
Lab ID: 1511945-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.011**	J	**0.0011**	**0.013**	**mg/Kg-dry**	1	11/24/2015 01:35
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**1,300**		**0.16**	**0.90**	**mg/Kg-dry**	1	11/20/2015 12:36
Arsenic	**1.6**		**0.11**	**0.45**	**mg/Kg-dry**	1	11/20/2015 12:36
Barium	**19**		**0.21**	**0.45**	**mg/Kg-dry**	1	11/20/2015 12:36
Cadmium	**0.13**	J	**0.070**	**0.90**	**mg/Kg-dry**	1	11/20/2015 12:36
Chromium	**4.5**		**0.014**	**0.45**	**mg/Kg-dry**	1	11/20/2015 12:36
Copper	**3.9**		**0.049**	**0.90**	**mg/Kg-dry**	1	11/20/2015 12:36
Iron	**3,800**		**0.69**	**7.2**	**mg/Kg-dry**	1	11/20/2015 12:36
Lead	**22**		**0.054**	**0.45**	**mg/Kg-dry**	1	11/20/2015 12:36
Manganese	**200**		**0.031**	**0.45**	**mg/Kg-dry**	1	11/20/2015 12:36
Potassium	**90**		**4.0**	**18**	**mg/Kg-dry**	1	11/20/2015 12:36
Selenium	**0.34**	J	**0.27**	**0.90**	**mg/Kg-dry**	1	11/20/2015 12:36
Silver	U		0.045	0.45	mg/Kg-dry	1	11/20/2015 12:36
Zinc	**43**		**0.14**	**0.90**	**mg/Kg-dry**	1	11/20/2015 12:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	**0.59**	J	**0.23**	**1.1**	**mg/Kg-dry**	1	11/24/2015 01:41
Sulfate	**6.3**	J	**0.69**	**11**	**mg/Kg-dry**	1	11/24/2015 01:41
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**9.1**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG- BG- 3
Collection Date: 11/16/2015 03:44 PM

Work Order: 1511945
Lab ID: 1511945-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.083**		**0.0022**	**0.025**	**mg/Kg-dry**	1	11/24/2015 01:37
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**2,500**		**0.25**	**1.4**	**mg/Kg-dry**	1	11/20/2015 12:41
Arsenic	**3.4**		**0.17**	**0.71**	**mg/Kg-dry**	1	11/20/2015 12:41
Barium	**31**		**0.33**	**0.71**	**mg/Kg-dry**	1	11/20/2015 12:41
Cadmium	**0.26**	J	**0.11**	**1.4**	**mg/Kg-dry**	1	11/20/2015 12:41
Chromium	**8.1**		**0.023**	**0.71**	**mg/Kg-dry**	1	11/20/2015 12:41
Copper	**6.9**		**0.077**	**1.4**	**mg/Kg-dry**	1	11/20/2015 12:41
Iron	**7,100**		**1.1**	**11**	**mg/Kg-dry**	1	11/20/2015 12:41
Lead	**40**		**0.086**	**0.71**	**mg/Kg-dry**	1	11/20/2015 12:41
Manganese	**330**		**0.049**	**0.71**	**mg/Kg-dry**	1	11/20/2015 12:41
Potassium	**170**		**6.4**	**29**	**mg/Kg-dry**	1	11/20/2015 12:41
Selenium	**0.78**	J	**0.43**	**1.4**	**mg/Kg-dry**	1	11/20/2015 12:41
Silver	**0.14**	J	**0.071**	**0.71**	**mg/Kg-dry**	1	11/20/2015 12:41
Zinc	**76**		**0.23**	**1.4**	**mg/Kg-dry**	1	11/20/2015 12:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	**6.5**		**0.43**	**2.0**	**mg/Kg-dry**	1	11/24/2015 02:02
Sulfate	**23**		**1.3**	**20**	**mg/Kg-dry**	1	11/24/2015 02:02
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**52**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG- BG- 4
Collection Date: 11/16/2015 04:06 PM

Work Order: 1511945
Lab ID: 1511945-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.0078**	J	**0.0012**	**0.014**	**mg/Kg-dry**	1	11/24/2015 01:40
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**1,400**		**0.15**	**0.84**	**mg/Kg-dry**	1	11/20/2015 12:47
Arsenic	**2.4**		**0.10**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:47
Barium	**17**		**0.19**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:47
Cadmium	**0.19**	J	**0.065**	**0.84**	**mg/Kg-dry**	1	11/20/2015 12:47
Chromium	**2.9**		**0.013**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:47
Copper	**4.0**		**0.045**	**0.84**	**mg/Kg-dry**	1	11/20/2015 12:47
Iron	**3,400**		**0.64**	**6.7**	**mg/Kg-dry**	1	11/20/2015 12:47
Lead	**22**		**0.050**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:47
Manganese	**95**		**0.029**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:47
Potassium	**80**		**3.7**	**17**	**mg/Kg-dry**	1	11/20/2015 12:47
Selenium	U		0.25	0.84	mg/Kg-dry	1	11/20/2015 12:47
Silver	U		0.042	0.42	mg/Kg-dry	1	11/20/2015 12:47
Zinc	**38**		**0.13**	**0.84**	**mg/Kg-dry**	1	11/20/2015 12:47
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	**0.63**	J	**0.22**	**1.1**	**mg/Kg-dry**	1	11/24/2015 02:22
Sulfate	**6.4**	J	**0.68**	**11**	**mg/Kg-dry**	1	11/24/2015 02:22
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**9.3**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Nov-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup- SG- 1
Collection Date: 11/16/2015

Work Order: 1511945
Lab ID: 1511945-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.0091**	J	**0.0012**	**0.015**	**mg/Kg-dry**	1	11/24/2015 01:54
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/18/15		Analyst: **JEC**
Aluminum	**1,400**		**0.15**	**0.83**	**mg/Kg-dry**	1	11/20/2015 12:52
Arsenic	**2.3**		**0.10**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:52
Barium	**16**		**0.19**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:52
Cadmium	**0.21**	J	**0.065**	**0.83**	**mg/Kg-dry**	1	11/20/2015 12:52
Chromium	**2.9**		**0.013**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:52
Copper	**3.7**		**0.045**	**0.83**	**mg/Kg-dry**	1	11/20/2015 12:52
Iron	**3,400**		**0.64**	**6.7**	**mg/Kg-dry**	1	11/20/2015 12:52
Lead	**20**		**0.050**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:52
Manganese	**95**		**0.028**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:52
Potassium	**84**		**3.7**	**17**	**mg/Kg-dry**	1	11/20/2015 12:52
Selenium	**0.28**	J	**0.25**	**0.83**	**mg/Kg-dry**	1	11/20/2015 12:52
Silver	**0.054**	J	**0.042**	**0.42**	**mg/Kg-dry**	1	11/20/2015 12:52
Zinc	**34**		**0.13**	**0.83**	**mg/Kg-dry**	1	11/20/2015 12:52
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	**0.46**	J	**0.23**	**1.1**	**mg/Kg-dry**	1	11/24/2015 02:42
Sulfate	**6.6**	J	**0.70**	**11**	**mg/Kg-dry**	1	11/24/2015 02:42
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**9.9**		**0.025**	**0.050**	**% of sample**	1	11/22/2015 13:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Nov-15

Client: ERM, Inc

Work Order: 1511945

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79277** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-79277-79277** Units: **mg/Kg** Analysis Date: **11/24/2015 12:58 A**

Client ID: Run ID: **HG1_151123B** SeqNo: **3586325** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-79277-79277** Units: **mg/Kg** Analysis Date: **11/24/2015 01:00 A**

Client ID: Run ID: **HG1_151123B** SeqNo: **3586326** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.18	0.020	0.1665	0	108	80-120	0			

MS Sample ID: **1511945-15AMS** Units: **mg/Kg** Analysis Date: **11/24/2015 01:42 A**

Client ID: **SG- BG- 4** Run ID: **HG1_151123B** SeqNo: **3586344** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1184	0.013	0.1052	0.007082	106	75-125	0			

MSD Sample ID: **1511945-15AMSD** Units: **mg/Kg** Analysis Date: **11/24/2015 01:51 A**

Client ID: **SG- BG- 4** Run ID: **HG1_151123B** SeqNo: **3586348** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1201	0.012	0.1034	0.007082	109	75-125	0.1184	1.39	35	

The following samples were analyzed in this batch:

1511945-02A	1511945-04A	1511945-06A
1511945-08A	1511945-10A	1511945-12A
1511945-13A	1511945-14A	1511945-15A
1511945-16A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79068** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-79068-79068** Units: **mg/Kg** Analysis Date: **11/20/2015 12:49 A**

Client ID: Run ID: **ICP2_151119A** SeqNo: **3577994** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.50								
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	U	0.25								
Copper	U	0.50								
Iron	U	4.0								
Lead	U	0.25								
Manganese	U	0.25								
Potassium	3.669	10								J
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

LCS Sample ID: **LCS-79068-79068** Units: **mg/Kg** Analysis Date: **11/20/2015 12:54 A**

Client ID: Run ID: **ICP2_151119A** SeqNo: **3577995** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5.058	0.50	5	0	101	80-120	0			
Arsenic	4.795	0.25	5	0	95.9	80-120	0			
Barium	4.797	0.25	5	0	95.9	80-120	0			
Cadmium	4.943	0.50	5	0	98.9	80-120	0			
Chromium	5.249	0.25	5	0	105	80-120	0			
Copper	5.042	0.50	5	0	101	80-120	0			
Iron	490.9	4.0	500	0	98.2	80-120	0			
Lead	5.072	0.25	5	0	101	80-120	0			
Manganese	5.328	0.25	5	0	107	80-120	0			
Potassium	485.3	10	500	0	97.1	80-120	0			
Selenium	5.154	0.50	5	0	103	80-120	0			
Silver	4.538	0.25	5	0	90.8	80-120	0			
Zinc	5.284	0.50	5	0	106	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79068** Instrument ID **ICP2** Method: **SW846 6010C**

MS Sample ID: **1511945-12AMS** Units: **mg/Kg** Analysis Date: **11/20/2015 02:39 A**
Client ID: **SG- BG-1** Run ID: **ICP2_151119A** SeqNo: **3578019** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	2082	0.79	7.899	1162	11600	75-125	0			SO
Arsenic	9.923	0.39	7.899	2.208	97.7	75-125	0			
Barium	21.32	0.39	7.899	12.97	106	75-125	0			
Cadmium	8.095	0.79	7.899	0.2	99.9	75-125	0			
Chromium	12.54	0.39	7.899	3.541	114	75-125	0			
Copper	12.1	0.79	7.899	4.236	99.5	75-125	0			
Iron	4616	6.3	789.9	3653	122	75-125	0			O
Lead	27.84	0.39	7.899	21.6	78.9	75-125	0			
Manganese	116.4	0.39	7.899	116.8	-5.61	75-125	0			SO
Potassium	943.1	16	789.9	89.57	108	75-125	0			
Selenium	8.534	0.79	7.899	0.3686	103	75-125	0			
Silver	7.307	0.39	7.899	0.02484	92.2	75-125	0			
Zinc	45.41	0.79	7.899	36.97	107	75-125	0			O

MSD Sample ID: **1511945-12AMSD** Units: **mg/Kg** Analysis Date: **11/20/2015 02:44 A**
Client ID: **SG- BG-1** Run ID: **ICP2_151119A** SeqNo: **3578020** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	2050	0.79	7.949	1162	11200	75-125	2082	1.51	20	SO
Arsenic	10.15	0.40	7.949	2.208	99.9	75-125	9.923	2.29	20	
Barium	21.53	0.40	7.949	12.97	108	75-125	21.32	0.966	20	
Cadmium	8.039	0.79	7.949	0.2	98.6	75-125	8.095	0.69	20	
Chromium	12.57	0.40	7.949	3.541	114	75-125	12.54	0.254	20	
Copper	12.24	0.79	7.949	4.236	101	75-125	12.1	1.21	20	
Iron	4685	6.4	794.9	3653	130	75-125	4616	1.48	20	SO
Lead	28.9	0.40	7.949	21.6	91.8	75-125	27.84	3.76	20	
Manganese	127.7	0.40	7.949	116.8	137	75-125	116.4	9.31	20	SO
Potassium	943	16	794.9	89.57	107	75-125	943.1	0.0154	20	
Selenium	8.49	0.79	7.949	0.3686	102	75-125	8.534	0.516	20	
Silver	7.295	0.40	7.949	0.02484	91.5	75-125	7.307	0.161	20	
Zinc	48.35	0.79	7.949	36.97	143	75-125	45.41	6.28	20	SO

The following samples were analyzed in this batch:

1511945-02A	1511945-04A	1511945-06A
1511945-08A	1511945-10A	1511945-12A
1511945-13A	1511945-14A	1511945-15A
1511945-16A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79064** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-79064-79064** Units: **mg/L** Analysis Date: **11/18/2015 12:59 PM**
Client ID: Run ID: **ICPMS2_151118A** SeqNo: **3574273** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-79072-79064** Units: **mg/L** Analysis Date: **11/19/2015 05:48 A**
Client ID: Run ID: **ICPMS2_151118A** SeqNo: **3576185** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.001185	0.010	0	0.1023	0	0-0	0			J
Arsenic	U	0.0050	0	0.1015	0	0-0	0			
Barium	U	0.0050	0	0.09834	0	0-0	0			
Cadmium	U	0.0020	0	0.1006	0	0-0	0			
Chromium	U	0.0050	0	0.1016	0	0-0	0			
Copper	U	0.0050	0	0.0995	0	0-0	0			
Hardness (Calculation)	U	2.0	0	67.65	0	0-0	0			
Iron	U	0.080	0	10.31	0	0-0	0			
Lead	U	0.0050	0	0.1008	0	0-0	0			
Manganese	U	0.0050	0	0.09883	0	0-0	0			
Potassium	U	0.20	0	10.04	0	0-0	0			
Selenium	U	0.0050	0	0.1012	0	0-0	0			
Silver	U	0.0050	0	0.1027	0	0-0	0			
Zinc	U	0.010	0	0.1015	0	0-0	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79064** Instrument ID **ICPMS2** Method: **SW6020A**

LCS Sample ID: **LCS-79064-79064** Units: **mg/L** Analysis Date: **11/18/2015 01:04 PM**
Client ID: Run ID: **ICPMS2_151118A** SeqNo: **3574275** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1059	0.010	0.1	0	106	80-120	0			
Arsenic	0.1007	0.0050	0.1	0	101	80-120	0			
Barium	0.1035	0.0050	0.1	0	104	80-120	0			
Cadmium	0.1048	0.0020	0.1	0	105	80-120	0			
Chromium	0.1017	0.0050	0.1	0	102	80-120	0			
Copper	0.1037	0.0050	0.1	0	104	80-120	0			
Hardness (Calculation)	70.4	2.0	66.15	0	106	80-120	0			
Iron	10.46	0.080	10	0	105	80-120	0			
Lead	0.1054	0.0050	0.1	0	105	80-120	0			
Manganese	0.1023	0.0050	0.1	0	102	80-120	0			
Potassium	10.51	0.20	10	0	105	80-120	0			
Selenium	0.1036	0.0050	0.1	0	104	80-120	0			
Silver	0.1034	0.0050	0.1	0	103	80-120	0			
Zinc	0.1044	0.010	0.1	0	104	80-120	0			

MS Sample ID: **1511910-01BMS** Units: **mg/L** Analysis Date: **11/18/2015 01:32 PM**
Client ID: Run ID: **ICPMS2_151118A** SeqNo: **3574285** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1083	0.010	0.1	0.005036	103	75-125	0			
Arsenic	0.1396	0.0050	0.1	0.04059	99	75-125	0			
Barium	0.2321	0.0050	0.1	0.1271	105	75-125	0			
Cadmium	0.101	0.0020	0.1	3.162E-06	101	75-125	0			
Chromium	0.1001	0.0050	0.1	0.0002487	99.9	75-125	0			
Copper	0.09421	0.0050	0.1	0.001262	92.9	75-125	0			
Iron	31.61	0.080	10	21.68	99.3	75-125	0			
Lead	0.1049	0.0050	0.1	0.0000993	105	75-125	0			
Manganese	0.2891	0.0050	0.1	0.2017	87.4	75-125	0			
Potassium	11	0.20	10	0.9145	101	75-125	0			
Selenium	0.1015	0.0050	0.1	0.00003233	101	75-125	0			
Silver	0.09341	0.0050	0.1	0.00001579	93.4	75-125	0			
Zinc	0.09583	0.010	0.1	0.001983	93.8	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79064** Instrument ID **ICPMS2** Method: **SW6020A**

MSD Sample ID: **1511910-01BMSD** Units: **mg/L** Analysis Date: **11/18/2015 01:37 PM**
Client ID: Run ID: **ICPMS2_151118A** SeqNo: **3574287** Prep Date: **11/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1082	0.010	0.1	0.005036	103	75-125	0.1083	0.0924	20	
Arsenic	0.1386	0.0050	0.1	0.04059	98	75-125	0.1396	0.719	20	
Barium	0.2458	0.0050	0.1	0.1271	119	75-125	0.2321	5.73	20	
Cadmium	0.106	0.0020	0.1	3.162E-06	106	75-125	0.101	4.83	20	
Chromium	0.09786	0.0050	0.1	0.0002487	97.6	75-125	0.1001	2.26	20	
Copper	0.09405	0.0050	0.1	0.001262	92.8	75-125	0.09421	0.17	20	
Iron	31.26	0.080	10	21.68	95.8	75-125	31.61	1.11	20	
Lead	0.1046	0.0050	0.1	0.0000993	105	75-125	0.1049	0.286	20	
Manganese	0.2918	0.0050	0.1	0.2017	90.1	75-125	0.2891	0.93	20	
Potassium	10.96	0.20	10	0.9145	100	75-125	11	0.364	20	
Selenium	0.1004	0.0050	0.1	0.00003233	100	75-125	0.1015	1.09	20	
Silver	0.09181	0.0050	0.1	0.00001579	91.8	75-125	0.09341	1.73	20	
Zinc	0.09575	0.010	0.1	0.001983	93.8	75-125	0.09583	0.0835	20	

The following samples were analyzed in this batch:

1511945-01C	1511945-03C	1511945-05C
1511945-07C	1511945-09C	1511945-11C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79389** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **MBLK-79389-79389** Units: **mg/Kg** Analysis Date: **11/23/2015 09:18 PM**
Client ID: Run ID: **IC4_151123B** SeqNo: **3586001** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	6.237	10								J

LCS Sample ID: **LCS-79389-79389** Units: **mg/Kg** Analysis Date: **11/23/2015 09:39 PM**
Client ID: Run ID: **IC4_151123B** SeqNo: **3586003** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	21.14	1.0	20	0	106	80-120	0			
Sulfate	102.1	10	100	0	102	80-120	0			

MS Sample ID: **15111034-06A MS** Units: **mg/Kg** Analysis Date: **11/24/2015 04:03 A**
Client ID: Run ID: **IC4_151123B** SeqNo: **3586060** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.25	0.97	19.49	0	98.7	75-125	0			
Sulfate	110.1	9.7	97.47	17.54	95	75-125	0			

MSD Sample ID: **15111034-06A MSD** Units: **mg/Kg** Analysis Date: **11/24/2015 04:23 A**
Client ID: Run ID: **IC4_151123B** SeqNo: **3586062** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.86	0.97	19.49	0	102	75-125	19.25	3.16	20	
Sulfate	121.3	9.7	97.47	17.54	106	75-125	110.1	9.65	20	

The following samples were analyzed in this batch:

1511945-02A	1511945-04A	1511945-06A
1511945-08A	1511945-10A	1511945-12A
1511945-13A	1511945-14A	1511945-15A
1511945-16A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176559** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R176559** Units: **mg/L** Analysis Date: **11/18/2015 01:33 PM**
Client ID: Run ID: **IC3_151118B** SeqNo: **3576167** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R176559** Units: **mg/L** Analysis Date: **11/18/2015 01:54 PM**
Client ID: Run ID: **IC3_151118B** SeqNo: **3576168** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.969	0.10	2	0	98.5	81-116	0			
Sulfate	9.832	1.0	10	0	98.3	85-110	0			

MS Sample ID: **1511945-01B MS** Units: **mg/L** Analysis Date: **11/18/2015 04:15 PM**
Client ID: **SW-BG-2** Run ID: **IC3_151118B** SeqNo: **3576175** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.967	0.10	2	0	98.3	75-125	0			
Sulfate	11.21	1.0	10	1.324	98.9	75-125	0			

MSD Sample ID: **1511945-01B MSD** Units: **mg/L** Analysis Date: **11/18/2015 04:36 PM**
Client ID: **SW-BG-2** Run ID: **IC3_151118B** SeqNo: **3576176** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.948	0.10	2	0	97.4	75-125	1.967	0.93	20	
Sulfate	11.33	1.0	10	1.324	100	75-125	11.21	1.03	20	

The following samples were analyzed in this batch:

1511945-01B	1511945-03B	1511945-05B
1511945-07B	1511945-09B	1511945-11B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176777** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R176777** Units: **% of sample** Analysis Date: **11/20/2015 05:23 PM**
Client ID: Run ID: **MOIST_151120F** SeqNo: **3582494** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.050								J

LCS Sample ID: **LCS-R176777** Units: **% of sample** Analysis Date: **11/20/2015 05:23 PM**
Client ID: Run ID: **MOIST_151120F** SeqNo: **3582492** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1511943-05A DUP** Units: **% of sample** Analysis Date: **11/20/2015 05:23 PM**
Client ID: Run ID: **MOIST_151120F** SeqNo: **3582439** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	11.67	0.050	0	0	0		11.47	1.73	20	

DUP Sample ID: **1511944-01A DUP** Units: **% of sample** Analysis Date: **11/20/2015 05:23 PM**
Client ID: Run ID: **MOIST_151120F** SeqNo: **3582470** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	10.12	0.050	0	0	0		10.31	1.86	20	

The following samples were analyzed in this batch: 1511945-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1511945
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176778** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R176778** Units: **% of sample** Analysis Date: **11/22/2015 01:58 PM**
Client ID: Run ID: **MOIST_151122A** SeqNo: **3582121** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R176778** Units: **% of sample** Analysis Date: **11/22/2015 01:58 PM**
Client ID: Run ID: **MOIST_151122A** SeqNo: **3582119** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111218-01A DUP** Units: **% of sample** Analysis Date: **11/22/2015 01:58 PM**
Client ID: Run ID: **MOIST_151122A** SeqNo: **3582097** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	13.64	0.050	0	0	0		13.35	2.15	20	

DUP Sample ID: **1511945-13A DUP** Units: **% of sample** Analysis Date: **11/22/2015 01:58 PM**
Client ID: **SG- BG- 2** Run ID: **MOIST_151122A** SeqNo: **3582108** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	9.77	0.050	0	0	0		9.07	7.43	20	

The following samples were analyzed in this batch:

1511945-04A	1511945-06A	1511945-08A
1511945-10A	1511945-12A	1511945-13A
1511945-14A	1511945-15A	1511945-16A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Chain of Custody Form

Page 1 of 2

COC ID: 30506

1511945

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW - Ogden Dunes	A	Mercury (low level) in water
Work Order		Project Number		B	Anions in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Dissolved Metals in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-BG-2	11-16-15	1056	W	—	3	X	X	X								
2	Sed-BG-2		1058	Sed	—	1				X	X	X					
3	SW-BG-4		1143	W	—	3	X	X	X								
4	Sed-BG-4		1147	Sed	—	1				X	X	X					
5	SW-BG-5		1218	W	—	3	X	X	X								
6	Sed-BG-5		1220	Sed	—	1				X	X	X					
7	SW-BG-3		1238	W	—	3	X	X	X								
8	Sed-BG-3		1242	Sed	—	1				X	X	X					
9	SW-BG-1		1305	W	—	3	X	X	X								
10	Sed-BG-1		1310	Sed	—	1				X	X	X					

Sampler(s) Please Print & Sign: Aaron Aleede

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☒ Other Standard

Results Due Date:

Relinquished by: Erin — Date: 11-16-15 — Time: 1645 — Received by:

Relinquished by: — Date: 11/17/15 — Time: 1500 — Received by (Laboratory):

Logged by (Laboratory): MEB — Date: 11/17/15 — Time: 1543 — Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp
	2.0°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Environmental

Chain of Custody Form

Page 2 of 2

COC ID: 30505

1511945

ALS Project Manager:	ALS Work Order #:

Customer Information		Project Information	
Purchase Order		Project Name	IAW Ogden Dunes
Work Order		Project Number	
Company Name	ERM, Inc	Bill To Company	ERM, Inc
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008
Phone	(317) 706-2000	Phone	
Fax	(317) 706-2010	Fax	
e-Mail Address	Martin.ryan@erm.com	e-Mail Address	

Parameter/Method Request for Analysis

A: Mercury (low level) in water
B: Anions in water
C: Dissolved metals in water
D: Metals in soil
E: Mercury in soil
F: Anions in soil
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	EB-1	11-16-15	1345	W	—	3	X	X	X								
12	SG-BG-1		~~1541~~ 1514	Soil	—	1				X	X	X					
13	SG-BG-2		1533		—	1				X	X	X					
14	SG-BG-3		1544		—	1				X	X	X					
15	SG-BG-4		1606		—	1				X	X	X					
16	Dup-SG-1		—		—	1				X	X	X					
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign:

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☒ Other Standard ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
EBM	11-16-15	1645	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	11/17/15	1500	
Logged by (Laboratory): MEB	Date: 11/17/15	Time: 1543	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp
	20C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **17-Nov-15 15:00**

Work Order: **1511945** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 17-Nov-15 (Date) Reviewed by: Bill Carey (eSignature) 17-Nov-15 (Date)

Matrices: water, soil

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.0/2.0	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	11/17/2015 3:58:49 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

01-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **15111034**

Dear Marty,

ALS Environmental received 18 samples on 18-Nov-2015 12:10 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 40.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

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ALS Group USA, Corp

Date: 01-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **15111034**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
15111034-01	SW-BG-6	Water		11/17/2015 08:45	11/18/2015 12:10	☐
15111034-02	Sed-BG-6	Sediment		11/17/2015 08:52	11/18/2015 12:10	☐
15111034-03	SW-BG-9	Water		11/17/2015 09:08	11/18/2015 12:10	☐
15111034-04	Sed-BG-9	Sediment		11/17/2015 09:15	11/18/2015 12:10	☐
15111034-05	SW-BG-10	Water		11/17/2015 09:35	11/18/2015 12:10	☐
15111034-06	Sed-BG-10	Sediment		11/17/2015 09:36	11/18/2015 12:10	☐
15111034-07	SW-BG-8	Water		11/17/2015 09:58	11/18/2015 12:10	☐
15111034-08	Sed-BG-8	Sediment		11/17/2015 10:00	11/18/2015 12:10	☐
15111034-09	SW-BG-7	Water		11/17/2015 10:16	11/18/2015 12:10	☐
15111034-10	Sed-BG-7	Sediment		11/17/2015 10:20	11/18/2015 12:10	☐
15111034-11	Dup-SW-1	Water		11/17/2015	11/18/2015 12:10	☐
15111034-12	Dup-Sed-1	Sediment		11/17/2015	11/18/2015 12:10	☐
15111034-13	SG-BG-8	Sediment		11/17/2015 13:16	11/18/2015 12:10	☐
15111034-14	SG-BG-9	Soil		11/17/2015 13:25	11/18/2015 12:10	☐
15111034-15	SG-BG-10	Soil		11/17/2015 13:35	11/18/2015 12:10	☐
15111034-16	SG-BG-5	Soil		11/17/2015 13:49	11/18/2015 12:10	☐
15111034-17	SG-BG-6	Soil		11/17/2015 14:00	11/18/2015 12:10	☐
15111034-18	SG-BG-7	Soil		11/17/2015 14:04	11/18/2015 12:10	☐

ALS Group USA, Corp

Date: 01-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **15111034**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/L	Micrograms per Liter
mg/Kg-dry	Milligrams per Kilogram Dry Weight

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 15111034

Case Narrative

Samples for the above noted Work Order were received on 11/18/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 79152, Method ICP_6010_S, Sample 15111034-06AMS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Cu

Batch 79152, Method ICP_6010_S, Sample 15111034-06AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Pb,Mn,Zn

Batch 79152, Method ICP_6010_S, Sample 15111034-06AMSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Cu

Batch 79152, Method ICP_6010_S, Sample 15111034-06AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Pb,Mn,Zn

Batch 79152, Method ICP_6010_S, Sample 15111034-06AMSD: The RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for this analyte: Pb

Batch 79152, Method ICP_6010_S, Sample 15111034-16AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Fe,Mn

Batch 79152, Method ICP_6010_S, Sample 15111034-16AMS: The MS recovery was above the upper control limit. The corresponding result in the parent sample may be biased high for this analyte: Zn

Batch 79152, Method ICP_6010_S, Sample 15111034-16AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Fe,Mn

Batch 79152, Method ICP_6010_S, Sample 15111034-16AMSD: The MSD recovery was outside of the control limit. However, the MS recovery and the RPD between the MS and MSD was in control. No qualification is required for this analyte: As

Batch 79152, Method ICP_6010_S, Sample 15111034-16AMSD: The MSD recovery was above the upper control limit. The corresponding result in the parent sample may be biased high for this analyte: Zn

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-6
Collection Date: 11/17/2015 08:45 AM

Work Order: 15111034
Lab ID: 15111034-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/20/15		Analyst: **JEC**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	11/20/2015 13:21
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/20/15		Analyst: **RH**
Aluminum	**16**		**1.1**	**10**	**µg/L**	1	11/20/2015 17:05
Arsenic	**1.4**	J	**0.70**	**5.0**	**µg/L**	1	11/20/2015 17:05
Barium	**9.0**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:05
Cadmium	U		0.10	2.0	µg/L	1	11/20/2015 17:05
Chromium	**0.83**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:05
Copper	**0.60**	J	**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:05
Hardness (Calculation)	**34,000**		**1,000**	**2,000**	**µg/L**	1	11/20/2015 17:05
Iron	**280**		**10**	**80**	**µg/L**	1	11/20/2015 17:05
Lead	**0.61**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:05
Manganese	**12**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:05
Potassium	**1,000**		**34**	**200**	**µg/L**	1	11/20/2015 17:05
Selenium	U		1.0	5.0	µg/L	1	11/20/2015 17:05
Silver	U		0.10	5.0	µg/L	1	11/20/2015 17:05
Zinc	**5.7**	J	**2.4**	**10**	**µg/L**	1	11/20/2015 17:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 00:55
Sulfate	**2,900**		**140**	**1,000**	**µg/L**	1	11/19/2015 00:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-BG-6
Collection Date: 11/17/2015 08:52 AM

Work Order: 15111034
Lab ID: 15111034-02
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.23**		**0.0094**	**0.11**	**mg/Kg-dry**	1	11/24/2015 02:12
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**5,600**		**1.1**	**6.5**	**mg/Kg-dry**	1	11/20/2015 13:31
Arsenic	**9.9**		**0.80**	**3.3**	**mg/Kg-dry**	1	11/20/2015 13:31
Barium	**99**		**1.5**	**3.3**	**mg/Kg-dry**	1	11/20/2015 13:31
Cadmium	**1.1**	J	**0.51**	**6.5**	**mg/Kg-dry**	1	11/20/2015 13:31
Chromium	**40**		**0.10**	**3.3**	**mg/Kg-dry**	1	11/20/2015 13:31
Copper	**38**		**0.35**	**6.5**	**mg/Kg-dry**	1	11/20/2015 13:31
Iron	**15,000**		**5.0**	**52**	**mg/Kg-dry**	1	11/20/2015 13:31
Lead	**160**		**0.39**	**3.3**	**mg/Kg-dry**	1	11/20/2015 13:31
Manganese	**380**		**0.22**	**3.3**	**mg/Kg-dry**	1	11/20/2015 13:31
Potassium	**400**		**29**	**130**	**mg/Kg-dry**	1	11/20/2015 13:31
Selenium	**5.9**	J	**2.0**	**6.5**	**mg/Kg-dry**	1	11/20/2015 13:31
Silver	U		0.33	3.3	mg/Kg-dry	1	11/20/2015 13:31
Zinc	**270**		**1.0**	**6.5**	**mg/Kg-dry**	1	11/20/2015 13:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		2.1	9.9	mg/Kg-dry	1	11/24/2015 03:02
Sulfate	**100**		**6.3**	**99**	**mg/Kg-dry**	1	11/24/2015 03:02
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**90**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-9
Collection Date: 11/17/2015 09:08 AM

Work Order: 15111034
Lab ID: 15111034-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/20/15		Analyst: **JEC**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	11/20/2015 13:36
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/20/15		Analyst: **RH**
Aluminum	**27**		**1.1**	**10**	**µg/L**	1	11/20/2015 17:10
Arsenic	**1.8**	J	**0.70**	**5.0**	**µg/L**	1	11/20/2015 17:10
Barium	**15**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:10
Cadmium	U		0.10	2.0	µg/L	1	11/20/2015 17:10
Chromium	**0.91**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:10
Copper	**0.58**	J	**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:10
Hardness (Calculation)	**64,000**		**1,000**	**2,000**	**µg/L**	1	11/20/2015 17:10
Iron	**1,400**		**10**	**80**	**µg/L**	1	11/20/2015 17:10
Lead	**0.76**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:10
Manganese	**37**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:10
Potassium	**800**		**34**	**200**	**µg/L**	1	11/20/2015 17:10
Selenium	U		1.0	5.0	µg/L	1	11/20/2015 17:10
Silver	U		0.10	5.0	µg/L	1	11/20/2015 17:10
Zinc	**6.7**	J	**2.4**	**10**	**µg/L**	1	11/20/2015 17:10
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 01:15
Sulfate	**1,400**		**140**	**1,000**	**µg/L**	1	11/19/2015 01:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-BG-9
Collection Date: 11/17/2015 09:15 AM

Work Order: 15111034
Lab ID: 15111034-04
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.094**	J	**0.0083**	**0.098**	**mg/Kg-dry**	1	11/24/2015 02:22
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**4,300**		**1.0**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:37
Arsenic	**6.5**		**0.70**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:37
Barium	**45**		**1.3**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:37
Cadmium	U		0.45	5.7	mg/Kg-dry	1	11/20/2015 13:37
Chromium	**11**		**0.092**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:37
Copper	**19**		**0.31**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:37
Iron	**10,000**		**4.4**	**46**	**mg/Kg-dry**	1	11/20/2015 13:37
Lead	**59**		**0.34**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:37
Manganese	**37**		**0.19**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:37
Potassium	**180**		**26**	**110**	**mg/Kg-dry**	1	11/20/2015 13:37
Selenium	**5.1**	J	**1.7**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:37
Silver	U		0.29	2.9	mg/Kg-dry	1	11/20/2015 13:37
Zinc	**87**		**0.92**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:37
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.7	8.0	mg/Kg-dry	1	11/24/2015 03:23
Sulfate	**27**	J	**5.1**	**80**	**mg/Kg-dry**	1	11/24/2015 03:23
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**88**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-10
Collection Date: 11/17/2015 09:35 AM

Work Order: 15111034
Lab ID: 15111034-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/20/15		Analyst: **JEC**
Mercury	**0.00077**		**0.00020**	**0.00050**	**µg/L**	1	11/20/2015 13:44
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/20/15		Analyst: **RH**
Aluminum	**13**		**1.1**	**10**	**µg/L**	1	11/20/2015 17:15
Arsenic	**1.4**	J	**0.70**	**5.0**	**µg/L**	1	11/20/2015 17:15
Barium	**8.5**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:15
Cadmium	U		0.10	2.0	µg/L	1	11/20/2015 17:15
Chromium	**0.70**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:15
Copper	**0.46**	J	**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:15
Hardness (Calculation)	**26,000**		**1,000**	**2,000**	**µg/L**	1	11/20/2015 17:15
Iron	**140**		**10**	**80**	**µg/L**	1	11/20/2015 17:15
Lead	**0.19**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:15
Manganese	**8.1**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:15
Potassium	**1,800**		**34**	**200**	**µg/L**	1	11/20/2015 17:15
Selenium	U		1.0	5.0	µg/L	1	11/20/2015 17:15
Silver	U		0.10	5.0	µg/L	1	11/20/2015 17:15
Zinc	**7.6**	J	**2.4**	**10**	**µg/L**	1	11/20/2015 17:15
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 01:35
Sulfate	**820**	J	**140**	**1,000**	**µg/L**	1	11/19/2015 01:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-BG-10
Collection Date: 11/17/2015 09:36 AM

Work Order: 15111034
Lab ID: 15111034-06
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.037**	J	**0.0031**	**0.037**	**mg/Kg-dry**	1	11/24/2015 02:24
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**2,800**		**0.34**	**1.9**	**mg/Kg-dry**	1	11/20/2015 08:59
Arsenic	**3.9**		**0.24**	**0.97**	**mg/Kg-dry**	1	11/20/2015 08:59
Barium	**42**		**0.45**	**0.97**	**mg/Kg-dry**	1	11/20/2015 08:59
Cadmium	**0.59**	J	**0.15**	**1.9**	**mg/Kg-dry**	1	11/20/2015 08:59
Chromium	**13**		**0.031**	**0.97**	**mg/Kg-dry**	1	11/20/2015 08:59
Copper	**18**		**0.10**	**1.9**	**mg/Kg-dry**	1	11/20/2015 08:59
Iron	**4,600**		**1.5**	**15**	**mg/Kg-dry**	1	11/20/2015 08:59
Lead	**79**		**0.12**	**0.97**	**mg/Kg-dry**	1	11/20/2015 08:59
Manganese	**99**		**0.066**	**0.97**	**mg/Kg-dry**	1	11/20/2015 08:59
Potassium	**210**		**8.6**	**39**	**mg/Kg-dry**	1	11/20/2015 08:59
Selenium	**1.9**	J	**0.58**	**1.9**	**mg/Kg-dry**	1	11/20/2015 08:59
Silver	U		0.097	0.97	mg/Kg-dry	1	11/20/2015 08:59
Zinc	**92**		**0.31**	**1.9**	**mg/Kg-dry**	1	11/20/2015 08:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.58	2.8	mg/Kg-dry	1	11/24/2015 03:43
Sulfate	**49**		**1.8**	**28**	**mg/Kg-dry**	1	11/24/2015 03:43
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**64**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-8
Collection Date: 11/17/2015 09:58 AM

Work Order: 15111034
Lab ID: 15111034-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/20/15		Analyst: **JEC**
Mercury	**0.0018**		**0.00020**	**0.00050**	**µg/L**	1	11/20/2015 13:52
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/20/15		Analyst: **RH**
Aluminum	**23**		**1.1**	**10**	**µg/L**	1	11/20/2015 17:20
Arsenic	**1.4**	J	**0.70**	**5.0**	**µg/L**	1	11/20/2015 17:20
Barium	**6.8**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:20
Cadmium	U		0.10	2.0	µg/L	1	11/20/2015 17:20
Chromium	**0.82**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:20
Copper	**0.73**	J	**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:20
Hardness (Calculation)	**30,000**		**1,000**	**2,000**	**µg/L**	1	11/20/2015 17:20
Iron	**300**		**10**	**80**	**µg/L**	1	11/20/2015 17:20
Lead	**0.74**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:20
Manganese	**6.8**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:20
Potassium	**1,200**		**34**	**200**	**µg/L**	1	11/20/2015 17:20
Selenium	U		1.0	5.0	µg/L	1	11/20/2015 17:20
Silver	U		0.10	5.0	µg/L	1	11/20/2015 17:20
Zinc	**7.4**	J	**2.4**	**10**	**µg/L**	1	11/20/2015 17:20
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 01:56
Sulfate	**1,200**		**140**	**1,000**	**µg/L**	1	11/19/2015 01:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-BG-8
Collection Date: 11/17/2015 10:00 AM

Work Order: 15111034
Lab ID: 15111034-08
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.11**		**0.0096**	**0.11**	**mg/Kg-dry**	1	11/24/2015 02:31
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**4,100**		**1.0**	**5.9**	**mg/Kg-dry**	1	11/20/2015 13:42
Arsenic	**6.0**		**0.72**	**3.0**	**mg/Kg-dry**	1	11/20/2015 13:42
Barium	**94**		**1.4**	**3.0**	**mg/Kg-dry**	1	11/20/2015 13:42
Cadmium	**0.77**	J	**0.46**	**5.9**	**mg/Kg-dry**	1	11/20/2015 13:42
Chromium	**20**		**0.094**	**3.0**	**mg/Kg-dry**	1	11/20/2015 13:42
Copper	**25**		**0.32**	**5.9**	**mg/Kg-dry**	1	11/20/2015 13:42
Iron	**9,700**		**4.5**	**47**	**mg/Kg-dry**	1	11/20/2015 13:42
Lead	**99**		**0.35**	**3.0**	**mg/Kg-dry**	1	11/20/2015 13:42
Manganese	**320**		**0.20**	**3.0**	**mg/Kg-dry**	1	11/20/2015 13:42
Potassium	**300**		**26**	**120**	**mg/Kg-dry**	1	11/20/2015 13:42
Selenium	**5.2**	J	**1.8**	**5.9**	**mg/Kg-dry**	1	11/20/2015 13:42
Silver	U		0.30	3.0	mg/Kg-dry	1	11/20/2015 13:42
Zinc	**150**		**0.94**	**5.9**	**mg/Kg-dry**	1	11/20/2015 13:42
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.9	9.2	mg/Kg-dry	1	11/24/2015 05:24
Sulfate	**60**	J	**5.9**	**92**	**mg/Kg-dry**	1	11/24/2015 05:24
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**89**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-7
Collection Date: 11/17/2015 10:16 AM

Work Order: 15111034
Lab ID: 15111034-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/20/15		Analyst: **JEC**
Mercury	**0.0016**		**0.00020**	**0.00050**	**µg/L**	1	11/20/2015 14:14
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/20/15		Analyst: **RH**
Aluminum	**26**		**1.1**	**10**	**µg/L**	1	11/20/2015 17:36
Arsenic	**1.3**	J	**0.70**	**5.0**	**µg/L**	1	11/20/2015 17:36
Barium	**11**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:36
Cadmium	U		0.10	2.0	µg/L	1	11/20/2015 17:36
Chromium	**0.92**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:36
Copper	**1.2**	J	**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:36
Hardness (Calculation)	**32,000**		**1,000**	**2,000**	**µg/L**	1	11/20/2015 17:36
Iron	**330**		**10**	**80**	**µg/L**	1	11/20/2015 17:36
Lead	**1.0**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:36
Manganese	**12**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:36
Potassium	**1,100**		**34**	**200**	**µg/L**	1	11/20/2015 17:36
Selenium	U		1.0	5.0	µg/L	1	11/20/2015 17:36
Silver	U		0.10	5.0	µg/L	1	11/20/2015 17:36
Zinc	**7.5**	J	**2.4**	**10**	**µg/L**	1	11/20/2015 17:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 02:56
Sulfate	**2,100**		**140**	**1,000**	**µg/L**	1	11/19/2015 02:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-BG-7
Collection Date: 11/17/2015 10:20 AM

Work Order: 15111034
Lab ID: 15111034-10
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.12**	J	**0.011**	**0.13**	**mg/Kg-dry**	1	11/24/2015 02:33
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**3,900**		**1.3**	**7.4**	**mg/Kg-dry**	1	11/20/2015 13:48
Arsenic	**6.1**		**0.91**	**3.7**	**mg/Kg-dry**	1	11/20/2015 13:48
Barium	**94**		**1.7**	**3.7**	**mg/Kg-dry**	1	11/20/2015 13:48
Cadmium	U		0.58	7.4	mg/Kg-dry	1	11/20/2015 13:48
Chromium	**19**		**0.12**	**3.7**	**mg/Kg-dry**	1	11/20/2015 13:48
Copper	**21**		**0.40**	**7.4**	**mg/Kg-dry**	1	11/20/2015 13:48
Iron	**11,000**		**5.7**	**59**	**mg/Kg-dry**	1	11/20/2015 13:48
Lead	**55**		**0.45**	**3.7**	**mg/Kg-dry**	1	11/20/2015 13:48
Manganese	**360**		**0.25**	**3.7**	**mg/Kg-dry**	1	11/20/2015 13:48
Potassium	**220**		**33**	**150**	**mg/Kg-dry**	1	11/20/2015 13:48
Selenium	**5.4**	J	**2.2**	**7.4**	**mg/Kg-dry**	1	11/20/2015 13:48
Silver	U		0.37	3.7	mg/Kg-dry	1	11/20/2015 13:48
Zinc	**150**		**1.2**	**7.4**	**mg/Kg-dry**	1	11/20/2015 13:48
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		2.0	9.3	mg/Kg-dry	1	11/24/2015 05:44
Sulfate	**59**	J	**6.0**	**93**	**mg/Kg-dry**	1	11/24/2015 05:44
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**89**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup-SW-1
Collection Date: 11/17/2015

Work Order: 15111034
Lab ID: 15111034-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/20/15		Analyst: **JEC**
Mercury	**0.0021**		**0.00020**	**0.00050**	**µg/L**	1	11/20/2015 14:22
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/20/15		Analyst: **RH**
Aluminum	**13**		**1.1**	**10**	**µg/L**	1	11/20/2015 17:41
Arsenic	**1.2**	J	**0.70**	**5.0**	**µg/L**	1	11/20/2015 17:41
Barium	**8.0**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:41
Cadmium	U		0.10	2.0	µg/L	1	11/20/2015 17:41
Chromium	**0.69**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:41
Copper	**1.1**	J	**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:41
Hardness (Calculation)	**26,000**		**1,000**	**2,000**	**µg/L**	1	11/20/2015 17:41
Iron	**130**		**10**	**80**	**µg/L**	1	11/20/2015 17:41
Lead	**0.18**	J	**0.10**	**5.0**	**µg/L**	1	11/20/2015 17:41
Manganese	**5.5**		**0.20**	**5.0**	**µg/L**	1	11/20/2015 17:41
Potassium	**1,700**		**34**	**200**	**µg/L**	1	11/20/2015 17:41
Selenium	U		1.0	5.0	µg/L	1	11/20/2015 17:41
Silver	U		0.10	5.0	µg/L	1	11/20/2015 17:41
Zinc	**6.2**	J	**2.4**	**10**	**µg/L**	1	11/20/2015 17:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 03:17
Sulfate	**870**	J	**140**	**1,000**	**µg/L**	1	11/19/2015 03:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup-Sed-1
Collection Date: 11/17/2015

Work Order: 15111034
Lab ID: 15111034-12
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.098**		**0.0083**	**0.098**	**mg/Kg-dry**	1	11/24/2015 02:35
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**4,100**		**1.0**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:53
Arsenic	**6.1**		**0.70**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:53
Barium	**44**		**1.3**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:53
Cadmium	U		0.45	5.7	mg/Kg-dry	1	11/20/2015 13:53
Chromium	**12**		**0.092**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:53
Copper	**17**		**0.31**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:53
Iron	**10,000**		**4.4**	**46**	**mg/Kg-dry**	1	11/20/2015 13:53
Lead	**45**		**0.34**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:53
Manganese	**38**		**0.19**	**2.9**	**mg/Kg-dry**	1	11/20/2015 13:53
Potassium	**180**		**26**	**110**	**mg/Kg-dry**	1	11/20/2015 13:53
Selenium	**4.8**	J	**1.7**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:53
Silver	U		0.29	2.9	mg/Kg-dry	1	11/20/2015 13:53
Zinc	**82**		**0.92**	**5.7**	**mg/Kg-dry**	1	11/20/2015 13:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.6	7.8	mg/Kg-dry	1	11/24/2015 06:04
Sulfate	**46**	J	**5.0**	**78**	**mg/Kg-dry**	1	11/24/2015 06:04
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**87**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-BG-8
Collection Date: 11/17/2015 01:16 PM

Work Order: 15111034
Lab ID: 15111034-13
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	U		0.0013	0.015	mg/Kg-dry	1	11/24/2015 02:38
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**630**		**0.15**	**0.83**	**mg/Kg-dry**	1	11/20/2015 13:59
Arsenic	**0.78**		**0.10**	**0.42**	**mg/Kg-dry**	1	11/20/2015 13:59
Barium	**4.5**		**0.19**	**0.42**	**mg/Kg-dry**	1	11/20/2015 13:59
Cadmium	U		0.065	0.83	mg/Kg-dry	1	11/20/2015 13:59
Chromium	**1.9**		**0.013**	**0.42**	**mg/Kg-dry**	1	11/20/2015 13:59
Copper	**0.80**	J	**0.045**	**0.83**	**mg/Kg-dry**	1	11/20/2015 13:59
Iron	**1,800**		**0.64**	**6.7**	**mg/Kg-dry**	1	11/20/2015 13:59
Lead	**5.7**		**0.050**	**0.42**	**mg/Kg-dry**	1	11/20/2015 13:59
Manganese	**41**		**0.028**	**0.42**	**mg/Kg-dry**	1	11/20/2015 13:59
Potassium	**71**		**3.7**	**17**	**mg/Kg-dry**	1	11/20/2015 13:59
Selenium	U		0.25	0.83	mg/Kg-dry	1	11/20/2015 13:59
Silver	U		0.042	0.42	mg/Kg-dry	1	11/20/2015 13:59
Zinc	**13**		**0.13**	**0.83**	**mg/Kg-dry**	1	11/20/2015 13:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.25	1.2	mg/Kg-dry	1	11/24/2015 06:25
Sulfate	**4.1**	J	**0.76**	**12**	**mg/Kg-dry**	1	11/24/2015 06:25
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**16**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-BG-9
Collection Date: 11/17/2015 01:25 PM

Work Order: 15111034
Lab ID: 15111034-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.013**	J	**0.0012**	**0.014**	**mg/Kg-dry**	1	11/24/2015 02:40
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**1,600**		**0.14**	**0.78**	**mg/Kg-dry**	1	11/20/2015 14:05
Arsenic	**2.9**		**0.095**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:05
Barium	**12**		**0.18**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:05
Cadmium	**0.10**	J	**0.061**	**0.78**	**mg/Kg-dry**	1	11/20/2015 14:05
Chromium	**4.4**		**0.012**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:05
Copper	**4.2**		**0.042**	**0.78**	**mg/Kg-dry**	1	11/20/2015 14:05
Iron	**4,400**		**0.60**	**6.2**	**mg/Kg-dry**	1	11/20/2015 14:05
Lead	**24**		**0.047**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:05
Manganese	**99**		**0.027**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:05
Potassium	**120**		**3.5**	**16**	**mg/Kg-dry**	1	11/20/2015 14:05
Selenium	**0.38**	J	**0.23**	**0.78**	**mg/Kg-dry**	1	11/20/2015 14:05
Silver	U		0.039	0.39	mg/Kg-dry	1	11/20/2015 14:05
Zinc	**33**		**0.12**	**0.78**	**mg/Kg-dry**	1	11/20/2015 14:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.24	1.1	mg/Kg-dry	1	11/24/2015 11:27
Sulfate	**4.3**	J	**0.72**	**11**	**mg/Kg-dry**	1	11/24/2015 11:27
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**11**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-BG-10
Collection Date: 11/17/2015 01:35 PM

Work Order: 15111034
Lab ID: 15111034-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.11**		**0.0018**	**0.022**	**mg/Kg-dry**	1	11/24/2015 02:42
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**3,400**		**0.20**	**1.1**	**mg/Kg-dry**	1	11/20/2015 14:10
Arsenic	**6.7**		**0.14**	**0.57**	**mg/Kg-dry**	1	11/20/2015 14:10
Barium	**38**		**0.26**	**0.57**	**mg/Kg-dry**	1	11/20/2015 14:10
Cadmium	**0.57**	J	**0.088**	**1.1**	**mg/Kg-dry**	1	11/20/2015 14:10
Chromium	**12**		**0.018**	**0.57**	**mg/Kg-dry**	1	11/20/2015 14:10
Copper	**17**		**0.061**	**1.1**	**mg/Kg-dry**	1	11/20/2015 14:10
Iron	**8,500**		**0.87**	**9.1**	**mg/Kg-dry**	1	11/20/2015 14:10
Lead	**93**		**0.068**	**0.57**	**mg/Kg-dry**	1	11/20/2015 14:10
Manganese	**80**		**0.039**	**0.57**	**mg/Kg-dry**	1	11/20/2015 14:10
Potassium	**150**		**5.1**	**23**	**mg/Kg-dry**	1	11/20/2015 14:10
Selenium	**1.5**		**0.34**	**1.1**	**mg/Kg-dry**	1	11/20/2015 14:10
Silver	U		0.057	0.57	mg/Kg-dry	1	11/20/2015 14:10
Zinc	**62**		**0.18**	**1.1**	**mg/Kg-dry**	1	11/20/2015 14:10
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	**4.0**		**0.36**	**1.7**	**mg/Kg-dry**	1	11/24/2015 11:46
Sulfate	U		1.1	17	mg/Kg-dry	1	11/24/2015 11:46
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**41**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-BG-5
Collection Date: 11/17/2015 01:49 PM

Work Order: 15111034
Lab ID: 15111034-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.0082**	J	**0.0012**	**0.014**	**mg/Kg-dry**	1	11/24/2015 02:52
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**1,300**		**0.12**	**0.71**	**mg/Kg-dry**	1	11/20/2015 09:26
Arsenic	**1.8**		**0.086**	**0.35**	**mg/Kg-dry**	1	11/20/2015 09:26
Barium	**10**		**0.16**	**0.35**	**mg/Kg-dry**	1	11/20/2015 09:26
Cadmium	**0.063**	J	**0.055**	**0.71**	**mg/Kg-dry**	1	11/20/2015 09:26
Chromium	**2.1**		**0.011**	**0.35**	**mg/Kg-dry**	1	11/20/2015 09:26
Copper	**1.9**		**0.038**	**0.71**	**mg/Kg-dry**	1	11/20/2015 09:26
Iron	**2,800**		**0.54**	**5.7**	**mg/Kg-dry**	1	11/20/2015 09:26
Lead	**7.7**		**0.042**	**0.35**	**mg/Kg-dry**	1	11/20/2015 09:26
Manganese	**52**		**0.024**	**0.35**	**mg/Kg-dry**	1	11/20/2015 09:26
Potassium	**78**		**3.2**	**14**	**mg/Kg-dry**	1	11/20/2015 09:26
Selenium	**0.27**	J	**0.21**	**0.71**	**mg/Kg-dry**	1	11/20/2015 09:26
Silver	U		0.035	0.35	mg/Kg-dry	1	11/20/2015 09:26
Zinc	**18**		**0.11**	**0.71**	**mg/Kg-dry**	1	11/20/2015 09:26
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.22	1.1	mg/Kg-dry	1	11/24/2015 12:06
Sulfate	**3.0**	J	**0.68**	**11**	**mg/Kg-dry**	1	11/24/2015 12:06
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**7.4**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-BG-6
Collection Date: 11/17/2015 02:00 PM

Work Order: 15111034
Lab ID: 15111034-17
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.0039**	J	**0.0012**	**0.014**	**mg/Kg-dry**	1	11/24/2015 02:59
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**1,100**		**0.13**	**0.71**	**mg/Kg-dry**	1	11/20/2015 14:15
Arsenic	**1.8**		**0.087**	**0.36**	**mg/Kg-dry**	1	11/20/2015 14:15
Barium	**11**		**0.17**	**0.36**	**mg/Kg-dry**	1	11/20/2015 14:15
Cadmium	**0.067**	J	**0.056**	**0.71**	**mg/Kg-dry**	1	11/20/2015 14:15
Chromium	**4.1**		**0.011**	**0.36**	**mg/Kg-dry**	1	11/20/2015 14:15
Copper	**2.8**		**0.039**	**0.71**	**mg/Kg-dry**	1	11/20/2015 14:15
Iron	**3,400**		**0.55**	**5.7**	**mg/Kg-dry**	1	11/20/2015 14:15
Lead	**21**		**0.043**	**0.36**	**mg/Kg-dry**	1	11/20/2015 14:15
Manganese	**89**		**0.024**	**0.36**	**mg/Kg-dry**	1	11/20/2015 14:15
Potassium	**93**		**3.2**	**14**	**mg/Kg-dry**	1	11/20/2015 14:15
Selenium	**0.29**	J	**0.21**	**0.71**	**mg/Kg-dry**	1	11/20/2015 14:15
Silver	U		0.036	0.36	mg/Kg-dry	1	11/20/2015 14:15
Zinc	**35**		**0.11**	**0.71**	**mg/Kg-dry**	1	11/20/2015 14:15
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.23	1.1	mg/Kg-dry	1	11/24/2015 13:06
Sulfate	**7.5**	J	**0.69**	**11**	**mg/Kg-dry**	1	11/24/2015 13:06
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**7.8**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 13:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *01-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-BG-7
Collection Date: 11/17/2015 02:04 PM

Work Order: 15111034
Lab ID: 15111034-18
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/23/15		Analyst: **LR**
Mercury	**0.0071**	J	**0.0011**	**0.013**	**mg/Kg-dry**	1	11/24/2015 03:01
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/19/15		Analyst: **JEC**
Aluminum	**1,100**		**0.14**	**0.79**	**mg/Kg-dry**	1	11/20/2015 14:21
Arsenic	**1.7**		**0.096**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:21
Barium	**10**		**0.18**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:21
Cadmium	**0.083**	J	**0.061**	**0.79**	**mg/Kg-dry**	1	11/20/2015 14:21
Chromium	**3.8**		**0.013**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:21
Copper	**2.8**		**0.042**	**0.79**	**mg/Kg-dry**	1	11/20/2015 14:21
Iron	**3,100**		**0.60**	**6.3**	**mg/Kg-dry**	1	11/20/2015 14:21
Lead	**20**		**0.047**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:21
Manganese	**93**		**0.027**	**0.39**	**mg/Kg-dry**	1	11/20/2015 14:21
Potassium	**88**		**3.5**	**16**	**mg/Kg-dry**	1	11/20/2015 14:21
Selenium	U		0.24	0.79	mg/Kg-dry	1	11/20/2015 14:21
Silver	U		0.039	0.39	mg/Kg-dry	1	11/20/2015 14:21
Zinc	**34**		**0.13**	**0.79**	**mg/Kg-dry**	1	11/20/2015 14:21
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.23	1.1	mg/Kg-dry	1	11/24/2015 13:27
Sulfate	**2.8**	J	**0.69**	**11**	**mg/Kg-dry**	1	11/24/2015 13:27
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**6.8**		**0.025**	**0.050**	**% of sample**	1	11/23/2015 15:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 01-Dec-15

Client: ERM, Inc

Work Order: 15111034

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79165** Instrument ID **HG2** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-79164-79165**				Units: **ng/L**			Analysis Date: **11/20/2015 10:05 A**			
Client ID:	Run ID: **HG2_151120A**				SeqNo: **3595637**			Prep Date: **11/20/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK2	Sample ID: **MBLK2-79164-79165**				Units: **ng/L**			Analysis Date: **11/20/2015 10:50 A**			
Client ID:	Run ID: **HG2_151120A**				SeqNo: **3595638**			Prep Date: **11/20/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK3	Sample ID: **MBLK3-79164-79165**				Units: **ng/L**			Analysis Date: **11/20/2015 12:51 PM**			
Client ID:	Run ID: **HG2_151120A**				SeqNo: **3595639**			Prep Date: **11/20/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MS	Sample ID: **15111034-07AMS**				Units: **ng/L**			Analysis Date: **11/20/2015 01:59 PM**			
Client ID: **SW-BG-8**	Run ID: **HG2_151120A**				SeqNo: **3579741**			Prep Date: **11/20/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	11.25	0.50	10	1.82	94.3	71-125	0				

MSD	Sample ID: **15111034-07AMSD**				Units: **ng/L**			Analysis Date: **11/20/2015 02:07 PM**			
Client ID: **SW-BG-8**	Run ID: **HG2_151120A**				SeqNo: **3579742**			Prep Date: **11/20/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	9.97	0.50	10	1.82	81.5	71-125	11.25	12.1	24		

LCS-OPR-START	Sample ID: **OPR-START-79164-79165**				Units: **ng/L**			Analysis Date: **11/20/2015 09:50 A**			
Client ID:	Run ID: **HG2_151120A**				SeqNo: **3595533**			Prep Date: **11/20/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.34	0.50	5	0	107	77-123	0				

LCS-OPR-END	Sample ID: **OPR-END-79164-79165**				Units: **ng/L**			Analysis Date: **11/20/2015 02:52 PM**			
Client ID:	Run ID: **HG2_151120A**				SeqNo: **3595534**			Prep Date: **11/20/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.38	0.50	5	0	108	77-123	0				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79165** Instrument ID **HG2** Method: **E1631E**

The following samples were analyzed in this batch:

15111034-01A	15111034-03A	15111034-05A
15111034-07A	15111034-09A	15111034-11A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79364** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-79364-79364** Units: **mg/Kg** Analysis Date: **11/24/2015 02:08 A**
Client ID: Run ID: **HG1_151123B** SeqNo: **3586355** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-79364-79364** Units: **mg/Kg** Analysis Date: **11/24/2015 02:10 A**
Client ID: Run ID: **HG1_151123B** SeqNo: **3586356** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.18	0.020	0.1665	0	108	80-120	0			

MS Sample ID: **15111034-06AMS** Units: **mg/Kg** Analysis Date: **11/24/2015 02:26 A**
Client ID: **Sed-BG-10** Run ID: **HG1_151123B** SeqNo: **3586363** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1262	0.013	0.1092	0.01299	104	75-125	0			

MS Sample ID: **15111034-16AMS** Units: **mg/Kg** Analysis Date: **11/24/2015 02:54 A**
Client ID: **SG-BG-5** Run ID: **HG1_151123B** SeqNo: **3586377** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1234	0.013	0.1045	0.007624	111	75-125	0			

MSD Sample ID: **15111034-06AMSD** Units: **mg/Kg** Analysis Date: **11/24/2015 02:28 A**
Client ID: **Sed-BG-10** Run ID: **HG1_151123B** SeqNo: **3586364** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1211	0.013	0.1075	0.01299	101	75-125	0.1262	4.15	35	

MSD Sample ID: **15111034-16AMSD** Units: **mg/Kg** Analysis Date: **11/24/2015 02:56 A**
Client ID: **SG-BG-5** Run ID: **HG1_151123B** SeqNo: **3586378** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1217	0.013	0.1053	0.007624	108	75-125	0.1234	1.41	35	

The following samples were analyzed in this batch:

15111034-02A	15111034-04A	15111034-06A
15111034-08A	15111034-10A	15111034-12A
15111034-13A	15111034-14A	15111034-15A
15111034-16A	15111034-17A	15111034-18A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79152** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-79152-79152** Units: **mg/Kg** Analysis Date: **11/20/2015 08:43 A**

Client ID: Run ID: **ICP2_151120A** SeqNo: **3579279** Prep Date: **11/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.50								
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.07793	0.25								J
Copper	0.1645	0.50								J
Iron	U	4.0								
Lead	U	0.25								
Manganese	U	0.25								
Potassium	U	10								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	0.2597	0.50								J

LCS Sample ID: **LCS-79152-79152** Units: **mg/Kg** Analysis Date: **11/20/2015 08:48 A**

Client ID: Run ID: **ICP2_151120A** SeqNo: **3579282** Prep Date: **11/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5.434	0.50	5	0	109	80-120	0			
Arsenic	4.911	0.25	5	0	98.2	80-120	0			
Barium	5.097	0.25	5	0	102	80-120	0			
Cadmium	4.867	0.50	5	0	97.3	80-120	0			
Chromium	5.505	0.25	5	0	110	80-120	0			
Copper	5.179	0.50	5	0	104	80-120	0			
Iron	516.9	4.0	500	0	103	80-120	0			
Lead	5.245	0.25	5	0	105	80-120	0			
Manganese	5.157	0.25	5	0	103	80-120	0			
Potassium	510.1	10	500	0	102	80-120	0			
Selenium	5.242	0.50	5	0	105	80-120	0			
Silver	4.857	0.25	5	0	97.1	80-120	0			
Zinc	5.388	0.50	5	0	108	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79152** Instrument ID **ICP2** Method: **SW846 6010C**

MS Sample ID: **15111034-06AMS** Units: **mg/Kg** Analysis Date: **11/20/2015 09:05 A**
Client ID: **Sed-BG-10** Run ID: **ICP2_151120A** SeqNo: **3579293** Prep Date: **11/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1682	0.68	6.812	998.3	10000	75-125	0			SO
Arsenic	8.435	0.34	6.812	1.398	103	75-125	0			
Barium	22.04	0.34	6.812	14.97	104	75-125	0			
Cadmium	6.79	0.68	6.812	0.2098	96.6	75-125	0			
Chromium	11.56	0.34	6.812	4.458	104	75-125	0			
Copper	11.36	0.68	6.812	6.302	74.3	75-125	0			S
Iron	2469	5.4	681.2	1648	121	75-125	0			
Lead	21.23	0.34	6.812	28.11	-101	75-125	0			SO
Manganese	39.23	0.34	6.812	35.2	59.2	75-125	0			SO
Potassium	837.6	14	681.2	72.81	112	75-125	0			
Selenium	8.174	0.68	6.812	0.6786	110	75-125	0			
Silver	6.485	0.34	6.812	-0.04113	95.8	75-125	0			
Zinc	39.05	0.68	6.812	32.59	94.9	75-125	0			O

MS Sample ID: **15111034-16AMS** Units: **mg/Kg** Analysis Date: **11/20/2015 09:32 A**
Client ID: **SG-BG-5** Run ID: **ICP2_151120A** SeqNo: **3579309** Prep Date: **11/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	2022	0.65	6.502	1232	12200	75-125	0			SO
Arsenic	8.429	0.33	6.502	1.628	105	75-125	0			
Barium	17.63	0.33	6.502	9.522	125	75-125	0			
Cadmium	6.518	0.65	6.502	0.05861	99.4	75-125	0			
Chromium	9.188	0.33	6.502	1.965	111	75-125	0			
Copper	8.62	0.65	6.502	1.797	105	75-125	0			
Iron	3530	5.2	650.2	2638	137	75-125	0			SO
Lead	13.93	0.33	6.502	7.149	104	75-125	0			
Manganese	56.62	0.33	6.502	48.37	127	75-125	0			SO
Potassium	820.9	13	650.2	71.97	115	75-125	0			
Selenium	7.115	0.65	6.502	0.2542	106	75-125	0			
Silver	6.528	0.33	6.502	0.001592	100	75-125	0			
Zinc	27.46	0.65	6.502	16.63	167	75-125	0			S

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79152** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **15111034-06AMSD** Units: **mg/Kg** Analysis Date: **11/20/2015 09:10 A**
Client ID: **Sed-BG-10** Run ID: **ICP2_151120A** SeqNo: **3579296** Prep Date: **11/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1574	0.68	6.849	998.3	8400	75-125	1682	6.66	20	SO
Arsenic	7.907	0.34	6.849	1.398	95	75-125	8.435	6.46	20	
Barium	20.66	0.34	6.849	14.97	83.1	75-125	22.04	6.48	20	
Cadmium	6.72	0.68	6.849	0.2098	95.1	75-125	6.79	1.03	20	
Chromium	10.66	0.34	6.849	4.458	90.6	75-125	11.56	8.1	20	
Copper	10.37	0.68	6.849	6.302	59.5	75-125	11.36	9.07	20	S
Iron	2311	5.5	684.9	1648	96.8	75-125	2469	6.6	20	
Lead	17.03	0.34	6.849	28.11	-162	75-125	21.23	21.9	20	SRO
Manganese	35.45	0.34	6.849	35.2	3.72	75-125	39.23	10.1	20	SO
Potassium	821.3	14	684.9	72.81	109	75-125	837.6	1.95	20	
Selenium	7.917	0.68	6.849	0.6786	106	75-125	8.174	3.19	20	
Silver	6.461	0.34	6.849	-0.04113	94.9	75-125	6.485	0.384	20	
Zinc	32.62	0.68	6.849	32.59	0.566	75-125	39.05	17.9	20	SO

MSD Sample ID: **15111034-16AMSD** Units: **mg/Kg** Analysis Date: **11/20/2015 09:54 A**
Client ID: **SG-BG-5** Run ID: **ICP2_151120A** SeqNo: **3579323** Prep Date: **11/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1988	0.66	6.579	1232	11500	75-125	2022	1.69	20	SO
Arsenic	8.673	0.33	6.579	1.628	107	75-125	8.429	2.86	20	
Barium	18.15	0.33	6.579	9.522	131	75-125	17.63	2.93	20	S
Cadmium	6.642	0.66	6.579	0.05861	100	75-125	6.518	1.87	20	
Chromium	9.293	0.33	6.579	1.965	111	75-125	9.188	1.13	20	
Copper	8.95	0.66	6.579	1.797	109	75-125	8.62	3.76	20	
Iron	3477	5.3	657.9	2638	128	75-125	3530	1.5	20	SO
Lead	15.04	0.33	6.579	7.149	120	75-125	13.93	7.68	20	
Manganese	59.12	0.33	6.579	48.37	163	75-125	56.62	4.31	20	SO
Potassium	822.8	13	657.9	71.97	114	75-125	820.9	0.235	20	
Selenium	7.403	0.66	6.579	0.2542	109	75-125	7.115	3.97	20	
Silver	6.484	0.33	6.579	0.001592	98.5	75-125	6.528	0.676	20	
Zinc	29.43	0.66	6.579	16.63	195	75-125	27.46	6.94	20	S

The following samples were analyzed in this batch:

15111034-02A	15111034-04A	15111034-06A
15111034-08A	15111034-10A	15111034-12A
15111034-13A	15111034-14A	15111034-15A
15111034-16A	15111034-17A	15111034-18A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79198** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-79198-79198** Units: **mg/L** Analysis Date: **11/20/2015 04:54 PM**
Client ID: Run ID: **ICPMS2_151120A** SeqNo: **3581569** Prep Date: **11/20/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	0.0008739	0.0050								J
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	0.0005684	0.0050								J
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-79198-79198** Units: **mg/L** Analysis Date: **11/20/2015 04:59 PM**
Client ID: Run ID: **ICPMS2_151120A** SeqNo: **3581570** Prep Date: **11/20/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.08624	0.010	0.1	0	86.2	80-120	0			
Arsenic	0.08443	0.0050	0.1	0	84.4	80-120	0			
Barium	0.08497	0.0050	0.1	0	85	80-120	0			
Cadmium	0.08567	0.0020	0.1	0	85.7	80-120	0			
Chromium	0.08556	0.0050	0.1	0	85.6	80-120	0			
Copper	0.08451	0.0050	0.1	0	84.5	80-120	0			
Hardness (Calculation)	59.03	2.0	66.15	0	89.2	80-120	0			
Iron	8.721	0.080	10	0	87.2	80-120	0			
Lead	0.08617	0.0050	0.1	0	86.2	80-120	0			
Manganese	0.08444	0.0050	0.1	0	84.4	80-120	0			
Potassium	8.772	0.20	10	0	87.7	80-120	0			
Selenium	0.0842	0.0050	0.1	0	84.2	80-120	0			
Silver	0.08705	0.0050	0.1	0	87	80-120	0			
Zinc	0.08716	0.010	0.1	0	87.2	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79198** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **15111034-07BMS** Units: **mg/L** Analysis Date: **11/20/2015 05:26 PM**
Client ID: **SW-BG-8** Run ID: **ICPMS2_151120A** SeqNo: **3581575** Prep Date: **11/20/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.135	0.010	0.1	0.02322	112	75-125	0			
Arsenic	0.09402	0.0050	0.1	0.001445	92.6	75-125	0			
Barium	0.1023	0.0050	0.1	0.006839	95.5	75-125	0			
Cadmium	0.09642	0.0020	0.1	-3.204E-05	96.5	75-125	0			
Chromium	0.09414	0.0050	0.1	0.0008172	93.3	75-125	0			
Copper	0.09544	0.0050	0.1	0.0007302	94.7	75-125	0			
Iron	9.906	0.080	10	0.2975	96.1	75-125	0			
Lead	0.09782	0.0050	0.1	0.0007373	97.1	75-125	0			
Manganese	0.1115	0.0050	0.1	0.006795	105	75-125	0			
Potassium	11.01	0.20	10	1.184	98.3	75-125	0			
Selenium	0.09438	0.0050	0.1	-0.0002372	94.6	75-125	0			
Silver	0.09523	0.0050	0.1	-1.355E-05	95.2	75-125	0			
Zinc	0.1052	0.010	0.1	0.007394	97.8	75-125	0			

MS Sample ID: **15111043-03AMS** Units: **mg/L** Analysis Date: **11/20/2015 06:23 PM**
Client ID: Run ID: **ICPMS2_151120A** SeqNo: **3581586** Prep Date: **11/20/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1244	0.010	0.1	0.0207	104	75-125	0			
Arsenic	0.09477	0.0050	0.1	0.002572	92.2	75-125	0			
Barium	0.1051	0.0050	0.1	0.009862	95.2	75-125	0			
Cadmium	0.09569	0.0020	0.1	-1.353E-05	95.7	75-125	0			
Chromium	0.09295	0.0050	0.1	0.001491	91.5	75-125	0			
Copper	0.09309	0.0050	0.1	0.003562	89.5	75-125	0			
Iron	10.3	0.080	10	0.963	93.4	75-125	0			
Lead	0.09672	0.0050	0.1	0.00009988	96.6	75-125	0			
Manganese	0.1264	0.0050	0.1	0.02116	105	75-125	0			
Potassium	10.31	0.20	10	0.6123	97	75-125	0			
Selenium	0.09428	0.0050	0.1	-3.598E-05	94.3	75-125	0			
Silver	0.0927	0.0050	0.1	-8.031E-06	92.7	75-125	0			
Zinc	0.09434	0.010	0.1	0.002236	92.1	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79198** Instrument ID **ICPMS2** Method: **SW6020A**

MSD Sample ID: **15111034-07BMSD** Units: **mg/L** Analysis Date: **11/20/2015 05:31 PM**
Client ID: **SW-BG-8** Run ID: **ICPMS2_151120A** SeqNo: **3581576** Prep Date: **11/20/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1329	0.010	0.1	0.02322	110	75-125	0.135	1.57	20	
Arsenic	0.09654	0.0050	0.1	0.001445	95.1	75-125	0.09402	2.64	20	
Barium	0.1036	0.0050	0.1	0.006839	96.8	75-125	0.1023	1.26	20	
Cadmium	0.09718	0.0020	0.1	-3.204E-05	97.2	75-125	0.09642	0.785	20	
Chromium	0.09574	0.0050	0.1	0.0008172	94.9	75-125	0.09414	1.69	20	
Copper	0.09622	0.0050	0.1	0.0007302	95.5	75-125	0.09544	0.814	20	
Iron	10.08	0.080	10	0.2975	97.8	75-125	9.906	1.74	20	
Lead	0.09908	0.0050	0.1	0.0007373	98.3	75-125	0.09782	1.28	20	
Manganese	0.1117	0.0050	0.1	0.006795	105	75-125	0.1115	0.179	20	
Potassium	11.04	0.20	10	1.184	98.6	75-125	11.01	0.272	20	
Selenium	0.09456	0.0050	0.1	-0.0002372	94.8	75-125	0.09438	0.191	20	
Silver	0.0976	0.0050	0.1	-1.355E-05	97.6	75-125	0.09523	2.46	20	
Zinc	0.1056	0.010	0.1	0.007394	98.2	75-125	0.1052	0.38	20	

MSD Sample ID: **15111043-03AMSD** Units: **mg/L** Analysis Date: **11/20/2015 06:28 PM**
Client ID: Run ID: **ICPMS2_151120A** SeqNo: **3581587** Prep Date: **11/20/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1172	0.010	0.1	0.0207	96.5	75-125	0.1244	5.96	20	
Arsenic	0.09321	0.0050	0.1	0.002572	90.6	75-125	0.09477	1.66	20	
Barium	0.1059	0.0050	0.1	0.009862	96	75-125	0.1051	0.758	20	
Cadmium	0.09661	0.0020	0.1	-1.353E-05	96.6	75-125	0.09569	0.957	20	
Chromium	0.0931	0.0050	0.1	0.001491	91.6	75-125	0.09295	0.161	20	
Copper	0.0944	0.0050	0.1	0.003562	90.8	75-125	0.09309	1.4	20	
Iron	10.34	0.080	10	0.963	93.8	75-125	10.3	0.388	20	
Lead	0.09815	0.0050	0.1	0.00009988	98.1	75-125	0.09672	1.47	20	
Manganese	0.1254	0.0050	0.1	0.02116	104	75-125	0.1264	0.794	20	
Potassium	10.37	0.20	10	0.6123	97.6	75-125	10.31	0.58	20	
Selenium	0.09031	0.0050	0.1	-3.598E-05	90.3	75-125	0.09428	4.3	20	
Silver	0.09307	0.0050	0.1	-8.031E-06	93.1	75-125	0.0927	0.398	20	
Zinc	0.09668	0.010	0.1	0.002236	94.4	75-125	0.09434	2.45	20	

The following samples were analyzed in this batch:

15111034-01B	15111034-03B	15111034-05B
15111034-07B	15111034-09B	15111034-11B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79389** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **MBLK-79389-79389** Units: **mg/Kg** Analysis Date: **11/23/2015 09:18 PM**
Client ID: Run ID: **IC4_151123B** SeqNo: **3586001** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	6.237	10								J

LCS Sample ID: **LCS-79389-79389** Units: **mg/Kg** Analysis Date: **11/23/2015 09:39 PM**
Client ID: Run ID: **IC4_151123B** SeqNo: **3586003** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	21.14	1.0	20	0	106	80-120	0			
Sulfate	102.1	10	100	0	102	80-120	0			

MS Sample ID: **15111034-06A MS** Units: **mg/Kg** Analysis Date: **11/24/2015 04:03 A**
Client ID: **Sed-BG-10** Run ID: **IC4_151123B** SeqNo: **3586060** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.25	0.97	19.49	0	98.7	75-125	0			
Sulfate	110.1	9.7	97.47	17.54	95	75-125	0			

MSD Sample ID: **15111034-06A MSD** Units: **mg/Kg** Analysis Date: **11/24/2015 04:23 A**
Client ID: **Sed-BG-10** Run ID: **IC4_151123B** SeqNo: **3586062** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.86	0.97	19.49	0	102	75-125	19.25	3.16	20	
Sulfate	121.3	9.7	97.47	17.54	106	75-125	110.1	9.65	20	

The following samples were analyzed in this batch:

15111034-02A	15111034-04A	15111034-06A
15111034-08A	15111034-10A	15111034-12A
15111034-13A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79391** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **MBLK-79391-79391** Units: **mg/Kg** Analysis Date: **11/24/2015 10:47 A**
Client ID: Run ID: **IC3_151124A** SeqNo: **3590592** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

LCS Sample ID: **LCS-79391-79391** Units: **mg/Kg** Analysis Date: **11/24/2015 11:07 A**
Client ID: Run ID: **IC3_151124A** SeqNo: **3590595** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.69	1.0	20	0	103	80-120	0			
Sulfate	92.02	10	100	0	92	80-120	0			

MS Sample ID: **15111034-16A MS** Units: **mg/Kg** Analysis Date: **11/24/2015 12:26 PM**
Client ID: **SG-BG-5** Run ID: **IC3_151124A** SeqNo: **3590606** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.62	0.99	19.84	0	104	75-125	0			
Sulfate	95.33	9.9	99.21	2.798	93.3	75-125	0			

MSD Sample ID: **15111034-16A MSD** Units: **mg/Kg** Analysis Date: **11/24/2015 12:46 PM**
Client ID: **SG-BG-5** Run ID: **IC3_151124A** SeqNo: **3590607** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.03	1.0	19.92	0	101	75-125	20.62	2.87	20	
Sulfate	95.43	10	99.6	2.798	93	75-125	95.33	0.105	20	

The following samples were analyzed in this batch:

15111034-14A	15111034-15A	15111034-16A
15111034-17A	15111034-18A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176562** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R176562** Units: **mg/L** Analysis Date: **11/18/2015 10:13 PM**
Client ID: Run ID: **IC4_151118C** SeqNo: **3576263** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R176562** Units: **mg/L** Analysis Date: **11/18/2015 10:33 PM**
Client ID: Run ID: **IC4_151118C** SeqNo: **3576264** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.915	0.10	2	0	95.7	81-116	0			
Sulfate	9.885	1.0	10	0	98.8	85-110	0			

MS Sample ID: **1511997-01A MS** Units: **mg/L** Analysis Date: **11/19/2015 12:15 A**
Client ID: Run ID: **IC4_151118C** SeqNo: **3576278** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	99.49	5.0	100	0	99.5	75-125	0			
Sulfate	648.5	50	500	141.2	101	75-125	0			

MSD Sample ID: **1511997-01A MSD** Units: **mg/L** Analysis Date: **11/19/2015 12:35 A**
Client ID: Run ID: **IC4_151118C** SeqNo: **3576282** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	100.5	5.0	100	0	100	75-125	99.49	1	20	
Sulfate	635.4	50	500	141.2	98.8	75-125	648.5	2.05	20	

The following samples were analyzed in this batch:

15111034-01C	15111034-03C	15111034-05C
15111034-07C	15111034-09C	15111034-11C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176919** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R176919** Units: **% of sample** Analysis Date: **11/23/2015 01:03 PM**
Client ID: Run ID: **MOIST_151123C** SeqNo: **3586324** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R176919** Units: **% of sample** Analysis Date: **11/23/2015 01:03 PM**
Client ID: Run ID: **MOIST_151123C** SeqNo: **3586323** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111034-06A DUP** Units: **% of sample** Analysis Date: **11/23/2015 01:03 PM**
Client ID: **Sed-BG-10** Run ID: **MOIST_151123C** SeqNo: **3586309** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	65.28	0.050	0	0	0		64.5	1.2	20	

DUP Sample ID: **15111034-16A DUP** Units: **% of sample** Analysis Date: **11/23/2015 01:03 PM**
Client ID: **SG-BG-5** Run ID: **MOIST_151123C** SeqNo: **3586318** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	7.85	0.050	0	0	0		7.42	5.63	20	

The following samples were analyzed in this batch:

15111034-02A	15111034-04A	15111034-06A
15111034-08A	15111034-10A	15111034-12A
15111034-13A	15111034-14A	15111034-15A
15111034-16A	15111034-17A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111034
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176927** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R176927** Units: **% of sample** Analysis Date: **11/23/2015 03:23 PM**
Client ID: Run ID: **MOIST_151123D** SeqNo: **3586523** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R176927** Units: **% of sample** Analysis Date: **11/23/2015 03:23 PM**
Client ID: Run ID: **MOIST_151123D** SeqNo: **3586522** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111034-18A DUP** Units: **% of sample** Analysis Date: **11/23/2015 03:23 PM**
Client ID: **SG-BG-7** Run ID: **MOIST_151123D** SeqNo: **3586475** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	7.14	0.050	0	0	0		6.81	4.73	20	

DUP Sample ID: **15111067-15A DUP** Units: **% of sample** Analysis Date: **11/23/2015 03:23 PM**
Client ID: Run ID: **MOIST_151123D** SeqNo: **3586497** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	9.68	0.050	0	0	0		9.93	2.55	20	

The following samples were analyzed in this batch: 15111034-18A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

ALS Environmental

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COC ID: 30508

ALS Project Manager: | ALS Work Order #: 511039

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Mercury (low level) in Water
Work Order		Project Number		B	Dissolved Metals in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Mercury in sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	Metals in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-BG-6	11-17-15	0845	W	—	1	X	X	X								
2	Sed-BG-6		0852	Sed	—	1				X	X	X					
3	SW-BG-9		0908	W	—	1	X	X	X								
4	Sed-BG-9		0915	Sed	—	1				X	X	X					
5	SW-BG-10		0928	W	—	1	X	X	X								
6	Sed-BG-10		0936	Sed	—	2				X	X	X					
7	SW-BG-8		0958	W	—	2	X	X	X								
8	Sed-BG-8		1000	Sed	—	1				X	X	X					
9	SW-BG-7		1016	W	—	1	X	X	X								
10	Sed-BG-7		1020	Sed	—	1				X	X	X					

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☒ Other Standard

Results Due Date:

Relinquished by:	Date: 11-17-15	Time: 1615	Received by:	
Relinquished by:	Date: 11/18/15	Time: 1210	Received by (Laboratory):	
Logged by (Laboratory): DFS	Date: 11/18/15	Time: 1515	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
	3.6°C

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

Chain of Custody Form

Page ___ of ___

COC ID: 30507

ALS Project Manager: | ALS Work Order #: 1511034

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Mercury (low level) in water
Work Order		Project Number		B	Dissolved metals in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Mercury in solids
Address	3425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	Metals in solids
				F	Anions in water
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Dup-SW-1	11-7-15	~~1316~~	W	—	1	X	X	X								
2	Dup-Sed-1		~~1325~~	Sed	—	1				X	X	X					
3	SG-BG-8	816	1335	Soil	—	1				X	X	X					
4	SG-BG-9		1325		—	1				X	X	X					
5	SG-BG-10		1335		—	1				X	X	X					
6	SG-BG-5		1349		—	2				X	X	X					
7	SG-BG-6		1400		—	1				X	X	X					
8	SG-BG-7		1404		—	1				X	X	X					
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: —

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☒ Other Standard ☐ 1 BD

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Aaron Alexander	11-17-15	1615	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	11/18/15	1210	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
DES	11/18/15	1515	

Notes:

Cooler ID	Cooler Temp
	3.0c

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **18-Nov-15 12:10**

Work Order: **15111034** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 18-Nov-15 (Date) Reviewed by: Bill Carey (eSignature) 18-Nov-15 (Date)

Matrices: Water, Sediment

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0/3.0 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	11/18/2015 3:50:22 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

03-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **15111129**

Dear Marty,

ALS Environmental received 34 samples on 19-Nov-2015 12:45 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 59.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 532786

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 03-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **15111129**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
15111129-01	SW-LL-1	Water		11/18/2015 08:34	11/19/2015 12:45	☐
15111129-02	SW-LL-2	Water		11/18/2015 11:08	11/19/2015 12:45	☐
15111129-03	Sed-LL-1	Sediment		11/18/2015 08:34	11/19/2015 12:45	☐
15111129-04	Sed-LL-2	Sediment		11/18/2015 11:08	11/19/2015 12:45	☐
15111129-05	SW-LL-3	Water		11/18/2015 10:44	11/19/2015 12:45	☐
15111129-06	Sed-LL-3	Sediment		11/18/2015 10:44	11/19/2015 12:45	☐
15111129-07	SW-LL-4	Water		11/18/2015 10:30	11/19/2015 12:45	☐
15111129-08	SW-LL-5	Water		11/18/2015 10:07	11/19/2015 12:45	☐
15111129-09	Sed-LL-4	Sediment		11/18/2015 10:30	11/19/2015 12:45	☐
15111129-10	Sed-LL-5	Sediment		11/18/2015 10:07	11/19/2015 12:45	☐
15111129-11	SW-LL-6	Water		11/18/2015 09:12	11/19/2015 12:45	☐
15111129-12	Sed-LL-6	Sediment		11/18/2015 09:12	11/19/2015 12:45	☐
15111129-13	SW-LL-7	Water		11/18/2015 09:40	11/19/2015 12:45	☐
15111129-14	Sed-LL-7	Sediment		11/18/2015 09:40	11/19/2015 12:45	☐
15111129-15	SW-LL-8	Water		11/18/2015 09:53	11/19/2015 12:45	☐
15111129-16	Sed-LL-8	Sediment		11/18/2015 09:53	11/19/2015 12:45	☐
15111129-17	DUP-LL-SW-1	Water		11/18/2015	11/19/2015 12:45	☐
15111129-18	DUP-LL-Sed-1	Sediment		11/18/2015	11/19/2015 12:45	☐
15111129-19	SW-LL-9	Water		11/18/2015 15:32	11/19/2015 12:45	☐
15111129-20	Sed-LL-9	Sediment		11/18/2015 15:32	11/19/2015 12:45	☐
15111129-21	SW-LL-10	Water		11/18/2015 15:19	11/19/2015 12:45	☐
15111129-22	Sed-LL-10	Sediment		11/18/2015 15:19	11/19/2015 12:45	☐
15111129-23	SW-LL-11	Water		11/18/2015 15:44	11/19/2015 12:45	☐
15111129-24	Sed-LL-11	Sediment		11/18/2015 15:44	11/19/2015 12:45	☐
15111129-25	SW-LL-12	Water		11/18/2015 13:42	11/19/2015 12:45	☐
15111129-26	Sed-LL-12	Sediment		11/18/2015 13:42	11/19/2015 12:45	☐
15111129-27	SW-LL-13	Water		11/18/2015 15:02	11/19/2015 12:45	☐
15111129-28	Sed-LL-13	Sediment		11/18/2015 15:02	11/19/2015 12:45	☐
15111129-29	Sed-LL-14	Sediment		11/18/2015 14:40	11/19/2015 12:45	☐
15111129-30	SW-LL-14	Water		11/18/2015 14:40	11/19/2015 12:45	☐
15111129-31	SW-LL-15	Water		11/18/2015 14:03	11/19/2015 12:45	☐
15111129-32	Sed-LL-15	Sediment		11/18/2015 14:03	11/19/2015 12:45	☐
15111129-33	SW-LL-16	Water		11/18/2015 14:30	11/19/2015 12:45	☐
15111129-34	Sed-LL-16	Sediment		11/18/2015 14:30	11/19/2015 12:45	☐

ALS Group USA, Corp

Date: 03-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **15111129**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/L	Micrograms per Liter
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: 03-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 15111129

Case Narrative

Samples for the above noted Work Order were received on 11/19/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 79264, Method ICP_6010_S, Sample 15111129-32AMS: The matrix spike recovery was outside of the control limit. However, the matrix spike duplicate recovery and the RPD between the MS and MSD were in control. No qualification is required for this analyte: Pb

Batch 79264, Method ICP_6010_S, Sample 15111129-32AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al

Batch 79264, Method ICP_6010_S, Sample 15111129-32AMSD: The MSD recovery was outside of the control limit. However, the MS recovery and the RPD between the MS and MSD was in control. No qualification is required for this analyte: Zn

Batch 79264, Method ICP_6010_S, Sample 15111129-32AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-1
Collection Date: 11/18/2015 08:34 AM

Work Order: 15111129
Lab ID: 15111129-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00065**		**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 20:16
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**7.7**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 15:09
Arsenic	**1.8**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 01:37
Barium	**22**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:37
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 01:37
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 01:37
Copper	U		0.20	5.0	µg/L	1	11/24/2015 01:37
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 01:37
Iron	**350**		**10**	**80**	**µg/L**	1	11/24/2015 01:37
Lead	**0.25**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 01:37
Manganese	**2.9**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:37
Potassium	**2,000**		**34**	**200**	**µg/L**	1	11/24/2015 01:37
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 01:37
Silver	U		0.10	5.0	µg/L	1	11/24/2015 01:37
Zinc	**3.2**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 01:37
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 16:49
Sulfate	**5,600**		**140**	**1,000**	**µg/L**	1	11/19/2015 16:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-2
Collection Date: 11/18/2015 11:08 AM

Work Order: 15111129
Lab ID: 15111129-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00055**		**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 20:23
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**5.5**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 15:16
Arsenic	**1.8**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 01:44
Barium	**22**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:44
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 01:44
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 01:44
Copper	**0.21**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:44
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 01:44
Iron	**290**		**10**	**80**	**µg/L**	1	11/24/2015 01:44
Lead	**0.16**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 01:44
Manganese	**4.7**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:44
Potassium	**2,000**		**34**	**200**	**µg/L**	1	11/24/2015 01:44
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 01:44
Silver	U		0.10	5.0	µg/L	1	11/24/2015 01:44
Zinc	**4.7**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 01:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 17:10
Sulfate	**5,600**		**140**	**1,000**	**µg/L**	1	11/19/2015 17:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-1
Collection Date: 11/18/2015 08:34 AM

Work Order: 15111129
Lab ID: 15111129-03
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.022**	J	**0.0040**	**0.047**	**mg/Kg-dry**	1	11/25/2015 23:58
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**1,200**		**0.38**	**2.2**	**mg/Kg-dry**	1	11/25/2015 20:18
Arsenic	**5.4**		**0.27**	**1.1**	**mg/Kg-dry**	1	11/25/2015 20:18
Barium	**10**		**0.51**	**1.1**	**mg/Kg-dry**	1	11/25/2015 20:18
Cadmium	U		0.17	2.2	mg/Kg-dry	1	11/25/2015 20:18
Chromium	**6.4**		**0.035**	**1.1**	**mg/Kg-dry**	1	11/25/2015 20:18
Copper	**19**		**0.12**	**2.2**	**mg/Kg-dry**	1	11/25/2015 20:18
Iron	**4,400**		**1.7**	**17**	**mg/Kg-dry**	1	11/25/2015 20:18
Lead	**27**		**0.13**	**1.1**	**mg/Kg-dry**	1	11/25/2015 20:18
Manganese	**51**		**0.074**	**1.1**	**mg/Kg-dry**	1	11/25/2015 20:18
Potassium	**160**		**9.7**	**44**	**mg/Kg-dry**	1	11/30/2015 16:32
Selenium	**0.81**	J	**0.66**	**2.2**	**mg/Kg-dry**	1	11/25/2015 20:18
Silver	U		0.11	1.1	mg/Kg-dry	1	11/25/2015 20:18
Zinc	**59**		**0.35**	**2.2**	**mg/Kg-dry**	1	11/25/2015 20:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.61	2.9	mg/Kg-dry	1	11/24/2015 13:47
Sulfate	**14**	J	**1.9**	**29**	**mg/Kg-dry**	1	11/24/2015 13:47
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**67**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-2
Collection Date: 11/18/2015 11:08 AM

Work Order: 15111129
Lab ID: 15111129-04
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.13**	J	**0.021**	**0.24**	**mg/Kg-dry**	1	11/26/2015 00:01
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**2,900**		**2.4**	**13**	**mg/Kg-dry**	1	11/25/2015 20:23
Arsenic	**43**		**1.6**	**6.7**	**mg/Kg-dry**	1	11/25/2015 20:23
Barium	**41**		**3.1**	**6.7**	**mg/Kg-dry**	1	11/25/2015 20:23
Cadmium	U		1.0	13	mg/Kg-dry	1	11/25/2015 20:23
Chromium	**19**		**0.21**	**6.7**	**mg/Kg-dry**	1	11/25/2015 20:23
Copper	**27**		**0.72**	**13**	**mg/Kg-dry**	1	11/25/2015 20:23
Iron	**20,000**		**10**	**110**	**mg/Kg-dry**	1	11/25/2015 20:23
Lead	**130**		**0.81**	**6.7**	**mg/Kg-dry**	1	11/25/2015 20:23
Manganese	**120**		**0.46**	**6.7**	**mg/Kg-dry**	1	11/25/2015 20:23
Potassium	**330**		**60**	**270**	**mg/Kg-dry**	1	11/30/2015 16:37
Selenium	**5.4**	J	**4.0**	**13**	**mg/Kg-dry**	1	11/25/2015 20:23
Silver	U		0.67	6.7	mg/Kg-dry	1	11/25/2015 20:23
Zinc	**260**		**2.1**	**13**	**mg/Kg-dry**	1	11/25/2015 20:23
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		3.4	16	mg/Kg-dry	1	11/24/2015 14:48
Sulfate	**320**		**10**	**160**	**mg/Kg-dry**	1	11/24/2015 14:48
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**94**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-3
Collection Date: 11/18/2015 10:44 AM

Work Order: 15111129
Lab ID: 15111129-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00058**		**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 20:31
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	U		1.1	10	µg/L	1	11/25/2015 15:22
Arsenic	**0.73**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 01:50
Barium	**22**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:50
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 01:50
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 01:50
Copper	U		0.20	5.0	µg/L	1	11/24/2015 01:50
Hardness (Calculation)	**120,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 01:50
Iron	**54**	J	**10**	**80**	**µg/L**	1	11/24/2015 01:50
Lead	U		0.10	5.0	µg/L	1	11/24/2015 01:50
Manganese	**2.2**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:50
Potassium	**3,500**		**34**	**200**	**µg/L**	1	11/24/2015 01:50
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 01:50
Silver	U		0.10	5.0	µg/L	1	11/24/2015 01:50
Zinc	**5.6**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 01:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 17:30
Sulfate	**4,500**		**140**	**1,000**	**µg/L**	1	11/19/2015 17:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-3
Collection Date: 11/18/2015 10:44 AM

Work Order: 15111129
Lab ID: 15111129-06
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.040**	J	**0.0058**	**0.068**	**mg/Kg-dry**	1	11/26/2015 00:10
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**2,200**		**0.56**	**3.2**	**mg/Kg-dry**	1	11/25/2015 20:29
Arsenic	**13**		**0.39**	**1.6**	**mg/Kg-dry**	1	11/25/2015 20:29
Barium	**51**		**0.73**	**1.6**	**mg/Kg-dry**	1	11/25/2015 20:29
Cadmium	U		0.25	3.2	mg/Kg-dry	1	11/25/2015 20:29
Chromium	**8.9**		**0.051**	**1.6**	**mg/Kg-dry**	1	11/25/2015 20:29
Copper	**17**		**0.17**	**3.2**	**mg/Kg-dry**	1	11/25/2015 20:29
Iron	**7,400**		**2.4**	**25**	**mg/Kg-dry**	1	11/25/2015 20:29
Lead	**31**		**0.19**	**1.6**	**mg/Kg-dry**	1	11/25/2015 20:29
Manganese	**29**		**0.11**	**1.6**	**mg/Kg-dry**	1	11/25/2015 20:29
Potassium	**210**		**14**	**63**	**mg/Kg-dry**	1	11/30/2015 16:43
Selenium	**2.4**	J	**0.95**	**3.2**	**mg/Kg-dry**	1	11/25/2015 20:29
Silver	U		0.16	1.6	mg/Kg-dry	1	11/25/2015 20:29
Zinc	**67**		**0.51**	**3.2**	**mg/Kg-dry**	1	11/25/2015 20:29
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.83	4.0	mg/Kg-dry	1	11/24/2015 15:08
Sulfate	**160**		**2.5**	**40**	**mg/Kg-dry**	1	11/24/2015 15:08
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**76**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-4
Collection Date: 11/18/2015 10:30 AM

Work Order: 15111129
Lab ID: 15111129-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00048**	J	**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 20:38
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**4.5**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 15:28
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 01:56
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:56
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 01:56
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 01:56
Copper	U		0.20	5.0	µg/L	1	11/24/2015 01:56
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 01:56
Iron	**360**		**10**	**80**	**µg/L**	1	11/24/2015 01:56
Lead	**0.16**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 01:56
Manganese	**5.6**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 01:56
Potassium	**2,100**		**34**	**200**	**µg/L**	1	11/24/2015 01:56
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 01:56
Silver	U		0.10	5.0	µg/L	1	11/24/2015 01:56
Zinc	**6.5**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 01:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 17:50
Sulfate	**5,200**		**140**	**1,000**	**µg/L**	1	11/19/2015 17:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-5
Collection Date: 11/18/2015 10:07 AM

Work Order: 15111129
Lab ID: 15111129-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00048**	J	**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 20:46
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**3.1**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 15:34
Arsenic	**0.95**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 02:21
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:21
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 02:21
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 02:21
Copper	U		0.20	5.0	µg/L	1	11/24/2015 02:21
Hardness (Calculation)	**120,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 02:21
Iron	**380**		**10**	**80**	**µg/L**	1	11/24/2015 02:21
Lead	**0.12**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 02:21
Manganese	**4.9**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:21
Potassium	**2,200**		**34**	**200**	**µg/L**	1	11/24/2015 02:21
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 02:21
Silver	U		0.10	5.0	µg/L	1	11/24/2015 02:21
Zinc	**5.4**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 02:21
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 18:10
Sulfate	**5,400**		**140**	**1,000**	**µg/L**	1	11/19/2015 18:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-4
Collection Date: 11/18/2015 10:30 AM

Work Order: 15111129
Lab ID: 15111129-09
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.11**	J	**0.019**	**0.22**	**mg/Kg-dry**	1	11/26/2015 00:12
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**3,100**		**1.9**	**11**	**mg/Kg-dry**	1	11/25/2015 20:35
Arsenic	**47**		**1.3**	**5.5**	**mg/Kg-dry**	1	11/25/2015 20:35
Barium	**58**		**2.5**	**5.5**	**mg/Kg-dry**	1	11/25/2015 20:35
Cadmium	U		0.85	11	mg/Kg-dry	1	11/25/2015 20:35
Chromium	**14**		**0.18**	**5.5**	**mg/Kg-dry**	1	11/25/2015 20:35
Copper	**26**		**0.59**	**11**	**mg/Kg-dry**	1	11/25/2015 20:35
Iron	**22,000**		**8.4**	**88**	**mg/Kg-dry**	1	11/25/2015 20:35
Lead	**84**		**0.66**	**5.5**	**mg/Kg-dry**	1	11/25/2015 20:35
Manganese	**200**		**0.37**	**5.5**	**mg/Kg-dry**	1	11/25/2015 20:35
Potassium	**310**		**49**	**220**	**mg/Kg-dry**	1	11/30/2015 16:49
Selenium	**4.1**	J	**3.3**	**11**	**mg/Kg-dry**	1	11/25/2015 20:35
Silver	U		0.55	5.5	mg/Kg-dry	1	11/25/2015 20:35
Zinc	**180**		**1.8**	**11**	**mg/Kg-dry**	1	11/25/2015 20:35
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		2.8	13	mg/Kg-dry	1	11/24/2015 15:28
Sulfate	**360**		**8.4**	**130**	**mg/Kg-dry**	1	11/24/2015 15:28
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**92**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-5
Collection Date: 11/18/2015 10:07 AM

Work Order: 15111129
Lab ID: 15111129-10
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.11**	J	**0.014**	**0.16**	**mg/Kg-dry**	1	11/26/2015 00:15
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**4,100**		**1.3**	**7.2**	**mg/Kg-dry**	1	11/25/2015 20:40
Arsenic	**55**		**0.88**	**3.6**	**mg/Kg-dry**	1	11/25/2015 20:40
Barium	**53**		**1.7**	**3.6**	**mg/Kg-dry**	1	11/25/2015 20:40
Cadmium	U		0.57	7.2	mg/Kg-dry	1	11/25/2015 20:40
Chromium	**17**		**0.12**	**3.6**	**mg/Kg-dry**	1	11/25/2015 20:40
Copper	**29**		**0.39**	**7.2**	**mg/Kg-dry**	1	11/25/2015 20:40
Iron	**16,000**		**5.6**	**58**	**mg/Kg-dry**	1	11/25/2015 20:40
Lead	**120**		**0.43**	**3.6**	**mg/Kg-dry**	1	11/25/2015 20:40
Manganese	**78**		**0.25**	**3.6**	**mg/Kg-dry**	1	11/25/2015 20:40
Potassium	**390**		**32**	**140**	**mg/Kg-dry**	1	11/30/2015 16:54
Selenium	**6.1**	J	**2.2**	**7.2**	**mg/Kg-dry**	1	11/25/2015 20:40
Silver	U		0.36	3.6	mg/Kg-dry	1	11/25/2015 20:40
Zinc	**210**		**1.2**	**7.2**	**mg/Kg-dry**	1	11/25/2015 20:40
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		2.0	9.5	mg/Kg-dry	1	11/24/2015 15:48
Sulfate	**110**		**6.1**	**95**	**mg/Kg-dry**	1	11/24/2015 15:48
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**90**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-6
Collection Date: 11/18/2015 09:12 AM

Work Order: 15111129
Lab ID: 15111129-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00043**	J	**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 20:53
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**3.4**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 15:41
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 02:27
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:27
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 02:27
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 02:27
Copper	U		0.20	5.0	µg/L	1	11/24/2015 02:27
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 02:27
Iron	**340**		**10**	**80**	**µg/L**	1	11/24/2015 02:27
Lead	U		0.10	5.0	µg/L	1	11/24/2015 02:27
Manganese	**1.1**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:27
Potassium	**2,000**		**34**	**200**	**µg/L**	1	11/24/2015 02:27
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 02:27
Silver	U		0.10	5.0	µg/L	1	11/24/2015 02:27
Zinc	**4.8**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 02:27
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 18:30
Sulfate	**5,100**		**140**	**1,000**	**µg/L**	1	11/19/2015 18:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-6
Collection Date: 11/18/2015 09:12 AM

Work Order: 15111129
Lab ID: 15111129-12
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.031**	J	**0.0035**	**0.041**	**mg/Kg-dry**	1	11/26/2015 00:17
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**1,400**		**0.39**	**2.2**	**mg/Kg-dry**	1	11/25/2015 21:02
Arsenic	**8.6**		**0.27**	**1.1**	**mg/Kg-dry**	1	11/25/2015 21:02
Barium	**16**		**0.51**	**1.1**	**mg/Kg-dry**	1	11/25/2015 21:02
Cadmium	**0.23**	J	**0.17**	**2.2**	**mg/Kg-dry**	1	11/25/2015 21:02
Chromium	**6.0**		**0.035**	**1.1**	**mg/Kg-dry**	1	11/25/2015 21:02
Copper	**11**		**0.12**	**2.2**	**mg/Kg-dry**	1	11/25/2015 21:02
Iron	**4,900**		**1.7**	**18**	**mg/Kg-dry**	1	11/25/2015 21:02
Lead	**44**		**0.13**	**1.1**	**mg/Kg-dry**	1	11/25/2015 21:02
Manganese	**48**		**0.075**	**1.1**	**mg/Kg-dry**	1	11/25/2015 21:02
Potassium	**120**		**9.8**	**44**	**mg/Kg-dry**	1	11/30/2015 17:00
Selenium	**1.6**	J	**0.66**	**2.2**	**mg/Kg-dry**	1	11/25/2015 21:02
Silver	U		0.11	1.1	mg/Kg-dry	1	11/25/2015 21:02
Zinc	**72**		**0.35**	**2.2**	**mg/Kg-dry**	1	11/25/2015 21:02
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.62	2.9	mg/Kg-dry	1	11/24/2015 16:09
Sulfate	**37**		**1.9**	**29**	**mg/Kg-dry**	1	11/24/2015 16:09
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**66**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-7
Collection Date: 11/18/2015 09:40 AM

Work Order: 15111129
Lab ID: 15111129-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00035**	J	**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 21:01
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**4.2**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:06
Arsenic	**1.2**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 02:34
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:34
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 02:34
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 02:34
Copper	U		0.20	5.0	µg/L	1	11/24/2015 02:34
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 02:34
Iron	**610**		**10**	**80**	**µg/L**	1	11/24/2015 02:34
Lead	**0.12**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 02:34
Manganese	**6.5**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:34
Potassium	**2,100**		**34**	**200**	**µg/L**	1	11/24/2015 02:34
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 02:34
Silver	U		0.10	5.0	µg/L	1	11/24/2015 02:34
Zinc	**8.5**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 02:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 18:51
Sulfate	**5,200**		**140**	**1,000**	**µg/L**	1	11/19/2015 18:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-7
Collection Date: 11/18/2015 09:40 AM

Work Order: 15111129
Lab ID: 15111129-14
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.064**	J	**0.021**	**0.24**	**mg/Kg-dry**	1	11/26/2015 00:19
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**3,200**		**2.0**	**11**	**mg/Kg-dry**	1	11/25/2015 21:08
Arsenic	**33**		**1.4**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:08
Barium	**46**		**2.6**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:08
Cadmium	U		0.89	11	mg/Kg-dry	1	11/25/2015 21:08
Chromium	**12**		**0.18**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:08
Copper	**14**		**0.61**	**11**	**mg/Kg-dry**	1	11/25/2015 21:08
Iron	**22,000**		**8.7**	**91**	**mg/Kg-dry**	1	11/25/2015 21:08
Lead	**46**		**0.68**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:08
Manganese	**310**		**0.39**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:08
Potassium	**390**		**51**	**230**	**mg/Kg-dry**	1	11/30/2015 17:05
Selenium	**5.3**	J	**3.4**	**11**	**mg/Kg-dry**	1	11/25/2015 21:08
Silver	U		0.57	5.7	mg/Kg-dry	1	11/25/2015 21:08
Zinc	**280**		**1.8**	**11**	**mg/Kg-dry**	1	11/25/2015 21:08
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		3.0	14	mg/Kg-dry	1	11/24/2015 16:29
Sulfate	**150**		**9.2**	**140**	**mg/Kg-dry**	1	11/24/2015 16:29
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**93**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-8
Collection Date: 11/18/2015 09:53 AM

Work Order: 15111129
Lab ID: 15111129-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/24/15		Analyst: **JEC**
Mercury	**0.00045**	J	**0.00020**	**0.00050**	**µg/L**	1	11/24/2015 21:09
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**1.3**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:12
Arsenic	**1.8**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 02:40
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:40
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 02:40
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 02:40
Copper	U		0.20	5.0	µg/L	1	11/24/2015 02:40
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 02:40
Iron	**400**		**10**	**80**	**µg/L**	1	11/24/2015 02:40
Lead	U		0.10	5.0	µg/L	1	11/24/2015 02:40
Manganese	**2.2**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:40
Potassium	**2,000**		**34**	**200**	**µg/L**	1	11/24/2015 02:40
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 02:40
Silver	U		0.10	5.0	µg/L	1	11/24/2015 02:40
Zinc	**5.2**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 02:40
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 19:11
Sulfate	**5,100**		**140**	**1,000**	**µg/L**	1	11/19/2015 19:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-8
Collection Date: 11/18/2015 09:53 AM

Work Order: 15111129
Lab ID: 15111129-16
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.087**	J	**0.010**	**0.12**	**mg/Kg-dry**	1	11/26/2015 00:21
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**3,800**		**0.95**	**5.4**	**mg/Kg-dry**	1	11/25/2015 21:14
Arsenic	**44**		**0.66**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:14
Barium	**50**		**1.3**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:14
Cadmium	**0.51**	J	**0.42**	**5.4**	**mg/Kg-dry**	1	11/25/2015 21:14
Chromium	**13**		**0.087**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:14
Copper	**27**		**0.29**	**5.4**	**mg/Kg-dry**	1	11/25/2015 21:14
Iron	**20,000**		**4.2**	**43**	**mg/Kg-dry**	1	11/25/2015 21:14
Lead	**130**		**0.33**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:14
Manganese	**140**		**0.18**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:14
Potassium	**370**		**24**	**110**	**mg/Kg-dry**	1	11/30/2015 17:11
Selenium	**4.6**	J	**1.6**	**5.4**	**mg/Kg-dry**	1	11/25/2015 21:14
Silver	U		0.27	2.7	mg/Kg-dry	1	11/25/2015 21:14
Zinc	**140**		**0.87**	**5.4**	**mg/Kg-dry**	1	11/25/2015 21:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.6	7.5	mg/Kg-dry	1	11/24/2015 16:49
Sulfate	**510**		**4.8**	**75**	**mg/Kg-dry**	1	11/24/2015 16:49
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**87**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-LL-SW-1
Collection Date: 11/18/2015

Work Order: 15111129
Lab ID: 15111129-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00045**	J	**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 11:10
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**1.6**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:18
Arsenic	**2.0**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 02:46
Barium	**24**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:46
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 02:46
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 02:46
Copper	U		0.20	5.0	µg/L	1	11/24/2015 02:46
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 02:46
Iron	**250**		**10**	**80**	**µg/L**	1	11/24/2015 02:46
Lead	U		0.10	5.0	µg/L	1	11/24/2015 02:46
Manganese	**3.9**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:46
Potassium	**2,300**		**34**	**200**	**µg/L**	1	11/24/2015 02:46
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 02:46
Silver	U		0.10	5.0	µg/L	1	11/24/2015 02:46
Zinc	**8.0**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 02:46
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 19:31
Sulfate	**5,500**		**140**	**1,000**	**µg/L**	1	11/19/2015 19:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-LL-Sed-1
Collection Date: 11/18/2015

Work Order: 15111129
Lab ID: 15111129-18
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.12**	J	**0.011**	**0.13**	**mg/Kg-dry**	1	11/26/2015 00:24
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**3,100**		**1.0**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:19
Arsenic	**37**		**0.70**	**2.9**	**mg/Kg-dry**	1	11/25/2015 21:19
Barium	**44**		**1.3**	**2.9**	**mg/Kg-dry**	1	11/25/2015 21:19
Cadmium	U		0.45	5.7	mg/Kg-dry	1	11/25/2015 21:19
Chromium	**13**		**0.092**	**2.9**	**mg/Kg-dry**	1	11/25/2015 21:19
Copper	**21**		**0.31**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:19
Iron	**12,000**		**4.4**	**46**	**mg/Kg-dry**	1	11/25/2015 21:19
Lead	**78**		**0.34**	**2.9**	**mg/Kg-dry**	1	11/25/2015 21:19
Manganese	**65**		**0.20**	**2.9**	**mg/Kg-dry**	1	11/25/2015 21:19
Potassium	**330**		**26**	**110**	**mg/Kg-dry**	1	11/30/2015 17:33
Selenium	**4.4**	J	**1.7**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:19
Silver	U		0.29	2.9	mg/Kg-dry	1	11/25/2015 21:19
Zinc	**140**		**0.92**	**5.7**	**mg/Kg-dry**	1	11/25/2015 21:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.7	8.1	mg/Kg-dry	1	11/24/2015 17:09
Sulfate	**330**		**5.2**	**81**	**mg/Kg-dry**	1	11/24/2015 17:09
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**89**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-9
Collection Date: 11/18/2015 03:32 PM

Work Order: 15111129
Lab ID: 15111129-19
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00051**		**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 11:18
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**3.4**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:24
Arsenic	**0.77**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 02:53
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:53
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 02:53
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 02:53
Copper	U		0.20	5.0	µg/L	1	11/24/2015 02:53
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 02:53
Iron	**310**		**10**	**80**	**µg/L**	1	11/24/2015 02:53
Lead	U		0.10	5.0	µg/L	1	11/24/2015 02:53
Manganese	**1.5**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:53
Potassium	**2,000**		**34**	**200**	**µg/L**	1	11/24/2015 02:53
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 02:53
Silver	U		0.10	5.0	µg/L	1	11/24/2015 02:53
Zinc	**5.1**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 02:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 20:32
Sulfate	**5,400**		**140**	**1,000**	**µg/L**	1	11/19/2015 20:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-9
Collection Date: 11/18/2015 03:32 PM

Work Order: 15111129
Lab ID: 15111129-20
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.022**	J	**0.0053**	**0.063**	**mg/Kg-dry**	1	11/26/2015 00:26
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**1,600**		**0.47**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:25
Arsenic	**15**		**0.33**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:25
Barium	**22**		**0.62**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:25
Cadmium	**0.33**	J	**0.21**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:25
Chromium	**6.0**		**0.043**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:25
Copper	**6.4**		**0.14**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:25
Iron	**6,300**		**2.0**	**21**	**mg/Kg-dry**	1	11/25/2015 21:25
Lead	**34**		**0.16**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:25
Manganese	**71**		**0.091**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:25
Potassium	**200**		**12**	**53**	**mg/Kg-dry**	1	11/30/2015 17:39
Selenium	**1.9**	J	**0.80**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:25
Silver	U		0.13	1.3	mg/Kg-dry	1	11/25/2015 21:25
Zinc	**94**		**0.43**	**2.7**	**mg/Kg-dry**	1	11/25/2015 21:25
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.81	3.9	mg/Kg-dry	1	11/24/2015 17:29
Sulfate	**210**		**2.5**	**39**	**mg/Kg-dry**	1	11/24/2015 17:29
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**74**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-10
Collection Date: 11/18/2015 03:19 PM

Work Order: 15111129
Lab ID: 15111129-21
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00036**	J	**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 11:25
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**1.7**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:31
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 02:59
Barium	**24**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:59
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 02:59
Chromium	**0.31**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 02:59
Copper	**3.8**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:59
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 02:59
Iron	**290**		**10**	**80**	**µg/L**	1	11/24/2015 02:59
Lead	U		0.10	5.0	µg/L	1	11/24/2015 02:59
Manganese	**3.5**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 02:59
Potassium	**2,500**		**34**	**200**	**µg/L**	1	11/24/2015 02:59
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 02:59
Silver	U		0.10	5.0	µg/L	1	11/24/2015 02:59
Zinc	**5.8**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 02:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/19/2015 20:52
Sulfate	**6,600**		**140**	**1,000**	**µg/L**	1	11/19/2015 20:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-10
Collection Date: 11/18/2015 03:19 PM

Work Order: 15111129
Lab ID: 15111129-22
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.0047**	J	**0.0023**	**0.028**	**mg/Kg-dry**	1	11/26/2015 00:28
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**900**		**0.23**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:30
Arsenic	**8.1**		**0.16**	**0.65**	**mg/Kg-dry**	1	11/25/2015 21:30
Barium	**12**		**0.30**	**0.65**	**mg/Kg-dry**	1	11/25/2015 21:30
Cadmium	U		0.10	1.3	mg/Kg-dry	1	11/25/2015 21:30
Chromium	**4.3**		**0.021**	**0.65**	**mg/Kg-dry**	1	11/25/2015 21:30
Copper	**3.4**		**0.070**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:30
Iron	**5,000**		**0.99**	**10**	**mg/Kg-dry**	1	11/25/2015 21:30
Lead	**16**		**0.078**	**0.65**	**mg/Kg-dry**	1	11/25/2015 21:30
Manganese	**26**		**0.044**	**0.65**	**mg/Kg-dry**	1	11/25/2015 21:30
Potassium	**97**		**5.8**	**26**	**mg/Kg-dry**	1	11/30/2015 17:44
Selenium	**0.73**	J	**0.39**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:30
Silver	U		0.065	0.65	mg/Kg-dry	1	11/25/2015 21:30
Zinc	**27**		**0.21**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:30
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.39	1.9	mg/Kg-dry	1	11/24/2015 17:50
Sulfate	**30**		**1.2**	**19**	**mg/Kg-dry**	1	11/24/2015 17:50
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**47**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-11
Collection Date: 11/18/2015 03:44 PM

Work Order: 15111129
Lab ID: 15111129-23
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00047**	J	**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 11:40
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**2.4**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:37
Arsenic	**0.76**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 03:05
Barium	**24**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:05
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 03:05
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 03:05
Copper	U		0.20	5.0	µg/L	1	11/24/2015 03:05
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 03:05
Iron	**280**		**10**	**80**	**µg/L**	1	11/24/2015 03:05
Lead	U		0.10	5.0	µg/L	1	11/24/2015 03:05
Manganese	**0.63**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:05
Potassium	**2,000**		**34**	**200**	**µg/L**	1	11/24/2015 03:05
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 03:05
Silver	U		0.10	5.0	µg/L	1	11/24/2015 03:05
Zinc	**4.2**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 03:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 00:54
Sulfate	**5,400**		**140**	**1,000**	**µg/L**	1	11/20/2015 00:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-11
Collection Date: 11/18/2015 03:44 PM

Work Order: 15111129
Lab ID: 15111129-24
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.021**	J	**0.0029**	**0.034**	**mg/Kg-dry**	1	11/26/2015 00:31
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**1,200**		**0.29**	**1.7**	**mg/Kg-dry**	1	11/25/2015 21:36
Arsenic	**5.5**		**0.20**	**0.83**	**mg/Kg-dry**	1	11/25/2015 21:36
Barium	**9.9**		**0.38**	**0.83**	**mg/Kg-dry**	1	11/25/2015 21:36
Cadmium	**0.44**	J	**0.13**	**1.7**	**mg/Kg-dry**	1	11/25/2015 21:36
Chromium	**3.0**		**0.027**	**0.83**	**mg/Kg-dry**	1	11/25/2015 21:36
Copper	**4.3**		**0.089**	**1.7**	**mg/Kg-dry**	1	11/25/2015 21:36
Iron	**3,100**		**1.3**	**13**	**mg/Kg-dry**	1	11/25/2015 21:36
Lead	**15**		**0.099**	**0.83**	**mg/Kg-dry**	1	11/25/2015 21:36
Manganese	**26**		**0.056**	**0.83**	**mg/Kg-dry**	1	11/25/2015 21:36
Potassium	**110**		**7.4**	**33**	**mg/Kg-dry**	1	11/30/2015 17:50
Selenium	**0.67**	J	**0.50**	**1.7**	**mg/Kg-dry**	1	11/25/2015 21:36
Silver	U		0.083	0.83	mg/Kg-dry	1	11/25/2015 21:36
Zinc	**42**		**0.27**	**1.7**	**mg/Kg-dry**	1	11/25/2015 21:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.42	2.0	mg/Kg-dry	1	11/24/2015 18:50
Sulfate	**73**		**1.3**	**20**	**mg/Kg-dry**	1	11/24/2015 18:50
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**52**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 15:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-12
Collection Date: 11/18/2015 01:42 PM

Work Order: 15111129
Lab ID: 15111129-25
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00038**	J	**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 11:48
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**3.0**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:43
Arsenic	**1.6**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 03:12
Barium	**24**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:12
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 03:12
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 03:12
Copper	U		0.20	5.0	µg/L	1	11/24/2015 03:12
Hardness (Calculation)	**140,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 03:12
Iron	**230**		**10**	**80**	**µg/L**	1	11/24/2015 03:12
Lead	U		0.10	5.0	µg/L	1	11/24/2015 03:12
Manganese	**0.59**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:12
Potassium	**2,100**		**34**	**200**	**µg/L**	1	11/24/2015 03:12
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 03:12
Silver	U		0.10	5.0	µg/L	1	11/24/2015 03:12
Zinc	**4.0**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 03:12
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 01:14
Sulfate	**5,900**		**140**	**1,000**	**µg/L**	1	11/20/2015 01:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-12
Collection Date: 11/18/2015 01:42 PM

Work Order: 15111129
Lab ID: 15111129-26
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.16**		**0.012**	**0.14**	**mg/Kg-dry**	1	11/26/2015 00:40
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**4,600**		**1.1**	**6.3**	**mg/Kg-dry**	1	11/25/2015 21:42
Arsenic	**37**		**0.76**	**3.1**	**mg/Kg-dry**	1	11/25/2015 21:42
Barium	**68**		**1.5**	**3.1**	**mg/Kg-dry**	1	11/25/2015 21:42
Cadmium	**1.7**	J	**0.49**	**6.3**	**mg/Kg-dry**	1	11/25/2015 21:42
Chromium	**13**		**0.10**	**3.1**	**mg/Kg-dry**	1	11/25/2015 21:42
Copper	**37**		**0.34**	**6.3**	**mg/Kg-dry**	1	11/25/2015 21:42
Iron	**21,000**		**4.8**	**50**	**mg/Kg-dry**	1	11/25/2015 21:42
Lead	**120**		**0.38**	**3.1**	**mg/Kg-dry**	1	11/25/2015 21:42
Manganese	**210**		**0.21**	**3.1**	**mg/Kg-dry**	1	11/25/2015 21:42
Potassium	**540**		**28**	**130**	**mg/Kg-dry**	1	11/30/2015 17:55
Selenium	**4.8**	J	**1.9**	**6.3**	**mg/Kg-dry**	1	11/25/2015 21:42
Silver	U		0.31	3.1	mg/Kg-dry	1	11/25/2015 21:42
Zinc	**200**		**1.0**	**6.3**	**mg/Kg-dry**	1	11/25/2015 21:42
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.9	8.9	mg/Kg-dry	1	11/24/2015 19:11
Sulfate	**610**		**5.7**	**89**	**mg/Kg-dry**	1	11/24/2015 19:11
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**89**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 17:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-13
Collection Date: 11/18/2015 03:02 PM

Work Order: 15111129
Lab ID: 15111129-27
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00072**		**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 11:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**1.2**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 16:49
Arsenic	**0.87**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 03:18
Barium	**24**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:18
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 03:18
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 03:18
Copper	U		0.20	5.0	µg/L	1	11/24/2015 03:18
Hardness (Calculation)	**140,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 03:18
Iron	**400**		**10**	**80**	**µg/L**	1	11/24/2015 03:18
Lead	U		0.10	5.0	µg/L	1	11/24/2015 03:18
Manganese	**7.1**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:18
Potassium	**2,100**		**34**	**200**	**µg/L**	1	11/24/2015 03:18
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 03:18
Silver	U		0.10	5.0	µg/L	1	11/24/2015 03:18
Zinc	**6.3**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 03:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 01:34
Sulfate	**5,300**		**140**	**1,000**	**µg/L**	1	11/20/2015 01:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-13
Collection Date: 11/18/2015 03:02 PM

Work Order: 15111129
Lab ID: 15111129-28
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.057**	J	**0.0062**	**0.073**	**mg/Kg-dry**	1	11/26/2015 00:42
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**2,100**		**0.67**	**3.8**	**mg/Kg-dry**	1	11/25/2015 21:47
Arsenic	**20**		**0.46**	**1.9**	**mg/Kg-dry**	1	11/25/2015 21:47
Barium	**32**		**0.88**	**1.9**	**mg/Kg-dry**	1	11/25/2015 21:47
Cadmium	U		0.30	3.8	mg/Kg-dry	1	11/25/2015 21:47
Chromium	**8.2**		**0.061**	**1.9**	**mg/Kg-dry**	1	11/25/2015 21:47
Copper	**5.4**		**0.20**	**3.8**	**mg/Kg-dry**	1	11/25/2015 21:47
Iron	**14,000**		**2.9**	**30**	**mg/Kg-dry**	1	11/25/2015 21:47
Lead	**29**		**0.23**	**1.9**	**mg/Kg-dry**	1	11/25/2015 21:47
Manganese	**79**		**0.13**	**1.9**	**mg/Kg-dry**	1	11/25/2015 21:47
Potassium	**170**		**17**	**76**	**mg/Kg-dry**	1	11/30/2015 18:01
Selenium	**2.4**	J	**1.1**	**3.8**	**mg/Kg-dry**	1	11/25/2015 21:47
Silver	U		0.19	1.9	mg/Kg-dry	1	11/25/2015 21:47
Zinc	**67**		**0.61**	**3.8**	**mg/Kg-dry**	1	11/25/2015 21:47
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.1	5.5	mg/Kg-dry	1	11/24/2015 19:31
Sulfate	**310**		**3.5**	**55**	**mg/Kg-dry**	1	11/24/2015 19:31
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**82**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 17:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-14
Collection Date: 11/18/2015 02:40 PM

Work Order: 15111129
Lab ID: 15111129-29
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	U		0.0021	0.025	mg/Kg-dry	1	11/26/2015 00:45
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**420**		**0.22**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:53
Arsenic	**2.8**		**0.15**	**0.63**	**mg/Kg-dry**	1	11/25/2015 21:53
Barium	**3.6**		**0.29**	**0.63**	**mg/Kg-dry**	1	11/25/2015 21:53
Cadmium	U		0.099	1.3	mg/Kg-dry	1	11/25/2015 21:53
Chromium	**1.3**		**0.020**	**0.63**	**mg/Kg-dry**	1	11/25/2015 21:53
Copper	**0.28**	J	**0.069**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:53
Iron	**4,100**		**0.97**	**10**	**mg/Kg-dry**	1	11/25/2015 21:53
Lead	**2.8**		**0.076**	**0.63**	**mg/Kg-dry**	1	11/25/2015 21:53
Manganese	**51**		**0.043**	**0.63**	**mg/Kg-dry**	1	11/25/2015 21:53
Potassium	**80**		**5.7**	**38**	**mg/Kg-dry**	1	11/30/2015 18:06
Selenium	U		0.38	1.3	mg/Kg-dry	1	11/25/2015 21:53
Silver	U		0.063	0.63	mg/Kg-dry	1	11/25/2015 21:53
Zinc	**10**		**0.20**	**1.3**	**mg/Kg-dry**	1	11/25/2015 21:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 11/23/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.36	1.7	mg/Kg-dry	1	11/24/2015 19:51
Sulfate	**23**		**1.1**	**17**	**mg/Kg-dry**	1	11/24/2015 19:51
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**43**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 17:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-14
Collection Date: 11/18/2015 02:40 PM

Work Order: 15111129
Lab ID: 15111129-30
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00079**		**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 12:03
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	U		1.1	10	µg/L	1	11/25/2015 16:55
Arsenic	**1.3**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 03:43
Barium	**24**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:43
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 03:43
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 03:43
Copper	U		0.20	5.0	µg/L	1	11/24/2015 03:43
Hardness (Calculation)	**140,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 03:43
Iron	**210**		**10**	**80**	**µg/L**	1	11/24/2015 03:43
Lead	U		0.10	5.0	µg/L	1	11/24/2015 03:43
Manganese	**1.2**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:43
Potassium	**2,100**		**34**	**200**	**µg/L**	1	11/24/2015 03:43
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 03:43
Silver	U		0.10	5.0	µg/L	1	11/24/2015 03:43
Zinc	**2.6**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 03:43
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 01:54
Sulfate	**6,000**		**140**	**1,000**	**µg/L**	1	11/20/2015 01:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-15
Collection Date: 11/18/2015 02:03 PM

Work Order: 15111129
Lab ID: 15111129-31
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00043**	J	**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 12:18
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**3.1**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 17:02
Arsenic	**1.6**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 03:49
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:49
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 03:49
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 03:49
Copper	U		0.20	5.0	µg/L	1	11/24/2015 03:49
Hardness (Calculation)	**140,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 03:49
Iron	**240**		**10**	**80**	**µg/L**	1	11/24/2015 03:49
Lead	U		0.10	5.0	µg/L	1	11/24/2015 03:49
Manganese	**0.24**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 03:49
Potassium	**2,100**		**34**	**200**	**µg/L**	1	11/24/2015 03:49
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 03:49
Silver	U		0.10	5.0	µg/L	1	11/24/2015 03:49
Zinc	**2.6**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 03:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 02:14
Sulfate	**5,900**		**140**	**1,000**	**µg/L**	1	11/20/2015 02:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-15
Collection Date: 11/18/2015 02:03 PM

Work Order: 15111129
Lab ID: 15111129-32
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.060**	J	**0.0085**	**0.099**	**mg/Kg-dry**	1	11/26/2015 00:47
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**3,300**		**0.86**	**4.9**	**mg/Kg-dry**	1	11/25/2015 22:15
Arsenic	**21**		**0.60**	**2.4**	**mg/Kg-dry**	1	11/25/2015 22:15
Barium	**51**		**1.1**	**2.4**	**mg/Kg-dry**	1	11/25/2015 22:15
Cadmium	U		0.38	4.9	mg/Kg-dry	1	11/25/2015 22:15
Chromium	**12**		**0.078**	**2.4**	**mg/Kg-dry**	1	11/25/2015 22:15
Copper	**14**		**0.26**	**4.9**	**mg/Kg-dry**	1	11/25/2015 22:15
Iron	**12,000**		**3.7**	**39**	**mg/Kg-dry**	1	11/25/2015 22:15
Lead	**57**		**0.29**	**2.4**	**mg/Kg-dry**	1	11/25/2015 22:15
Manganese	**140**		**0.17**	**2.4**	**mg/Kg-dry**	1	11/25/2015 22:15
Potassium	**350**		**22**	**98**	**mg/Kg-dry**	1	11/30/2015 18:12
Selenium	**4.5**	J	**1.5**	**4.9**	**mg/Kg-dry**	1	11/25/2015 22:15
Silver	U		0.24	2.4	mg/Kg-dry	1	11/25/2015 22:15
Zinc	**170**		**0.78**	**4.9**	**mg/Kg-dry**	1	11/25/2015 22:15
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.5	6.9	mg/Kg-dry	1	12/2/2015 15:27
Sulfate	**360**		**4.4**	**69**	**mg/Kg-dry**	1	12/2/2015 15:27
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**86**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 17:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-16
Collection Date: 11/18/2015 02:30 PM

Work Order: 15111129
Lab ID: 15111129-33
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00088**		**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 12:41
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/23/15		Analyst: **RH**
Aluminum	**6.4**	J	**1.1**	**10**	**µg/L**	1	11/25/2015 19:01
Arsenic	**1.1**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 04:08
Barium	**30**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 04:08
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 04:08
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 04:08
Copper	U		0.20	5.0	µg/L	1	11/24/2015 04:08
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 04:08
Iron	**1,500**		**10**	**80**	**µg/L**	1	11/24/2015 04:08
Lead	**0.21**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 04:08
Manganese	**98**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 04:08
Potassium	**1,400**		**34**	**200**	**µg/L**	1	11/24/2015 04:08
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 04:08
Silver	U		0.10	5.0	µg/L	1	11/24/2015 04:08
Zinc	**3.0**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 04:08
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 03:15
Sulfate	**4,100**		**140**	**1,000**	**µg/L**	1	11/20/2015 03:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *03-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-16
Collection Date: 11/18/2015 02:30 PM

Work Order: 15111129
Lab ID: 15111129-34
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/25/15		Analyst: **LR**
Mercury	**0.025**	J	**0.0038**	**0.045**	**mg/Kg-dry**	1	11/26/2015 00:54
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/21/15		Analyst: **JEC**
Aluminum	**950**		**0.31**	**1.7**	**mg/Kg-dry**	1	11/25/2015 22:42
Arsenic	**14**		**0.21**	**0.87**	**mg/Kg-dry**	1	11/25/2015 22:42
Barium	**9.4**		**0.41**	**0.87**	**mg/Kg-dry**	1	11/25/2015 22:42
Cadmium	U		0.14	1.7	mg/Kg-dry	1	11/25/2015 22:42
Chromium	**3.6**		**0.028**	**0.87**	**mg/Kg-dry**	1	11/25/2015 22:42
Copper	**4.7**		**0.094**	**1.7**	**mg/Kg-dry**	1	11/25/2015 22:42
Iron	**9,200**		**1.3**	**14**	**mg/Kg-dry**	1	11/25/2015 22:42
Lead	**27**		**0.10**	**0.87**	**mg/Kg-dry**	1	11/25/2015 22:42
Manganese	**66**		**0.059**	**0.87**	**mg/Kg-dry**	1	11/25/2015 22:42
Potassium	**99**		**7.8**	**35**	**mg/Kg-dry**	1	11/30/2015 18:17
Selenium	**0.92**	J	**0.52**	**1.7**	**mg/Kg-dry**	1	11/25/2015 22:42
Silver	U		0.087	0.87	mg/Kg-dry	1	11/25/2015 22:42
Zinc	**52**		**0.28**	**1.7**	**mg/Kg-dry**	1	11/25/2015 22:42
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.56	2.7	mg/Kg-dry	1	12/2/2015 16:28
Sulfate	**120**		**1.7**	**27**	**mg/Kg-dry**	1	12/2/2015 16:28
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**63**		**0.025**	**0.050**	**% of sample**	1	11/24/2015 17:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 03-Dec-15

Client: ERM, Inc

Work Order: 15111129

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79319** Instrument ID **HG2** Method: **E1631E**

MBLK1	Sample ID: **MBLK-79319-79319**				Units: **ng/L**			Analysis Date: **11/24/2015 08:08 PM**			
Client ID:	Run ID: **HG2_151124A**				SeqNo: **3588444**			Prep Date: **11/24/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.41	0.50	0	0	0		0			J

MBLK1	Sample ID: **MBLK1-79318-79319**				Units: **ng/L**			Analysis Date: **11/24/2015 05:37 PM**			
Client ID:	Run ID: **HG2_151124A**				SeqNo: **3601320**			Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2	Sample ID: **MBLK2-79318-79319**				Units: **ng/L**			Analysis Date: **11/24/2015 06:22 PM**			
Client ID:	Run ID: **HG2_151124A**				SeqNo: **3601321**			Prep Date: **11/24/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3	Sample ID: **MBLK3-79318-79319**				Units: **ng/L**			Analysis Date: **11/24/2015 07:15 PM**			
Client ID:	Run ID: **HG2_151124A**				SeqNo: **3601322**			Prep Date: **11/24/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.38	0.50	0	0	0		0			J

LCS-OPR-END	Sample ID: **OPR-END-79318-79319**				Units: **ng/L**			Analysis Date: **11/24/2015 09:16 PM**			
Client ID:	Run ID: **HG2_151124A**				SeqNo: **3601323**			Prep Date: **11/24/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.36	0.50	5	0	107	77-123	0			

LCS-OPR-START	Sample ID: **OPR-START-79318-79319**				Units: **ng/L**			Analysis Date: **11/24/2015 05:29 PM**			
Client ID:	Run ID: **HG2_151124A**				SeqNo: **3601324**			Prep Date: **11/24/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.22	0.50	5	0	104	77-123	0			

The following samples were analyzed in this batch:

15111129-01A	15111129-02A	15111129-05A
15111129-07A	15111129-08A	15111129-11A
15111129-13A	15111129-15A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79473** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK-79239-79473** Units: **ng/L** Analysis Date: **11/30/2015 12:11 PM**
Client ID: Run ID: **HG2_151130A** SeqNo: **3595096** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK1 Sample ID: **MBLK1-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601641** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601642** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601643** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **15111129-31AMS** Units: **ng/L** Analysis Date: **11/30/2015 12:26 PM**
Client ID: **SW-LL-15** Run ID: **HG2_151130A** SeqNo: **3595098** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.69	0.50	5	0.43	85.2	71-125	0			

MSD Sample ID: **15111129-31AMSD** Units: **ng/L** Analysis Date: **11/30/2015 12:33 PM**
Client ID: **SW-LL-15** Run ID: **HG2_151130A** SeqNo: **3595099** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.45	0.50	5	0.43	100	71-125	4.69	15	24	

LCS-OPR-END Sample ID: **OPR-END-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601644** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.28	0.50	5	0	106	77-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79473** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601645** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.6	0.50	5	0	112	77-123	0			

The following samples were analyzed in this batch:

15111129-17A	15111129-19A	15111129-21A
15111129-23A	15111129-25A	15111129-27A
15111129-30A	15111129-31A	15111129-33A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79488** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-79488-79488** Units: **mg/Kg** Analysis Date: **11/25/2015 11:49 PM**
Client ID: Run ID: **HG1_151125A** SeqNo: **3591490** Prep Date: **11/25/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-79488-79488** Units: **mg/Kg** Analysis Date: **11/25/2015 11:51 PM**
Client ID: Run ID: **HG1_151125A** SeqNo: **3591491** Prep Date: **11/25/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1775	0.020	0.1665	0	107	80-120	0			

MS Sample ID: **15111129-32AMS** Units: **mg/Kg** Analysis Date: **11/26/2015 12:49 A**
Client ID: **Sed-LL-15** Run ID: **HG1_151125A** SeqNo: **3591516** Prep Date: **11/25/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.145	0.015	0.1238	0.00861	110	75-125	0			

MSD Sample ID: **15111129-32AMSD** Units: **mg/Kg** Analysis Date: **11/26/2015 12:52 A**
Client ID: **Sed-LL-15** Run ID: **HG1_151125A** SeqNo: **3591517** Prep Date: **11/25/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1325	0.014	0.1156	0.00861	107	75-125	0.145	8.98	35	

The following samples were analyzed in this batch:

15111129-03A	15111129-04A	15111129-06A
15111129-09A	15111129-10A	15111129-12A
15111129-14A	15111129-16A	15111129-18A
15111129-20A	15111129-22A	15111129-24A
15111129-26A	15111129-28A	15111129-29A
15111129-32A	15111129-34A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79264** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-79264-79264** Units: **mg/L** Analysis Date: **11/25/2015 07:50 PM**
Client ID: Run ID: **ICP2_151125A** SeqNo: **3593089** Prep Date: **11/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.50								
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.06707	0.25								J
Copper	U	0.50								
Iron	U	4.0								
Lead	U	0.25								
Manganese	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

LCS Sample ID: **LCS-79264-79264** Units: **mg/L** Analysis Date: **11/25/2015 07:56 PM**
Client ID: Run ID: **ICP2_151125A** SeqNo: **3593090** Prep Date: **11/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5.322	0.50	5	0	106	80-120	0			
Arsenic	4.983	0.25	5	0	99.7	80-120	0			
Barium	4.959	0.25	5	0	99.2	80-120	0			
Cadmium	4.717	0.50	5	0	94.3	80-120	0			
Chromium	5.342	0.25	5	0	107	80-120	0			
Copper	4.952	0.50	5	0	99	80-120	0			
Iron	494.3	4.0	500	0	98.9	80-120	0			
Lead	5.153	0.25	5	0	103	80-120	0			
Manganese	5.136	0.25	5	0	103	80-120	0			
Selenium	5.255	0.50	5	0	105	80-120	0			
Silver	4.995	0.25	5	0	99.9	80-120	0			
Zinc	5.237	0.50	5	0	105	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79264** Instrument ID **ICP2** Method: **SW846 6010C**

MS Sample ID: **15111129-32AMS** Units: **mg/Kg** Analysis Date: **11/25/2015 10:20 PM**
Client ID: **Sed-LL-15** Run ID: **ICP2_151125A** SeqNo: **3593132** Prep Date: **11/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	694.2	0.71	7.072	475.9	3090	75-125	0			SO
Arsenic	10.11	0.35	7.072	2.949	101	75-125	0			
Barium	14.46	0.35	7.072	7.365	100	75-125	0			
Cadmium	6.596	0.71	7.072	0.02366	92.9	75-125	0			
Chromium	9.442	0.35	7.072	1.775	108	75-125	0			
Copper	9.249	0.71	7.072	2.018	102	75-125	0			
Iron	2451	5.7	707.2	1721	103	75-125	0			
Lead	17.4	0.35	7.072	8.216	130	75-125	0			S
Potassium	750.1	14	707.2	47.78	99.3	75-125	0			
Selenium	7.951	0.71	7.072	0.6401	103	75-125	0			
Silver	6.941	0.35	7.072	0.01414	97.9	75-125	0			
Zinc	30.99	0.71	7.072	24.09	97.5	75-125	0			

MSD Sample ID: **15111129-32AMSD** Units: **mg/Kg** Analysis Date: **11/25/2015 10:26 PM**
Client ID: **Sed-LL-15** Run ID: **ICP2_151125A** SeqNo: **3593133** Prep Date: **11/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	587.5	0.69	6.925	475.9	1610	75-125	694.2	16.6	20	SO
Arsenic	9.743	0.35	6.925	2.949	98.1	75-125	10.11	3.66	20	
Barium	13.47	0.35	6.925	7.365	88.1	75-125	14.46	7.14	20	
Cadmium	6.521	0.69	6.925	0.02366	93.8	75-125	6.596	1.14	20	
Chromium	9.232	0.35	6.925	1.775	108	75-125	9.442	2.24	20	
Copper	8.872	0.69	6.925	2.018	99	75-125	9.249	4.16	20	
Iron	2303	5.5	692.5	1721	84.1	75-125	2451	6.22	20	
Lead	15.56	0.35	6.925	8.216	106	75-125	17.4	11.2	20	
Potassium	744.4	14	692.5	47.78	101	75-125	750.1	0.764	20	
Selenium	7.791	0.69	6.925	0.6401	103	75-125	7.951	2.03	20	
Silver	6.9	0.35	6.925	0.01414	99.4	75-125	6.941	0.589	20	
Zinc	27.69	0.69	6.925	24.09	52	75-125	30.99	11.2	20	S

The following samples were analyzed in this batch:

15111129-03A	15111129-04A	15111129-06A
15111129-09A	15111129-10A	15111129-12A
15111129-14A	15111129-16A	15111129-18A
15111129-20A	15111129-22A	15111129-24A
15111129-26A	15111129-28A	15111129-29A
15111129-32A	15111129-34A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79308** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK	Sample ID: **MBLK-79307-79308**				Units: **mg/L**			Analysis Date: **11/24/2015 01:06 A**		
Client ID:	Run ID: **ICPMS1_151123A**			SeqNo: **3585988**		Prep Date: **11/23/2015**		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK	Sample ID: **MBLK-79308-79308**				Units: **mg/L**			Analysis Date: **11/24/2015 01:18 A**		
Client ID:	Run ID: **ICPMS1_151123A**			SeqNo: **3585990**		Prep Date: **11/23/2015**		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK	Sample ID: **MBLK-79307-79308**				Units: **mg/L**			Analysis Date: **11/25/2015 02:44 PM**		
Client ID:	Run ID: **ICPMS1_151125A**			SeqNo: **3591764**		Prep Date: **11/23/2015**		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79308** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-79308-79308** Units: **mg/L** Analysis Date: **11/25/2015 02:57 PM**
Client ID: Run ID: **ICPMS1_151125A** SeqNo: **3591766** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								

LCS Sample ID: **LCS-79307-79308** Units: **mg/L** Analysis Date: **11/24/2015 01:12 A**
Client ID: Run ID: **ICPMS1_151123A** SeqNo: **3585989** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09928	0.0050	0.1	0	99.3	80-120	0			
Barium	0.09771	0.0050	0.1	0	97.7	80-120	0			
Cadmium	0.1009	0.0020	0.1	0	101	80-120	0			
Chromium	0.09991	0.0050	0.1	0	99.9	80-120	0			
Copper	0.09906	0.0050	0.1	0	99.1	80-120	0			
Iron	9.981	0.080	10	0	99.8	80-120	0			
Lead	0.09954	0.0050	0.1	0	99.5	80-120	0			
Manganese	0.09891	0.0050	0.1	0	98.9	80-120	0			
Potassium	10.27	0.20	10	0	103	80-120	0			
Selenium	0.1026	0.0050	0.1	0	103	80-120	0			
Silver	0.09845	0.0050	0.1	0	98.4	80-120	0			
Zinc	0.1013	0.010	0.1	0	101	80-120	0			

LCS Sample ID: **LCS-79308-79308** Units: **mg/L** Analysis Date: **11/24/2015 01:25 A**
Client ID: Run ID: **ICPMS1_151123A** SeqNo: **3585991** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0996	0.0050	0.1	0	99.6	80-120	0			
Barium	0.09849	0.0050	0.1	0	98.5	80-120	0			
Cadmium	0.101	0.0020	0.1	0	101	80-120	0			
Chromium	0.09996	0.0050	0.1	0	100	80-120	0			
Copper	0.0987	0.0050	0.1	0	98.7	80-120	0			
Iron	9.939	0.080	10	0	99.4	80-120	0			
Lead	0.09958	0.0050	0.1	0	99.6	80-120	0			
Manganese	0.09884	0.0050	0.1	0	98.8	80-120	0			
Potassium	10.13	0.20	10	0	101	80-120	0			
Selenium	0.1009	0.0050	0.1	0	101	80-120	0			
Silver	0.09825	0.0050	0.1	0	98.2	80-120	0			
Zinc	0.1027	0.010	0.1	0	103	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79308** Instrument ID **ICPMS1** Method: **SW6020A**

LCS Sample ID: **LCS-79307-79308** Units: **mg/L** Analysis Date: **11/25/2015 02:51 PM**
Client ID: Run ID: **ICPMS1_151125A** SeqNo: **3591765** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09871	0.010	0.1	0	98.7	80-120	0			

LCS Sample ID: **LCS-79308-79308** Units: **mg/L** Analysis Date: **11/25/2015 03:03 PM**
Client ID: Run ID: **ICPMS1_151125A** SeqNo: **3591767** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09635	0.010	0.1	0	96.4	80-120	0			

MS Sample ID: **15111129-31CMS** Units: **mg/L** Analysis Date: **11/24/2015 03:56 A**
Client ID: **SW-LL-15** Run ID: **ICPMS1_151123A** SeqNo: **3586059** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1024	0.0050	0.1	0.001574	101	75-125	0			
Barium	0.1233	0.0050	0.1	0.02314	100	75-125	0			
Cadmium	0.0993	0.0020	0.1	-0.000039	99.3	75-125	0			
Chromium	0.1007	0.0050	0.1	-8.478E-05	101	75-125	0			
Copper	0.09726	0.0050	0.1	0.0001686	97.1	75-125	0			
Iron	10.18	0.080	10	0.243	99.4	75-125	0			
Lead	0.1018	0.0050	0.1	0.00001502	102	75-125	0			
Manganese	0.09921	0.0050	0.1	0.000239	99	75-125	0			
Potassium	12.42	0.20	10	2.081	103	75-125	0			
Selenium	0.1011	0.0050	0.1	-0.0001315	101	75-125	0			
Silver	0.09527	0.0050	0.1	-3.467E-05	95.3	75-125	0			
Zinc	0.1003	0.010	0.1	0.002558	97.7	75-125	0			

MS Sample ID: **15111129-31CMS** Units: **mg/L** Analysis Date: **11/25/2015 06:49 PM**
Client ID: **SW-LL-15** Run ID: **ICPMS1_151125A** SeqNo: **3591802** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1066	0.010	0.1	0.003133	103	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79308** Instrument ID **ICPMS1** Method: **SW6020A**

MSD Sample ID: **15111129-31CMSD** Units: **mg/L** Analysis Date: **11/24/2015 04:02 A**
Client ID: **SW-LL-15** Run ID: **ICPMS1_151123A** SeqNo: **3586061** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1032	0.0050	0.1	0.001574	102	75-125	0.1024	0.778	20	
Barium	0.1259	0.0050	0.1	0.02314	103	75-125	0.1233	2.09	20	
Cadmium	0.1011	0.0020	0.1	-0.000039	101	75-125	0.0993	1.8	20	
Chromium	0.1011	0.0050	0.1	-8.478E-05	101	75-125	0.1007	0.396	20	
Copper	0.09911	0.0050	0.1	0.0001686	98.9	75-125	0.09726	1.88	20	
Iron	10.2	0.080	10	0.243	99.6	75-125	10.18	0.196	20	
Lead	0.103	0.0050	0.1	0.00001502	103	75-125	0.1018	1.17	20	
Manganese	0.09932	0.0050	0.1	0.000239	99.1	75-125	0.09921	0.111	20	
Potassium	12.48	0.20	10	2.081	104	75-125	12.42	0.482	20	
Selenium	0.1047	0.0050	0.1	-0.0001315	105	75-125	0.1011	3.5	20	
Silver	0.09642	0.0050	0.1	-3.467E-05	96.5	75-125	0.09527	1.2	20	
Zinc	0.1019	0.010	0.1	0.002558	99.3	75-125	0.1003	1.58	20	

MSD Sample ID: **15111129-31CMSD** Units: **mg/L** Analysis Date: **11/25/2015 06:55 PM**
Client ID: **SW-LL-15** Run ID: **ICPMS1_151125A** SeqNo: **3591803** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1079	0.010	0.1	0.003133	105	75-125	0.1066	1.21	20	

The following samples were analyzed in this batch:

15111129-01C	15111129-02C	15111129-05C
15111129-07C	15111129-08C	15111129-11C
15111129-13C	15111129-15C	15111129-17C
15111129-19C	15111129-21C	15111129-23C
15111129-25C	15111129-27C	15111129-30C
15111129-31C	15111129-33C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79391** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **MBLK-79391-79391** Units: **mg/Kg** Analysis Date: **11/24/2015 10:47 A**
Client ID: Run ID: **IC3_151124A** SeqNo: **3590592** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

LCS Sample ID: **LCS-79391-79391** Units: **mg/Kg** Analysis Date: **11/24/2015 11:07 A**
Client ID: Run ID: **IC3_151124A** SeqNo: **3590595** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.69	1.0	20	0	103	80-120	0			
Sulfate	92.02	10	100	0	92	80-120	0			

MS Sample ID: **15111034-16A MS** Units: **mg/Kg** Analysis Date: **11/24/2015 12:26 PM**
Client ID: Run ID: **IC3_151124A** SeqNo: **3590606** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.62	0.99	19.84	0	104	75-125	0			
Sulfate	95.33	9.9	99.21	2.798	93.3	75-125	0			

MSD Sample ID: **15111034-16A MSD** Units: **mg/Kg** Analysis Date: **11/24/2015 12:46 PM**
Client ID: Run ID: **IC3_151124A** SeqNo: **3590607** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.03	1.0	19.92	0	101	75-125	20.62	2.87	20	
Sulfate	95.43	10	99.6	2.798	93	75-125	95.33	0.105	20	

The following samples were analyzed in this batch:

15111129-03A	15111129-04A	15111129-06A
15111129-09A	15111129-10A	15111129-12A
15111129-14A	15111129-16A	15111129-18A
15111129-20A	15111129-22A	15111129-24A
15111129-26A	15111129-28A	15111129-29A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79748** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **MBLK-79748-79748** Units: **mg/Kg** Analysis Date: **12/2/2015 01:46 PM**
Client ID: Run ID: **IC3_151202A** SeqNo: **3600636** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

LCS Sample ID: **LCS-79748-79748** Units: **mg/Kg** Analysis Date: **12/2/2015 02:06 PM**
Client ID: Run ID: **IC3_151202A** SeqNo: **3600637** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.01	1.0	20	0	100	80-120	0			
Sulfate	89.92	10	100	0	89.9	80-120	0			

MS Sample ID: **15111129-32A MS** Units: **mg/Kg** Analysis Date: **12/2/2015 03:47 PM**
Client ID: **Sed-LL-15** Run ID: **IC3_151202A** SeqNo: **3600642** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.45	0.99	19.88	0	103	75-125	0			
Sulfate	147.9	9.9	99.4	51.57	96.9	75-125	0			

MSD Sample ID: **15111129-32A MSD** Units: **mg/Kg** Analysis Date: **12/2/2015 04:07 PM**
Client ID: **Sed-LL-15** Run ID: **IC3_151202A** SeqNo: **3600643** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.9	0.99	19.72	0	101	75-125	20.45	2.75	20	
Sulfate	137.4	9.9	98.62	51.57	87.1	75-125	147.9	7.33	20	

The following samples were analyzed in this batch:

15111129-32A	15111129-34A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176645** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R176645** Units: **mg/L** Analysis Date: **11/19/2015 11:02 A**
Client ID: Run ID: **IC4_151119A** SeqNo: **3578461** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R176645** Units: **mg/L** Analysis Date: **11/19/2015 11:22 A**
Client ID: Run ID: **IC4_151119A** SeqNo: **3578466** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.898	0.10	2	0	94.9	81-116	0			
Sulfate	9.647	1.0	10	0	96.5	85-110	0			

MS Sample ID: **15111034-07C MS** Units: **mg/L** Analysis Date: **11/19/2015 12:23 PM**
Client ID: Run ID: **IC4_151119A** SeqNo: **3578473** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.915	0.10	2	0	95.7	75-125	0			
Sulfate	11.06	1.0	10	1.221	98.4	75-125	0			

MSD Sample ID: **15111034-07C MSD** Units: **mg/L** Analysis Date: **11/19/2015 12:44 PM**
Client ID: Run ID: **IC4_151119A** SeqNo: **3578476** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.916	0.10	2	0	95.8	75-125	1.915	0.0783	20	
Sulfate	11.11	1.0	10	1.221	98.8	75-125	11.06	0.398	20	

The following samples were analyzed in this batch:

15111129-01B	15111129-02B	15111129-05B
15111129-07B	15111129-08B	15111129-11B
15111129-13B	15111129-15B	15111129-17B
15111129-19B	15111129-21B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176725** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R176725** Units: **mg/L** Analysis Date: **11/20/2015 12:13 A**
Client ID: Run ID: **IC3_151119C** SeqNo: **3580444** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R176725** Units: **mg/L** Analysis Date: **11/20/2015 12:33 A**
Client ID: Run ID: **IC3_151119C** SeqNo: **3580446** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.957	0.10	2	0	97.8	81-116	0			
Sulfate	9.261	1.0	10	0	92.6	85-110	0			

MS Sample ID: **15111129-31B MS** Units: **mg/L** Analysis Date: **11/20/2015 02:35 A**
Client ID: **SW-LL-15** Run ID: **IC3_151119C** SeqNo: **3580453** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.973	0.10	2	0	98.6	75-125	0			
Sulfate	16.16	1.0	10	5.919	102	75-125	0			

MSD Sample ID: **15111129-31B MSD** Units: **mg/L** Analysis Date: **11/20/2015 02:55 A**
Client ID: **SW-LL-15** Run ID: **IC3_151119C** SeqNo: **3580454** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.98	0.10	2	0	99	75-125	1.973	0.349	20	
Sulfate	16.8	1.0	10	5.919	109	75-125	16.16	3.88	20	

The following samples were analyzed in this batch:

15111129-23B	15111129-25B	15111129-27B
15111129-30B	15111129-31B	15111129-33B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177034** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R177034** Units: **% of sample** Analysis Date: **11/24/2015 03:27 PM**
Client ID: Run ID: **MOIST_151124A** SeqNo: **3589622** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R177034** Units: **% of sample** Analysis Date: **11/24/2015 03:27 PM**
Client ID: Run ID: **MOIST_151124A** SeqNo: **3589621** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111129-06A DUP** Units: **% of sample** Analysis Date: **11/24/2015 03:27 PM**
Client ID: **Sed-LL-3** Run ID: **MOIST_151124A** SeqNo: **3589610** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	76.03	0.050	0	0	0		75.83	0.263	20	

DUP Sample ID: **15111129-20A DUP** Units: **% of sample** Analysis Date: **11/24/2015 03:27 PM**
Client ID: **Sed-LL-9** Run ID: **MOIST_151124A** SeqNo: **3589618** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	78.9	0.050	0	0	0		74.09	6.29	20	

The following samples were analyzed in this batch:

15111129-03A	15111129-04A	15111129-06A
15111129-09A	15111129-10A	15111129-12A
15111129-14A	15111129-16A	15111129-18A
15111129-20A	15111129-22A	15111129-24A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111129
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177035** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R177035** Units: **% of sample** Analysis Date: **11/24/2015 05:08 PM**
Client ID: Run ID: **MOIST_151124B** SeqNo: **3589651** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R177035** Units: **% of sample** Analysis Date: **11/24/2015 05:08 PM**
Client ID: Run ID: **MOIST_151124B** SeqNo: **3589650** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111129-32A DUP** Units: **% of sample** Analysis Date: **11/24/2015 05:08 PM**
Client ID: **Sed-LL-15** Run ID: **MOIST_151124B** SeqNo: **3589630** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	87.15	0.050	0	0	0		85.67	1.71	20	

DUP Sample ID: **15111242-05A DUP** Units: **% of sample** Analysis Date: **11/24/2015 05:08 PM**
Client ID: Run ID: **MOIST_151124B** SeqNo: **3589639** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	16.35	0.050	0	0	0		16.49	0.853	20	

The following samples were analyzed in this batch:

15111129-26A	15111129-28A	15111129-29A
15111129-32A	15111129-34A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Chain of Custody Form

Page 1 of 4

COC ID: 30509

ALS Environmental

ALS Project Manager:

ALS Work Order #: 1511129

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Metals (Dissolved) in water
Work Order		Project Number		B	Low level mercury in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-LL-1	11-18-15	0834	W	—	3	X	X	X								
2	SW-LL-2		~~1108~~ 1108	W	—	3	X	X	X								
3	Sed-LL-1		0834	Sed	—	1				X	X	X					
4	Sed-LL-2		1108	Sed	—	1				X	X	X					
5	SW-LL-3		1044	W	—	3	X	X	X								
6	Sed-LL-3		1044	Sed	—	1				X	X	X					
7	SW-LL-4		1030	W	—	3	X	X	X								
8	SW-LL-5		1007	W	—	3	X	X	X								
9	Sed-LL-4		1030	Sed	—	1				X	X	X					
10	Sed-LL-5		1007	Sed	—	1				X	X	X					

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☒ Other Standard

Results Due Date:

	Date:	Time:		
Relinquished by:	11-18-15	1715	Received by:	
Relinquished by:	11/19/15	1245	Received by (Laboratory):	
Logged by (Laboratory): KLW	11/19/15	1535	Checked by (Laboratory):	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Notes:

Cooler ID	Cooler Temp
	24°c
	28°c

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

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Chain of Custody Form

COC ID: 30512

ALS Project Manager:

ALS Work Order #: 1511129

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Metals (dissolved) in water
Work Order		Project Number		B	Mercury (low level) in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Metals in ~~soil~~ sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	SW-LL-6	11-18-15	0912	W	—	3	X	X	X								
12	Sed-LL-6		0912	Sed	—	1				X	X	X					
13	SW-LL-7		0940	W	—	3	X	X	X								
14	Sed-LL-7		0940	Sed	—	1				X	X	X					
15	SW-LL-8		0953	W	—	3	X	X	X								
16	Sed-LL-8		0953	Sed	—	1				X	X	X					
17	Dup-LLSW-1		—	W	—	3	X	X	X								
18	Dup-LLSed-1		—	Sed	—	1				X	X	X					
19	SW-LL-9		1532	W	—	3	X	X	X								
20	Sed-LL-9		1532	Sed	—	1				X	X	X					

Sampler(s) Please Print & Sign: Ann Alexander

Shipment Method:

Turnaround Time in Business Days (BD): ☒ Other standard ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date: 11-18-15	Time: 1715	Received by:	Notes:
Relinquished by:	Date: 11/19/15	Time: 1245	Received by (Laboratory):	Cooler ID / Cooler Temp
Logged by (Laboratory): KW	Date: 11/19/15	Time: 1535	Checked by (Laboratory):	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

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ALS Environmental

Chain of Custody Form

COC ID: 30511

ALS Project Manager:

ALS Work Order #: 15111129

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	I-74 W Ogden Dunes	A	Metals (dissolved) in water
Work Order		Project Number		B	Mercury (low level) in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	G	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	MS/MSD
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
21	SW-LL-10	11-18-15	1519	W	~~W~~ MS	3		X	X	X							
22	Sed-LL-10		1519	Sed	~~Sed~~ AD	1					X	X	X				
23	SW-LL-11		1544	W	~~W~~ MS	3		X	X	X							
24	Sed-LL-11		1544	Sed	~~Sed~~ AA	1					X	X	X				
25	SW-LL-12		1342	W	~~W~~ MS	3		X	X	X							
26	Sed-LL-12		1342	Sed	~~Sed~~ AA	1					X	X	X				
27	SW-LL-13		1502	W	~~W~~ AA	3		X	X	X							
28	Sed-LL-13		1502	Sed	~~Sed~~ MS	1					X	X	X				
29	Sed-LL-14		1440	Sed	~~Sed~~ AD	1					X	X	X				
30	SW-LL-14		1440	W	~~W~~ MS	3		X	X	X							

Sampler(s) Please Print & Sign: Aron Alexander

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ Other Standard ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date: 11-18-15	Time: 1715	Received by:	Notes:
Relinquished by:	Date: 11/19/15	Time: 1245	Received by (Laboratory):	
Logged by (Laboratory): KEW	Date: 11/19/15	Time: 1335	Checked by (Laboratory):	

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

Page 4 of 4

COC ID: 30510

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals (dissolved) in water
Work Order		Project Number		B	Mercury (low level) in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	MS/MSD
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
31	SW-LL-15	11-18-15	1403	W	—	6	X	X	X					X			
32	Sed-LL-15		1403	Sed	—	2				X	X	X		X			
33	SW-LL-16		1430	W	—	3	X	X	X								
34	Sed-LL-16		1430	Sed	—	1				X	X	X					
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☒ Other Standard

Results Due Date:

Relinquished by:	Date: 11-18-15	Time: 1715	Received by:	
Relinquished by:	Date: 11/19/15	Time: 1245	Received by (Laboratory):	
Logged by (Laboratory): KEL	Date: 11/19/15	Time: 1535	Checked by (Laboratory):	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **19-Nov-15 12:45**

Work Order: **15111129** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 19-Nov-15 (Date) Reviewed by: Bill Carey (eSignature) 20-Nov-15 (Date)

Matrices: Water & Sediment

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.4, 2.8 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	11/19/2015 3:54:14 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

04-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **15111219**

Dear Marty,

ALS Environmental received 43 samples on 20-Nov-2015 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 82.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 532786

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

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ALS Group USA, Corp

Date: 04-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **15111219**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
15111219-01	SW-RP-1	Water		11/19/2015 13:08	11/20/2015 10:05	☐
15111219-02	Sed-RP-1	Sediment		11/19/2015 13:08	11/20/2015 10:05	☐
15111219-03	SW-RP-2	Water		11/19/2015 11:03	11/20/2015 10:05	☐
15111219-04	Sed-RP-2	Sediment		11/19/2015 11:33	11/20/2015 10:05	☐
15111219-05	SW-RP-3	Water		11/19/2015 12:50	11/20/2015 10:05	☐
15111219-06	Sed-RP-3	Sediment		11/19/2015 12:50	11/20/2015 10:05	☐
15111219-07	SW-RP-4	Water		11/19/2015 13:17	11/20/2015 10:05	☐
15111219-08	Sed-RP-4	Sediment		11/19/2015 13:17	11/20/2015 10:05	☐
15111219-09	SW-RP-5	Water		11/19/2015 13:00	11/20/2015 10:05	☐
15111219-10	Sed-RP-5	Sediment		11/19/2015 13:00	11/20/2015 10:05	☐
15111219-11	SW-RP-6	Water		11/19/2015 11:19	11/20/2015 10:05	☐
15111219-12	Sed-RP-6	Sediment		11/19/2015 11:19	11/20/2015 10:05	☐
15111219-13	SW-RP-7	Water		11/19/2015 09:53	11/20/2015 10:05	☐
15111219-14	Sed-RP-7	Sediment		11/19/2015 09:53	11/20/2015 10:05	☐
15111219-15	SW-RP-8	Water		11/19/2015 13:26	11/20/2015 10:05	☐
15111219-16	Sed-RP-8	Sediment		11/19/2015 13:26	11/20/2015 10:05	☐
15111219-17	SW-RP-9	Water		11/19/2015 13:39	11/20/2015 10:05	☐
15111219-18	Sed-RP-9	Sediment		11/19/2015 13:39	11/20/2015 10:05	☐
15111219-19	SW-RP-10	Water		11/19/2015 09:26	11/20/2015 10:05	☐
15111219-20	Sed-RP-10	Sediment		11/19/2015 09:26	11/20/2015 10:05	☐
15111219-21	DUP-RPSW-1	Water		11/19/2015	11/20/2015 10:05	☐
15111219-22	DUP-RPSed-1	Sediment		11/19/2015	11/20/2015 10:05	☐
15111219-23	EB-2	Water		11/19/2015 08:05	11/20/2015 10:05	☐
15111219-24	SW-RP-11	Water		11/19/2015 11:08	11/20/2015 10:05	☐
15111219-25	Sed-RP-11	Sediment		11/19/2015 11:08	11/20/2015 10:05	☐
15111219-26	SW-RP-12	Water		11/19/2015 10:59	11/20/2015 10:05	☐
15111219-27	Sed-RP-12	Sediment		11/19/2015 10:59	11/20/2015 10:05	☐
15111219-28	SW-RP-13	Water		11/19/2015 09:44	11/20/2015 10:05	☐
15111219-29	Sed-RP-13	Sediment		11/19/2015 09:44	11/20/2015 10:05	☐
15111219-30	SW-RP-14	Water		11/19/2015 09:35	11/20/2015 10:05	☐
15111219-31	Sed-RP-14	Sediment		11/19/2015 09:35	11/20/2015 10:05	☐
15111219-32	SW-RP-15	Water		11/19/2015 09:16	11/20/2015 10:05	☐
15111219-33	Sed-Rp-15	Sediment		11/19/2015 09:16	11/20/2015 10:05	☐
15111219-34	SW-RP-16	Water		11/19/2015 10:50	11/20/2015 10:05	☐
15111219-35	Sed-RP-16	Sediment		11/19/2015 10:50	11/20/2015 10:05	☐
15111219-36	SW-Rp-17	Water		11/19/2015 09:06	11/20/2015 10:05	☐
15111219-37	Sed-RP-17	Sediment		11/19/2015 09:06	11/20/2015 10:05	☐
15111219-38	SW-RP-18	Water		11/19/2015 08:49	11/20/2015 10:05	☐
15111219-39	Sed-RP-18	Sediment		11/19/2015 08:49	11/20/2015 10:05	☐

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **15111219**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
15111219-40	SW-RP-19	Water		11/19/2015 08:40	11/20/2015 10:05	☐
15111219-41	Sed-RP-19	Sediment		11/19/2015 08:40	11/20/2015 10:05	☐
15111219-42	SW-RP-20	Water		11/19/2015 08:23	11/20/2015 10:05	☐
15111219-43	Sed-RP-20	Sediment		11/19/2015 08:23	11/20/2015 10:05	☐

ALS Group USA, Corp

Date: 04-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **15111219**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/L	Micrograms per Liter
mg/Kg-dry	Milligrams per Kilogram Dry Weight

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 15111219

Case Narrative

Samples for the above noted Work Order were received on 11/20/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 79299, Method ICP_6010_S, Sample 15111219-12AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Mn,Zn

Batch 79299, Method ICP_6010_S, Sample 15111219-12AMS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Ca,Cu,Fe,Pb

Batch 79299, Method ICP_6010_S, Sample 15111219-12AMSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Ca,Cu,Fe,Pb

Batch 79299, Method ICP_6010_S, Sample 15111219-12AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Mn,Zn

Wet Chemistry:
Batch R177218, Method IC_9056_W, Sample 15111219-11B MS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Sulfate

Batch R177218, Method IC_9056_W, Sample 15111219-11B MSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Sulfate

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-1
Collection Date: 11/19/2015 01:08 PM

Work Order: 15111219
Lab ID: 15111219-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00042**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 09:53
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**49**		**1.1**	**10**	**µg/L**	1	11/24/2015 19:23
Arsenic	**0.89**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 19:23
Barium	**28**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:23
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 19:23
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 19:23
Copper	**1.2**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:23
Hardness (Calculation)	**150,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 19:23
Iron	U		10	80	µg/L	1	11/24/2015 19:23
Lead	U		0.10	5.0	µg/L	1	11/24/2015 19:23
Manganese	**0.28**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:23
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 19:23
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 19:23
Silver	U		0.10	5.0	µg/L	1	11/24/2015 19:23
Zinc	**5.0**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 19:23
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 16:14
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/29/2015 21:42

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-1
Collection Date: 11/19/2015 01:08 PM

Work Order: 15111219
Lab ID: 15111219-02
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.0052**	J	**0.0014**	**0.017**	**mg/Kg-dry**	1	11/30/2015 01:27
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**650**		**0.16**	**0.88**	**mg/Kg-dry**	1	11/30/2015 21:21
Arsenic	**1.0**		**0.11**	**0.44**	**mg/Kg-dry**	1	11/30/2015 21:21
Barium	**3.6**		**0.20**	**0.44**	**mg/Kg-dry**	1	11/30/2015 21:21
Cadmium	U		0.069	0.88	mg/Kg-dry	1	11/30/2015 21:21
Chromium	**1.6**		**0.014**	**0.44**	**mg/Kg-dry**	1	11/30/2015 21:21
Copper	**1.0**		**0.048**	**0.88**	**mg/Kg-dry**	1	11/30/2015 21:21
Iron	**1,600**		**0.67**	**7.0**	**mg/Kg-dry**	1	11/30/2015 21:21
Lead	**1.4**		**0.053**	**0.44**	**mg/Kg-dry**	1	11/30/2015 21:21
Manganese	**17**		**0.030**	**0.44**	**mg/Kg-dry**	1	11/30/2015 21:21
Potassium	**92**		**3.9**	**18**	**mg/Kg-dry**	1	11/30/2015 21:21
Selenium	U		0.26	0.88	mg/Kg-dry	1	11/30/2015 21:21
Silver	U		0.044	0.44	mg/Kg-dry	1	11/30/2015 21:21
Zinc	**9.3**		**0.14**	**0.88**	**mg/Kg-dry**	1	11/30/2015 21:21
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.28	1.4	mg/Kg-dry	1	12/2/2015 16:48
Sulfate	**49**		**0.87**	**14**	**mg/Kg-dry**	1	12/2/2015 16:48
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**27**		**0.025**	**0.050**	**% of sample**	1	11/25/2015

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-2
Collection Date: 11/19/2015 11:03 AM

Work Order: 15111219
Lab ID: 15111219-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00034**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 10:01
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**38**		**1.1**	**10**	**µg/L**	1	11/24/2015 19:28
Arsenic	**0.85**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 19:28
Barium	**27**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:28
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 19:28
Chromium	**0.13**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 19:28
Copper	**1.1**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:28
Hardness (Calculation)	**150,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 19:28
Iron	U		10	80	µg/L	1	11/24/2015 19:28
Lead	U		0.10	5.0	µg/L	1	11/24/2015 19:28
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 19:28
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 19:28
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 19:28
Silver	U		0.10	5.0	µg/L	1	11/24/2015 19:28
Zinc	**6.9**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 19:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 16:34
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/29/2015 22:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-2
Collection Date: 11/19/2015 11:33 AM

Work Order: 15111219
Lab ID: 15111219-04
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.56**		**0.0058**	**0.068**	**mg/Kg-dry**	1	11/30/2015 01:29
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**21,000**		**0.68**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Arsenic	**19**		**0.47**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Barium	**53**		**0.90**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Cadmium	U		0.30	3.9	mg/Kg-dry	1	11/30/2015 21:27
Chromium	**31**		**0.062**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Copper	**76**		**0.21**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Iron	**27,000**		**3.0**	**31**	**mg/Kg-dry**	1	11/30/2015 21:27
Lead	**46**		**0.23**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Manganese	**180**		**0.13**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Potassium	**1,000**		**17**	**77**	**mg/Kg-dry**	1	11/30/2015 21:27
Selenium	**5.0**		**1.2**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:27
Silver	U		0.19	1.9	mg/Kg-dry	1	11/30/2015 21:27
Zinc	**750**		**0.62**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:27
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.1	5.3	mg/Kg-dry	1	12/2/2015 17:49
Sulfate	**680**		**3.4**	**53**	**mg/Kg-dry**	1	12/2/2015 17:49
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**81**		**0.025**	**0.050**	**% of sample**	1	11/25/2015

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-3
Collection Date: 11/19/2015 12:50 PM

Work Order: 15111219
Lab ID: 15111219-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00055**		**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 10:09
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**43**		**1.1**	**10**	**µg/L**	1	11/24/2015 19:33
Arsenic	**0.84**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 19:33
Barium	**27**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:33
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 19:33
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 19:33
Copper	**1.2**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:33
Hardness (Calculation)	**150,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 19:33
Iron	U		10	80	µg/L	1	11/24/2015 19:33
Lead	U		0.10	5.0	µg/L	1	11/24/2015 19:33
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 19:33
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 19:33
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 19:33
Silver	U		0.10	5.0	µg/L	1	11/24/2015 19:33
Zinc	**4.8**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 19:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 16:54
Sulfate	**25,000**		**280**	**2,000**	**µg/L**	2	11/29/2015 22:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-3
Collection Date: 11/19/2015 12:50 PM

Work Order: 15111219
Lab ID: 15111219-06
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.29**		**0.0041**	**0.048**	**mg/Kg-dry**	1	11/30/2015 01:31
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**8,000**		**0.69**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:32
Arsenic	**15**		**0.48**	**2.0**	**mg/Kg-dry**	1	11/30/2015 21:32
Barium	**48**		**0.91**	**2.0**	**mg/Kg-dry**	1	11/30/2015 21:32
Cadmium	**0.66**	J	**0.31**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:32
Chromium	**20**		**0.063**	**2.0**	**mg/Kg-dry**	1	11/30/2015 21:32
Copper	**32**		**0.21**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:32
Iron	**15,000**		**3.0**	**31**	**mg/Kg-dry**	1	11/30/2015 21:32
Lead	**97**		**0.24**	**2.0**	**mg/Kg-dry**	1	11/30/2015 21:32
Manganese	**140**		**0.13**	**2.0**	**mg/Kg-dry**	1	11/30/2015 21:32
Potassium	**460**		**18**	**78**	**mg/Kg-dry**	1	11/30/2015 21:32
Selenium	**3.8**	J	**1.2**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:32
Silver	U		0.20	2.0	mg/Kg-dry	1	11/30/2015 21:32
Zinc	**450**		**0.63**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:32
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.2	5.6	mg/Kg-dry	1	12/3/2015 11:38
Sulfate	**410**		**3.6**	**56**	**mg/Kg-dry**	1	12/3/2015 11:38
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**82**		**0.025**	**0.050**	**% of sample**	1	11/25/2015

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-4
Collection Date: 11/19/2015 01:17 PM

Work Order: 15111219
Lab ID: 15111219-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00069**		**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 10:16
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**68**		**1.1**	**10**	**µg/L**	1	11/24/2015 19:39
Arsenic	**0.88**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 19:39
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:39
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 19:39
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 19:39
Copper	**1.3**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:39
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 19:39
Iron	U		10	80	µg/L	1	11/24/2015 19:39
Lead	U		0.10	5.0	µg/L	1	11/24/2015 19:39
Manganese	**0.35**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:39
Potassium	**2,700**		**34**	**200**	**µg/L**	1	11/24/2015 19:39
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 19:39
Silver	U		0.10	5.0	µg/L	1	11/24/2015 19:39
Zinc	**2.9**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 19:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 17:14
Sulfate	**27,000**		**280**	**2,000**	**µg/L**	2	11/29/2015 22:43

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-4
Collection Date: 11/19/2015 01:17 PM

Work Order: 15111219
Lab ID: 15111219-08
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.56**		**0.0047**	**0.055**	**mg/Kg-dry**	1	11/30/2015 01:33
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**26,000**		**0.68**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Arsenic	**16**		**0.47**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Barium	**42**		**0.90**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Cadmium	**0.47**	J	**0.30**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Chromium	**29**		**0.062**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Copper	**89**		**0.21**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Iron	**21,000**		**3.0**	**31**	**mg/Kg-dry**	1	11/30/2015 21:38
Lead	**55**		**0.23**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Manganese	**170**		**0.13**	**1.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Potassium	**680**		**17**	**77**	**mg/Kg-dry**	1	11/30/2015 21:38
Selenium	**3.5**	J	**1.2**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:38
Silver	U		0.19	1.9	mg/Kg-dry	1	11/30/2015 21:38
Zinc	**480**		**0.62**	**3.9**	**mg/Kg-dry**	1	11/30/2015 21:38
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.3	6.0	mg/Kg-dry	1	12/3/2015 11:58
Sulfate	**270**		**3.8**	**60**	**mg/Kg-dry**	1	12/3/2015 11:58
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**84**		**0.025**	**0.050**	**% of sample**	1	11/25/2015

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-5
Collection Date: 11/19/2015 01:00 PM

Work Order: 15111219
Lab ID: 15111219-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00029**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 10:24
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**41**		**1.1**	**10**	**µg/L**	1	11/24/2015 19:44
Arsenic	**0.73**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 19:44
Barium	**28**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:44
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 19:44
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 19:44
Copper	**0.90**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:44
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 19:44
Iron	**15**	J	**10**	**80**	**µg/L**	1	11/24/2015 19:44
Lead	U		0.10	5.0	µg/L	1	11/24/2015 19:44
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 19:44
Potassium	**2,700**		**34**	**200**	**µg/L**	1	11/24/2015 19:44
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 19:44
Silver	U		0.10	5.0	µg/L	1	11/24/2015 19:44
Zinc	**5.5**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 19:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 17:34
Sulfate	**27,000**		**280**	**2,000**	**µg/L**	2	11/29/2015 23:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-5
Collection Date: 11/19/2015 01:00 PM

Work Order: 15111219
Lab ID: 15111219-10
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.34**		**0.0056**	**0.066**	**mg/Kg-dry**	1	11/30/2015 01:36
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**13,000**		**1.1**	**6.1**	**mg/Kg-dry**	1	11/30/2015 21:43
Arsenic	**21**		**0.74**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:43
Barium	**53**		**1.4**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:43
Cadmium	**0.62**	J	**0.47**	**6.1**	**mg/Kg-dry**	1	11/30/2015 21:43
Chromium	**20**		**0.097**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:43
Copper	**38**		**0.33**	**6.1**	**mg/Kg-dry**	1	11/30/2015 21:43
Iron	**17,000**		**4.6**	**48**	**mg/Kg-dry**	1	11/30/2015 21:43
Lead	**88**		**0.36**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:43
Manganese	**240**		**0.21**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:43
Potassium	**520**		**27**	**120**	**mg/Kg-dry**	1	11/30/2015 21:43
Selenium	**4.5**	J	**1.8**	**6.1**	**mg/Kg-dry**	1	11/30/2015 21:43
Silver	U		0.30	3.0	mg/Kg-dry	1	11/30/2015 21:43
Zinc	**450**		**0.97**	**6.1**	**mg/Kg-dry**	1	11/30/2015 21:43
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	**8.0**	J	**1.8**	**8.5**	**mg/Kg-dry**	1	12/3/2015 12:19
Sulfate	**300**		**11**	**170**	**mg/Kg-dry**	2	12/3/2015 20:04
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**88**		**0.025**	**0.050**	**% of sample**	1	11/25/2015

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-6
Collection Date: 11/19/2015 11:19 AM

Work Order: 15111219
Lab ID: 15111219-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00036**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 10:39
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**35**		**1.1**	**10**	**µg/L**	1	11/24/2015 19:49
Arsenic	**0.88**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 19:49
Barium	**27**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:49
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 19:49
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 19:49
Copper	**1.1**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 19:49
Hardness (Calculation)	**150,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 19:49
Iron	U		10	80	µg/L	1	11/24/2015 19:49
Lead	U		0.10	5.0	µg/L	1	11/24/2015 19:49
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 19:49
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 19:49
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 19:49
Silver	U		0.10	5.0	µg/L	1	11/24/2015 19:49
Zinc	**4.8**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 19:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 17:55
Sulfate	**27,000**		**420**	**3,000**	**µg/L**	3	11/29/2015 23:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-6
Collection Date: 11/19/2015 11:19 AM

Work Order: 15111219
Lab ID: 15111219-12
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.047**	J	**0.0044**	**0.051**	**mg/Kg-dry**	1	11/30/2015 01:38
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**5,900**		**0.53**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:49
Arsenic	**12**		**0.37**	**1.5**	**mg/Kg-dry**	1	11/30/2015 21:49
Barium	**34**		**0.70**	**1.5**	**mg/Kg-dry**	1	11/30/2015 21:49
Cadmium	U		0.23	3.0	mg/Kg-dry	1	11/30/2015 21:49
Chromium	**13**		**0.048**	**1.5**	**mg/Kg-dry**	1	11/30/2015 21:49
Copper	**18**		**0.16**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:49
Iron	**11,000**		**2.3**	**24**	**mg/Kg-dry**	1	11/30/2015 21:49
Lead	**25**		**0.18**	**1.5**	**mg/Kg-dry**	1	11/30/2015 21:49
Manganese	**140**		**0.10**	**1.5**	**mg/Kg-dry**	1	11/30/2015 21:49
Potassium	**370**		**13**	**60**	**mg/Kg-dry**	1	11/30/2015 21:49
Selenium	**3.3**		**0.90**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:49
Silver	U		0.15	1.5	mg/Kg-dry	1	11/30/2015 21:49
Zinc	**150**		**0.48**	**3.0**	**mg/Kg-dry**	1	11/30/2015 21:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	**4.0**	J	**0.89**	**4.2**	**mg/Kg-dry**	1	12/3/2015 12:39
Sulfate	**960**		**14**	**210**	**mg/Kg-dry**	5	12/3/2015 20:24
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**76**		**0.025**	**0.050**	**% of sample**	1	11/25/2015

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-7
Collection Date: 11/19/2015 09:53 AM

Work Order: 15111219
Lab ID: 15111219-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00024**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 11:01
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**33**		**1.1**	**10**	**µg/L**	1	11/24/2015 20:04
Arsenic	**0.87**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 20:04
Barium	**28**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:04
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 20:04
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 20:04
Copper	**0.97**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:04
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 20:04
Iron	**14**	J	**10**	**80**	**µg/L**	1	11/24/2015 20:04
Lead	U		0.10	5.0	µg/L	1	11/24/2015 20:04
Manganese	**0.43**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:04
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 20:04
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 20:04
Silver	U		0.10	5.0	µg/L	1	11/24/2015 20:04
Zinc	**5.5**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 20:04
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 19:36
Sulfate	**27,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 00:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-7
Collection Date: 11/19/2015 09:53 AM

Work Order: 15111219
Lab ID: 15111219-14
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.35**		**0.0046**	**0.054**	**mg/Kg-dry**	1	11/30/2015 01:51
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**4,900**		**0.66**	**3.8**	**mg/Kg-dry**	1	11/30/2015 22:33
Arsenic	**8.9**		**0.46**	**1.9**	**mg/Kg-dry**	1	11/30/2015 22:33
Barium	**24**		**0.87**	**1.9**	**mg/Kg-dry**	1	11/30/2015 22:33
Cadmium	U		0.29	3.8	mg/Kg-dry	1	11/30/2015 22:33
Chromium	**10**		**0.060**	**1.9**	**mg/Kg-dry**	1	11/30/2015 22:33
Copper	**9.2**		**0.20**	**3.8**	**mg/Kg-dry**	1	11/30/2015 22:33
Iron	**6,400**		**2.9**	**30**	**mg/Kg-dry**	1	11/30/2015 22:33
Lead	**13**		**0.23**	**1.9**	**mg/Kg-dry**	1	11/30/2015 22:33
Manganese	**220**		**0.13**	**1.9**	**mg/Kg-dry**	1	11/30/2015 22:33
Potassium	**250**		**17**	**75**	**mg/Kg-dry**	1	11/30/2015 22:33
Selenium	**2.8**	J	**1.1**	**3.8**	**mg/Kg-dry**	1	11/30/2015 22:33
Silver	U		0.19	1.9	mg/Kg-dry	1	11/30/2015 22:33
Zinc	**75**		**0.60**	**3.8**	**mg/Kg-dry**	1	11/30/2015 22:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.0	4.8	mg/Kg-dry	1	12/3/2015 13:39
Sulfate	**350**		**3.1**	**48**	**mg/Kg-dry**	1	12/3/2015 13:39
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**80**		**0.025**	**0.050**	**% of sample**	1	11/25/2015

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-8
Collection Date: 11/19/2015 01:26 PM

Work Order: 15111219
Lab ID: 15111219-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00025**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 11:09
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**34**		**1.1**	**10**	**µg/L**	1	11/24/2015 20:24
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 20:24
Barium	**28**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:24
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 20:24
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 20:24
Copper	**0.87**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:24
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 20:24
Iron	**13**	J	**10**	**80**	**µg/L**	1	11/24/2015 20:24
Lead	U		0.10	5.0	µg/L	1	11/24/2015 20:24
Manganese	**0.25**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:24
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 20:24
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 20:24
Silver	U		0.10	5.0	µg/L	1	11/24/2015 20:24
Zinc	**6.3**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 20:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 19:56
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 00:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-8
Collection Date: 11/19/2015 01:26 PM

Work Order: 15111219
Lab ID: 15111219-16
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.20**		**0.011**	**0.12**	**mg/Kg-dry**	1	11/30/2015 01:54
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**39,000**		**1.2**	**6.6**	**mg/Kg-dry**	1	11/30/2015 22:38
Arsenic	**37**		**0.80**	**3.3**	**mg/Kg-dry**	1	11/30/2015 22:38
Barium	**77**		**1.5**	**3.3**	**mg/Kg-dry**	1	11/30/2015 22:38
Cadmium	U		0.51	6.6	mg/Kg-dry	1	11/30/2015 22:38
Chromium	**29**		**0.11**	**3.3**	**mg/Kg-dry**	1	11/30/2015 22:38
Copper	**47**		**0.36**	**6.6**	**mg/Kg-dry**	1	11/30/2015 22:38
Iron	**28,000**		**5.0**	**53**	**mg/Kg-dry**	1	11/30/2015 22:38
Lead	**49**		**0.40**	**3.3**	**mg/Kg-dry**	1	11/30/2015 22:38
Manganese	**340**		**0.22**	**3.3**	**mg/Kg-dry**	1	11/30/2015 22:38
Potassium	**1,700**		**29**	**130**	**mg/Kg-dry**	1	11/30/2015 22:38
Selenium	**5.3**	J	**2.0**	**6.6**	**mg/Kg-dry**	1	11/30/2015 22:38
Silver	U		0.33	3.3	mg/Kg-dry	1	11/30/2015 22:38
Zinc	**360**		**1.1**	**6.6**	**mg/Kg-dry**	1	11/30/2015 22:38
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		2.1	9.8	mg/Kg-dry	1	12/3/2015 14:00
Sulfate	**420**		**6.3**	**98**	**mg/Kg-dry**	1	12/3/2015 14:00
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**90**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-9
Collection Date: 11/19/2015 01:39 PM

Work Order: 15111219
Lab ID: 15111219-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00032**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 11:24
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**60**		**1.1**	**10**	**µg/L**	1	11/24/2015 20:39
Arsenic	**0.80**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 20:39
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:39
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 20:39
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 20:39
Copper	**0.82**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:39
Hardness (Calculation)	**150,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 20:39
Iron	**40**	J	**10**	**80**	**µg/L**	1	11/24/2015 20:39
Lead	U		0.10	5.0	µg/L	1	11/24/2015 20:39
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 20:39
Potassium	**2,500**		**34**	**200**	**µg/L**	1	11/24/2015 20:39
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 20:39
Silver	U		0.10	5.0	µg/L	1	11/24/2015 20:39
Zinc	**4.3**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 20:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 20:16
Sulfate	**25,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 01:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-9
Collection Date: 11/19/2015 01:39 PM

Work Order: 15111219
Lab ID: 15111219-18
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.24**		**0.0066**	**0.078**	**mg/Kg-dry**	1	11/30/2015 01:56
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**52,000**		**0.82**	**4.6**	**mg/Kg-dry**	1	11/30/2015 22:44
Arsenic	**29**		**0.57**	**2.3**	**mg/Kg-dry**	1	11/30/2015 22:44
Barium	**70**		**1.1**	**2.3**	**mg/Kg-dry**	1	11/30/2015 22:44
Cadmium	U		0.36	4.6	mg/Kg-dry	1	11/30/2015 22:44
Chromium	**28**		**0.074**	**2.3**	**mg/Kg-dry**	1	11/30/2015 22:44
Copper	**38**		**0.25**	**4.6**	**mg/Kg-dry**	1	11/30/2015 22:44
Iron	**24,000**		**3.5**	**37**	**mg/Kg-dry**	1	11/30/2015 22:44
Lead	**32**		**0.28**	**2.3**	**mg/Kg-dry**	1	11/30/2015 22:44
Manganese	**250**		**0.16**	**2.3**	**mg/Kg-dry**	1	11/30/2015 22:44
Potassium	**1,500**		**21**	**93**	**mg/Kg-dry**	1	11/30/2015 22:44
Selenium	**3.8**	J	**1.4**	**4.6**	**mg/Kg-dry**	1	11/30/2015 22:44
Silver	U		0.23	2.3	mg/Kg-dry	1	11/30/2015 22:44
Zinc	**520**		**0.74**	**4.6**	**mg/Kg-dry**	1	11/30/2015 22:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.5	7.0	mg/Kg-dry	1	12/3/2015 15:00
Sulfate	**370**		**4.5**	**70**	**mg/Kg-dry**	1	12/3/2015 15:00
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**86**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-10
Collection Date: 11/19/2015 09:26 AM

Work Order: 15111219
Lab ID: 15111219-19
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00022**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 11:32
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**40**		**1.1**	**10**	**µg/L**	1	11/24/2015 20:45
Arsenic	**0.81**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 20:45
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:45
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 20:45
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 20:45
Copper	**0.86**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:45
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 20:45
Iron	**37**	J	**10**	**80**	**µg/L**	1	11/24/2015 20:45
Lead	U		0.10	5.0	µg/L	1	11/24/2015 20:45
Manganese	**1.4**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:45
Potassium	**2,700**		**34**	**200**	**µg/L**	1	11/24/2015 20:45
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 20:45
Silver	U		0.10	5.0	µg/L	1	11/24/2015 20:45
Zinc	**5.5**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 20:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 20:37
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 02:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-10
Collection Date: 11/19/2015 09:26 AM

Work Order: 15111219
Lab ID: 15111219-20
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.087**		**0.0018**	**0.021**	**mg/Kg-dry**	1	11/30/2015 01:58
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**4,300**		**0.26**	**1.5**	**mg/Kg-dry**	1	11/30/2015 22:49
Arsenic	**25**		**0.18**	**0.73**	**mg/Kg-dry**	1	11/30/2015 22:49
Barium	**68**		**0.34**	**0.73**	**mg/Kg-dry**	1	11/30/2015 22:49
Cadmium	U		0.11	1.5	mg/Kg-dry	1	11/30/2015 22:49
Chromium	**32**		**0.023**	**0.73**	**mg/Kg-dry**	1	11/30/2015 22:49
Copper	**24**		**0.079**	**1.5**	**mg/Kg-dry**	1	11/30/2015 22:49
Iron	**61,000**		**11**	**120**	**mg/Kg-dry**	10	12/1/2015 10:58
Lead	**28**		**0.088**	**0.73**	**mg/Kg-dry**	1	11/30/2015 22:49
Manganese	**480**		**0.050**	**0.73**	**mg/Kg-dry**	1	11/30/2015 22:49
Potassium	**840**		**6.5**	**29**	**mg/Kg-dry**	1	11/30/2015 22:49
Selenium	**2.2**		**0.44**	**1.5**	**mg/Kg-dry**	1	11/30/2015 22:49
Silver	**2.0**		**0.073**	**0.73**	**mg/Kg-dry**	1	11/30/2015 22:49
Zinc	**93**		**0.23**	**1.5**	**mg/Kg-dry**	1	11/30/2015 22:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.47	2.2	mg/Kg-dry	1	12/3/2015 15:21
Sulfate	**18**	J	**1.4**	**22**	**mg/Kg-dry**	1	12/3/2015 15:21
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**56**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-RPSW-1
Collection Date: 11/19/2015

Work Order: 15111219
Lab ID: 15111219-21
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00023**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 11:39
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**33**		**1.1**	**10**	**µg/L**	1	11/24/2015 20:50
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 20:50
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:50
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 20:50
Chromium	**0.12**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 20:50
Copper	**0.91**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:50
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 20:50
Iron	**12**	J	**10**	**80**	**µg/L**	1	11/24/2015 20:50
Lead	U		0.10	5.0	µg/L	1	11/24/2015 20:50
Manganese	**0.33**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:50
Potassium	**2,700**		**34**	**200**	**µg/L**	1	11/24/2015 20:50
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 20:50
Silver	U		0.10	5.0	µg/L	1	11/24/2015 20:50
Zinc	**6.8**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 20:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/20/2015 20:57
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 02:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-RPSed-1
Collection Date: 11/19/2015

Work Order: 15111219
Lab ID: 15111219-22
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.35**		**0.0025**	**0.029**	**mg/Kg-dry**	1	11/30/2015 02:00
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**6,400**		**0.38**	**2.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Arsenic	**17**		**0.26**	**1.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Barium	**50**		**0.50**	**1.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Cadmium	U		0.17	2.1	mg/Kg-dry	1	11/30/2015 22:55
Chromium	**12**		**0.034**	**1.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Copper	**12**		**0.12**	**2.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Iron	**34,000**		**1.6**	**17**	**mg/Kg-dry**	1	11/30/2015 22:55
Lead	**9.0**		**0.13**	**1.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Manganese	**800**		**0.073**	**1.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Potassium	**260**		**9.5**	**43**	**mg/Kg-dry**	1	11/30/2015 22:55
Selenium	**1.8**	J	**0.64**	**2.1**	**mg/Kg-dry**	1	11/30/2015 22:55
Silver	U		0.11	1.1	mg/Kg-dry	1	11/30/2015 22:55
Zinc	**62**		**0.34**	**2.1**	**mg/Kg-dry**	1	11/30/2015 22:55
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.64	3.1	mg/Kg-dry	1	12/3/2015 15:41
Sulfate	**100**		**2.0**	**31**	**mg/Kg-dry**	1	12/3/2015 15:41
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**67**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: EB-2
Collection Date: 11/19/2015 08:05 AM

Work Order: 15111219
Lab ID: 15111219-23
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	11/25/2015 11:47
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	U		1.1	10	µg/L	1	11/24/2015 20:55
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 20:55
Barium	**0.26**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:55
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 20:55
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 20:55
Copper	**2.0**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 20:55
Hardness (Calculation)	U		1,000	2,000	µg/L	1	11/24/2015 20:55
Iron	U		10	80	µg/L	1	11/24/2015 20:55
Lead	U		0.10	5.0	µg/L	1	11/24/2015 20:55
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 20:55
Potassium	U		34	200	µg/L	1	11/24/2015 20:55
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 20:55
Silver	U		0.10	5.0	µg/L	1	11/24/2015 20:55
Zinc	**9.3**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 20:55
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**110**		**27**	**100**	**µg/L**	1	11/21/2015 01:24
Sulfate	U		140	1,000	µg/L	1	11/21/2015 01:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-11
Collection Date: 11/19/2015 11:08 AM

Work Order: 15111219
Lab ID: 15111219-24
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00025**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 12:02
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**40**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:00
Arsenic	**0.78**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 21:00
Barium	**30**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:00
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:00
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 21:00
Copper	**0.83**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:00
Hardness (Calculation)	**180,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:00
Iron	**44**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:00
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:00
Manganese	**0.23**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:00
Potassium	**2,800**		**34**	**200**	**µg/L**	1	11/24/2015 21:00
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:00
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:00
Zinc	**3.0**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 02:24
Sulfate	**25,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 02:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-11
Collection Date: 11/19/2015 11:08 AM

Work Order: 15111219
Lab ID: 15111219-25
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.10**		**0.0046**	**0.055**	**mg/Kg-dry**	1	11/30/2015 02:02
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**65,000**		**0.51**	**2.9**	**mg/Kg-dry**	1	11/30/2015 23:00
Arsenic	**33**		**0.36**	**1.5**	**mg/Kg-dry**	1	11/30/2015 23:00
Barium	**84**		**0.68**	**1.5**	**mg/Kg-dry**	1	11/30/2015 23:00
Cadmium	U		0.23	2.9	mg/Kg-dry	1	11/30/2015 23:00
Chromium	**25**		**0.047**	**1.5**	**mg/Kg-dry**	1	11/30/2015 23:00
Copper	**32**		**0.16**	**2.9**	**mg/Kg-dry**	1	11/30/2015 23:00
Iron	**19,000**		**2.2**	**23**	**mg/Kg-dry**	1	11/30/2015 23:00
Lead	**22**		**0.17**	**1.5**	**mg/Kg-dry**	1	11/30/2015 23:00
Manganese	**310**		**0.099**	**1.5**	**mg/Kg-dry**	1	11/30/2015 23:00
Potassium	**1,500**		**13**	**58**	**mg/Kg-dry**	1	11/30/2015 23:00
Selenium	**2.5**	J	**0.87**	**2.9**	**mg/Kg-dry**	1	12/1/2015 11:03
Silver	U		0.15	1.5	mg/Kg-dry	1	11/30/2015 23:00
Zinc	**170**		**0.47**	**2.9**	**mg/Kg-dry**	1	11/30/2015 23:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.94	4.5	mg/Kg-dry	1	12/3/2015 16:01
Sulfate	**410**		**2.9**	**45**	**mg/Kg-dry**	1	12/3/2015 16:01
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**78**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-12
Collection Date: 11/19/2015 10:59 AM

Work Order: 15111219
Lab ID: 15111219-26
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00022**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 12:09
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**16**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:05
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 21:05
Barium	**30**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:05
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:05
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 21:05
Copper	**0.80**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:05
Hardness (Calculation)	**180,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:05
Iron	**54**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:05
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:05
Manganese	**0.49**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:05
Potassium	**2,900**		**34**	**200**	**µg/L**	1	11/24/2015 21:05
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:05
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:05
Zinc	**5.1**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**72**	J	**27**	**100**	**µg/L**	1	11/21/2015 02:44
Sulfate	**25,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 03:06

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-12
Collection Date: 11/19/2015 10:59 AM

Work Order: 15111219
Lab ID: 15111219-27
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.045**		**0.0016**	**0.019**	**mg/Kg-dry**	1	11/30/2015 02:05
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**3,000**		**0.24**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:06
Arsenic	**4.3**		**0.17**	**0.69**	**mg/Kg-dry**	1	11/30/2015 23:06
Barium	**15**		**0.32**	**0.69**	**mg/Kg-dry**	1	11/30/2015 23:06
Cadmium	U		0.11	1.4	mg/Kg-dry	1	11/30/2015 23:06
Chromium	**5.6**		**0.022**	**0.69**	**mg/Kg-dry**	1	11/30/2015 23:06
Copper	**8.6**		**0.074**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:06
Iron	**5,700**		**1.1**	**11**	**mg/Kg-dry**	1	11/30/2015 23:06
Lead	**11**		**0.083**	**0.69**	**mg/Kg-dry**	1	11/30/2015 23:06
Manganese	**69**		**0.047**	**0.69**	**mg/Kg-dry**	1	11/30/2015 23:06
Potassium	**190**		**6.1**	**28**	**mg/Kg-dry**	1	11/30/2015 23:06
Selenium	**1.1**	J	**0.41**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:06
Silver	U		0.069	0.69	mg/Kg-dry	1	11/30/2015 23:06
Zinc	**72**		**0.22**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:06
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.42	2.0	mg/Kg-dry	1	12/3/2015 16:21
Sulfate	**100**		**1.3**	**20**	**mg/Kg-dry**	1	12/3/2015 16:21
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**50**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-13
Collection Date: 11/19/2015 09:44 AM

Work Order: 15111219
Lab ID: 15111219-28
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	11/25/2015 12:17
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**34**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:10
Arsenic	**0.81**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 21:10
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:10
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:10
Chromium	**0.13**	J	**0.10**	**5.0**	**µg/L**	1	11/24/2015 21:10
Copper	**0.96**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:10
Hardness (Calculation)	**170,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:10
Iron	**15**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:10
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:10
Manganese	**3.3**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:10
Potassium	**2,800**		**34**	**200**	**µg/L**	1	11/24/2015 21:10
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:10
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:10
Zinc	**6.7**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:10
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 03:05
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 03:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-13
Collection Date: 11/19/2015 09:44 AM

Work Order: 15111219
Lab ID: 15111219-29
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**3.5**		**0.038**	**0.45**	**mg/Kg-dry**	5	11/30/2015 02:40
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**57,000**		**0.96**	**5.5**	**mg/Kg-dry**	1	11/30/2015 23:11
Arsenic	**48**		**0.67**	**2.7**	**mg/Kg-dry**	1	11/30/2015 23:11
Barium	**130**		**1.3**	**2.7**	**mg/Kg-dry**	1	11/30/2015 23:11
Cadmium	**0.51**	J	**0.43**	**5.5**	**mg/Kg-dry**	1	11/30/2015 23:11
Chromium	**67**		**0.087**	**2.7**	**mg/Kg-dry**	1	11/30/2015 23:11
Copper	**61**		**0.29**	**5.5**	**mg/Kg-dry**	1	11/30/2015 23:11
Iron	**42,000**		**4.2**	**44**	**mg/Kg-dry**	1	11/30/2015 23:11
Lead	**61**		**0.33**	**2.7**	**mg/Kg-dry**	1	11/30/2015 23:11
Manganese	**990**		**0.19**	**2.7**	**mg/Kg-dry**	1	11/30/2015 23:11
Potassium	**1,300**		**24**	**110**	**mg/Kg-dry**	1	11/30/2015 23:11
Selenium	**5.3**	J	**1.6**	**5.5**	**mg/Kg-dry**	1	11/30/2015 23:11
Silver	U		0.27	2.7	mg/Kg-dry	1	11/30/2015 23:11
Zinc	**610**		**0.87**	**5.5**	**mg/Kg-dry**	1	11/30/2015 23:11
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.7	8.0	mg/Kg-dry	1	12/3/2015 16:42
Sulfate	**400**		**5.1**	**80**	**mg/Kg-dry**	1	12/3/2015 16:42
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**88**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-14
Collection Date: 11/19/2015 09:35 AM

Work Order: 15111219
Lab ID: 15111219-30
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00020**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 12:24
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**31**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:31
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 21:31
Barium	**28**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:31
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:31
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 21:31
Copper	**0.81**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:31
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:31
Iron	**14**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:31
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:31
Manganese	**0.25**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:31
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 21:31
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:31
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:31
Zinc	**6.3**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 03:25
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 03:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-14
Collection Date: 11/19/2015 09:35 AM

Work Order: 15111219
Lab ID: 15111219-31
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.38**		**0.0043**	**0.050**	**mg/Kg-dry**	1	11/30/2015 02:09
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**12,000**		**0.62**	**3.5**	**mg/Kg-dry**	1	11/30/2015 23:39
Arsenic	**38**		**0.43**	**1.8**	**mg/Kg-dry**	1	11/30/2015 23:39
Barium	**110**		**0.82**	**1.8**	**mg/Kg-dry**	1	11/30/2015 23:39
Cadmium	U		0.27	3.5	mg/Kg-dry	1	11/30/2015 23:39
Chromium	**50**		**0.056**	**1.8**	**mg/Kg-dry**	1	11/30/2015 23:39
Copper	**58**		**0.19**	**3.5**	**mg/Kg-dry**	1	11/30/2015 23:39
Iron	**96,000**		**27**	**280**	**mg/Kg-dry**	10	12/1/2015 11:09
Lead	**19**		**0.21**	**1.8**	**mg/Kg-dry**	1	11/30/2015 23:39
Manganese	**1,500**		**0.12**	**1.8**	**mg/Kg-dry**	1	11/30/2015 23:39
Potassium	**1,200**		**16**	**70**	**mg/Kg-dry**	1	11/30/2015 23:39
Selenium	**3.6**		**1.1**	**3.5**	**mg/Kg-dry**	1	11/30/2015 23:39
Silver	**0.21**	J	**0.18**	**1.8**	**mg/Kg-dry**	1	11/30/2015 23:39
Zinc	**180**		**0.56**	**3.5**	**mg/Kg-dry**	1	11/30/2015 23:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.0	5.0	mg/Kg-dry	1	12/3/2015 17:02
Sulfate	**78**		**3.2**	**50**	**mg/Kg-dry**	1	12/3/2015 17:02
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**80**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-15
Collection Date: 11/19/2015 09:16 AM

Work Order: 15111219
Lab ID: 15111219-32
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00021**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 12:32
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**33**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:36
Arsenic	**0.71**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 21:36
Barium	**30**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:36
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:36
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 21:36
Copper	**0.91**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:36
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:36
Iron	**12**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:36
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:36
Manganese	**0.22**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:36
Potassium	**2,700**		**34**	**200**	**µg/L**	1	11/24/2015 21:36
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:36
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:36
Zinc	**7.7**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 13:23
Sulfate	**27,000**		**700**	**5,000**	**µg/L**	5	11/21/2015 13:43

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-Rp-15
Collection Date: 11/19/2015 09:16 AM

Work Order: 15111219
Lab ID: 15111219-33
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.13**		**0.0035**	**0.041**	**mg/Kg-dry**	1	11/30/2015 02:11
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**25,000**		**0.50**	**2.8**	**mg/Kg-dry**	1	11/30/2015 23:45
Arsenic	**17**		**0.34**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:45
Barium	**41**		**0.65**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:45
Cadmium	U		0.22	2.8	mg/Kg-dry	1	11/30/2015 23:45
Chromium	**23**		**0.045**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:45
Copper	**23**		**0.15**	**2.8**	**mg/Kg-dry**	1	11/30/2015 23:45
Iron	**23,000**		**2.2**	**23**	**mg/Kg-dry**	1	11/30/2015 23:45
Lead	**16**		**0.17**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:45
Manganese	**330**		**0.096**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:45
Potassium	**710**		**13**	**56**	**mg/Kg-dry**	1	11/30/2015 23:45
Selenium	**1.7**	J	**0.85**	**2.8**	**mg/Kg-dry**	1	11/30/2015 23:45
Silver	**0.19**	J	**0.14**	**1.4**	**mg/Kg-dry**	1	11/30/2015 23:45
Zinc	**150**		**0.45**	**2.8**	**mg/Kg-dry**	1	11/30/2015 23:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.91	4.3	mg/Kg-dry	1	12/3/2015 17:22
Sulfate	**110**		**2.8**	**43**	**mg/Kg-dry**	1	12/3/2015 17:22
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**77**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-16
Collection Date: 11/19/2015 10:50 AM

Work Order: 15111219
Lab ID: 15111219-34
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00031**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 12:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**14**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:41
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 21:41
Barium	**30**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:41
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:41
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 21:41
Copper	**0.74**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:41
Hardness (Calculation)	**180,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:41
Iron	**67**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:41
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:41
Manganese	**0.82**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:41
Potassium	**2,800**		**34**	**200**	**µg/L**	1	11/24/2015 21:41
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:41
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:41
Zinc	**5.6**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 03:45
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 04:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-16
Collection Date: 11/19/2015 10:50 AM

Work Order: 15111219
Lab ID: 15111219-35
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.16**		**0.0034**	**0.040**	**mg/Kg-dry**	1	11/30/2015 02:20
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**12,000**		**0.46**	**2.6**	**mg/Kg-dry**	1	11/30/2015 23:50
Arsenic	**10**		**0.32**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:50
Barium	**34**		**0.61**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:50
Cadmium	U		0.20	2.6	mg/Kg-dry	1	11/30/2015 23:50
Chromium	**14**		**0.042**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:50
Copper	**20**		**0.14**	**2.6**	**mg/Kg-dry**	1	11/30/2015 23:50
Iron	**15,000**		**2.0**	**21**	**mg/Kg-dry**	1	11/30/2015 23:50
Lead	**19**		**0.16**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:50
Manganese	**260**		**0.089**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:50
Potassium	**470**		**12**	**52**	**mg/Kg-dry**	1	11/30/2015 23:50
Selenium	**1.7**	J	**0.79**	**2.6**	**mg/Kg-dry**	1	11/30/2015 23:50
Silver	U		0.13	1.3	mg/Kg-dry	1	11/30/2015 23:50
Zinc	**410**		**0.42**	**2.6**	**mg/Kg-dry**	1	11/30/2015 23:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.82	3.9	mg/Kg-dry	1	12/3/2015 17:42
Sulfate	**110**		**2.5**	**39**	**mg/Kg-dry**	1	12/3/2015 17:42
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**75**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-Rp-17
Collection Date: 11/19/2015 09:06 AM

Work Order: 15111219
Lab ID: 15111219-36
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00024**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 13:02
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**33**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:46
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 21:46
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:46
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:46
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 21:46
Copper	**0.99**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:46
Hardness (Calculation)	**170,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:46
Iron	**11**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:46
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:46
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 21:46
Potassium	**2,800**		**34**	**200**	**µg/L**	1	11/24/2015 21:46
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:46
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:46
Zinc	**6.4**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:46
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 04:05
Sulfate	**25,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 04:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-17
Collection Date: 11/19/2015 09:06 AM

Work Order: 15111219
Lab ID: 15111219-37
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**1.6**		**0.017**	**0.20**	**mg/Kg-dry**	5	11/30/2015 02:37
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**17,000**		**0.44**	**2.5**	**mg/Kg-dry**	1	11/30/2015 23:56
Arsenic	**22**		**0.31**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:56
Barium	**53**		**0.58**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:56
Cadmium	U		0.20	2.5	mg/Kg-dry	1	11/30/2015 23:56
Chromium	**24**		**0.040**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:56
Copper	**24**		**0.14**	**2.5**	**mg/Kg-dry**	1	11/30/2015 23:56
Iron	**21,000**		**1.9**	**20**	**mg/Kg-dry**	1	11/30/2015 23:56
Lead	**21**		**0.15**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:56
Manganese	**530**		**0.086**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:56
Potassium	**480**		**11**	**50**	**mg/Kg-dry**	1	11/30/2015 23:56
Selenium	**1.9**	J	**0.76**	**2.5**	**mg/Kg-dry**	1	11/30/2015 23:56
Silver	**0.13**	J	**0.13**	**1.3**	**mg/Kg-dry**	1	11/30/2015 23:56
Zinc	**150**		**0.40**	**2.5**	**mg/Kg-dry**	1	11/30/2015 23:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.83	3.9	mg/Kg-dry	1	12/3/2015 18:03
Sulfate	**170**		**2.5**	**39**	**mg/Kg-dry**	1	12/3/2015 18:03
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**75**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-18
Collection Date: 11/19/2015 08:49 AM

Work Order: 15111219
Lab ID: 15111219-38
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/25/15		Analyst: **JEC**
Mercury	**0.00029**	J	**0.00020**	**0.00050**	**µg/L**	1	11/25/2015 13:10
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**33**		**1.1**	**10**	**µg/L**	1	11/24/2015 21:51
Arsenic	**0.74**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 21:51
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:51
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 21:51
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 21:51
Copper	**0.90**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:51
Hardness (Calculation)	**170,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 21:51
Iron	**12**	J	**10**	**80**	**µg/L**	1	11/24/2015 21:51
Lead	U		0.10	5.0	µg/L	1	11/24/2015 21:51
Manganese	**0.20**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 21:51
Potassium	**2,800**		**34**	**200**	**µg/L**	1	11/24/2015 21:51
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 21:51
Silver	U		0.10	5.0	µg/L	1	11/24/2015 21:51
Zinc	**6.1**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 21:51
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 04:26
Sulfate	**27,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 04:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-18
Collection Date: 11/19/2015 08:49 AM

Work Order: 15111219
Lab ID: 15111219-39
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.34**		**0.0030**	**0.035**	**mg/Kg-dry**	1	11/30/2015 02:25
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**6,800**		**0.36**	**2.1**	**mg/Kg-dry**	1	12/1/2015 00:01
Arsenic	**16**		**0.25**	**1.0**	**mg/Kg-dry**	1	12/1/2015 00:01
Barium	**46**		**0.48**	**1.0**	**mg/Kg-dry**	1	12/1/2015 00:01
Cadmium	U		0.16	2.1	mg/Kg-dry	1	12/1/2015 00:01
Chromium	**11**		**0.033**	**1.0**	**mg/Kg-dry**	1	12/1/2015 00:01
Copper	**10**		**0.11**	**2.1**	**mg/Kg-dry**	1	12/1/2015 00:01
Iron	**33,000**		**1.6**	**16**	**mg/Kg-dry**	1	12/1/2015 00:01
Lead	**9.1**		**0.12**	**1.0**	**mg/Kg-dry**	1	12/1/2015 00:01
Manganese	**750**		**0.070**	**1.0**	**mg/Kg-dry**	1	12/1/2015 00:01
Potassium	**270**		**9.2**	**41**	**mg/Kg-dry**	1	12/1/2015 00:01
Selenium	**1.7**	J	**0.62**	**2.1**	**mg/Kg-dry**	1	12/1/2015 00:01
Silver	U		0.10	1.0	mg/Kg-dry	1	12/1/2015 00:01
Zinc	**63**		**0.33**	**2.1**	**mg/Kg-dry**	1	12/1/2015 00:01
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.66	3.1	mg/Kg-dry	1	12/3/2015 19:03
Sulfate	**95**		**2.0**	**31**	**mg/Kg-dry**	1	12/3/2015 19:03
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**69**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-19
Collection Date: 11/19/2015 08:40 AM

Work Order: 15111219
Lab ID: 15111219-40
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00027**	J	**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 12:48
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**35**		**1.1**	**10**	**µg/L**	1	11/24/2015 17:13
Arsenic	**0.90**	J	**0.70**	**5.0**	**µg/L**	1	11/24/2015 17:13
Barium	**29**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 17:13
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 17:13
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 17:13
Copper	**0.80**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 17:13
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 17:13
Iron	**16**	J	**10**	**80**	**µg/L**	1	11/24/2015 17:13
Lead	U		0.10	5.0	µg/L	1	11/24/2015 17:13
Manganese	**0.49**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 17:13
Potassium	**2,600**		**34**	**200**	**µg/L**	1	11/24/2015 17:13
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 17:13
Silver	U		0.10	5.0	µg/L	1	11/24/2015 17:13
Zinc	**4.2**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 17:13
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 05:26
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 05:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-19
Collection Date: 11/19/2015 08:40 AM

Work Order: 15111219
Lab ID: 15111219-41
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.41**		**0.0048**	**0.056**	**mg/Kg-dry**	1	11/30/2015 02:27
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**15,000**		**0.69**	**3.9**	**mg/Kg-dry**	1	12/1/2015 00:07
Arsenic	**31**		**0.48**	**2.0**	**mg/Kg-dry**	1	12/1/2015 00:07
Barium	**74**		**0.91**	**2.0**	**mg/Kg-dry**	1	12/1/2015 00:07
Cadmium	U		0.31	3.9	mg/Kg-dry	1	12/1/2015 00:07
Chromium	**22**		**0.063**	**2.0**	**mg/Kg-dry**	1	12/1/2015 00:07
Copper	**22**		**0.21**	**3.9**	**mg/Kg-dry**	1	12/1/2015 00:07
Iron	**52,000**		**3.0**	**31**	**mg/Kg-dry**	1	12/1/2015 00:07
Lead	**30**		**0.24**	**2.0**	**mg/Kg-dry**	1	12/1/2015 00:07
Manganese	**1,100**		**0.13**	**2.0**	**mg/Kg-dry**	1	12/1/2015 00:07
Potassium	**500**		**18**	**79**	**mg/Kg-dry**	1	12/1/2015 00:07
Selenium	**3.9**	J	**1.2**	**3.9**	**mg/Kg-dry**	1	12/1/2015 00:07
Silver	U		0.20	2.0	mg/Kg-dry	1	12/1/2015 00:07
Zinc	**190**		**0.63**	**3.9**	**mg/Kg-dry**	1	12/1/2015 00:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		1.2	5.7	mg/Kg-dry	1	12/3/2015 19:24
Sulfate	**230**		**3.7**	**57**	**mg/Kg-dry**	1	12/3/2015 19:24
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**83**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 19:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-20
Collection Date: 11/19/2015 08:23 AM

Work Order: 15111219
Lab ID: 15111219-42
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER (DISSOLVED)		Method: **E1631E**			Prep: E1631E / 11/30/15		Analyst: **JEC**
Mercury	**0.00030**	J	**0.00020**	**0.00050**	**µg/L**	1	11/30/2015 12:56
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 11/24/15		Analyst: **RH**
Aluminum	**14**		**1.1**	**10**	**µg/L**	1	11/24/2015 17:18
Arsenic	U		0.70	5.0	µg/L	1	11/24/2015 17:18
Barium	**30**		**0.20**	**5.0**	**µg/L**	1	11/24/2015 17:18
Cadmium	U		0.10	2.0	µg/L	1	11/24/2015 17:18
Chromium	U		0.10	5.0	µg/L	1	11/24/2015 17:18
Copper	**0.73**	J	**0.20**	**5.0**	**µg/L**	1	11/24/2015 17:18
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	11/24/2015 17:18
Iron	**22**	J	**10**	**80**	**µg/L**	1	11/24/2015 17:18
Lead	U		0.10	5.0	µg/L	1	11/24/2015 17:18
Manganese	U		0.20	5.0	µg/L	1	11/24/2015 17:18
Potassium	**2,700**		**34**	**200**	**µg/L**	1	11/24/2015 17:18
Selenium	U		1.0	5.0	µg/L	1	11/24/2015 17:18
Silver	U		0.10	5.0	µg/L	1	11/24/2015 17:18
Zinc	**4.8**	J	**2.4**	**10**	**µg/L**	1	11/24/2015 17:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	11/21/2015 05:47
Sulfate	**26,000**		**280**	**2,000**	**µg/L**	2	11/30/2015 06:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *04-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-20
Collection Date: 11/19/2015 08:23 AM

Work Order: 15111219
Lab ID: 15111219-43
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 11/29/15		Analyst: **LR**
Mercury	**0.051**		**0.0013**	**0.016**	**mg/Kg-dry**	1	11/30/2015 03:00
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 11/23/15		Analyst: **JEC**
Aluminum	**3,000**		**0.22**	**1.2**	**mg/Kg-dry**	1	11/30/2015 11:05
Arsenic	**3.3**		**0.15**	**0.61**	**mg/Kg-dry**	1	11/30/2015 11:05
Barium	**11**		**0.28**	**0.61**	**mg/Kg-dry**	1	11/30/2015 11:05
Cadmium	U		0.095	1.2	mg/Kg-dry	1	11/30/2015 11:05
Chromium	**5.4**		**0.020**	**0.61**	**mg/Kg-dry**	1	11/30/2015 11:05
Copper	**5.8**		**0.066**	**1.2**	**mg/Kg-dry**	1	11/30/2015 11:05
Iron	**5,400**		**0.94**	**9.8**	**mg/Kg-dry**	1	11/30/2015 11:05
Lead	**6.3**		**0.073**	**0.61**	**mg/Kg-dry**	1	11/30/2015 11:05
Manganese	**88**		**0.042**	**0.61**	**mg/Kg-dry**	1	11/30/2015 11:05
Potassium	**190**		**5.4**	**24**	**mg/Kg-dry**	1	11/30/2015 11:05
Selenium	**0.67**	J	**0.37**	**1.2**	**mg/Kg-dry**	1	11/30/2015 11:05
Silver	U		0.061	0.61	mg/Kg-dry	1	11/30/2015 11:05
Zinc	**93**		**0.20**	**1.2**	**mg/Kg-dry**	1	11/30/2015 11:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/1/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.38	1.8	mg/Kg-dry	1	12/3/2015 19:44
Sulfate	**65**		**1.2**	**18**	**mg/Kg-dry**	1	12/3/2015 19:44
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**45**		**0.025**	**0.050**	**% of sample**	1	11/25/2015 11:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 04-Dec-15

Client: ERM, Inc

Work Order: 15111219

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79424** Instrument ID **HG2** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-79424-79424**			Units: **ng/L**			Analysis Date: **11/25/2015 09:46 A**			
Client ID:	Run ID: **HG2_151125B**			SeqNo: **3589702**			Prep Date: **11/25/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2	Sample ID: **MBLK2-79424-79424**			Units: **ng/L**			Analysis Date: **11/25/2015 10:31 A**			
Client ID:	Run ID: **HG2_151125B**			SeqNo: **3589708**			Prep Date: **11/25/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3	Sample ID: **MBLK3-79424-79424**			Units: **ng/L**			Analysis Date: **11/25/2015 11:17 A**			
Client ID:	Run ID: **HG2_151125B**			SeqNo: **3589715**			Prep Date: **11/25/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK1	Sample ID: **MBLK-79239-79424**			Units: **ng/L**			Analysis Date: **11/25/2015 11:54 A**			
Client ID:	Run ID: **HG2_151125B**			SeqNo: **3589722**			Prep Date: **11/25/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS	Sample ID: **15111219-11AMS**			Units: **ng/L**			Analysis Date: **11/25/2015 10:46 A**			
Client ID: **SW-RP-6**	Run ID: **HG2_151125B**			SeqNo: **3589710**			Prep Date: **11/25/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.99	0.50	5	0.36	92.6	71-125	0			

MS	Sample ID: **15111219-32AMS**			Units: **ng/L**			Analysis Date: **11/25/2015 12:40 PM**			
Client ID: **SW-RP-15**	Run ID: **HG2_151125B**			SeqNo: **3589741**			Prep Date: **11/25/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.17	0.50	5	0.21	99.2	71-125	0			

MSD	Sample ID: **15111219-11AMSD**			Units: **ng/L**			Analysis Date: **11/25/2015 10:54 A**			
Client ID: **SW-RP-6**	Run ID: **HG2_151125B**			SeqNo: **3589712**			Prep Date: **11/25/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.83	0.50	5	0.36	89.4	71-125	4.99	3.26	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79424** Instrument ID **HG2** Method: **E1631E**

MSD Sample ID: **15111219-32AMSD** Units: **ng/L** Analysis Date: **11/25/2015 12:47 PM**
Client ID: **SW-RP-15** Run ID: **HG2_151125B** SeqNo: **3589744** Prep Date: **11/25/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.9	0.50	5	0.21	93.8	71-125	5.17	5.36	24	

The following samples were analyzed in this batch:

15111219-01A	15111219-03A	15111219-05A
15111219-07A	15111219-09A	15111219-11A
15111219-13A	15111219-15A	15111219-17A
15111219-19A	15111219-21A	15111219-23A
15111219-24A	15111219-26A	15111219-28A
15111219-30A	15111219-32A	15111219-34A
15111219-36A	15111219-38A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79473** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK-79239-79473** Units: **ng/L** Analysis Date: **11/30/2015 12:11 PM**
Client ID: Run ID: **HG2_151130A** SeqNo: **3595096** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK1 Sample ID: **MBLK1-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601641** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601642** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601643** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **15111129-31AMS** Units: **ng/L** Analysis Date: **11/30/2015 12:26 PM**
Client ID: Run ID: **HG2_151130A** SeqNo: **3595098** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.69	0.50	5	0.43	85.2	71-125	0			

MSD Sample ID: **15111129-31AMSD** Units: **ng/L** Analysis Date: **11/30/2015 12:33 PM**
Client ID: Run ID: **HG2_151130A** SeqNo: **3595099** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.45	0.50	5	0.43	100	71-125	4.69	15	24	

LCS-OPR-END Sample ID: **OPR-END-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601644** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.28	0.50	5	0	106	77-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79473** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-79472-79473** Units: **ng/L** Analysis Date: **11/30/2015**
Client ID: Run ID: **HG2_151130A** SeqNo: **3601645** Prep Date: **11/30/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.6	0.50	5	0	112	77-123	0			

The following samples were analyzed in this batch:

15111219-40A	15111219-42A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79508** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-79508-79508** Units: **mg/Kg** Analysis Date: **11/30/2015 01:22 A**
Client ID: Run ID: **HG1_151129A** SeqNo: **3593712** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-79508-79508** Units: **mg/Kg** Analysis Date: **11/30/2015 01:25 A**
Client ID: Run ID: **HG1_151129A** SeqNo: **3593713** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1725	0.020	0.1665	0	104	80-120	0			

MS Sample ID: **15111219-12AMS** Units: **mg/Kg** Analysis Date: **11/30/2015 01:40 A**
Client ID: **Sed-RP-6** Run ID: **HG1_151129A** SeqNo: **3593722** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.09929	0.012	0.1017	0.01109	86.7	75-125	0			

MSD Sample ID: **15111219-12AMSD** Units: **mg/Kg** Analysis Date: **11/30/2015 01:42 A**
Client ID: **Sed-RP-6** Run ID: **HG1_151129A** SeqNo: **3593725** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1021	0.012	0.1035	0.01109	87.9	75-125	0.09929	2.77	35	

The following samples were analyzed in this batch:

15111219-02A	15111219-04A	15111219-06A
15111219-08A	15111219-10A	15111219-12A
15111219-14A	15111219-16A	15111219-18A
15111219-20A	15111219-22A	15111219-25A
15111219-27A	15111219-29A	15111219-31A
15111219-33A	15111219-35A	15111219-37A
15111219-39A	15111219-41A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79509** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-79509-79509** Units: **mg/Kg** Analysis Date: **11/30/2015 02:49 A**
Client ID: Run ID: **HG1_151129A** SeqNo: **3593967** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-79509-79509** Units: **mg/Kg** Analysis Date: **11/30/2015 02:51 A**
Client ID: Run ID: **HG1_151129A** SeqNo: **3593968** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1708	0.020	0.1665	0	103	80-120	0			

MS Sample ID: **15111322-01BMS** Units: **mg/Kg** Analysis Date: **11/30/2015 03:20 A**
Client ID: Run ID: **HG1_151129A** SeqNo: **3593990** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1287	0.013	0.1109	0.02014	98	75-125	0			

MSD Sample ID: **15111322-01BMSD** Units: **mg/Kg** Analysis Date: **11/30/2015 03:22 A**
Client ID: Run ID: **HG1_151129A** SeqNo: **3593992** Prep Date: **11/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1291	0.013	0.1066	0.02014	102	75-125	0.1287	0.302	35	

The following samples were analyzed in this batch: 15111219-43A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79299** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-79299-79299** Units: **mg/Kg** Analysis Date: **11/30/2015 09:10 PM**
Client ID: Run ID: **ICP2_151130A** SeqNo: **3596192** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1469	0.50								J
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.03691	0.25								J
Copper	U	0.50								
Iron	U	4.0								
Lead	U	0.25								
Manganese	U	0.25								
Potassium	U	10								
Selenium	0.1601	0.50								J
Silver	U	0.25								
Zinc	U	0.50								

LCS Sample ID: **LCS-79299-79299** Units: **mg/Kg** Analysis Date: **11/30/2015 09:16 PM**
Client ID: Run ID: **ICP2_151130A** SeqNo: **3596194** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5.091	0.50	5	0	102	80-120	0			
Arsenic	4.932	0.25	5	0	98.6	80-120	0			
Barium	5.104	0.25	5	0	102	80-120	0			
Cadmium	4.767	0.50	5	0	95.3	80-120	0			
Chromium	5.348	0.25	5	0	107	80-120	0			
Copper	4.99	0.50	5	0	99.8	80-120	0			
Iron	510.8	4.0	500	0	102	80-120	0			
Lead	5.233	0.25	5	0	105	80-120	0			
Manganese	4.874	0.25	5	0	97.5	80-120	0			
Potassium	500.2	10	500	0	100	80-120	0			
Selenium	5.185	0.50	5	0	104	80-120	0			
Silver	4.865	0.25	5	0	97.3	80-120	0			
Zinc	5.277	0.50	5	0	106	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79299** Instrument ID **ICP2** Method: **SW846 6010C**

MS Sample ID: **15111219-12AMS** Units: **mg/Kg** Analysis Date: **11/30/2015 09:54 PM**
Client ID: **Sed-RP-6** Run ID: **ICP2_151130A** SeqNo: **3596202** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1015	0.70	7.032	1387	-5300	75-125	0			SO
Arsenic	9.352	0.35	7.032	2.953	91	75-125	0			
Barium	14.11	0.35	7.032	7.925	88	75-125	0			
Cadmium	6.677	0.70	7.032	0.02737	94.6	75-125	0			
Chromium	9.923	0.35	7.032	3.108	96.9	75-125	0			
Copper	8.661	0.70	7.032	4.245	62.8	75-125	0			S
Iron	2180	5.6	703.2	2619	-62.3	75-125	0			S
Lead	10.09	0.35	7.032	6.005	58.2	75-125	0			S
Manganese	32.22	0.35	7.032	32.99	-10.9	75-125	0			SO
Potassium	816.3	14	703.2	87.81	104	75-125	0			
Selenium	8.089	0.70	7.032	0.7865	104	75-125	0			
Silver	6.803	0.35	7.032	-0.02395	97.1	75-125	0			
Zinc	20.05	0.70	7.032	34.27	-202	75-125	0			SO

MSD Sample ID: **15111219-12AMSD** Units: **mg/Kg** Analysis Date: **11/30/2015 10:00 PM**
Client ID: **Sed-RP-6** Run ID: **ICP2_151130A** SeqNo: **3596203** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1084	0.71	7.123	1387	-4250	75-125	1015	6.62	20	SO
Arsenic	9.54	0.36	7.123	2.953	92.5	75-125	9.352	1.99	20	
Barium	14.69	0.36	7.123	7.925	95	75-125	14.11	4.02	20	
Cadmium	6.857	0.71	7.123	0.02737	95.9	75-125	6.677	2.66	20	
Chromium	10.14	0.36	7.123	3.108	98.7	75-125	9.923	2.17	20	
Copper	9.414	0.71	7.123	4.245	72.6	75-125	8.661	8.34	20	S
Iron	2276	5.7	712.3	2619	-48.1	75-125	2180	4.27	20	S
Lead	10.34	0.36	7.123	6.005	60.8	75-125	10.09	2.39	20	S
Manganese	35.63	0.36	7.123	32.99	37.1	75-125	32.22	10	20	SO
Potassium	836.6	14	712.3	87.81	105	75-125	816.3	2.46	20	
Selenium	8.359	0.71	7.123	0.7865	106	75-125	8.089	3.28	20	
Silver	6.957	0.36	7.123	-0.02395	98	75-125	6.803	2.24	20	
Zinc	21.23	0.71	7.123	34.27	-183	75-125	20.05	5.69	20	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79299** Instrument ID **ICP2** Method: **SW846 6010C**

The following samples were analyzed in this batch:

15111219-02A	15111219-04A	15111219-06A
15111219-08A	15111219-10A	15111219-12A
15111219-14A	15111219-16A	15111219-18A
15111219-20A	15111219-22A	15111219-25A
15111219-27A	15111219-29A	15111219-31A
15111219-33A	15111219-35A	15111219-37A
15111219-39A	15111219-41A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79304** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-79304-79304** Units: **mg/Kg** Analysis Date: **11/30/2015 10:37 A**

Client ID: Run ID: **ICP2_151130A** SeqNo: **3594752** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1285	0.50								J
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.05716	0.25								J
Copper	U	0.50								
Iron	U	4.0								
Lead	U	0.25								
Manganese	U	0.25								
Potassium	U	10								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

LCS Sample ID: **LCS-79304-79304** Units: **mg/Kg** Analysis Date: **11/30/2015 10:43 A**

Client ID: Run ID: **ICP2_151130A** SeqNo: **3594756** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5.071	0.50	5	0	101	80-120	0			
Arsenic	5.048	0.25	5	0	101	80-120	0			
Barium	4.984	0.25	5	0	99.7	80-120	0			
Cadmium	4.832	0.50	5	0	96.6	80-120	0			
Chromium	5.389	0.25	5	0	108	80-120	0			
Copper	5.003	0.50	5	0	100	80-120	0			
Iron	505.3	4.0	500	0	101	80-120	0			
Lead	5.115	0.25	5	0	102	80-120	0			
Manganese	5.1	0.25	5	0	102	80-120	0			
Potassium	492.7	10	500	0	98.5	80-120	0			
Selenium	5.215	0.50	5	0	104	80-120	0			
Silver	4.915	0.25	5	0	98.3	80-120	0			
Zinc	5.286	0.50	5	0	106	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79304** Instrument ID **ICP2** Method: **SW846 6010C**

MS Sample ID: **15111242-02AMS** Units: **mg/Kg** Analysis Date: **11/30/2015 02:51 PM**

Client ID: Run ID: **ICP2_151130A** SeqNo: **3595481** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	4573	0.75	7.463	2920	22200	75-125	0			SO
Arsenic	11.94	0.37	7.463	3.808	109	75-125	0			
Barium	40.26	0.37	7.463	27.92	165	75-125	0			S
Cadmium	7.349	0.75	7.463	0.07865	97.4	75-125	0			
Chromium	13.77	0.37	7.463	6.78	93.6	75-125	0			
Copper	17.23	0.75	7.463	9.511	103	75-125	0			
Iron	5695	6.0	746.3	4687	135	75-125	0			SO
Lead	29.32	0.37	7.463	21.32	107	75-125	0			
Manganese	312.8	0.37	7.463	288.5	326	75-125	0			SO
Potassium	1357	15	746.3	401.5	128	75-125	0			S
Selenium	8.487	0.75	7.463	0.3478	109	75-125	0			
Silver	7.49	0.37	7.463	0.05564	99.6	75-125	0			
Zinc	50	0.75	7.463	33.02	227	75-125	0			SO

MSD Sample ID: **15111242-02AMSD** Units: **mg/Kg** Analysis Date: **11/30/2015 02:56 PM**

Client ID: Run ID: **ICP2_151130A** SeqNo: **3595482** Prep Date: **11/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	4573	0.75	7.452	2920	22200	75-125	4573	0.00722	20	SO
Arsenic	11.59	0.37	7.452	3.808	104	75-125	11.94	2.97	20	
Barium	39.16	0.37	7.452	27.92	151	75-125	40.26	2.77	20	S
Cadmium	7.303	0.75	7.452	0.07865	96.9	75-125	7.349	0.637	20	
Chromium	15.2	0.37	7.452	6.78	113	75-125	13.77	9.89	20	
Copper	16.9	0.75	7.452	9.511	99.1	75-125	17.23	1.96	20	
Iron	5538	6.0	745.2	4687	114	75-125	5695	2.79	20	O
Lead	28.59	0.37	7.452	21.32	97.6	75-125	29.32	2.53	20	
Manganese	301.1	0.37	7.452	288.5	169	75-125	312.8	3.81	20	SO
Potassium	1313	15	745.2	401.5	122	75-125	1357	3.35	20	
Selenium	8.327	0.75	7.452	0.3478	107	75-125	8.487	1.9	20	
Silver	7.397	0.37	7.452	0.05564	98.5	75-125	7.49	1.25	20	
Zinc	49.24	0.75	7.452	33.02	218	75-125	50	1.54	20	SO

The following samples were analyzed in this batch: 15111219-43A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79377** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-79377-79377** Units: **mg/L** Analysis Date: **11/24/2015 04:48 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588017** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-79377-79377** Units: **mg/L** Analysis Date: **11/24/2015 05:08 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588021** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1025	0.010	0.1	0	102	80-120	0			
Arsenic	0.1017	0.0050	0.1	0	102	80-120	0			
Barium	0.102	0.0050	0.1	0	102	80-120	0			
Cadmium	0.1016	0.0020	0.1	0	102	80-120	0			
Chromium	0.101	0.0050	0.1	0	101	80-120	0			
Copper	0.1008	0.0050	0.1	0	101	80-120	0			
Iron	10.33	0.080	10	0	103	80-120	0			
Lead	0.1059	0.0050	0.1	0	106	80-120	0			
Manganese	0.1037	0.0050	0.1	0	104	80-120	0			
Potassium	10.65	0.20	10	0	106	80-120	0			
Selenium	0.1063	0.0050	0.1	0	106	80-120	0			
Silver	0.099	0.0050	0.1	0	99	80-120	0			
Zinc	0.101	0.010	0.1	0	101	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79377** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **15111248-02CMS** Units: **mg/L** Analysis Date: **11/24/2015 05:28 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588025** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1067	0.010	0.1	0.0008433	106	75-125	0			
Arsenic	0.1029	0.0050	0.1	0.0003759	103	75-125	0			
Barium	0.4047	0.0050	0.1	0.2963	108	75-125	0			
Cadmium	0.09685	0.0020	0.1	0.001089	95.8	75-125	0			
Chromium	0.09976	0.0050	0.1	0.0001425	99.6	75-125	0			
Copper	0.09622	0.0050	0.1	0.003314	92.9	75-125	0			
Iron	9.957	0.080	10	0.02176	99.4	75-125	0			
Manganese	0.2115	0.0050	0.1	0.1132	98.3	75-125	0			
Potassium	19.52	0.20	10	8.352	112	75-125	0			
Selenium	0.104	0.0050	0.1	0.0006372	103	75-125	0			
Silver	0.08004	0.0050	0.1	-4.657E-06	80	75-125	0			
Zinc	0.09375	0.010	0.1	0.002027	91.7	75-125	0			

MS Sample ID: **15111248-02CMS** Units: **mg/L** Analysis Date: **11/25/2015 09:56 A**
Client ID: Run ID: **ICPMS2_151125A** SeqNo: **3589478** Prep Date: **11/24/2015** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.1016	0.050	0.1	-1.759E-05	102	75-125	0			

MSD Sample ID: **15111248-02CMSD** Units: **mg/L** Analysis Date: **11/24/2015 05:33 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588026** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1063	0.010	0.1	0.0008433	105	75-125	0.1067	0.376	20	
Arsenic	0.09361	0.0050	0.1	0.0003759	93.2	75-125	0.1029	9.45	20	
Barium	0.4	0.0050	0.1	0.2963	104	75-125	0.4047	1.17	20	
Cadmium	0.09559	0.0020	0.1	0.001089	94.5	75-125	0.09685	1.31	20	
Chromium	0.09049	0.0050	0.1	0.0001425	90.3	75-125	0.09976	9.75	20	
Copper	0.09503	0.0050	0.1	0.003314	91.7	75-125	0.09622	1.24	20	
Iron	8.96	0.080	10	0.02176	89.4	75-125	9.957	10.5	20	
Manganese	0.2105	0.0050	0.1	0.1132	97.3	75-125	0.2115	0.474	20	
Potassium	19.49	0.20	10	8.352	111	75-125	19.52	0.154	20	
Selenium	0.0954	0.0050	0.1	0.0006372	94.8	75-125	0.104	8.63	20	
Silver	0.07255	0.0050	0.1	-4.657E-06	72.6	75-125	0.08004	9.82	20	S
Zinc	0.09312	0.010	0.1	0.002027	91.1	75-125	0.09375	0.674	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79377** Instrument ID **ICPMS2** Method: **SW6020A**

MSD	Sample ID: **15111248-02CMSD**			Units: **mg/L**			Analysis Date: **11/25/2015 10:01 A**			
Client ID:		Run ID: **ICPMS2_151125A**		SeqNo: **3589479**		Prep Date: **11/24/2015**		DF: **10**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.09772	0.050	0.1	-1.759E-05	97.7	75-125	0.1016	3.89	20	

The following samples were analyzed in this batch:

15111219-40C	15111219-42C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **79379** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-79378-79379** Units: **mg/L** Analysis Date: **11/24/2015 05:43 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588028** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-79379-79379** Units: **mg/L** Analysis Date: **11/24/2015 05:53 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588030** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79379** Instrument ID **ICPMS2** Method: **SW6020A**

LCS Sample ID: **LCS-79378-79379** Units: **mg/L** Analysis Date: **11/24/2015 05:48 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588029** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1014	0.010	0.1	0	101	80-120	0			
Arsenic	0.1003	0.0050	0.1	0	100	80-120	0			
Barium	0.1001	0.0050	0.1	0	100	80-120	0			
Cadmium	0.1002	0.0020	0.1	0	100	80-120	0			
Chromium	0.09878	0.0050	0.1	0	98.8	80-120	0			
Copper	0.09796	0.0050	0.1	0	98	80-120	0			
Hardness (Calculation)	67.5	2.0	66.15	0	102	80-120	0			
Iron	10.01	0.080	10	0	100	80-120	0			
Lead	0.104	0.0050	0.1	0	104	80-120	0			
Manganese	0.1019	0.0050	0.1	0	102	80-120	0			
Potassium	10.54	0.20	10	0	105	80-120	0			
Selenium	0.1029	0.0050	0.1	0	103	80-120	0			
Silver	0.09547	0.0050	0.1	0	95.5	80-120	0			
Zinc	0.09838	0.010	0.1	0	98.4	80-120	0			

LCS Sample ID: **LCS-79379-79379** Units: **mg/L** Analysis Date: **11/24/2015 07:18 PM**
Client ID: Run ID: **ICPMS2_151124A** SeqNo: **3588046** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1016	0.010	0.1	0	102	80-120	0			
Arsenic	0.09824	0.0050	0.1	0	98.2	80-120	0			
Barium	0.09923	0.0050	0.1	0	99.2	80-120	0			
Cadmium	0.1005	0.0020	0.1	0	100	80-120	0			
Chromium	0.09945	0.0050	0.1	0	99.4	80-120	0			
Copper	0.1022	0.0050	0.1	0	102	80-120	0			
Hardness (Calculation)	66.96	2.0	66.15	0	101	80-120	0			
Iron	10.11	0.080	10	0	101	80-120	0			
Lead	0.101	0.0050	0.1	0	101	80-120	0			
Manganese	0.1007	0.0050	0.1	0	101	80-120	0			
Potassium	10.11	0.20	10	0	101	80-120	0			
Selenium	0.09836	0.0050	0.1	0	98.4	80-120	0			
Silver	0.09894	0.0050	0.1	0	98.9	80-120	0			
Zinc	0.1014	0.010	0.1	0	101	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79379** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **15111219-11CMS** Units: **mg/L** Analysis Date: **11/24/2015 07:54 PM**
Client ID: **SW-RP-6** Run ID: **ICPMS2_151124A** SeqNo: **3588053** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1413	0.010	0.1	0.03545	106	75-125	0			
Arsenic	0.1037	0.0050	0.1	0.0008751	103	75-125	0			
Barium	0.1295	0.0050	0.1	0.02711	102	75-125	0			
Cadmium	0.103	0.0020	0.1	7.181E-06	103	75-125	0			
Chromium	0.1022	0.0050	0.1	5.341E-06	102	75-125	0			
Copper	0.1051	0.0050	0.1	0.001067	104	75-125	0			
Iron	10.28	0.080	10	-0.01411	103	75-125	0			
Lead	0.1049	0.0050	0.1	0.00002252	105	75-125	0			
Manganese	0.1031	0.0050	0.1	0.0000211	103	75-125	0			
Potassium	12.97	0.20	10	2.605	104	75-125	0			
Selenium	0.1026	0.0050	0.1	-2.094E-05	103	75-125	0			
Silver	0.09913	0.0050	0.1	9.534E-07	99.1	75-125	0			
Zinc	0.1068	0.010	0.1	0.004792	102	75-125	0			

MSD Sample ID: **15111219-11CMSD** Units: **mg/L** Analysis Date: **11/24/2015 07:59 PM**
Client ID: **SW-RP-6** Run ID: **ICPMS2_151124A** SeqNo: **3588054** Prep Date: **11/24/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1389	0.010	0.1	0.03545	103	75-125	0.1413	1.71	20	
Arsenic	0.1026	0.0050	0.1	0.0008751	102	75-125	0.1037	1.07	20	
Barium	0.1264	0.0050	0.1	0.02711	99.3	75-125	0.1295	2.42	20	
Cadmium	0.1006	0.0020	0.1	7.181E-06	101	75-125	0.103	2.36	20	
Chromium	0.1011	0.0050	0.1	5.341E-06	101	75-125	0.1022	1.08	20	
Copper	0.1015	0.0050	0.1	0.001067	100	75-125	0.1051	3.48	20	
Iron	10.26	0.080	10	-0.01411	103	75-125	10.28	0.195	20	
Lead	0.1035	0.0050	0.1	0.00002252	103	75-125	0.1049	1.34	20	
Manganese	0.103	0.0050	0.1	0.0000211	103	75-125	0.1031	0.097	20	
Potassium	12.59	0.20	10	2.605	99.8	75-125	12.97	2.97	20	
Selenium	0.1001	0.0050	0.1	-2.094E-05	100	75-125	0.1026	2.47	20	
Silver	0.09909	0.0050	0.1	9.534E-07	99.1	75-125	0.09913	0.0404	20	
Zinc	0.1067	0.010	0.1	0.004792	102	75-125	0.1068	0.0937	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79379** Instrument ID **ICPMS2** Method: **SW6020A**

The following samples were analyzed in this batch:

15111219-01C	15111219-03C	15111219-05C
15111219-07C	15111219-09C	15111219-11C
15111219-13C	15111219-15C	15111219-17C
15111219-19C	15111219-21C	15111219-23C
15111219-24C	15111219-26C	15111219-28C
15111219-30C	15111219-32C	15111219-34C
15111219-36C	15111219-38C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79747** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **MBLK-79747-79747** Units: **mg/Kg** Analysis Date: **12/3/2015 10:58 AM**
Client ID: Run ID: **IC3_151203A** SeqNo: **3602878** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

LCS Sample ID: **LCS-79747-79747** Units: **mg/Kg** Analysis Date: **12/3/2015 11:18 AM**
Client ID: Run ID: **IC3_151203A** SeqNo: **3602881** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.52	1.0	20	0	103	80-120	0			
Sulfate	93.05	10	100	0	93	80-120	0			

MS Sample ID: **15111219-12A MS** Units: **mg/Kg** Analysis Date: **12/3/2015 12:59 PM**
Client ID: **Sed-RP-6** Run ID: **IC3_151203A** SeqNo: **3602892** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	21.37	1.0	19.96	0	107	75-125	0			

MS Sample ID: **15111219-12A MS** Units: **mg/Kg** Analysis Date: **12/3/2015 08:44 PM**
Client ID: **Sed-RP-6** Run ID: **IC3_151203A** SeqNo: **3602939** Prep Date: **12/1/2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	343.2	50	99.8	226.4	117	75-125	0			

MSD Sample ID: **15111219-12A MSD** Units: **mg/Kg** Analysis Date: **12/3/2015 01:19 PM**
Client ID: **Sed-RP-6** Run ID: **IC3_151203A** SeqNo: **3602896** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.46	0.99	19.84	0	103	75-125	21.08	3.02	20	

MSD Sample ID: **15111219-12A MSD** Units: **mg/Kg** Analysis Date: **12/3/2015 09:05 PM**
Client ID: **Sed-RP-6** Run ID: **IC3_151203A** SeqNo: **3602940** Prep Date: **12/1/2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	330.6	50	99.21	226.4	105	75-125	343.2	3.75	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79747** Instrument ID **IC3** Method: **SW9056A**

The following samples were analyzed in this batch:

15111219-06A	15111219-08A	15111219-10A
15111219-12A	15111219-14A	15111219-16A
15111219-18A	15111219-20A	15111219-22A
15111219-25A	15111219-27A	15111219-29A
15111219-31A	15111219-33A	15111219-35A
15111219-37A	15111219-39A	15111219-41A
15111219-43A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79748** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **MBLK-79748-79748** Units: **mg/Kg** Analysis Date: **12/2/2015 01:46 PM**
Client ID: Run ID: **IC3_151202A** SeqNo: **3600636** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

LCS Sample ID: **LCS-79748-79748** Units: **mg/Kg** Analysis Date: **12/2/2015 02:06 PM**
Client ID: Run ID: **IC3_151202A** SeqNo: **3600637** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.01	1.0	20	0	100	80-120	0			
Sulfate	89.92	10	100	0	89.9	80-120	0			

MS Sample ID: **15111129-32A MS** Units: **mg/Kg** Analysis Date: **12/2/2015 03:47 PM**
Client ID: Run ID: **IC3_151202A** SeqNo: **3600642** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.45	0.99	19.88	0	103	75-125	0			
Sulfate	147.9	9.9	99.4	51.57	96.9	75-125	0			

MSD Sample ID: **15111129-32A MSD** Units: **mg/Kg** Analysis Date: **12/2/2015 04:07 PM**
Client ID: Run ID: **IC3_151202A** SeqNo: **3600643** Prep Date: **12/1/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.9	0.99	19.72	0	101	75-125	20.45	2.75	20	
Sulfate	137.4	9.9	98.62	51.57	87.1	75-125	147.9	7.33	20	

The following samples were analyzed in this batch: 15111219-02A 15111219-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176724** Instrument ID **IC4** Method: **SW9056A**

MBLK	Sample ID: **CCB/MBLK-R176724**			Units: **mg/L**			Analysis Date: **11/20/2015 09:39 A**			
Client ID:	Run ID: **IC4_151120A**			SeqNo: **3580410**		Prep Date:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								

LCS	Sample ID: **LCS-R176724**			Units: **mg/L**			Analysis Date: **11/20/2015 09:59 A**			
Client ID:	Run ID: **IC4_151120A**			SeqNo: **3580411**		Prep Date:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.915	0.10	2	0	95.7	81-116	0			

MS	Sample ID: **15111219-11B MS**			Units: **mg/L**			Analysis Date: **11/20/2015 06:15 PM**			
Client ID: **SW-RP-6**	Run ID: **IC4_151120A**			SeqNo: **3580432**		Prep Date:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.018	0.10	2	0	101	75-125	0			

MSD	Sample ID: **15111219-11B MSD**			Units: **mg/L**			Analysis Date: **11/20/2015 06:35 PM**			
Client ID: **SW-RP-6**	Run ID: **IC4_151120A**			SeqNo: **3580433**		Prep Date:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.008	0.10	2	0	100	75-125	2.018	0.522	20	

The following samples were analyzed in this batch:

15111219-01B	15111219-03B	15111219-05B
15111219-07B	15111219-09B	15111219-11B
15111219-13B	15111219-15B	15111219-17B
15111219-19B	15111219-21B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176727** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R176727** Units: **mg/L** Analysis Date: **11/21/2015 12:43 A**
Client ID: Run ID: **IC4_151121A** SeqNo: **3580534** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R176727** Units: **mg/L** Analysis Date: **11/21/2015 01:03 A**
Client ID: Run ID: **IC4_151121A** SeqNo: **3580536** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.94	0.10	2	0	97	81-116	0			
Sulfate	10.14	1.0	10	0	101	85-110	0			

MS Sample ID: **15111219-23B MS** Units: **mg/L** Analysis Date: **11/21/2015 01:44 A**
Client ID: **EB-2** Run ID: **IC4_151121A** SeqNo: **3580540** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.118	0.10	2	0.1124	100	75-125	0			
Sulfate	10.07	1.0	10	0	101	75-125	0			

MSD Sample ID: **15111219-23B MSD** Units: **mg/L** Analysis Date: **11/21/2015 02:04 A**
Client ID: **EB-2** Run ID: **IC4_151121A** SeqNo: **3580541** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.12	0.10	2	0.1124	100	75-125	2.118	0.0613	20	
Sulfate	9.658	1.0	10	0	96.6	75-125	10.07	4.17	20	

The following samples were analyzed in this batch:

15111219-23B	15111219-24B	15111219-26B
15111219-28B	15111219-30B	15111219-34B
15111219-36B	15111219-38B	15111219-40B
15111219-42B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R176764** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R176764** Units: **mg/L** Analysis Date: **11/21/2015 11:35 A**
Client ID: Run ID: **IC3_151121A** SeqNo: **3581763** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R176764** Units: **mg/L** Analysis Date: **11/21/2015 11:56 A**
Client ID: Run ID: **IC3_151121A** SeqNo: **3581764** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.99	0.10	2	0	99.5	81-116	0			
Sulfate	9.303	1.0	10	0	93	85-110	0			

MS Sample ID: **15111219-32B MS** Units: **mg/L** Analysis Date: **11/21/2015 02:03 PM**
Client ID: **SW-RP-15** Run ID: **IC3_151121A** SeqNo: **3581767** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.29	1.0	20	0	101	75-125	0			
Sulfate	127.6	10	100	26.71	101	75-125	0			

MSD Sample ID: **15111219-32B MSD** Units: **mg/L** Analysis Date: **11/21/2015 02:23 PM**
Client ID: **SW-RP-15** Run ID: **IC3_151121A** SeqNo: **3581768** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.42	1.0	20	0	102	75-125	20.29	0.653	20	
Sulfate	124.7	10	100	26.71	98	75-125	127.6	2.31	20	

The following samples were analyzed in this batch: 15111219-32B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177137** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R177137** Units: **% of sample** Analysis Date: **11/25/2015**
Client ID: Run ID: **MOIST_151125B** SeqNo: **3592215** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R177137** Units: **% of sample** Analysis Date: **11/25/2015**
Client ID: Run ID: **MOIST_151125B** SeqNo: **3592210** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111219-12A DUP** Units: **% of sample** Analysis Date: **11/25/2015**
Client ID: **Sed-RP-6** Run ID: **MOIST_151125B** SeqNo: **3592195** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	73.01	0.050	0	0	0		76.37	4.5	20	

DUP Sample ID: **15111398-01B DUP** Units: **% of sample** Analysis Date: **11/25/2015**
Client ID: Run ID: **MOIST_151125B** SeqNo: **3592205** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	17.47	0.050	0	0	0		18.58	6.16	20	

The following samples were analyzed in this batch:

15111219-02A	15111219-04A	15111219-06A
15111219-08A	15111219-10A	15111219-12A
15111219-14A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177144** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R177144** Units: **% of sample** Analysis Date: **11/25/2015 07:16 PM**
Client ID: Run ID: **MOIST_151125C** SeqNo: **3592819** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R177144** Units: **% of sample** Analysis Date: **11/25/2015 07:16 PM**
Client ID: Run ID: **MOIST_151125C** SeqNo: **3592818** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111219-37A DUP** Units: **% of sample** Analysis Date: **11/25/2015 07:16 PM**
Client ID: **Sed-RP-17** Run ID: **MOIST_151125C** SeqNo: **3592807** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	75.91	0.050	0	0	0		74.83	1.43	20	

DUP Sample ID: **15111219-16A DUP** Units: **% of sample** Analysis Date: **11/25/2015 07:16 PM**
Client ID: **Sed-RP-8** Run ID: **MOIST_151125C** SeqNo: **3592817** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	89.98	0.050	0	0	0		89.93	0.0556	20	

The following samples were analyzed in this batch:

15111219-16A	15111219-18A	15111219-20A
15111219-22A	15111219-25A	15111219-27A
15111219-29A	15111219-31A	15111219-33A
15111219-35A	15111219-37A	15111219-39A
15111219-41A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177147** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R177147** Units: **% of sample** Analysis Date: **11/25/2015 11:00 A**
Client ID: Run ID: **MOIST_151125D** SeqNo: **3592411** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.050								J

LCS Sample ID: **LCS-R177147** Units: **% of sample** Analysis Date: **11/25/2015 11:00 A**
Client ID: Run ID: **MOIST_151125D** SeqNo: **3592406** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	99.99	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111277-08A DUP** Units: **% of sample** Analysis Date: **11/25/2015 11:00 A**
Client ID: Run ID: **MOIST_151125D** SeqNo: **3592387** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.16	0.050	0	0	0		14.84	2.13	20	

DUP Sample ID: **15111302-01A DUP** Units: **% of sample** Analysis Date: **11/25/2015 11:00 A**
Client ID: Run ID: **MOIST_151125D** SeqNo: **3592389** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	6.81	0.050	0	0	0		6.99	2.61	20	

The following samples were analyzed in this batch: 15111219-43A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 15111219
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177218** Instrument ID **IC3** Method: **SW9056A**

MBLK	Sample ID: **CCB/MBLK-R177218**			Units: **mg/L**			Analysis Date: **11/29/2015 08:16 PM**			
Client ID:	Run ID: **IC3_151129A**			SeqNo: **3594831**		Prep Date:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	1.0								

LCS	Sample ID: **LCS-R177218**			Units: **mg/L**			Analysis Date: **11/29/2015 08:36 PM**			
Client ID:	Run ID: **IC3_151129A**			SeqNo: **3594832**		Prep Date:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.081	1.0	10	0	90.8	85-110	0			

MS	Sample ID: **15111219-11B MS**			Units: **mg/L**			Analysis Date: **11/29/2015 11:44 PM**			
Client ID: **SW-RP-6**	Run ID: **IC3_151129A**			SeqNo: **3594841**		Prep Date:		DF: **3**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	32.6	3.0	10	26.58	60.2	75-125	0			S

MSD	Sample ID: **15111219-11B MSD**			Units: **mg/L**			Analysis Date: **11/30/2015 12:04 A**			
Client ID: **SW-RP-6**	Run ID: **IC3_151129A**			SeqNo: **3594842**		Prep Date:		DF: **3**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	32.55	3.0	10	26.58	59.7	75-125	32.6	0.145	20	S

The following samples were analyzed in this batch:

15111219-01B	15111219-03B	15111219-05B
15111219-07B	15111219-09B	15111219-11B
15111219-13B	15111219-15B	15111219-17B
15111219-19B	15111219-21B	15111219-24B
15111219-26B	15111219-28B	15111219-30B
15111219-34B	15111219-36B	15111219-38B
15111219-40B	15111219-42B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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ALS Environmental

Chain of Custody Form

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COC ID: 30514

ALS Project Manager: | ALS Work Order #: 1511219

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals (dissolved) in water
Work Order		Project Number		B	Mercury (low level) in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-RP-1	11-19-15	1308	W	—	3	X	X	X								
2	Sed-RP-1		1308	Sed	—	1				X	X	X					
3	SW-RP-2		1133	W	—	3	X	X	X								
4	Sed-RP-2		1133	Sed	—	1				X	X	X					
5	SW-RP-3		1250	W	—	3	X	X	X								
6	Sed-RP-3		1250	Sed	—	1				X	X	X					
7	SW-RP-4		1317	W	—	3	X	X	X								
8	Sed-RP-4		1317	Sed	—	1				X	X	X					
9	SW-RP-5		1300	W	—	3	X	X	X								
10	Sed-RP-5		1300	Sed	—	1				X	X	X					

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☒ Other Standard ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date: 11/20/15	Time: 1000	Received by:	Notes:
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory): KL	Date: 11/20/15	Time: 1400	Checked by (Laboratory):	

Cooler ID	Cooler Temp
4.2°	4.8°
	5.2°
	3.4°

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

Page ____ of ____

COC ID: 30513

ALS Project Manager: | ALS Work Order #: 1511219

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals (dissolved) in water
Work Order		Project Number		B	Mercury (low level) in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin, Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	MS/MSD
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	SW-RP-6	11-19-15	1119	W	—	6	X	X	X					X			
12	Sed-RP-6		1119	Sed	—	2				X	X	X		X			
13	SW-RP-7		0953	W	—	3	X	X	X								
14	Sed-RP-7		0953	Sed	—	1				X	X	X					
15	SW-RP-8		1326	W	—	3	X	X	X								
16	Sed-RP-8		1326	Sed	—	1				X	X	X					
17	SW-RP-9		1339	W	—	3	X	X	X								
18	Sed-RP-9		1339	Sed	—	1				X	X	X					
19	SW-RP-10		0926	W	—	3	X	X	X								
20	Sed-RP-10		0926	Sed	—	1				X	X	X					

Sampler(s) Please Print & Sign: Ryan Martin

Shipment Method: —

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☒ Other Standard

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Ryan A. Martin	11/20/15	1005	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

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COC ID: 18099

ALS Project Manager: | ALS Work Order #: 1511219

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden dunes	A	Metals (dissolved) in water
Work Order		Project Number		B	Mercury (low level) in water
Company Name	ERM	Bill To Company	ERM, Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd suite 560W Indianapolis, IN, 46240	Address	one Continental Towers 1701 Golf Rd. suite 1-1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip		City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	317-706-2000	Phone		H	
Fax	317-706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
21	Dup-RPSW-1	11-19-15	—	W	—	3	X	X	X								
22	Dup-RPSed-1		—	Sed	—	1				X	X	X					
23	EB-2		0805	W	—	3	X	X	X								
24	SW-RP-11		1108	W	—	3	X	X	X			\					
25	Sed-RP-11		1108	Sed	—	1				X	X	X					
26	SW-RP-12		1059	W	—	3	X	X	X								
27	Sed-RP-12		1059	Sed	—	1				X	X	X					
28	SW-RP-13		0944	W	—	3	X	X	X								
29	Sed-RP-13		0944	Sed	—	1				X	X	X					
30	SW-RP-14		0935	W	—	3	X	X	X								

Sampler(s) Please Print & Sign: Brian Alexander

Shipment Method: —

Required Turnaround Time: (Check Box) ☒ Other Standard ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Brian Alexander	11/20/15	1000		
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☑ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

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COC ID: 25325

ALS Project Manager: | ALS Work Order #: 1511219

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	EAV Ogden Dunes	A	Metals (dissolved) in water
Work Order		Project Number		B	Mercury (low level) in water
Company Name	Erm	Bill To Company	ERM Inc	C	Anions in water
Send Report To	Martin Ryan	Invoice Attn	Accounts Payable	D	Metals in sediment
Address	8425 Woodfield Crossing Blvd Suite 560 W	Address	One Continental Tower 1701 Golf Rd Suite 1-1000	E	Mercury in sediment
				F	Anions in sediment
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	317-706-2000	Phone		H	
Fax	317-706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
31	Sed-RP-14	11-9-15	0935	Sed	—	1				X	X	X					
32	SW-RP-15		0916	W	—	3	X	X	X								
33	Sed-RP-15		0916	Sed	—	1				X	X	X					
34	SW-RP-16		1050	W	—	3	X	X	X								
35	Sed-RP-16		1050	Sed	—	1				X	X	X					
36	SW-RP-17		0906	W	—	3	X	X	X								
37	Sed-RP-17		0906	Sed	—	1				X	X	X					
38	SW-RP-18		0849	W	—	3	X	X	X								
39	Sed-RP-18		0849	Sed	—	1				X	X	X					
40	SW-RP-19		0840	W	—	3	X	X	X								

Sampler(s) Please Print & Sign: Dawn Alexander

Shipment Method: —

Required Turnaround Time: (Check Box) ☒ Other Standard ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	11/20/15	1000	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

Page ____ of ____

COC ID: 25326

ALS Project Manager: | ALS Work Order #: 1511219

Customer Information

Purchase Order	
Work Order	
Company Name	ERM
Send Report To	Martin Ryan
Address	8425 Woodfield Crossing Blvd suite 560 W
City/State/Zip	Indianapolis, IN 46240
Phone	317-706-2000
Fax	317-706-2010
e-Mail Address	martin.ryan@erm.com

Project Information

Project Name	IAW Ogden Dunes
Project Number	
Bill To Company	ERM, Inc
Invoice Attn	Accounts Payable
Address	One Continental Towers 1701 Golf Rd suite 1-1000
City/State/Zip	Rolling Meadows, IL 60008
Phone	
Fax	
e-Mail Address	

Parameter/Method Request for Analysis

A	Metals (dissolved) in water
B	Mercury (low level) in water
C	Anions in water
D	Metals in soil
E	Mercury in soil
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Sed-RP-19	11-19-15	0840	Sed	—	1				X	X	X					
2	SW-RP-20	↓	0823	W	—	3	X	X	X								
3	Sed-RP-20	↓	0823	Sed	—	1				X	X	X					
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method:

Required Turnaround Time: (Check Box) ☒ Other Standard ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by: A. Alexander	Date: 11/20/15	Time: 1005	Received by:	
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)

- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **20-Nov-15 00:00**

Work Order: **15111219** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 20-Nov-15 (Date) Reviewed by: Bill Carey (eSignature) 22-Nov-15 (Date)

Matrices: Water & Sediment

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.2, 4.8, 5.2, 3.4 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	11/20/2015 2:01:20 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

15-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1512317**

Dear Marty,

ALS Environmental received 14 samples on 04-Dec-2015 01:05 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1512317**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1512317-01	SG-RP-1	Soil		12/3/2015 09:45	12/4/2015 13:05	☐
1512317-02	SG-RP-2	Soil		12/3/2015 09:50	12/4/2015 13:05	☐
1512317-03	SG-RP-3	Soil		12/3/2015 09:55	12/4/2015 13:05	☐
1512317-04	SG-RP-4	Soil		12/3/2015 10:00	12/4/2015 13:05	☐
1512317-05	SG-RP-5	Soil		12/3/2015 10:05	12/4/2015 13:05	☐
1512317-06	SG-RP-6	Soil		12/3/2015 10:10	12/4/2015 13:05	☐
1512317-07	SG-RP-7	Soil		12/3/2015 10:15	12/4/2015 13:05	☐
1512317-08	SG-RP-8	Soil		12/3/2015 10:20	12/4/2015 13:05	☐
1512317-09	SG-RP-9	Soil		12/3/2015 11:15	12/4/2015 13:05	☐
1512317-10	SG-RP-10	Soil		12/3/2015 11:20	12/4/2015 13:05	☐
1512317-11	SG-RP-11	Soil		12/3/2015 11:25	12/4/2015 13:05	☐
1512317-12	SG-RP-12	Soil		12/3/2015 11:30	12/4/2015 13:05	☐
1512317-13	SG-RP-13	Soil		12/3/2015 11:35	12/4/2015 13:05	☐
1512317-14	DUP-SG-RP-1	Soil		12/3/2015	12/4/2015 13:05	☐

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1512317**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1512317

Case Narrative

Samples for the above noted Work Order were received on 12/4/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 79893, Method ICP_6010_S, Sample 1512317-11AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Fe

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Co,Mg,Cr,Ni

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Mn,Zn

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Ba,Cu,Li,V

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMSD: The RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for this analyte: Ca,Cr,Fe,Mg,Ni

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Ca,Fe

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Co,Mg

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMSD: The RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for this analyte: Al,Mn,Zn,Ba,Cu,Li,V,K

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al,Mn,Zn

Batch 79893, Method ICP_6010_S, Sample 1512317-11AMSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Ba,Cu,Li,V

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-1
Collection Date: 12/3/2015 09:45 AM

Work Order: 1512317
Lab ID: 1512317-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.0067**	J	**0.0015**	**0.018**	**mg/Kg-dry**	1	12/9/2015 22:22
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**610**		**0.16**	**0.91**	**mg/Kg-dry**	1	12/8/2015 20:41
Arsenic	**0.63**		**0.11**	**0.45**	**mg/Kg-dry**	1	12/8/2015 20:41
Barium	**3.6**		**0.21**	**0.45**	**mg/Kg-dry**	1	12/8/2015 20:41
Cadmium	U		0.071	0.91	mg/Kg-dry	1	12/8/2015 20:41
Chromium	**1.9**		**0.015**	**0.45**	**mg/Kg-dry**	1	12/9/2015 17:24
Copper	**1.0**		**0.049**	**0.91**	**mg/Kg-dry**	1	12/8/2015 20:41
Iron	**1,200**		**0.70**	**7.3**	**mg/Kg-dry**	1	12/9/2015 17:24
Lead	**1.9**		**0.055**	**0.45**	**mg/Kg-dry**	1	12/8/2015 20:41
Manganese	**11**		**0.031**	**0.45**	**mg/Kg-dry**	1	12/9/2015 17:24
Potassium	**74**		**4.1**	**18**	**mg/Kg-dry**	1	12/8/2015 20:41
Selenium	**0.29**	J	**0.27**	**0.91**	**mg/Kg-dry**	1	12/8/2015 20:41
Silver	U		0.045	0.45	mg/Kg-dry	1	12/8/2015 20:41
Zinc	**22**		**0.15**	**0.91**	**mg/Kg-dry**	1	12/8/2015 20:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.26	1.3	mg/Kg-dry	1	12/14/2015 14:46
Sulfate	**6.4**	J	**0.80**	**13**	**mg/Kg-dry**	1	12/14/2015 14:46
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**22**		**0.025**	**0.050**	**% of sample**	1	12/4/2015 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-2
Collection Date: 12/3/2015 09:50 AM

Work Order: 1512317
Lab ID: 1512317-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.0097**	J	**0.0016**	**0.018**	**mg/Kg-dry**	1	12/9/2015 22:24
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**760**		**0.15**	**0.84**	**mg/Kg-dry**	1	12/8/2015 20:46
Arsenic	**1.1**		**0.10**	**0.42**	**mg/Kg-dry**	1	12/8/2015 20:46
Barium	**3.2**		**0.20**	**0.42**	**mg/Kg-dry**	1	12/8/2015 20:46
Cadmium	U		0.066	0.84	mg/Kg-dry	1	12/8/2015 20:46
Chromium	**2.0**		**0.013**	**0.42**	**mg/Kg-dry**	1	12/9/2015 17:30
Copper	**2.7**		**0.045**	**0.84**	**mg/Kg-dry**	1	12/8/2015 20:46
Iron	**1,600**		**0.64**	**6.7**	**mg/Kg-dry**	1	12/9/2015 17:30
Lead	**1.9**		**0.050**	**0.42**	**mg/Kg-dry**	1	12/8/2015 20:46
Manganese	**18**		**0.029**	**0.42**	**mg/Kg-dry**	1	12/9/2015 17:30
Potassium	**130**		**3.8**	**17**	**mg/Kg-dry**	1	12/8/2015 20:46
Selenium	**0.33**	J	**0.25**	**0.84**	**mg/Kg-dry**	1	12/8/2015 20:46
Silver	U		0.042	0.42	mg/Kg-dry	1	12/8/2015 20:46
Zinc	**21**		**0.13**	**0.84**	**mg/Kg-dry**	1	12/8/2015 20:46
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.27	1.3	mg/Kg-dry	1	12/14/2015 15:06
Sulfate	**5.2**	J	**0.82**	**13**	**mg/Kg-dry**	1	12/14/2015 15:06
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**22**		**0.025**	**0.050**	**% of sample**	1	12/4/2015 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-3
Collection Date: 12/3/2015 09:55 AM

Work Order: 1512317
Lab ID: 1512317-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.011**	J	**0.0015**	**0.018**	**mg/Kg-dry**	1	12/9/2015 22:26
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**1,100**		**0.17**	**0.99**	**mg/Kg-dry**	1	12/8/2015 20:52
Arsenic	**1.4**		**0.12**	**0.50**	**mg/Kg-dry**	1	12/8/2015 20:52
Barium	**6.3**		**0.23**	**0.50**	**mg/Kg-dry**	1	12/8/2015 20:52
Cadmium	U		0.077	0.99	mg/Kg-dry	1	12/8/2015 20:52
Chromium	**2.5**		**0.016**	**0.50**	**mg/Kg-dry**	1	12/9/2015 17:35
Copper	**2.2**		**0.054**	**0.99**	**mg/Kg-dry**	1	12/8/2015 20:52
Iron	**2,000**		**0.76**	**7.9**	**mg/Kg-dry**	1	12/9/2015 17:35
Lead	**3.8**		**0.060**	**0.50**	**mg/Kg-dry**	1	12/8/2015 20:52
Manganese	**12**		**0.034**	**0.50**	**mg/Kg-dry**	1	12/9/2015 17:35
Potassium	**120**		**4.4**	**20**	**mg/Kg-dry**	1	12/8/2015 20:52
Selenium	**0.42**	J	**0.30**	**0.99**	**mg/Kg-dry**	1	12/8/2015 20:52
Silver	U		0.050	0.50	mg/Kg-dry	1	12/8/2015 20:52
Zinc	**16**		**0.16**	**0.99**	**mg/Kg-dry**	1	12/8/2015 20:52
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**0.65**	J	**0.29**	**1.4**	**mg/Kg-dry**	1	12/14/2015 15:27
Sulfate	**10**	J	**0.88**	**14**	**mg/Kg-dry**	1	12/14/2015 15:27
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**30**		**0.025**	**0.050**	**% of sample**	1	12/4/2015 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-4
Collection Date: 12/3/2015 10:00 AM

Work Order: 1512317
Lab ID: 1512317-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.011**	J	**0.0013**	**0.016**	**mg/Kg-dry**	1	12/9/2015 22:35
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**1,100**		**0.14**	**0.82**	**mg/Kg-dry**	1	12/8/2015 20:57
Arsenic	**1.1**		**0.10**	**0.41**	**mg/Kg-dry**	1	12/8/2015 20:57
Barium	**4.5**		**0.19**	**0.41**	**mg/Kg-dry**	1	12/8/2015 20:57
Cadmium	U		0.064	0.82	mg/Kg-dry	1	12/8/2015 20:57
Chromium	**2.7**		**0.013**	**0.41**	**mg/Kg-dry**	1	12/9/2015 17:41
Copper	**1.6**		**0.044**	**0.82**	**mg/Kg-dry**	1	12/8/2015 20:57
Iron	**1,900**		**0.63**	**6.5**	**mg/Kg-dry**	1	12/9/2015 17:41
Lead	**2.6**		**0.049**	**0.41**	**mg/Kg-dry**	1	12/8/2015 20:57
Manganese	**22**		**0.028**	**0.41**	**mg/Kg-dry**	1	12/9/2015 17:41
Potassium	**100**		**3.6**	**16**	**mg/Kg-dry**	1	12/8/2015 20:57
Selenium	**0.40**	J	**0.24**	**0.82**	**mg/Kg-dry**	1	12/8/2015 20:57
Silver	U		0.041	0.41	mg/Kg-dry	1	12/8/2015 20:57
Zinc	**23**		**0.13**	**0.82**	**mg/Kg-dry**	1	12/8/2015 20:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**1.0**	J	**0.24**	**1.2**	**mg/Kg-dry**	1	12/14/2015 15:47
Sulfate	**4.4**	J	**0.74**	**12**	**mg/Kg-dry**	1	12/14/2015 15:47
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**16**		**0.025**	**0.050**	**% of sample**	1	12/4/2015 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-5
Collection Date: 12/3/2015 10:05 AM

Work Order: 1512317
Lab ID: 1512317-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.024**		**0.0018**	**0.021**	**mg/Kg-dry**	1	12/9/2015 22:37
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**3,400**		**0.20**	**1.1**	**mg/Kg-dry**	1	12/8/2015 21:03
Arsenic	**3.3**		**0.14**	**0.57**	**mg/Kg-dry**	1	12/8/2015 21:03
Barium	**27**		**0.26**	**0.57**	**mg/Kg-dry**	1	12/8/2015 21:03
Cadmium	U		0.088	1.1	mg/Kg-dry	1	12/8/2015 21:03
Chromium	**7.8**		**0.018**	**0.57**	**mg/Kg-dry**	1	12/9/2015 17:47
Copper	**9.8**		**0.061**	**1.1**	**mg/Kg-dry**	1	12/8/2015 21:03
Iron	**6,200**		**0.87**	**9.0**	**mg/Kg-dry**	1	12/9/2015 17:47
Lead	**9.6**		**0.068**	**0.57**	**mg/Kg-dry**	1	12/8/2015 21:03
Manganese	**160**		**0.038**	**0.57**	**mg/Kg-dry**	1	12/9/2015 17:47
Potassium	**320**		**5.0**	**23**	**mg/Kg-dry**	1	12/8/2015 21:03
Selenium	**0.96**	J	**0.34**	**1.1**	**mg/Kg-dry**	1	12/8/2015 21:03
Silver	U		0.057	0.57	mg/Kg-dry	1	12/8/2015 21:03
Zinc	**250**		**0.18**	**1.1**	**mg/Kg-dry**	1	12/8/2015 21:03
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.30	1.4	mg/Kg-dry	1	12/14/2015 16:07
Sulfate	**19**		**0.92**	**14**	**mg/Kg-dry**	1	12/14/2015 16:07
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**31**		**0.025**	**0.050**	**% of sample**	1	12/4/2015 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-6
Collection Date: 12/3/2015 10:10 AM

Work Order: 1512317
Lab ID: 1512317-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.0067**	J	**0.0013**	**0.015**	**mg/Kg-dry**	1	12/9/2015 22:39
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**2,500**		**0.16**	**0.88**	**mg/Kg-dry**	1	12/8/2015 21:08
Arsenic	**1.0**		**0.11**	**0.44**	**mg/Kg-dry**	1	12/8/2015 21:08
Barium	**25**		**0.20**	**0.44**	**mg/Kg-dry**	1	12/8/2015 21:08
Cadmium	U		0.069	0.88	mg/Kg-dry	1	12/8/2015 21:08
Chromium	**4.2**		**0.014**	**0.44**	**mg/Kg-dry**	1	12/9/2015 17:52
Copper	**1.2**		**0.048**	**0.88**	**mg/Kg-dry**	1	12/8/2015 21:08
Iron	**2,200**		**0.68**	**7.1**	**mg/Kg-dry**	1	12/9/2015 17:52
Lead	**2.3**		**0.053**	**0.44**	**mg/Kg-dry**	1	12/8/2015 21:08
Manganese	**310**		**0.030**	**0.44**	**mg/Kg-dry**	1	12/9/2015 17:52
Potassium	**170**		**3.9**	**18**	**mg/Kg-dry**	1	12/8/2015 21:08
Selenium	**0.50**	J	**0.26**	**0.88**	**mg/Kg-dry**	1	12/8/2015 21:08
Silver	U		0.044	0.44	mg/Kg-dry	1	12/8/2015 21:08
Zinc	**12**		**0.14**	**0.88**	**mg/Kg-dry**	1	12/8/2015 21:08
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.26	1.2	mg/Kg-dry	1	12/14/2015 16:27
Sulfate	**10**	J	**0.78**	**12**	**mg/Kg-dry**	1	12/14/2015 16:27
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**21**		**0.025**	**0.050**	**% of sample**	1	12/4/2015 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-7
Collection Date: 12/3/2015 10:15 AM

Work Order: 1512317
Lab ID: 1512317-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.0050**	J	**0.0014**	**0.017**	**mg/Kg-dry**	1	12/9/2015 22:42
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**770**		**0.16**	**0.92**	**mg/Kg-dry**	1	12/8/2015 21:14
Arsenic	**0.91**		**0.11**	**0.46**	**mg/Kg-dry**	1	12/8/2015 21:14
Barium	**6.5**		**0.21**	**0.46**	**mg/Kg-dry**	1	12/8/2015 21:14
Cadmium	U		0.072	0.92	mg/Kg-dry	1	12/8/2015 21:14
Chromium	**2.1**		**0.015**	**0.46**	**mg/Kg-dry**	1	12/9/2015 17:57
Copper	**1.2**		**0.050**	**0.92**	**mg/Kg-dry**	1	12/8/2015 21:14
Iron	**2,200**		**0.70**	**7.3**	**mg/Kg-dry**	1	12/9/2015 17:57
Lead	**2.3**		**0.055**	**0.46**	**mg/Kg-dry**	1	12/8/2015 21:14
Manganese	**31**		**0.031**	**0.46**	**mg/Kg-dry**	1	12/9/2015 17:57
Potassium	**90**		**4.1**	**18**	**mg/Kg-dry**	1	12/8/2015 21:14
Selenium	**0.46**	J	**0.28**	**0.92**	**mg/Kg-dry**	1	12/8/2015 21:14
Silver	U		0.046	0.46	mg/Kg-dry	1	12/8/2015 21:14
Zinc	**8.1**		**0.15**	**0.92**	**mg/Kg-dry**	1	12/8/2015 21:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	U		0.28	1.3	mg/Kg-dry	1	12/14/2015 16:47
Sulfate	**17**		**0.86**	**13**	**mg/Kg-dry**	1	12/14/2015 16:47
MOISTURE		Method: **E160.3M**					Analyst: **ED**
Moisture	**27**		**0.025**	**0.050**	**% of sample**	1	12/4/2015 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-8
Collection Date: 12/3/2015 10:20 AM

Work Order: 1512317
Lab ID: 1512317-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.0066**	J	**0.0011**	**0.013**	**mg/Kg-dry**	1	12/9/2015 22:44
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**1,400**		**0.12**	**0.70**	**mg/Kg-dry**	1	12/8/2015 21:19
Arsenic	**0.93**		**0.085**	**0.35**	**mg/Kg-dry**	1	12/8/2015 21:19
Barium	**8.3**		**0.16**	**0.35**	**mg/Kg-dry**	1	12/8/2015 21:19
Cadmium	U		0.054	0.70	mg/Kg-dry	1	12/8/2015 21:19
Chromium	**3.0**		**0.011**	**0.35**	**mg/Kg-dry**	1	12/9/2015 18:03
Copper	**2.2**		**0.038**	**0.70**	**mg/Kg-dry**	1	12/8/2015 21:19
Iron	**1,800**		**0.53**	**5.6**	**mg/Kg-dry**	1	12/9/2015 18:03
Lead	**2.7**		**0.042**	**0.35**	**mg/Kg-dry**	1	12/8/2015 21:19
Manganese	**57**		**0.024**	**0.35**	**mg/Kg-dry**	1	12/9/2015 18:03
Potassium	**140**		**3.1**	**14**	**mg/Kg-dry**	1	12/8/2015 21:19
Selenium	**0.37**	J	**0.21**	**0.70**	**mg/Kg-dry**	1	12/8/2015 21:19
Silver	U		0.035	0.35	mg/Kg-dry	1	12/8/2015 21:19
Zinc	**16**		**0.11**	**0.70**	**mg/Kg-dry**	1	12/8/2015 21:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**2.6**		**0.22**	**1.1**	**mg/Kg-dry**	1	12/14/2015 17:08
Sulfate	**3.5**	J	**0.67**	**11**	**mg/Kg-dry**	1	12/14/2015 17:08
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**6.3**		**0.025**	**0.050**	**% of sample**	1	12/7/2015 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-9
Collection Date: 12/3/2015 11:15 AM

Work Order: 1512317
Lab ID: 1512317-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.024**		**0.0015**	**0.018**	**mg/Kg-dry**	1	12/9/2015 22:46
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**9,100**		**0.16**	**0.89**	**mg/Kg-dry**	1	12/8/2015 21:42
Arsenic	**6.8**		**0.11**	**0.44**	**mg/Kg-dry**	1	12/8/2015 21:42
Barium	**51**		**0.21**	**0.44**	**mg/Kg-dry**	1	12/8/2015 21:42
Cadmium	U		0.069	0.89	mg/Kg-dry	1	12/8/2015 21:42
Chromium	**15**		**0.014**	**0.44**	**mg/Kg-dry**	1	12/9/2015 18:09
Copper	**17**		**0.048**	**0.89**	**mg/Kg-dry**	1	12/8/2015 21:42
Iron	**16,000**		**0.68**	**7.1**	**mg/Kg-dry**	1	12/9/2015 18:09
Lead	**14**		**0.053**	**0.44**	**mg/Kg-dry**	1	12/8/2015 21:42
Manganese	**500**		**0.030**	**0.44**	**mg/Kg-dry**	1	12/8/2015 21:42
Potassium	**1,100**		**4.0**	**18**	**mg/Kg-dry**	1	12/8/2015 21:42
Selenium	**1.2**		**0.27**	**0.89**	**mg/Kg-dry**	1	12/8/2015 21:42
Silver	U		0.044	0.44	mg/Kg-dry	1	12/8/2015 21:42
Zinc	**99**		**0.14**	**0.89**	**mg/Kg-dry**	1	12/8/2015 21:42
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**1.9**		**0.25**	**1.2**	**mg/Kg-dry**	1	12/14/2015 17:28
Sulfate	**4.3**	J	**0.77**	**12**	**mg/Kg-dry**	1	12/14/2015 17:28
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**17**		**0.025**	**0.050**	**% of sample**	1	12/7/2015 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-10
Collection Date: 12/3/2015 11:20 AM

Work Order: 1512317
Lab ID: 1512317-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.029**		**0.0013**	**0.016**	**mg/Kg-dry**	1	12/9/2015 22:48
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**8,600**		**0.13**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:47
Arsenic	**6.0**		**0.092**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:47
Barium	**46**		**0.18**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:47
Cadmium	U		0.059	0.76	mg/Kg-dry	1	12/8/2015 21:47
Chromium	**14**		**0.012**	**0.38**	**mg/Kg-dry**	1	12/9/2015 18:31
Copper	**15**		**0.041**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:47
Iron	**15,000**		**0.58**	**6.1**	**mg/Kg-dry**	1	12/9/2015 18:31
Lead	**14**		**0.045**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:47
Manganese	**440**		**0.026**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:47
Potassium	**920**		**3.4**	**15**	**mg/Kg-dry**	1	12/8/2015 21:47
Selenium	**0.66**	J	**0.23**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:47
Silver	U		0.038	0.38	mg/Kg-dry	1	12/8/2015 21:47
Zinc	**65**		**0.12**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:47
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**2.8**		**0.24**	**1.1**	**mg/Kg-dry**	1	12/14/2015 17:48
Sulfate	**6.2**	J	**0.73**	**11**	**mg/Kg-dry**	1	12/14/2015 17:48
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**15**		**0.025**	**0.050**	**% of sample**	1	12/7/2015 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-11
Collection Date: 12/3/2015 11:25 AM

Work Order: 1512317
Lab ID: 1512317-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.032**		**0.0014**	**0.016**	**mg/Kg-dry**	1	12/9/2015 22:51
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**4,400**		**0.13**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:53
Arsenic	**3.7**		**0.093**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:53
Barium	**24**		**0.18**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:53
Cadmium	U		0.059	0.76	mg/Kg-dry	1	12/8/2015 21:53
Chromium	**8.9**		**0.012**	**0.38**	**mg/Kg-dry**	1	12/9/2015 18:37
Copper	**7.9**		**0.041**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:53
Iron	**9,200**		**0.58**	**6.1**	**mg/Kg-dry**	1	12/9/2015 18:37
Lead	**12**		**0.046**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:53
Manganese	**220**		**0.026**	**0.38**	**mg/Kg-dry**	1	12/8/2015 21:53
Potassium	**460**		**3.4**	**15**	**mg/Kg-dry**	1	12/8/2015 21:53
Selenium	**0.78**		**0.23**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:53
Silver	U		0.038	0.38	mg/Kg-dry	1	12/8/2015 21:53
Zinc	**190**		**0.12**	**0.76**	**mg/Kg-dry**	1	12/8/2015 21:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**0.82**	J	**0.25**	**1.2**	**mg/Kg-dry**	1	12/14/2015 11:24
Sulfate	**7.8**	J	**0.75**	**12**	**mg/Kg-dry**	1	12/14/2015 11:24
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**15**		**0.025**	**0.050**	**% of sample**	1	12/7/2015 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-12
Collection Date: 12/3/2015 11:30 AM

Work Order: 1512317
Lab ID: 1512317-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.031**		**0.0014**	**0.017**	**mg/Kg-dry**	1	12/9/2015 23:04
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**4,100**		**0.14**	**0.77**	**mg/Kg-dry**	1	12/8/2015 22:20
Arsenic	**3.8**		**0.094**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:20
Barium	**26**		**0.18**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:20
Cadmium	U		0.060	0.77	mg/Kg-dry	1	12/8/2015 22:20
Chromium	**7.7**		**0.012**	**0.39**	**mg/Kg-dry**	1	12/9/2015 18:53
Copper	**7.7**		**0.042**	**0.77**	**mg/Kg-dry**	1	12/8/2015 22:20
Iron	**7,300**		**0.59**	**6.2**	**mg/Kg-dry**	1	12/9/2015 18:53
Lead	**8.9**		**0.046**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:20
Manganese	**180**		**0.026**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:20
Potassium	**450**		**3.5**	**15**	**mg/Kg-dry**	1	12/8/2015 22:20
Selenium	**0.73**	J	**0.23**	**0.77**	**mg/Kg-dry**	1	12/8/2015 22:20
Silver	U		0.039	0.39	mg/Kg-dry	1	12/8/2015 22:20
Zinc	**38**		**0.12**	**0.77**	**mg/Kg-dry**	1	12/8/2015 22:20
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**3.9**		**0.24**	**1.1**	**mg/Kg-dry**	1	12/14/2015 18:49
Sulfate	**4.7**	J	**0.73**	**11**	**mg/Kg-dry**	1	12/14/2015 18:49
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**13**		**0.025**	**0.050**	**% of sample**	1	12/7/2015 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SG-RP-13
Collection Date: 12/3/2015 11:35 AM

Work Order: 1512317
Lab ID: 1512317-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.13**		**0.0012**	**0.014**	**mg/Kg-dry**	1	12/9/2015 23:06
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**730**		**0.13**	**0.74**	**mg/Kg-dry**	1	12/8/2015 22:25
Arsenic	**2.4**		**0.090**	**0.37**	**mg/Kg-dry**	1	12/8/2015 22:25
Barium	**7.5**		**0.17**	**0.37**	**mg/Kg-dry**	1	12/8/2015 22:25
Cadmium	U		0.058	0.74	mg/Kg-dry	1	12/8/2015 22:25
Chromium	**2.7**		**0.012**	**0.37**	**mg/Kg-dry**	1	12/9/2015 18:58
Copper	**2.2**		**0.040**	**0.74**	**mg/Kg-dry**	1	12/8/2015 22:25
Iron	**2,900**		**0.57**	**5.9**	**mg/Kg-dry**	1	12/9/2015 18:58
Lead	**11**		**0.044**	**0.37**	**mg/Kg-dry**	1	12/8/2015 22:25
Manganese	**58**		**0.025**	**0.37**	**mg/Kg-dry**	1	12/8/2015 22:25
Potassium	**99**		**3.3**	**15**	**mg/Kg-dry**	1	12/8/2015 22:25
Selenium	**0.49**	J	**0.22**	**0.74**	**mg/Kg-dry**	1	12/8/2015 22:25
Silver	U		0.037	0.37	mg/Kg-dry	1	12/8/2015 22:25
Zinc	**73**		**0.12**	**0.74**	**mg/Kg-dry**	1	12/8/2015 22:25
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**5.4**		**0.23**	**1.1**	**mg/Kg-dry**	1	12/14/2015 19:09
Sulfate	**4.7**	J	**0.69**	**11**	**mg/Kg-dry**	1	12/14/2015 19:09
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**7.5**		**0.025**	**0.050**	**% of sample**	1	12/7/2015 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-SG-RP-1
Collection Date: 12/3/2015

Work Order: 1512317
Lab ID: 1512317-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 12/9/15		Analyst: **LR**
Mercury	**0.023**		**0.0014**	**0.016**	**mg/Kg-dry**	1	12/9/2015 23:08
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 12/7/15		Analyst: **JEC**
Aluminum	**9,400**		**0.14**	**0.77**	**mg/Kg-dry**	1	12/8/2015 22:31
Arsenic	**7.0**		**0.094**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:31
Barium	**52**		**0.18**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:31
Cadmium	U		0.060	0.77	mg/Kg-dry	1	12/8/2015 22:31
Chromium	**15**		**0.012**	**0.39**	**mg/Kg-dry**	1	12/9/2015 19:04
Copper	**17**		**0.042**	**0.77**	**mg/Kg-dry**	1	12/8/2015 22:31
Iron	**19,000**		**5.9**	**62**	**mg/Kg-dry**	10	12/10/2015 15:07
Lead	**12**		**0.046**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:31
Manganese	**360**		**0.026**	**0.39**	**mg/Kg-dry**	1	12/8/2015 22:31
Potassium	**930**		**3.4**	**15**	**mg/Kg-dry**	1	12/8/2015 22:31
Selenium	**0.78**		**0.23**	**0.77**	**mg/Kg-dry**	1	12/9/2015 19:04
Silver	U		0.039	0.39	mg/Kg-dry	1	12/8/2015 22:31
Zinc	**62**		**0.12**	**0.77**	**mg/Kg-dry**	1	12/8/2015 22:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 12/11/15		Analyst: **EE**
Nitrogen, Nitrate	**0.62**	J	**0.24**	**1.2**	**mg/Kg-dry**	1	12/14/2015 19:29
Sulfate	**3.8**	J	**0.74**	**12**	**mg/Kg-dry**	1	12/14/2015 19:29
MOISTURE		Method: **E160.3M**					Analyst: **TM**
Moisture	**15**		**0.025**	**0.050**	**% of sample**	1	12/7/2015 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc

Work Order: 1512317

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79956** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-79956-79956** Units: **mg/Kg** Analysis Date: **12/9/2015 10:17 PM**

Client ID: Run ID: **HG1_151209A** SeqNo: **3613486** Prep Date: **12/9/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.003167	0.020								J

LCS Sample ID: **LCS-79956-79956** Units: **mg/Kg** Analysis Date: **12/9/2015 10:19 PM**

Client ID: Run ID: **HG1_151209A** SeqNo: **3613487** Prep Date: **12/9/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.19	0.020	0.1665	0	114	80-120	0			

MS Sample ID: **1512317-11AMS** Units: **mg/Kg** Analysis Date: **12/9/2015 10:53 PM**

Client ID: **SG-RP-11** Run ID: **HG1_151209A** SeqNo: **3613507** Prep Date: **12/9/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1481	0.015	0.1212	0.02714	99.7	75-125	0			

MSD Sample ID: **1512317-11AMSD** Units: **mg/Kg** Analysis Date: **12/9/2015 10:55 PM**

Client ID: **SG-RP-11** Run ID: **HG1_151209A** SeqNo: **3613509** Prep Date: **12/9/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1529	0.014	0.1194	0.02714	105	75-125	0.1481	3.24	35	

The following samples were analyzed in this batch:

1512317-01A	1512317-02A	1512317-03A
1512317-04A	1512317-05A	1512317-06A
1512317-07A	1512317-08A	1512317-09A
1512317-10A	1512317-11A	1512317-12A
1512317-13A	1512317-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512317
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79893** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-79893-79893** Units: **mg/Kg** Analysis Date: **12/8/2015 08:30 PM**
Client ID: Run ID: **ICP2_151208B** SeqNo: **3610205** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.50								
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	0.07197	0.50								J
Chromium	0.07166	0.25								J
Copper	U	0.50								
Iron	U	4.0								
Lead	U	0.25								
Manganese	U	0.25								
Potassium	2.429	10								J
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

LCS Sample ID: **LCS-79893-79893** Units: **mg/Kg** Analysis Date: **12/8/2015 08:35 PM**
Client ID: Run ID: **ICP2_151208B** SeqNo: **3610206** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5.435	0.50	5	0	109	80-120	0			
Arsenic	5.022	0.25	5	0	100	80-120	0			
Barium	5.183	0.25	5	0	104	80-120	0			
Copper	5.075	0.50	5	0	101	80-120	0			
Lead	5.413	0.25	5	0	108	80-120	0			
Potassium	499.2	10	500	0	99.8	80-120	0			
Selenium	5.305	0.50	5	0	106	80-120	0			
Silver	5.188	0.25	5	0	104	80-120	0			
Zinc	5.409	0.50	5	0	108	80-120	0			

LCS Sample ID: **LCS-79893-79893** Units: **mg/Kg** Analysis Date: **12/9/2015 04:13 PM**
Client ID: Run ID: **ICP2_151209A** SeqNo: **3612256** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	5.231	0.25	5	0	105	80-120	0			
Iron	503.1	4.0	500	0	101	80-120	0			
Manganese	5.176	0.25	5	0	104	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512317
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79893** Instrument ID **ICP2** Method: **SW846 6010C**

MS Sample ID: **1512317-11AMS** Units: **mg/Kg** Analysis Date: **12/8/2015 09:58 PM**
Client ID: **SG-RP-11** Run ID: **ICP2_151208B** SeqNo: **3610231** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	2729	0.64	6.41	3754	-16000	75-125	0			SO
Arsenic	8.652	0.32	6.41	3.139	86	75-125	0			
Barium	18.76	0.32	6.41	20.42	-25.8	75-125	0			S
Cadmium	6.617	0.64	6.41	-0.0537	104	75-125	0			
Copper	10.03	0.64	6.41	6.747	51.2	75-125	0			S
Lead	15.38	0.32	6.41	10.25	80	75-125	0			
Manganese	92.56	0.32	6.41	187.2	-1480	75-125	0			SO
Potassium	994.3	13	641	388	94.6	75-125	0			
Selenium	7.348	0.64	6.41	0.66	104	75-125	0			
Silver	6.653	0.32	6.41	-0.005893	104	75-125	0			
Zinc	189	0.64	6.41	160.4	445	75-125	0			SO

MS Sample ID: **1512317-11AMS** Units: **mg/Kg** Analysis Date: **12/9/2015 06:42 PM**
Client ID: **SG-RP-11** Run ID: **ICP2_151209A** SeqNo: **3612303** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	11.94	0.32	6.41	7.582	68	75-125	0			S
Iron	5101	5.1	641	7837	-427	75-125	0			SO

MSD Sample ID: **1512317-11AMSD** Units: **mg/Kg** Analysis Date: **12/8/2015 10:04 PM**
Client ID: **SG-RP-11** Run ID: **ICP2_151208B** SeqNo: **3610233** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5655	0.65	6.527	3754	29100	75-125	2729	69.8	20	SRO
Arsenic	10.32	0.33	6.527	3.139	110	75-125	8.652	17.6	20	
Barium	30.29	0.33	6.527	20.42	151	75-125	18.76	47	20	SR
Cadmium	6.864	0.65	6.527	-0.0537	106	75-125	6.617	3.66	20	
Copper	13.76	0.65	6.527	6.747	107	75-125	10.03	31.4	20	R
Lead	17.06	0.33	6.527	10.25	104	75-125	15.38	10.4	20	
Manganese	177.3	0.33	6.527	187.2	-151	75-125	92.56	62.8	20	SRO
Potassium	1346	13	652.7	388	147	75-125	994.3	30	20	SR
Selenium	7.696	0.65	6.527	0.66	108	75-125	7.348	4.63	20	
Silver	7.005	0.33	6.527	-0.005893	107	75-125	6.653	5.16	20	
Zinc	161.3	0.65	6.527	160.4	13.6	75-125	189	15.8	20	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512317
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79893** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1512317-11AMSD** Units: **mg/Kg** Analysis Date: **12/9/2015 06:47 PM**
Client ID: **SG-RP-11** Run ID: **ICP2_151209A** SeqNo: **3612304** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	15.33	0.33	6.527	7.582	119	75-125	11.94	24.9	20	R
Iron	8546	5.2	652.7	7837	109	75-125	5101	50.5	20	RO

The following samples were analyzed in this batch:

1512317-01A	1512317-02A	1512317-03A
1512317-04A	1512317-05A	1512317-06A
1512317-07A	1512317-08A	1512317-09A
1512317-10A	1512317-11A	1512317-12A
1512317-13A	1512317-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512317
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80241** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **MBLK-80241-80241** Units: **mg/Kg** Analysis Date: **12/14/2015 10:43 A**
Client ID: Run ID: **IC4_151214A** SeqNo: **3619180** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

MBLK Sample ID: **MBLK-80241-80241** Units: **mg/Kg** Analysis Date: **12/14/2015 09:42 A**
Client ID: Run ID: **IC4_151214A** SeqNo: **3620522** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

LCS Sample ID: **LCS-80241-80241** Units: **mg/Kg** Analysis Date: **12/14/2015 11:03 A**
Client ID: Run ID: **IC4_151214A** SeqNo: **3619181** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.84	1.0	20	0	104	80-120	0			
Sulfate	105.6	10	100	0	106	80-120	0			

LCS Sample ID: **LCS-80241-80241** Units: **mg/Kg** Analysis Date: **12/14/2015 09:42 A**
Client ID: Run ID: **IC4_151214A** SeqNo: **3620523** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.84	1.0	20	0	104	80-120	0			
Sulfate	105.6	10	100	0	106	80-120	0			

MS Sample ID: **1512317-11A MS** Units: **mg/Kg** Analysis Date: **12/14/2015 11:44 A**
Client ID: **SG-RP-11** Run ID: **IC4_151214A** SeqNo: **3619184** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.69	0.99	19.8	0.7016	95.9	75-125	0			
Sulfate	104.1	9.9	99.01	6.648	98.5	75-125	0			

MSD Sample ID: **1512317-11A MSD** Units: **mg/Kg** Analysis Date: **12/14/2015 12:04 PM**
Client ID: **SG-RP-11** Run ID: **IC4_151214A** SeqNo: **3619186** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.05	0.99	19.8	0.7016	97.7	75-125	19.69	1.83	20	
Sulfate	108.1	9.9	99.01	6.648	103	75-125	104.1	3.77	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512317
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80241** Instrument ID **IC4** Method: **SW9056A**

The following samples were analyzed in this batch:

1512317-01A	1512317-02A	1512317-03A
1512317-04A	1512317-05A	1512317-06A
1512317-07A	1512317-08A	1512317-09A
1512317-10A	1512317-11A	1512317-12A
1512317-13A	1512317-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512317
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177675** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R177675** Units: **% of sample** Analysis Date: **12/4/2015 09:03 PM**
Client ID: Run ID: **MOIST_151204E** SeqNo: **3605559** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R177675** Units: **% of sample** Analysis Date: **12/4/2015 09:03 PM**
Client ID: Run ID: **MOIST_151204E** SeqNo: **3605558** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1512296-16B DUP** Units: **% of sample** Analysis Date: **12/4/2015 09:03 PM**
Client ID: Run ID: **MOIST_151204E** SeqNo: **3605533** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	21.25	0.050	0	0	0		18.85	12	20	

DUP Sample ID: **1512296-27B DUP** Units: **% of sample** Analysis Date: **12/4/2015 09:03 PM**
Client ID: Run ID: **MOIST_151204E** SeqNo: **3605549** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	20.64	0.050	0	0	0		21.34	3.33	20	

The following samples were analyzed in this batch:

1512317-01A	1512317-02A	1512317-03A
1512317-04A	1512317-05A	1512317-06A
1512317-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512317
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177767** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R177767** Units: **% of sample** Analysis Date: **12/7/2015 03:50 PM**
Client ID: Run ID: **MOIST_151207B** SeqNo: **3608297** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R177767** Units: **% of sample** Analysis Date: **12/7/2015 03:50 PM**
Client ID: Run ID: **MOIST_151207B** SeqNo: **3608296** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **15111395-04B DUP** Units: **% of sample** Analysis Date: **12/7/2015 03:50 PM**
Client ID: Run ID: **MOIST_151207B** SeqNo: **3608266** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	16.48	0.050	0	0	0		16.46	0.121	20	

DUP Sample ID: **1512317-11A DUP** Units: **% of sample** Analysis Date: **12/7/2015 03:50 PM**
Client ID: **SG-RP-11** Run ID: **MOIST_151207B** SeqNo: **3608275** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.57	0.050	0	0	0		14.9	4.4	20	

The following samples were analyzed in this batch:

1512317-08A	1512317-09A	1512317-10A
1512317-11A	1512317-12A	1512317-13A
1512317-14A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
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South Charleston, WV +1 304 356 3168
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Holland, MI +1 616 399 6070
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 32280

ALS Project Manager: | ALS Work Order #: 1512317

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals in Soil
Work Order		Project Number		B	Mercury in Soil
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions in Soil
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SG-RP-1	12-3-15	0945	Soil	—	1	X	X	X								
2	SG-RP-2		0950		—	1	X	X	X								
3	SG-RP-3		0955		—	1	X	X	X								
4	SG-RP-4		1000		—	1	X	X	X								
5	SG-RP-5		1005		—	1	X	X	X								
6	SG-RP-6		1010		—	1	X	X	X								
7	SG-RP-7		1015		—	1	X	X	X								
8	SG-RP-8		1020		—	1	X	X	X								
9	SG-RP-9		1115		—	1	X	X	X								
10	SG-RP-10		1120		—	1	X	X	X								

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: —

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☒ Other ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	ERM	Date: 12-3-15	Time: 1418	Received by:	
Relinquished by:		Date: 12/4/15	Time: 1305	Received by (Laboratory):	
Logged by (Laboratory): KEU		Date: 12/4/15	Time: 1415	Checked by (Laboratory):	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Notes:

Cooler ID	Cooler Temp
	3.2°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

COC ID: 32281

ALS Project Manager: | ALS Work Order #: 1512317

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals in Soil
Work Order		Project Number		B	Mercury in Soil
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anion's in Soil
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	MS/MSD
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SG-RP-11	12-3-15	1125	Soil	—	2	X	X	X		X						
2	SG-RP-12		1130		—	1	X	X	X								
3	SG-RP-13		1135		—	1	X	X	X								
4	Dup-SG-RP-1		—		—	1	X	X	X								
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method:

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☑ Other Standard

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
ERM	12-3-15	1418	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	12/4/15	1305	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
KC	12/4/15	1415	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **04-Dec-15 13:05**

Work Order: **1512317** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 04-Dec-15 (Date) Reviewed by: Bill Carey (eSignature) 07-Dec-15 (Date)

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2/3.2 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/4/2015 2:23:15 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

18-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1512373**

Dear Marty,

ALS Environmental received 1 sample on 05-Dec-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 13.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 532786

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ALS Group USA, Corp

Date: 18-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1512373**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1512373-01	EB-Well screen	Water		12/4/2015 11:10	12/5/2015 10:00	☐

ALS Group USA, Corp

Date: 18-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1512373**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 18-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1512373

Case Narrative

Samples for the above noted Work Order were received on 12/5/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *18-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: EB-Well screen
Collection Date: 12/4/2015 11:10 AM

Work Order: 1512373
Lab ID: 1512373-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/7/15		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	12/8/2015 14:00
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/8/15		Analyst: **RH**
Aluminum	**400**		**1.1**	**10**	**µg/L**	1	12/9/2015 02:32
Arsenic	U		0.70	5.0	µg/L	1	12/9/2015 02:32
Barium	**5.7**		**0.20**	**5.0**	**µg/L**	1	12/9/2015 02:32
Cadmium	U		0.10	2.0	µg/L	1	12/9/2015 02:32
Chromium	**0.88**	J	**0.10**	**5.0**	**µg/L**	1	12/9/2015 02:32
Copper	**1.4**	J	**0.20**	**5.0**	**µg/L**	1	12/9/2015 02:32
Hardness (Calculation)	**1,200**	J	**1,000**	**2,000**	**µg/L**	1	12/9/2015 02:32
Iron	**130**		**10**	**80**	**µg/L**	1	12/9/2015 02:32
Lead	**0.30**	J	**0.10**	**5.0**	**µg/L**	1	12/9/2015 02:32
Manganese	**1.5**	J	**0.20**	**5.0**	**µg/L**	1	12/9/2015 02:32
Potassium	**200**		**34**	**200**	**µg/L**	1	12/9/2015 02:32
Selenium	U		1.0	5.0	µg/L	1	12/9/2015 02:32
Silver	U		0.10	5.0	µg/L	1	12/9/2015 02:32
Vanadium	**0.43**	J	**0.40**	**5.0**	**µg/L**	1	12/9/2015 02:32
Zinc	**4.6**	J	**2.4**	**10**	**µg/L**	1	12/9/2015 02:32
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**92**	J	**27**	**100**	**µg/L**	1	12/5/2015 12:25
Sulfate	U		140	1,000	µg/L	1	12/5/2015 12:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 18-Dec-15

Client: ERM, Inc

Work Order: 1512373

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79910** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-79910-79910** Units: **ng/L** Analysis Date: **12/8/2015 10:44 AM**

Client ID: Run ID: **HG2_151208A** SeqNo: **3608733** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-79910-79910** Units: **ng/L** Analysis Date: **12/8/2015 11:29 AM**

Client ID: Run ID: **HG2_151208A** SeqNo: **3608739** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-79910-79910** Units: **ng/L** Analysis Date: **12/8/2015 12:14 PM**

Client ID: Run ID: **HG2_151208A** SeqNo: **3608745** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1512189-08AMS** Units: **ng/L** Analysis Date: **12/8/2015 11:52 AM**

Client ID: Run ID: **HG2_151208A** SeqNo: **3608742** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.23	0.50	5	1.18	101	71-125	0			

MS Sample ID: **1512333-04AMS** Units: **ng/L** Analysis Date: **12/8/2015 01:15 PM**

Client ID: Run ID: **HG2_151208A** SeqNo: **3608755** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.71	0.50	5	0.78	98.6	71-125	0			

MSD Sample ID: **1512189-08AMSD** Units: **ng/L** Analysis Date: **12/8/2015 11:59 AM**

Client ID: Run ID: **HG2_151208A** SeqNo: **3608743** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.28	0.50	5	1.18	102	71-125	6.23	0.799	24	

MSD Sample ID: **1512333-04AMSD** Units: **ng/L** Analysis Date: **12/8/2015 01:22 PM**

Client ID: Run ID: **HG2_151208A** SeqNo: **3608756** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.3	0.50	5	0.78	110	71-125	5.71	9.83	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512373
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79910** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-79910-79910** Units: **ng/L** Analysis Date: **12/8/2015 10:29 AM**
Client ID: Run ID: **HG2_151208A** SeqNo: **3608731** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.4	0.50	5	0	108	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-79910-79910** Units: **ng/L** Analysis Date: **12/8/2015 02:08 PM**
Client ID: Run ID: **HG2_151208A** SeqNo: **3608768** Prep Date: **12/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.26	0.50	5	0	105	77-123	0			

The following samples were analyzed in this batch: 1512373-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512373
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79933** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-79933-79933** Units: **mg/L** Analysis Date: **12/8/2015 11:04 PM**
Client ID: Run ID: **ICPMS2_151208A** SeqNo: **3609791** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	0.0003161	0.0050								J
Cadmium	U	0.0020								
Chromium	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Vanadium	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-79933-79933** Units: **mg/L** Analysis Date: **12/9/2015 12:36 PM**
Client ID: Run ID: **ICPMS2_151209A** SeqNo: **3612601** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	U	0.0050								

LCS Sample ID: **LCS-79933-79933** Units: **mg/L** Analysis Date: **12/8/2015 11:09 PM**
Client ID: Run ID: **ICPMS2_151208A** SeqNo: **3609792** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1128	0.010	0.1	0	113	80-120	0			
Arsenic	0.1043	0.0050	0.1	0	104	80-120	0			
Barium	0.09286	0.0050	0.1	0	92.9	80-120	0			
Cadmium	0.09443	0.0020	0.1	0	94.4	80-120	0			
Chromium	0.1052	0.0050	0.1	0	105	80-120	0			
Copper	0.1081	0.0050	0.1	0	108	80-120	0			
Hardness (Calculation)	72.5	2.0	66.15	0	110	80-120	0			
Iron	10.76	0.080	10	0	108	80-120	0			
Lead	0.1113	0.0050	0.1	0	111	80-120	0			
Manganese	0.1066	0.0050	0.1	0	107	80-120	0			
Potassium	11.14	0.20	10	0	111	80-120	0			
Selenium	0.1102	0.0050	0.1	0	110	80-120	0			
Silver	0.09996	0.0050	0.1	0	100	80-120	0			
Vanadium	0.1111	0.0050	0.1	0	111	80-120	0			
Zinc	0.1081	0.010	0.1	0	108	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512373
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **79933** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1512319-08AMS** Units: **mg/L** Analysis Date: **12/9/2015 12:12 AM**
Client ID: Run ID: **ICPMS2_151208A** SeqNo: **3609804** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.122	0.010	0.1	0.004625	117	75-125	0			
Arsenic	0.1059	0.0050	0.1	0.0004816	105	75-125	0			
Barium	0.1387	0.0050	0.1	0.03424	104	75-125	0			
Cadmium	0.1024	0.0020	0.1	2.746E-06	102	75-125	0			
Chromium	0.1045	0.0050	0.1	0.001162	103	75-125	0			
Copper	0.1063	0.0050	0.1	0.004175	102	75-125	0			
Iron	10.4	0.080	10	0.0295	104	75-125	0			
Lead	0.1053	0.0050	0.1	2.772E-06	105	75-125	0			
Manganese	0.1206	0.0050	0.1	0.01392	107	75-125	0			
Potassium	17.17	0.20	10	5.887	113	75-125	0			
Selenium	0.1196	0.0050	0.1	0.008826	111	75-125	0			
Silver	0.09473	0.0050	0.1	-1.549E-05	94.7	75-125	0			
Vanadium	0.1119	0.0050	0.1	0.0004594	111	75-125	0			
Zinc	0.1069	0.010	0.1	0.002876	104	75-125	0			

MSD Sample ID: **1512319-08AMSD** Units: **mg/L** Analysis Date: **12/9/2015 12:17 AM**
Client ID: Run ID: **ICPMS2_151208A** SeqNo: **3609812** Prep Date: **12/8/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1177	0.010	0.1	0.004625	113	75-125	0.122	3.59	20	
Arsenic	0.104	0.0050	0.1	0.0004816	104	75-125	0.1059	1.81	20	
Barium	0.137	0.0050	0.1	0.03424	103	75-125	0.1387	1.23	20	
Cadmium	0.1013	0.0020	0.1	2.746E-06	101	75-125	0.1024	1.08	20	
Chromium	0.102	0.0050	0.1	0.001162	101	75-125	0.1045	2.42	20	
Copper	0.1046	0.0050	0.1	0.004175	100	75-125	0.1063	1.61	20	
Iron	10.21	0.080	10	0.0295	102	75-125	10.4	1.84	20	
Lead	0.1036	0.0050	0.1	2.772E-06	104	75-125	0.1053	1.63	20	
Manganese	0.1185	0.0050	0.1	0.01392	105	75-125	0.1206	1.76	20	
Potassium	16.89	0.20	10	5.887	110	75-125	17.17	1.64	20	
Selenium	0.1178	0.0050	0.1	0.008826	109	75-125	0.1196	1.52	20	
Silver	0.09226	0.0050	0.1	-1.549E-05	92.3	75-125	0.09473	2.64	20	
Vanadium	0.1097	0.0050	0.1	0.0004594	109	75-125	0.1119	1.99	20	
Zinc	0.09985	0.010	0.1	0.002876	97	75-125	0.1069	6.82	20	

The following samples were analyzed in this batch: 1512373-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512373
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177637** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R177637** Units: **mg/L** Analysis Date: **12/5/2015 09:45 AM**
Client ID: Run ID: **IC3_151205A** SeqNo: **3604766** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R177637** Units: **mg/L** Analysis Date: **12/5/2015 10:06 AM**
Client ID: Run ID: **IC3_151205A** SeqNo: **3604767** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.066	0.10	2	0	103	81-116	0			
Sulfate	9.408	1.0	10	0	94.1	85-110	0			

MS Sample ID: **1512373-01B MS** Units: **mg/L** Analysis Date: **12/5/2015 12:45 PM**
Client ID: **EB-Well screen** Run ID: **IC3_151205A** SeqNo: **3604769** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.013	0.10	2	0.0919	96.1	75-125	0			
Sulfate	9.48	1.0	10	0	94.8	75-125	0			

MSD Sample ID: **1512373-01B MSD** Units: **mg/L** Analysis Date: **12/5/2015 01:06 PM**
Client ID: **EB-Well screen** Run ID: **IC3_151205A** SeqNo: **3604770** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.004	0.10	2	0.0919	95.6	75-125	2.013	0.458	20	
Sulfate	9.153	1.0	10	0	91.5	75-125	9.48	3.51	20	

The following samples were analyzed in this batch: 1512373-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

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Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 32279

ALS Project Manager: | ALS Work Order #: 1512373

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAV Ogden Dunes	A	Mercury (low level) in Water
Work Order		Project Number		B	Metals in water
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	EB-Wellscreen	12-4-15	1110	Water	HNO_3	3	X	X	X								
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: FedEx

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☒ Other Standard ☐ 2 BD ☐ 1 BD

Results Due Date:

	Date:	Time:	
Relinquished by:	12-4-15	1300	Received by:
Relinquished by:	12/5/15	1006	Received by (Laboratory):
Logged by (Laboratory): DES	12/5/15	1010	Checked by (Laboratory):

Notes:

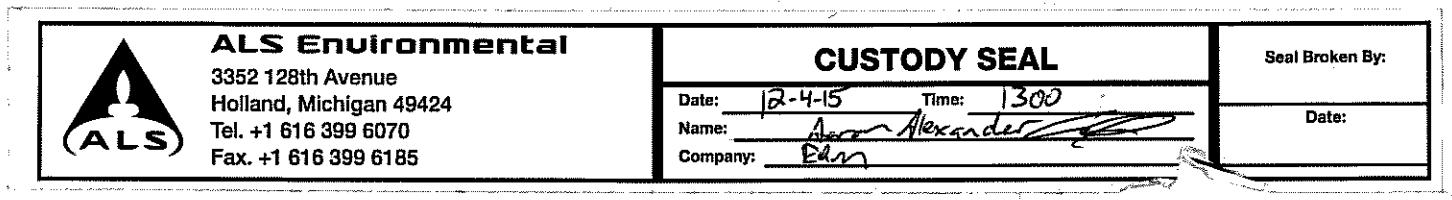
Cooler ID	Cooler Temp
	3.4°C

QC Package: (Check One Box Below)
☐ Level I Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☒ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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CUSTODY SEAL

Date: 12-4-15 Time: 1300
Name: Aaron Alexander
Company: Eam

Seal Broken By:

Date:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **05-Dec-15 10:00**

Work Order: **1512373** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 05-Dec-15 (Date) Reviewed by: Bill Carey (eSignature) 07-Dec-15 (Date)

Matrices: Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.4/3.4 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/5/2015 10:09:06 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

15-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1512477**

Dear Marty,

ALS Environmental received 3 samples on 08-Dec-2015 01:00 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 14.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1512477**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1512477-01	BG-1S	Water		12/7/2015 13:25	12/8/2015 13:00	☐
1512477-02	BG-1D	Water		12/7/2015 14:25	12/8/2015 13:00	☐
1512477-03	MW-5S	Water		12/7/2015 16:00	12/8/2015 13:00	☐

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1512477**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1512477

Case Narrative

Samples for the above noted Work Order were received on 12/8/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 12/7/2015 01:25 PM

Work Order: 1512477
Lab ID: 1512477-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.011**		**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 10:55
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**370**		**1.1**	**10**	**µg/L**	1	12/11/2015 23:39
Arsenic	**3.0**	J	**0.70**	**5.0**	**µg/L**	1	12/11/2015 23:39
Barium	**11**		**0.20**	**5.0**	**µg/L**	1	12/11/2015 23:39
Cadmium	**0.11**	J	**0.10**	**2.0**	**µg/L**	1	12/11/2015 23:39
Chromium	**2.0**	J	**0.10**	**5.0**	**µg/L**	1	12/11/2015 23:39
Copper	**3.0**	J	**0.20**	**5.0**	**µg/L**	1	12/11/2015 23:39
Hardness (Calculation)	**75,000**		**1,000**	**2,000**	**µg/L**	1	12/11/2015 23:39
Iron	**4,800**		**10**	**80**	**µg/L**	1	12/11/2015 23:39
Lead	**0.82**	J	**0.10**	**5.0**	**µg/L**	1	12/11/2015 23:39
Manganese	**81**		**0.20**	**5.0**	**µg/L**	1	12/11/2015 23:39
Potassium	**880**		**34**	**200**	**µg/L**	1	12/11/2015 23:39
Selenium	U		1.0	5.0	µg/L	1	12/11/2015 23:39
Silver	U		0.10	5.0	µg/L	1	12/11/2015 23:39
Zinc	**150**		**2.4**	**10**	**µg/L**	1	12/11/2015 23:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 09:15
Sulfate	**19,000**		**140**	**1,000**	**µg/L**	1	12/9/2015 09:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 12/7/2015 02:25 PM

Work Order: 1512477
Lab ID: 1512477-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00061**		**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 11:02
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**270**		**1.1**	**10**	**µg/L**	1	12/11/2015 23:44
Arsenic	**6.2**		**0.70**	**5.0**	**µg/L**	1	12/11/2015 23:44
Barium	**19**		**0.20**	**5.0**	**µg/L**	1	12/11/2015 23:44
Cadmium	U		0.10	2.0	µg/L	1	12/11/2015 23:44
Chromium	**1.9**	J	**0.10**	**5.0**	**µg/L**	1	12/11/2015 23:44
Copper	**2.5**	J	**0.20**	**5.0**	**µg/L**	1	12/11/2015 23:44
Hardness (Calculation)	**150,000**		**1,000**	**2,000**	**µg/L**	1	12/11/2015 23:44
Iron	**7,300**		**10**	**80**	**µg/L**	1	12/11/2015 23:44
Lead	**0.59**	J	**0.10**	**5.0**	**µg/L**	1	12/11/2015 23:44
Manganese	**170**		**0.20**	**5.0**	**µg/L**	1	12/11/2015 23:44
Potassium	**2,400**		**34**	**200**	**µg/L**	1	12/11/2015 23:44
Selenium	U		1.0	5.0	µg/L	1	12/11/2015 23:44
Silver	U		0.10	5.0	µg/L	1	12/11/2015 23:44
Zinc	**84**		**2.4**	**10**	**µg/L**	1	12/11/2015 23:44
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**130**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:05
Arsenic	**5.7**		**0.70**	**5.0**	**µg/L**	1	12/12/2015 00:05
Barium	**17**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:05
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:05
Chromium	**1.0**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:05
Copper	**1.3**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:05
Hardness (Calculation)	**150,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:05
Iron	**6,600**		**10**	**80**	**µg/L**	1	12/12/2015 00:05
Lead	**0.38**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:05
Manganese	**170**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:05
Potassium	**2,400**		**34**	**200**	**µg/L**	1	12/12/2015 00:05
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:05
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:05
Zinc	**82**		**2.4**	**10**	**µg/L**	1	12/12/2015 00:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 09:35
Sulfate	**19,000**		**140**	**1,000**	**µg/L**	1	12/9/2015 09:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5S
Collection Date: 12/7/2015 04:00 PM

Work Order: 1512477
Lab ID: 1512477-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.0021**		**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 11:10
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**70**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:10
Arsenic	**2.7**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 00:10
Barium	**44**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:10
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:10
Chromium	**0.47**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:10
Copper	**2.4**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:10
Hardness (Calculation)	**320,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:10
Iron	**2,100**		**10**	**80**	**µg/L**	1	12/12/2015 00:10
Lead	**0.14**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:10
Manganese	**260**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:10
Potassium	**4,100**		**34**	**200**	**µg/L**	1	12/12/2015 00:10
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:10
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:10
Zinc	**8.4**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 00:10
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**5.5**	J	**1.1**	**10**	**µg/L**	1	12/12/2015 00:15
Arsenic	**0.99**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 00:15
Barium	**40**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:15
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:15
Chromium	**0.24**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:15
Copper	**2.1**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:15
Hardness (Calculation)	**320,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:15
Iron	**110**		**10**	**80**	**µg/L**	1	12/12/2015 00:15
Lead	U		0.10	5.0	µg/L	1	12/12/2015 00:15
Manganese	**240**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:15
Potassium	**4,200**		**34**	**200**	**µg/L**	1	12/12/2015 00:15
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:15
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:15
Zinc	**16**		**2.4**	**10**	**µg/L**	1	12/12/2015 00:15
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	**1,500**		**27**	**100**	**µg/L**	1	12/9/2015 09:56
Sulfate	**170,000**		**2,800**	**20,000**	**µg/L**	20	12/9/2015 10:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc

Work Order: 1512477

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80080** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 10:40 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616582** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 11:25 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616588** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 12:48 PM**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616599** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1512490-03AMS** Units: **ng/L** Analysis Date: **12/11/2015 11:32 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616589** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.68	0.50	5	0.76	98.4	71-125	0			

MS Sample ID: **1512551-08BMS** Units: **ng/L** Analysis Date: **12/11/2015 01:11 PM**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616602** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.33	0.50	5	0.29	101	71-125	0			

MSD Sample ID: **1512490-03AMSD** Units: **ng/L** Analysis Date: **12/11/2015 11:40 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616590** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.69	0.50	5	0.76	98.6	71-125	5.68	0.176	24	

MSD Sample ID: **1512551-08BMSD** Units: **ng/L** Analysis Date: **12/11/2015 01:18 PM**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616603** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.96	0.50	5	0.29	93.4	71-125	5.33	7.19	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512477
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80080** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 10:23 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616579** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.35	0.50	5	0	107	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 02:11 PM**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616610** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.21	0.50	5	0	104	77-123	0			

The following samples were analyzed in this batch: 1512477-01C 1512477-02D 1512477-03D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512477
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80136** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-80136-80136** Units: **mg/L** Analysis Date: **12/11/2015 11:28 PM**
Client ID: Run ID: **ICPMS2_151211A** SeqNo: **3617805** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-80136-80136** Units: **mg/L** Analysis Date: **12/11/2015 11:34 PM**
Client ID: Run ID: **ICPMS2_151211A** SeqNo: **3617808** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1035	0.010	0.1	0	104	80-120	0			
Arsenic	0.09752	0.0050	0.1	0	97.5	80-120	0			
Barium	0.09904	0.0050	0.1	0	99	80-120	0			
Cadmium	0.1006	0.0020	0.1	0	101	80-120	0			
Chromium	0.09843	0.0050	0.1	0	98.4	80-120	0			
Copper	0.09976	0.0050	0.1	0	99.8	80-120	0			
Hardness (Calculation)	67.84	2.0	66.15	0	103	80-120	0			
Iron	9.891	0.080	10	0	98.9	80-120	0			
Lead	0.09521	0.0050	0.1	0	95.2	80-120	0			
Manganese	0.09966	0.0050	0.1	0	99.7	80-120	0			
Potassium	10.33	0.20	10	0	103	80-120	0			
Selenium	0.09121	0.0050	0.1	0	91.2	80-120	0			
Silver	0.09622	0.0050	0.1	0	96.2	80-120	0			
Zinc	0.09632	0.010	0.1	0	96.3	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512477
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80136** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1512551-10AMS** Units: **mg/L** Analysis Date: **12/12/2015 01:39 A**

Client ID: Run ID: **ICPMS2_151211A** SeqNo: **3617851** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1466	0.010	0.1	0.03078	116	75-125	0			
Arsenic	0.09884	0.0050	0.1	0.0008877	98	75-125	0			
Barium	0.1254	0.0050	0.1	0.02311	102	75-125	0			
Cadmium	0.1027	0.0020	0.1	0.00002777	103	75-125	0			
Chromium	0.09772	0.0050	0.1	0.0003321	97.4	75-125	0			
Copper	0.09829	0.0050	0.1	0.001236	97.1	75-125	0			
Iron	10.14	0.080	10	0.3861	97.5	75-125	0			
Lead	0.09693	0.0050	0.1	0.00007041	96.9	75-125	0			
Manganese	0.1105	0.0050	0.1	0.01109	99.4	75-125	0			
Potassium	11.11	0.20	10	0.7205	104	75-125	0			
Selenium	0.09478	0.0050	0.1	0.00137	93.4	75-125	0			
Silver	0.09205	0.0050	0.1	-1.254E-05	92.1	75-125	0			
Zinc	0.09634	0.010	0.1	-7.021E-05	96.4	75-125	0			

MSD Sample ID: **1512551-10AMSD** Units: **mg/L** Analysis Date: **12/12/2015 01:45 A**

Client ID: Run ID: **ICPMS2_151211A** SeqNo: **3617853** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1438	0.010	0.1	0.03078	113	75-125	0.1466	1.93	20	
Arsenic	0.09959	0.0050	0.1	0.0008877	98.7	75-125	0.09884	0.756	20	
Barium	0.1239	0.0050	0.1	0.02311	101	75-125	0.1254	1.2	20	
Cadmium	0.1016	0.0020	0.1	0.00002777	102	75-125	0.1027	1.08	20	
Chromium	0.09727	0.0050	0.1	0.0003321	96.9	75-125	0.09772	0.462	20	
Copper	0.09753	0.0050	0.1	0.001236	96.3	75-125	0.09829	0.776	20	
Iron	10.04	0.080	10	0.3861	96.5	75-125	10.14	0.991	20	
Lead	0.09532	0.0050	0.1	0.00007041	95.2	75-125	0.09693	1.67	20	
Manganese	0.1097	0.0050	0.1	0.01109	98.6	75-125	0.1105	0.727	20	
Potassium	10.98	0.20	10	0.7205	103	75-125	11.11	1.18	20	
Selenium	0.09342	0.0050	0.1	0.00137	92	75-125	0.09478	1.45	20	
Silver	0.09193	0.0050	0.1	-1.254E-05	91.9	75-125	0.09205	0.13	20	
Zinc	0.09498	0.010	0.1	-7.021E-05	95.1	75-125	0.09634	1.42	20	

The following samples were analyzed in this batch:

1512477-01A	1512477-02A	1512477-02B
1512477-03A	1512477-03B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512477
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177954** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R177954** Units: **mg/L** Analysis Date: **12/9/2015 08:15 AM**
Client ID: Run ID: **IC3_151209A** SeqNo: **3613001** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R177954** Units: **mg/L** Analysis Date: **12/9/2015 08:36 AM**
Client ID: Run ID: **IC3_151209A** SeqNo: **3613002** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	2.059	0.10	2	0	103	81-116	0			
Sulfate	9.563	1.0	10	0	95.6	85-110	0			

MS Sample ID: **1512477-01B MS** Units: **mg/L** Analysis Date: **12/9/2015 10:46 AM**
Client ID: **BG-1S** Run ID: **IC3_151209A** SeqNo: **3613007** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.28	0.50	10	0	103	75-125	0			
Sulfate	72.74	5.0	50	18.6	108	75-125	0			

MSD Sample ID: **1512477-01B MSD** Units: **mg/L** Analysis Date: **12/9/2015 11:06 AM**
Client ID: **BG-1S** Run ID: **IC3_151209A** SeqNo: **3613008** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.47	0.50	10	0	105	75-125	10.28	1.84	20	
Sulfate	70.17	5.0	50	18.6	103	75-125	72.74	3.6	20	

The following samples were analyzed in this batch: 1512477-01B 1512477-02C 1512477-03C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511 | Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 32278

1512477

ALS Project Manager:	ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Total Metals
Work Order		Project Number		B	Dissolved Metals (Field Filtered)
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Mercury (low level)
Address	8425 Woodfield Crossing Blvd Suite 360W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	BG-1S	12-7-15	1325	W	HNO_3	3	X	AE	X	X							
2	~~BG-2S~~ BG-1D	12-7-15	1425	W	HNO_3	4	X	X	X	X							
3	MW-5S	12-7-15	1600	W	HNO_3		X	X	X	X							
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: —

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☒ Other Standard

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	12-7-15	1628	Dave Mea
Relinquished by:	Date:	Time:	Received by (Laboratory):
Dave Mea	12/8/15	1300	M Brandt
Logged by (Laboratory): MB	Date: 12/8/15	Time: 1325	Checked by (Laboratory):

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Notes:

Cooler ID	Cooler Temp
	3.0 C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ Level III Std QC/Raw Data ☐ Level IV SW846/CLP ☐ Other
☑ TRRP Checklist ☐ TRRP Level IV

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **08-Dec-15 13:00**

Work Order: **1512477** Received by: **MB**

Checklist completed by Meghan Broadbent (eSignature) 08-Dec-15 (Date) Reviewed by: Bill Carey (eSignature) 09-Dec-15 (Date)

Matrices: water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0/3.0	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/8/2015 1:31:55 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

15-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1512551**

Dear Marty,

ALS Environmental received 13 samples on 09-Dec-2015 12:20 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 25.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1512551**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1512551-01	MW-5D	Water		12/8/2015 08:50	12/9/2015 12:20	☐
1512551-02	MW-4S	Water		12/8/2015 09:50	12/9/2015 12:20	☐
1512551-03	MW-4D	Water		12/8/2015 10:30	12/9/2015 12:20	☐
1512551-04	MW-3S	Water		12/8/2015 11:15	12/9/2015 12:20	☐
1512551-05	MW-3D	Water		12/8/2015 11:45	12/9/2015 12:20	☐
1512551-06	MW-2S	Water		12/8/2015 12:45	12/9/2015 12:20	☐
1512551-07	MW-2D	Water		12/8/2015 13:20	12/9/2015 12:20	☐
1512551-08	MW-1S	Water		12/8/2015 14:00	12/9/2015 12:20	☐
1512551-09	MW-1D	Water		12/8/2015 14:40	12/9/2015 12:20	☐
1512551-10	MW-8S	Water		12/8/2015 15:15	12/9/2015 12:20	☐
1512551-11	MW-8D	Water		12/8/2015 15:45	12/9/2015 12:20	☐
1512551-12	Dup-GW-1	Water		12/8/2015	12/9/2015 12:20	☐
1512551-13	MW-7S	Water		12/8/2015 16:40	12/9/2015 12:20	☐

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1512551**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1512551

Case Narrative

Samples for the above noted Work Order were received on 12/9/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 12/8/2015 08:50 AM

Work Order: 1512551
Lab ID: 1512551-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00039**	J	**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 12:03
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**48**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:21
Arsenic	U		0.70	5.0	µg/L	1	12/12/2015 00:21
Barium	**42**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:21
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:21
Chromium	**0.77**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:21
Copper	**1.1**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:21
Hardness (Calculation)	**290,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:21
Iron	**2,400**		**10**	**80**	**µg/L**	1	12/12/2015 00:21
Lead	**0.13**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:21
Manganese	**170**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:21
Potassium	**8,000**		**34**	**200**	**µg/L**	1	12/12/2015 00:21
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:21
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:21
Zinc	**5.7**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 00:21
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**6.5**	J	**1.1**	**10**	**µg/L**	1	12/12/2015 00:26
Arsenic	U		0.70	5.0	µg/L	1	12/12/2015 00:26
Barium	**41**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:26
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:26
Chromium	U		0.10	5.0	µg/L	1	12/12/2015 00:26
Copper	**0.59**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:26
Hardness (Calculation)	**290,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:26
Iron	**1,400**		**10**	**80**	**µg/L**	1	12/12/2015 00:26
Lead	U		0.10	5.0	µg/L	1	12/12/2015 00:26
Manganese	**170**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:26
Potassium	**8,200**		**34**	**200**	**µg/L**	1	12/12/2015 00:26
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:26
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:26
Zinc	**8.4**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 00:26
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 17:47
Sulfate	**86,000**		**1,400**	**10,000**	**µg/L**	10	12/9/2015 18:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 12/8/2015 09:50 AM

Work Order: 1512551
Lab ID: 1512551-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 12:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**160**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:31
Arsenic	**4.0**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 00:31
Barium	**40**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:31
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:31
Chromium	**1.4**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:31
Copper	**0.33**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:31
Hardness (Calculation)	**96,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:31
Iron	**6,300**		**10**	**80**	**µg/L**	1	12/12/2015 00:31
Lead	**0.82**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:31
Manganese	**330**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:31
Potassium	**1,500**		**34**	**200**	**µg/L**	1	12/12/2015 00:31
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:31
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:31
Zinc	**4.2**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 00:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 19:08
Sulfate	**510**	J	**140**	**1,000**	**µg/L**	1	12/9/2015 19:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 12/8/2015 10:30 AM

Work Order: 1512551
Lab ID: 1512551-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00026**	J	**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 12:18
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**49**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:36
Arsenic	**1.4**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 00:36
Barium	**140**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:36
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:36
Chromium	**1.9**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:36
Copper	**1.5**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:36
Hardness (Calculation)	**550,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:36
Iron	**21,000**		**10**	**80**	**µg/L**	1	12/12/2015 00:36
Lead	U		0.10	5.0	µg/L	1	12/12/2015 00:36
Manganese	**490**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:36
Potassium	**7,100**		**34**	**200**	**µg/L**	1	12/12/2015 00:36
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:36
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:36
Zinc	**22**		**2.4**	**10**	**µg/L**	1	12/12/2015 00:36
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		54	200	µg/L	2	12/9/2015 19:28
Sulfate	**260,000**		**7,000**	**50,000**	**µg/L**	50	12/9/2015 19:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 12/8/2015 11:15 AM

Work Order: 1512551
Lab ID: 1512551-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	U		0.00020	0.00050	µg/L	1	12/11/2015 12:25
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**16**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:42
Arsenic	U		0.70	5.0	µg/L	1	12/12/2015 00:42
Barium	**72**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:42
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:42
Chromium	**0.38**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:42
Copper	**0.30**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:42
Hardness (Calculation)	**240,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:42
Iron	**3,200**		**10**	**80**	**µg/L**	1	12/12/2015 00:42
Lead	U		0.10	5.0	µg/L	1	12/12/2015 00:42
Manganese	**480**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:42
Potassium	**4,500**		**34**	**200**	**µg/L**	1	12/12/2015 00:42
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:42
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:42
Zinc	U		2.4	10	µg/L	1	12/12/2015 00:42
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 20:09
Sulfate	**310**	J	**140**	**1,000**	**µg/L**	1	12/9/2015 20:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 12/8/2015 11:45 AM

Work Order: 1512551
Lab ID: 1512551-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	U		0.00020	0.00050	µg/L	1	12/11/2015 12:33
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**46**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:47
Arsenic	**4.5**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 00:47
Barium	**110**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:47
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:47
Chromium	**1.1**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:47
Copper	**0.59**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:47
Hardness (Calculation)	**350,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:47
Iron	**13,000**		**10**	**80**	**µg/L**	1	12/12/2015 00:47
Lead	U		0.10	5.0	µg/L	1	12/12/2015 00:47
Manganese	**310**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:47
Potassium	**7,300**		**34**	**200**	**µg/L**	1	12/12/2015 00:47
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:47
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:47
Zinc	**16**		**2.4**	**10**	**µg/L**	1	12/12/2015 00:47
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 20:29
Sulfate	**570**	J	**140**	**1,000**	**µg/L**	1	12/9/2015 20:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 12/8/2015 12:45 PM

Work Order: 1512551
Lab ID: 1512551-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00060**		**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 12:40
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**12**		**1.1**	**10**	**µg/L**	1	12/12/2015 00:52
Arsenic	**3.0**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 00:52
Barium	**24**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:52
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 00:52
Chromium	U		0.10	5.0	µg/L	1	12/12/2015 00:52
Copper	**0.50**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:52
Hardness (Calculation)	**180,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 00:52
Iron	**1,800**		**10**	**80**	**µg/L**	1	12/12/2015 00:52
Lead	**0.12**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 00:52
Manganese	**41**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 00:52
Potassium	**660**		**34**	**200**	**µg/L**	1	12/12/2015 00:52
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 00:52
Silver	U		0.10	5.0	µg/L	1	12/12/2015 00:52
Zinc	U		2.4	10	µg/L	1	12/12/2015 00:52
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**4.7**	J	**1.1**	**10**	**µg/L**	1	12/12/2015 01:13
Arsenic	**1.5**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 01:13
Barium	**22**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:13
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 01:13
Chromium	U		0.10	5.0	µg/L	1	12/12/2015 01:13
Copper	**0.39**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:13
Hardness (Calculation)	**170,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 01:13
Iron	**780**		**10**	**80**	**µg/L**	1	12/12/2015 01:13
Lead	U		0.10	5.0	µg/L	1	12/12/2015 01:13
Manganese	**40**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:13
Potassium	**680**		**34**	**200**	**µg/L**	1	12/12/2015 01:13
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 01:13
Silver	U		0.10	5.0	µg/L	1	12/12/2015 01:13
Zinc	**3.9**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 01:13
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	**810**		**27**	**100**	**µg/L**	1	12/9/2015 20:49
Sulfate	**41,000**		**700**	**5,000**	**µg/L**	5	12/9/2015 21:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 12/8/2015 01:20 PM

Work Order: 1512551
Lab ID: 1512551-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	U		0.00020	0.00050	µg/L	1	12/11/2015 12:56
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**24**		**1.1**	**10**	**µg/L**	1	12/12/2015 01:18
Arsenic	**0.81**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 01:18
Barium	**97**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:18
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 01:18
Chromium	**0.50**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 01:18
Copper	**0.39**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:18
Hardness (Calculation)	**310,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 01:18
Iron	**9,600**		**10**	**80**	**µg/L**	1	12/12/2015 01:18
Lead	U		0.10	5.0	µg/L	1	12/12/2015 01:18
Manganese	**1,600**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:18
Potassium	**2,900**		**34**	**200**	**µg/L**	1	12/12/2015 01:18
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 01:18
Silver	U		0.10	5.0	µg/L	1	12/12/2015 01:18
Zinc	**12**		**2.4**	**10**	**µg/L**	1	12/12/2015 01:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 22:10
Sulfate	**280**	J	**140**	**1,000**	**µg/L**	1	12/9/2015 22:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1S
Collection Date: 12/8/2015 02:00 PM

Work Order: 1512551
Lab ID: 1512551-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00029**	J	**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 13:03
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**2.7**	J	**1.1**	**10**	**µg/L**	1	12/12/2015 01:24
Arsenic	**1.4**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 01:24
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:24
Cadmium	**0.14**	J	**0.10**	**2.0**	**µg/L**	1	12/12/2015 01:24
Chromium	U		0.10	5.0	µg/L	1	12/12/2015 01:24
Copper	**0.37**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:24
Hardness (Calculation)	**210,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 01:24
Iron	**750**		**10**	**80**	**µg/L**	1	12/12/2015 01:24
Lead	U		0.10	5.0	µg/L	1	12/12/2015 01:24
Manganese	**260**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:24
Potassium	**1,400**		**34**	**200**	**µg/L**	1	12/12/2015 01:24
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 01:24
Silver	U		0.10	5.0	µg/L	1	12/12/2015 01:24
Zinc	U		2.4	10	µg/L	1	12/12/2015 01:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**2,700**		**27**	**100**	**µg/L**	1	12/9/2015 22:51
Sulfate	**35,000**		**700**	**5,000**	**µg/L**	5	12/9/2015 23:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 12/8/2015 02:40 PM

Work Order: 1512551
Lab ID: 1512551-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00027**	J	**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 13:33
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**26**		**1.1**	**10**	**µg/L**	1	12/12/2015 01:29
Arsenic	U		0.70	5.0	µg/L	1	12/12/2015 01:29
Barium	**26**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:29
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 01:29
Chromium	**0.40**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 01:29
Copper	**0.21**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:29
Hardness (Calculation)	**140,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 01:29
Iron	**3,400**		**10**	**80**	**µg/L**	1	12/12/2015 01:29
Lead	U		0.10	5.0	µg/L	1	12/12/2015 01:29
Manganese	**220**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:29
Potassium	**1,800**		**34**	**200**	**µg/L**	1	12/12/2015 01:29
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 01:29
Silver	U		0.10	5.0	µg/L	1	12/12/2015 01:29
Zinc	**6.4**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 01:29
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/9/2015 23:31
Sulfate	**9,100**		**140**	**1,000**	**µg/L**	1	12/9/2015 23:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 12/8/2015 03:15 PM

Work Order: 1512551
Lab ID: 1512551-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00055**		**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 13:41
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**31**		**1.1**	**10**	**µg/L**	1	12/12/2015 01:34
Arsenic	**0.89**	J	**0.70**	**5.0**	**µg/L**	1	12/12/2015 01:34
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:34
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 01:34
Chromium	**0.33**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 01:34
Copper	**1.2**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:34
Hardness (Calculation)	**270,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 01:34
Iron	**390**		**10**	**80**	**µg/L**	1	12/12/2015 01:34
Lead	U		0.10	5.0	µg/L	1	12/12/2015 01:34
Manganese	**11**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:34
Potassium	**720**		**34**	**200**	**µg/L**	1	12/12/2015 01:34
Selenium	**1.4**	J	**1.0**	**5.0**	**µg/L**	1	12/12/2015 01:34
Silver	U		0.10	5.0	µg/L	1	12/12/2015 01:34
Zinc	U		2.4	10	µg/L	1	12/12/2015 01:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**2,400**		**27**	**100**	**µg/L**	1	12/9/2015 23:51
Sulfate	**32,000**		**700**	**5,000**	**µg/L**	5	12/10/2015 00:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 12/8/2015 03:45 PM

Work Order: 1512551
Lab ID: 1512551-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00025**	J	**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 13:48
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**17**		**1.1**	**10**	**µg/L**	1	12/12/2015 01:50
Arsenic	U		0.70	5.0	µg/L	1	12/12/2015 01:50
Barium	**23**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:50
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 01:50
Chromium	**0.88**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 01:50
Copper	**0.61**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:50
Hardness (Calculation)	**180,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 01:50
Iron	**4,700**		**10**	**80**	**µg/L**	1	12/12/2015 01:50
Lead	U		0.10	5.0	µg/L	1	12/12/2015 01:50
Manganese	**300**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:50
Potassium	**3,000**		**34**	**200**	**µg/L**	1	12/12/2015 01:50
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 01:50
Silver	U		0.10	5.0	µg/L	1	12/12/2015 01:50
Zinc	**6.7**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 01:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/10/2015 00:32
Sulfate	**28,000**		**700**	**5,000**	**µg/L**	5	12/10/2015 00:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup-GW-1
Collection Date: 12/8/2015

Work Order: 1512551
Lab ID: 1512551-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.00020**	J	**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 13:56
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**14**		**1.1**	**10**	**µg/L**	1	12/12/2015 01:55
Arsenic	U		0.70	5.0	µg/L	1	12/12/2015 01:55
Barium	**22**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:55
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 01:55
Chromium	**0.77**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 01:55
Copper	**0.47**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:55
Hardness (Calculation)	**170,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 01:55
Iron	**4,400**		**10**	**80**	**µg/L**	1	12/12/2015 01:55
Lead	U		0.10	5.0	µg/L	1	12/12/2015 01:55
Manganese	**290**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 01:55
Potassium	**2,900**		**34**	**200**	**µg/L**	1	12/12/2015 01:55
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 01:55
Silver	U		0.10	5.0	µg/L	1	12/12/2015 01:55
Zinc	**6.8**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 01:55
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/10/2015 01:53
Sulfate	**27,000**		**700**	**5,000**	**µg/L**	5	12/10/2015 02:13

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *15-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 12/8/2015 04:40 PM

Work Order: 1512551
Lab ID: 1512551-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/11/15		Analyst: **BL**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	12/11/2015 14:04
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**32**		**1.1**	**10**	**µg/L**	1	12/12/2015 02:00
Arsenic	**7.2**		**0.70**	**5.0**	**µg/L**	1	12/12/2015 02:00
Barium	**77**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 02:00
Cadmium	U		0.10	2.0	µg/L	1	12/12/2015 02:00
Chromium	**0.90**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 02:00
Copper	**0.45**	J	**0.20**	**5.0**	**µg/L**	1	12/12/2015 02:00
Hardness (Calculation)	**290,000**		**1,000**	**2,000**	**µg/L**	1	12/12/2015 02:00
Iron	**11,000**		**10**	**80**	**µg/L**	1	12/12/2015 02:00
Lead	**0.12**	J	**0.10**	**5.0**	**µg/L**	1	12/12/2015 02:00
Manganese	**410**		**0.20**	**5.0**	**µg/L**	1	12/12/2015 02:00
Potassium	**3,900**		**34**	**200**	**µg/L**	1	12/12/2015 02:00
Selenium	U		1.0	5.0	µg/L	1	12/12/2015 02:00
Silver	U		0.10	5.0	µg/L	1	12/12/2015 02:00
Zinc	**4.2**	J	**2.4**	**10**	**µg/L**	1	12/12/2015 02:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	12/10/2015 02:33
Sulfate	**6,200**		**140**	**1,000**	**µg/L**	1	12/10/2015 02:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 15-Dec-15

Client: ERM, Inc

Work Order: 1512551

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80080** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 10:40 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616582** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 11:25 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616588** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 12:48 PM**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616599** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1512490-03AMS** Units: **ng/L** Analysis Date: **12/11/2015 11:32 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616589** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.68	0.50	5	0.76	98.4	71-125	0			

MS Sample ID: **1512551-08BMS** Units: **ng/L** Analysis Date: **12/11/2015 01:11 PM**

Client ID: **MW-1S** Run ID: **HG2_151211A** SeqNo: **3616602** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.33	0.50	5	0.29	101	71-125	0			

MSD Sample ID: **1512490-03AMSD** Units: **ng/L** Analysis Date: **12/11/2015 11:40 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616590** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.69	0.50	5	0.76	98.6	71-125	5.68	0.176	24	

MSD Sample ID: **1512551-08BMSD** Units: **ng/L** Analysis Date: **12/11/2015 01:18 PM**

Client ID: **MW-1S** Run ID: **HG2_151211A** SeqNo: **3616603** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.96	0.50	5	0.29	93.4	71-125	5.33	7.19	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512551
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80080** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 10:23 A**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616579** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.35	0.50	5	0	107	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-80080-80080** Units: **ng/L** Analysis Date: **12/11/2015 02:11 PM**

Client ID: Run ID: **HG2_151211A** SeqNo: **3616610** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.21	0.50	5	0	104	77-123	0			

The following samples were analyzed in this batch:

1512551-01B	1512551-02B	1512551-03B
1512551-04B	1512551-05B	1512551-06B
1512551-07B	1512551-08B	1512551-09B
1512551-10B	1512551-11B	1512551-12B
1512551-13B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512551
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80136** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-80136-80136** Units: **mg/L** Analysis Date: **12/11/2015 11:28 PM**
Client ID: Run ID: **ICPMS2_151211A** SeqNo: **3617805** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-80136-80136** Units: **mg/L** Analysis Date: **12/11/2015 11:34 PM**
Client ID: Run ID: **ICPMS2_151211A** SeqNo: **3617808** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1035	0.010	0.1	0	104	80-120	0			
Arsenic	0.09752	0.0050	0.1	0	97.5	80-120	0			
Barium	0.09904	0.0050	0.1	0	99	80-120	0			
Cadmium	0.1006	0.0020	0.1	0	101	80-120	0			
Chromium	0.09843	0.0050	0.1	0	98.4	80-120	0			
Copper	0.09976	0.0050	0.1	0	99.8	80-120	0			
Hardness (Calculation)	67.84	2.0	66.15	0	103	80-120	0			
Iron	9.891	0.080	10	0	98.9	80-120	0			
Lead	0.09521	0.0050	0.1	0	95.2	80-120	0			
Manganese	0.09966	0.0050	0.1	0	99.7	80-120	0			
Potassium	10.33	0.20	10	0	103	80-120	0			
Selenium	0.09121	0.0050	0.1	0	91.2	80-120	0			
Silver	0.09622	0.0050	0.1	0	96.2	80-120	0			
Zinc	0.09632	0.010	0.1	0	96.3	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512551
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80136** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1512551-10AMS** Units: **mg/L** Analysis Date: **12/12/2015 01:39 A**

Client ID: **MW-8S** Run ID: **ICPMS2_151211A** SeqNo: **3617851** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1466	0.010	0.1	0.03078	116	75-125	0			
Arsenic	0.09884	0.0050	0.1	0.0008877	98	75-125	0			
Barium	0.1254	0.0050	0.1	0.02311	102	75-125	0			
Cadmium	0.1027	0.0020	0.1	0.00002777	103	75-125	0			
Chromium	0.09772	0.0050	0.1	0.0003321	97.4	75-125	0			
Copper	0.09829	0.0050	0.1	0.001236	97.1	75-125	0			
Iron	10.14	0.080	10	0.3861	97.5	75-125	0			
Lead	0.09693	0.0050	0.1	0.00007041	96.9	75-125	0			
Manganese	0.1105	0.0050	0.1	0.01109	99.4	75-125	0			
Potassium	11.11	0.20	10	0.7205	104	75-125	0			
Selenium	0.09478	0.0050	0.1	0.00137	93.4	75-125	0			
Silver	0.09205	0.0050	0.1	-1.254E-05	92.1	75-125	0			
Zinc	0.09634	0.010	0.1	-7.021E-05	96.4	75-125	0			

MSD Sample ID: **1512551-10AMSD** Units: **mg/L** Analysis Date: **12/12/2015 01:45 A**

Client ID: **MW-8S** Run ID: **ICPMS2_151211A** SeqNo: **3617853** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1438	0.010	0.1	0.03078	113	75-125	0.1466	1.93	20	
Arsenic	0.09959	0.0050	0.1	0.0008877	98.7	75-125	0.09884	0.756	20	
Barium	0.1239	0.0050	0.1	0.02311	101	75-125	0.1254	1.2	20	
Cadmium	0.1016	0.0020	0.1	0.00002777	102	75-125	0.1027	1.08	20	
Chromium	0.09727	0.0050	0.1	0.0003321	96.9	75-125	0.09772	0.462	20	
Copper	0.09753	0.0050	0.1	0.001236	96.3	75-125	0.09829	0.776	20	
Iron	10.04	0.080	10	0.3861	96.5	75-125	10.14	0.991	20	
Lead	0.09532	0.0050	0.1	0.00007041	95.2	75-125	0.09693	1.67	20	
Manganese	0.1097	0.0050	0.1	0.01109	98.6	75-125	0.1105	0.727	20	
Potassium	10.98	0.20	10	0.7205	103	75-125	11.11	1.18	20	
Selenium	0.09342	0.0050	0.1	0.00137	92	75-125	0.09478	1.45	20	
Silver	0.09193	0.0050	0.1	-1.254E-05	91.9	75-125	0.09205	0.13	20	
Zinc	0.09498	0.010	0.1	-7.021E-05	95.1	75-125	0.09634	1.42	20	

The following samples were analyzed in this batch:

1512551-01A	1512551-01D	1512551-02A
1512551-03A	1512551-04A	1512551-05A
1512551-06A	1512551-06D	1512551-07A
1512551-08A	1512551-09A	1512551-10A
1512551-11A	1512551-12A	1512551-13A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512551
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R177955** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R177955** Units: **mg/L** Analysis Date: **12/9/2015 05:07 PM**
Client ID: Run ID: **IC4_151209B** SeqNo: **3613105** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R177955** Units: **mg/L** Analysis Date: **12/9/2015 05:27 PM**
Client ID: Run ID: **IC4_151209B** SeqNo: **3613106** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.937	0.10	2	0	96.8	81-116	0			
Sulfate	10.05	1.0	10	0	101	85-110	0			

MS Sample ID: **1512551-01C MS** Units: **mg/L** Analysis Date: **12/9/2015 06:27 PM**
Client ID: **MW-5D** Run ID: **IC4_151209B** SeqNo: **3613109** Prep Date: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	49.75	2.5	50	0	99.5	75-125	0			
Sulfate	341.9	25	250	85.54	103	75-125	0			

MSD Sample ID: **1512551-01C MSD** Units: **mg/L** Analysis Date: **12/9/2015 06:48 PM**
Client ID: **MW-5D** Run ID: **IC4_151209B** SeqNo: **3613110** Prep Date: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	49.92	2.5	50	0	99.8	75-125	49.75	0.346	20	
Sulfate	336.3	25	250	85.54	100	75-125	341.9	1.66	20	

The following samples were analyzed in this batch:

1512551-01C	1512551-02C	1512551-03C
1512551-04C	1512551-05C	1512551-06C
1512551-07C	1512551-08C	1512551-09C
1512551-10C	1512551-11C	1512551-12C
1512551-13C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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South Charleston, WV +1 304 356 3168
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Chain of Custody Form

Page 1 of 1

COC ID: 25357

ALS Project Manager:

ALS Work Order #: 1512551

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals (Total)
Work Order		Project Number		B	Low Level Mercury
Company Name	ERM	Bill To Company		C	Anions
Send Report To	Martin Ryan	Invoice Attn		D	Dissolved Metals (Field Filtered)
Address	8859 Woodfield Crossing Blvd suite 560W Indianapolis, IN 46240	Address		E	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip		F	
Phone	317-706-2000	Phone		G	
Fax	317-706-2010	Fax		H	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-5D	12-8-15	0850	W	HNO_3	4	X	X	X	X							
2	MW-4S		0950			3	X	X	X								
3	MW-4D		1030			3	X	X	X								
4	MW-3S		1115			3	X	X	X								
5	MW-3D		1145			3	X	X	X								
6	MW-2S		1245			4	X	X	X	X							
7	MW-2D		1320			3	X	X	X								
8	MW-1S		1400			3	X	X	X								
9	MW-1D		1440			3	X	X	X								
10	MW-8S		1515			3	X	X	X								

Sampler(s) Please Print & Sign: Aaron Alexander, Tanner Parker

Shipment Method:

Required Turnaround Time: (Check Box) ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☒ Other Standard

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	12-8-15	1725	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	12/9/15	1220	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
MES	12/9/15	1420	

Notes:

Cooler ID	Cooler Temp
	1.6

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page ____ of ____

COC ID: 25356

1572551

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals (Total)
Work Order		Project Number		B	Low level Mercury
Company Name	ERM	Bill To Company		C	Anions
Send Report To	Martin Ryan	Invoice Attn		D	
Address	8854 Woodfield Crossing Blvd Suite 560W	Address		E	
				F	
City/State/Zip	Indianapolis	City/State/Zip		G	
Phone	317-706-2000	Phone		H	
Fax	317-706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	MW-8D	12-8-15	1545	W	HNO_3	3	X	X	X								
12	Dup-GW-1	12-8-15	—	W	HNO_3	3	X	X	X								
13	MW-7S	12-8-15	1640	W	HNO_3	3	X	X	X								
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander Tanner Parker

Shipment Method: —

Required Turnaround Time: (Check Box) ☒ Other Standard ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date: 12/8/15	Time: 1725	Received by:	
Relinquished by:	Date: 12/9/15	Time: 1220	Received by/Laboratory:	
Logged by (Laboratory): MEB	Date: 12/9/15	Time: 1420	Checked by (Laboratory):	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Notes:

Cooler ID	Cooler Temp
	1.6°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **09-Dec-15 12:20**

Work Order: **1512551** Received by: **MB**

Checklist completed by Meghan Broadbent (eSignature) 09-Dec-15 (Date) Reviewed by: Bill Carey (eSignature) 10-Dec-15 (Date)

Matrices: water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6/1.6	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/9/2015 2:33:59 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

17-Dec-2015

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1512621**

Dear Marty,

ALS Environmental received 4 samples on 10-Dec-2015 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 17.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

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ALS Group USA, Corp

Date: 17-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1512621**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1512621-01	MW-6S	Water		12/9/2015 09:10	12/10/2015 09:00	☐
1512621-02	MW-6D	Water		12/9/2015 10:00	12/10/2015 09:00	☐
1512621-03	MW-7D	Water		12/9/2015 11:00	12/10/2015 09:00	☐
1512621-04	EB-Tubing	Water		12/9/2015 10:40	12/10/2015 09:00	☐

ALS Group USA, Corp

Date: 17-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1512621**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 17-Dec-15

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1512621

Case Narrative

Samples for the above noted Work Order were received on 12/10/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *17-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 12/9/2015 09:10 AM

Work Order: 1512621
Lab ID: 1512621-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/14/15		Analyst: **BL**
Mercury	**0.00088**		**0.00020**	**0.00050**	**µg/L**	1	12/14/2015 12:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**34**		**1.1**	**10**	**µg/L**	1	12/14/2015 12:57
Arsenic	**0.82**	J	**0.70**	**5.0**	**µg/L**	1	12/14/2015 12:57
Barium	**15**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 12:57
Cadmium	U		0.10	2.0	µg/L	1	12/14/2015 12:57
Chromium	**1.0**	J	**0.10**	**5.0**	**µg/L**	1	12/14/2015 12:57
Copper	**2.7**	J	**0.20**	**5.0**	**µg/L**	1	12/14/2015 12:57
Hardness (Calculation)	**520,000**		**1,000**	**2,000**	**µg/L**	1	12/14/2015 12:57
Iron	**1,700**		**10**	**80**	**µg/L**	1	12/14/2015 12:57
Lead	U		0.10	5.0	µg/L	1	12/14/2015 12:57
Manganese	**620**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 12:57
Potassium	**1,200**		**34**	**200**	**µg/L**	1	12/14/2015 12:57
Selenium	**3.6**	J	**1.0**	**5.0**	**µg/L**	1	12/14/2015 12:57
Silver	U		0.10	5.0	µg/L	1	12/14/2015 12:57
Zinc	U		2.4	10	µg/L	1	12/14/2015 12:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**13,000**		**270**	**1,000**	**µg/L**	10	12/10/2015 16:56
Sulfate	**110,000**		**1,400**	**10,000**	**µg/L**	10	12/10/2015 16:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 12/9/2015 10:00 AM

Work Order: 1512621
Lab ID: 1512621-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/14/15		Analyst: **BL**
Mercury	**0.00045**	J	**0.00020**	**0.00050**	**µg/L**	1	12/14/2015 12:57
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**19**		**1.1**	**10**	**µg/L**	1	12/14/2015 13:32
Arsenic	**2.6**	J	**0.70**	**5.0**	**µg/L**	1	12/14/2015 13:32
Barium	**43**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:32
Cadmium	U		0.10	2.0	µg/L	1	12/14/2015 13:32
Chromium	**0.22**	J	**0.10**	**5.0**	**µg/L**	1	12/14/2015 13:32
Copper	U		0.20	5.0	µg/L	1	12/14/2015 13:32
Hardness (Calculation)	**220,000**		**1,000**	**2,000**	**µg/L**	1	12/14/2015 13:32
Iron	**4,400**		**10**	**80**	**µg/L**	1	12/14/2015 13:32
Lead	U		0.10	5.0	µg/L	1	12/14/2015 13:32
Manganese	**160**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:32
Potassium	**4,500**		**34**	**200**	**µg/L**	1	12/14/2015 13:32
Selenium	U		1.0	5.0	µg/L	1	12/14/2015 13:32
Silver	U		0.10	5.0	µg/L	1	12/14/2015 13:32
Zinc	**10**		**2.4**	**10**	**µg/L**	1	12/14/2015 13:32
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**47**	J	**27**	**100**	**µg/L**	1	12/10/2015 17:57
Sulfate	**65,000**		**700**	**5,000**	**µg/L**	5	12/10/2015 18:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 12/9/2015 11:00 AM

Work Order: 1512621
Lab ID: 1512621-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/14/15		Analyst: **BL**
Mercury	**0.0024**		**0.00020**	**0.00050**	**µg/L**	1	12/14/2015 14:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**16,000**		**1.1**	**10**	**µg/L**	1	12/14/2015 13:38
Arsenic	**2.5**	J	**0.70**	**5.0**	**µg/L**	1	12/14/2015 13:38
Barium	**83**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:38
Cadmium	U		0.10	2.0	µg/L	1	12/14/2015 13:38
Chromium	**2.7**	J	**0.10**	**5.0**	**µg/L**	1	12/14/2015 13:38
Copper	**2.1**	J	**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:38
Hardness (Calculation)	**200,000**		**1,000**	**2,000**	**µg/L**	1	12/14/2015 13:38
Iron	**7,600**		**10**	**80**	**µg/L**	1	12/14/2015 13:38
Lead	**12**		**0.10**	**5.0**	**µg/L**	1	12/14/2015 13:38
Manganese	**240**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:38
Potassium	**4,200**		**34**	**200**	**µg/L**	1	12/14/2015 13:38
Selenium	U		1.0	5.0	µg/L	1	12/14/2015 13:38
Silver	U		0.10	5.0	µg/L	1	12/14/2015 13:38
Zinc	**28**		**2.4**	**10**	**µg/L**	1	12/14/2015 13:38
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**4,300**		**1.1**	**10**	**µg/L**	1	12/14/2015 13:50
Arsenic	**1.5**	J	**0.70**	**5.0**	**µg/L**	1	12/14/2015 13:50
Barium	**35**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:50
Cadmium	U		0.10	2.0	µg/L	1	12/14/2015 13:50
Chromium	**0.67**	J	**0.10**	**5.0**	**µg/L**	1	12/14/2015 13:50
Copper	**0.80**	J	**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:50
Hardness (Calculation)	**160,000**		**1,000**	**2,000**	**µg/L**	1	12/14/2015 13:50
Iron	**2,400**		**10**	**80**	**µg/L**	1	12/14/2015 13:50
Lead	**3.3**	J	**0.10**	**5.0**	**µg/L**	1	12/14/2015 13:50
Manganese	**170**		**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:50
Potassium	**3,300**		**34**	**200**	**µg/L**	1	12/14/2015 13:50
Selenium	U		1.0	5.0	µg/L	1	12/14/2015 13:50
Silver	U		0.10	5.0	µg/L	1	12/14/2015 13:50
Zinc	**15**		**2.4**	**10**	**µg/L**	1	12/14/2015 13:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**33**	J	**27**	**100**	**µg/L**	1	12/10/2015 18:37
Sulfate	**26,000**		**700**	**5,000**	**µg/L**	5	12/10/2015 18:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-15*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: EB-Tubing
Collection Date: 12/9/2015 10:40 AM

Work Order: 1512621
Lab ID: 1512621-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/11/15		Analyst: **RH**
Aluminum	**2.5**	J	**1.1**	**10**	**µg/L**	1	12/14/2015 13:57
Arsenic	U		0.70	5.0	µg/L	1	12/14/2015 13:57
Barium	U		0.20	5.0	µg/L	1	12/14/2015 13:57
Cadmium	U		0.10	2.0	µg/L	1	12/14/2015 13:57
Chromium	**0.24**	J	**0.10**	**5.0**	**µg/L**	1	12/14/2015 13:57
Copper	**0.26**	J	**0.20**	**5.0**	**µg/L**	1	12/14/2015 13:57
Hardness (Calculation)	U		1,000	2,000	µg/L	1	12/14/2015 13:57
Iron	**35**	J	**10**	**80**	**µg/L**	1	12/14/2015 13:57
Lead	U		0.10	5.0	µg/L	1	12/14/2015 13:57
Manganese	U		0.20	5.0	µg/L	1	12/14/2015 13:57
Potassium	U		34	200	µg/L	1	12/14/2015 13:57
Selenium	U		1.0	5.0	µg/L	1	12/14/2015 13:57
Silver	U		0.10	5.0	µg/L	1	12/14/2015 13:57
Zinc	U		2.4	10	µg/L	1	12/14/2015 13:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**96**	J	**27**	**100**	**µg/L**	1	12/10/2015 20:39
Sulfate	U		140	1,000	µg/L	1	12/10/2015 20:39

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Dec-15

Client: ERM, Inc

Work Order: 1512621

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80166** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-80166-80166** Units: **ng/L** Analysis Date: **12/14/2015 10:26 A**

Client ID: Run ID: **HG2_151214A** SeqNo: **3619082** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-80166-80166** Units: **ng/L** Analysis Date: **12/14/2015 11:11 A**

Client ID: Run ID: **HG2_151214A** SeqNo: **3619088** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-80166-80166** Units: **ng/L** Analysis Date: **12/14/2015 12:34 PM**

Client ID: Run ID: **HG2_151214A** SeqNo: **3619130** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1512616-03AMS** Units: **ng/L** Analysis Date: **12/14/2015 11:26 A**

Client ID: Run ID: **HG2_151214A** SeqNo: **3619099** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.23	0.50	5	0.5	94.6	71-125	0			

MS Sample ID: **1512621-01BMS** Units: **ng/L** Analysis Date: **12/14/2015 12:42 PM**

Client ID: **MW-6S** Run ID: **HG2_151214A** SeqNo: **3619134** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.88	0.50	5	0.88	100	71-125	0			

MSD Sample ID: **1512616-03AMSD** Units: **ng/L** Analysis Date: **12/14/2015 11:34 A**

Client ID: Run ID: **HG2_151214A** SeqNo: **3619104** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.18	0.50	5	0.5	93.6	71-125	5.23	0.961	24	

MSD Sample ID: **1512621-01BMSD** Units: **ng/L** Analysis Date: **12/14/2015 12:49 PM**

Client ID: **MW-6S** Run ID: **HG2_151214A** SeqNo: **3619136** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.85	0.50	5	0.88	99.4	71-125	5.88	0.512	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512621
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80166** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-80166-80166** Units: **ng/L** Analysis Date: **12/14/2015 10:09 A**

Client ID: Run ID: **HG2_151214A** SeqNo: **3619075** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.5	0.50	5	0	110	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-80166-80166** Units: **ng/L** Analysis Date: **12/14/2015 02:25 PM**

Client ID: Run ID: **HG2_151214A** SeqNo: **3619175** Prep Date: **12/14/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.06	0.50	5	0	101	77-123	0			

The following samples were analyzed in this batch: 1512621-01B 1512621-02B 1512621-03B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80135** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-80133-80135** Units: **mg/L** Analysis Date: **12/14/2015 12:26 PM**
Client ID: Run ID: **ICPMS2_151214A** SeqNo: **3618637** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-80135-80135** Units: **mg/L** Analysis Date: **12/14/2015 12:37 PM**
Client ID: Run ID: **ICPMS2_151214A** SeqNo: **3618640** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80135** Instrument ID **ICPMS2** Method: **SW6020A**

LCS Sample ID: **LCS-80133-80135** Units: **mg/L** Analysis Date: **12/14/2015 12:32 PM**
Client ID: Run ID: **ICPMS2_151214A** SeqNo: **3618638** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.105	0.010	0.1	0	105	80-120	0			
Arsenic	0.1052	0.0050	0.1	0	105	80-120	0			
Barium	0.1024	0.0050	0.1	0	102	80-120	0			
Cadmium	0.1042	0.0020	0.1	0	104	80-120	0			
Chromium	0.1021	0.0050	0.1	0	102	80-120	0			
Copper	0.1057	0.0050	0.1	0	106	80-120	0			
Hardness (Calculation)	68.83	2.0	66.15	0	104	80-120	0			
Iron	10.38	0.080	10	0	104	80-120	0			
Lead	0.1036	0.0050	0.1	0	104	80-120	0			
Manganese	0.1005	0.0050	0.1	0	100	80-120	0			
Potassium	10.21	0.20	10	0	102	80-120	0			
Selenium	0.101	0.0050	0.1	0	101	80-120	0			
Silver	0.1052	0.0050	0.1	0	105	80-120	0			
Zinc	0.1055	0.010	0.1	0	106	80-120	0			

LCS Sample ID: **LCS-80135-80135** Units: **mg/L** Analysis Date: **12/14/2015 12:42 PM**
Client ID: Run ID: **ICPMS2_151214A** SeqNo: **3618641** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.101	0.010	0.1	0	101	80-120	0			
Arsenic	0.1043	0.0050	0.1	0	104	80-120	0			
Barium	0.1007	0.0050	0.1	0	101	80-120	0			
Cadmium	0.1027	0.0020	0.1	0	103	80-120	0			
Chromium	0.1023	0.0050	0.1	0	102	80-120	0			
Copper	0.1009	0.0050	0.1	0	101	80-120	0			
Hardness (Calculation)	66.15	2.0	66.15	0	100	80-120	0			
Iron	10.44	0.080	10	0	104	80-120	0			
Lead	0.1002	0.0050	0.1	0	100	80-120	0			
Manganese	0.09708	0.0050	0.1	0	97.1	80-120	0			
Potassium	9.816	0.20	10	0	98.2	80-120	0			
Selenium	0.1055	0.0050	0.1	0	106	80-120	0			
Silver	0.1053	0.0050	0.1	0	105	80-120	0			
Zinc	0.1001	0.010	0.1	0	100	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512621
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **80135** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1512621-01AMS** Units: **mg/L** Analysis Date: **12/14/2015 01:02 PM**
Client ID: **MW-6S** Run ID: **ICPMS2_151214A** SeqNo: **3618648** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.156	0.010	0.1	0.03379	122	75-125	0			
Arsenic	0.1081	0.0050	0.1	0.0008185	107	75-125	0			
Barium	0.1125	0.0050	0.1	0.01533	97.2	75-125	0			
Cadmium	0.09662	0.0020	0.1	0.00003092	96.6	75-125	0			
Chromium	0.103	0.0050	0.1	0.001004	102	75-125	0			
Copper	0.1016	0.0050	0.1	0.002667	98.9	75-125	0			
Iron	11.84	0.080	10	1.651	102	75-125	0			
Lead	0.0992	0.0050	0.1	0.00007432	99.1	75-125	0			
Manganese	0.711	0.0050	0.1	0.6194	91.6	75-125	0			O
Potassium	11.41	0.20	10	1.212	102	75-125	0			
Selenium	0.1072	0.0050	0.1	0.003649	104	75-125	0			
Silver	0.09852	0.0050	0.1	-5.985E-06	98.5	75-125	0			
Zinc	0.1005	0.010	0.1	0.002378	98.1	75-125	0			

MSD Sample ID: **1512621-01AMSD** Units: **mg/L** Analysis Date: **12/14/2015 01:07 PM**
Client ID: **MW-6S** Run ID: **ICPMS2_151214A** SeqNo: **3618649** Prep Date: **12/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1576	0.010	0.1	0.03379	124	75-125	0.156	1.02	20	
Arsenic	0.1073	0.0050	0.1	0.0008185	106	75-125	0.1081	0.743	20	
Barium	0.1173	0.0050	0.1	0.01533	102	75-125	0.1125	4.18	20	
Cadmium	0.09994	0.0020	0.1	0.00003092	99.9	75-125	0.09662	3.38	20	
Chromium	0.1029	0.0050	0.1	0.001004	102	75-125	0.103	0.0971	20	
Copper	0.1022	0.0050	0.1	0.002667	99.5	75-125	0.1016	0.589	20	
Iron	11.79	0.080	10	1.651	101	75-125	11.84	0.423	20	
Lead	0.09933	0.0050	0.1	0.00007432	99.3	75-125	0.0992	0.131	20	
Manganese	0.722	0.0050	0.1	0.6194	103	75-125	0.711	1.54	20	O
Potassium	11.57	0.20	10	1.212	104	75-125	11.41	1.39	20	
Selenium	0.1084	0.0050	0.1	0.003649	105	75-125	0.1072	1.11	20	
Silver	0.09845	0.0050	0.1	-5.985E-06	98.5	75-125	0.09852	0.0711	20	
Zinc	0.1004	0.010	0.1	0.002378	98	75-125	0.1005	0.0996	20	

The following samples were analyzed in this batch:

1512621-01A	1512621-02A	1512621-03A
1512621-03D	1512621-04B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1512621
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R178055** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R178055** Units: **mg/L** Analysis Date: **12/10/2015 03:56 PM**
Client ID: Run ID: **IC4_151210B** SeqNo: **3615412** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R178055** Units: **mg/L** Analysis Date: **12/10/2015 04:16 PM**
Client ID: Run ID: **IC4_151210B** SeqNo: **3615413** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.954	0.10	2	0	97.7	81-116	0			
Sulfate	10.34	1.0	10	0	103	85-110	0			

MS Sample ID: **1512621-01C MS** Units: **mg/L** Analysis Date: **12/10/2015 05:17 PM**
Client ID: **MW-6S** Run ID: **IC4_151210B** SeqNo: **3615416** Prep Date: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	51.51	2.0	40	12.94	96.4	75-125	0			
Sulfate	320.8	20	200	114.7	103	75-125	0			

MSD Sample ID: **1512621-01C MSD** Units: **mg/L** Analysis Date: **12/10/2015 05:37 PM**
Client ID: **MW-6S** Run ID: **IC4_151210B** SeqNo: **3615417** Prep Date: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	51.58	2.0	40	12.94	96.6	75-125	51.51	0.147	20	
Sulfate	322.6	20	200	114.7	104	75-125	320.8	0.544	20	

The following samples were analyzed in this batch:

1512621-01C	1512621-02C	1512621-03C
1512621-04C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 32083

15120621

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals
Work Order		Project Number		B	low level Mercury
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions
Send Report To	Martin	Invoice Attn	Debra Moss/Accounts Payable	D	Dissolved Metals (Field Filtered)
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	MS/MSD
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6S	12-9-15	0910	Water	HNO_3	6	X	X	X			X					
2	MW-6D	↓	1000	↓	↓	3	X	X	X								
3	MW-7D	↓	1100	↓	↓	4	X	X	X	X							
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander Tanner Kidd

Shipment Method: —

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD X Other 5+ BD ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date: 12-9-15	Time: 1430 1200	Received by:	Notes:	
Relinquished by:	Date: 12/9/15	Time: 1800	Received by (Laboratory):	Cooler ID	Cooler Temp
Logged by (Laboratory): MB	Date: 12/10/15	Time: 1147	Checked by (Laboratory):		4.2C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Page 3 of 3
ORIGIN ID:HLMA (219) 405-5409
PETE WESSON
ALS ENVIRONMENTAL
3352 128TH AVE
HOLLAND, MI 49424
UNITED STATES US
SHIP DATE: 09DEC15
ACTWGT: 58.00 LB
CAD: 2264840/INET3670
DIMS: 14x26x15 IN
BILL SENDER
TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
3352 128TH AVE
HOLLAND MI 49424
(616) 399-6070
INV:
PO:
REF:
DEPT:
FedEx Express
3 of 3
THU - 10 DEC 10:30A
PRIORITY OVERNIGHT
FedEx
MPS#
0263 7751 6591 9938
THU - 10 DEC 10:30A
PRIORITY OVERNIGHT
NA HLMA
49424
MI-US
GRR
FID 42941 09DEC15 SBNA 639C1/1308/3100
Custody Seal
Time 1820
Date 12/9/15
Name
Company

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **10-Dec-15 09:00**

Work Order: **1512621** Received by: **MB**

Checklist completed by Meghan Broadbent (eSignature) 10-Dec-15 (Date) Reviewed by: Bill Carey (eSignature) 11-Dec-15 (Date)

Matrices: water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.2/4.2	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/10/2015 11:56:25 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

28-Mar-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1603971**

Dear Marty,

ALS Environmental received 15 samples on 17-Mar-2016 12:25 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 31.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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RIGHT SOLUTIONS RIGHT PARTNER

ALS Group USA, Corp

Date: 28-Mar-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1603971**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1603971-01	MW-5s	Water		3/16/2016 08:50	3/17/2016 12:25	☐
1603971-02	MW-5D	Water		3/16/2016 08:45	3/17/2016 12:25	☐
1603971-03	MW-4S	Water		3/16/2016 09:45	3/17/2016 12:25	☐
1603971-04	MW-4D	Water		3/16/2016 09:50	3/17/2016 12:25	☐
1603971-05	MW-3S	Water		3/16/2016 10:40	3/17/2016 12:25	☐
1603971-06	MW-3D	Water		3/16/2016 10:35	3/17/2016 12:25	☐
1603971-07	MW-2S	Water		3/16/2016 11:35	3/17/2016 12:25	☐
1603971-08	MW-2D	Water		3/16/2016 11:30	3/17/2016 12:25	☐
1603971-09	MW-1S	Water		3/16/2016 12:15	3/17/2016 12:25	☐
1603971-10	MW-1D	Water		3/16/2016 12:15	3/17/2016 12:25	☐
1603971-11	BG-1S	Water		3/16/2016 14:40	3/17/2016 12:25	☐
1603971-12	BG-1D	Water		3/16/2016 14:45	3/17/2016 12:25	☐
1603971-13	MW-6S	Water		3/16/2016 15:45	3/17/2016 12:25	☐
1603971-14	MW-6D	Water		3/16/2016 15:55	3/17/2016 12:25	☐
1603971-15	DUP-GW-31616	Water		3/16/2016	3/17/2016 12:25	☐

ALS Group USA, Corp

Date: 28-Mar-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1603971**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 28-Mar-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1603971

Case Narrative

Samples for the above noted Work Order were received on 3/17/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5s
Collection Date: 3/16/2016 08:50 AM

Work Order: 1603971
Lab ID: 1603971-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.0015**		**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 12:55
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**310**		**1.1**	**10**	**µg/L**	1	3/23/2016 04:37
Arsenic	U		0.70	5.0	µg/L	1	3/23/2016 04:37
Barium	**19**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:37
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 04:37
Chromium	**0.82**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 04:37
Copper	**1.8**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:37
Hardness (Calculation)	**170,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 04:37
Iron	**470**		**10**	**80**	**µg/L**	1	3/23/2016 04:37
Lead	**0.56**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 04:37
Manganese	**49**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:37
Potassium	**3,000**		**34**	**200**	**µg/L**	1	3/23/2016 04:37
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 04:37
Silver	U		0.10	5.0	µg/L	1	3/23/2016 04:37
Zinc	**31**		**2.4**	**10**	**µg/L**	1	3/23/2016 04:37
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**1,800**		**27**	**100**	**µg/L**	1	3/17/2016 17:26
Sulfate	**66,000**		**1,400**	**10,000**	**µg/L**	10	3/17/2016 17:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 3/16/2016 08:45 AM

Work Order: 1603971
Lab ID: 1603971-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 13:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**21**		**1.1**	**10**	**µg/L**	1	3/24/2016 16:41
Arsenic	U		0.70	5.0	µg/L	1	3/23/2016 04:44
Barium	**49**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:44
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 04:44
Chromium	**0.21**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 04:44
Copper	U		0.20	5.0	µg/L	1	3/23/2016 04:44
Hardness (Calculation)	**270,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 04:44
Iron	**3,500**		**10**	**80**	**µg/L**	1	3/23/2016 04:44
Lead	U		0.10	5.0	µg/L	1	3/23/2016 04:44
Manganese	**180**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:44
Potassium	**5,600**		**34**	**200**	**µg/L**	1	3/23/2016 04:44
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 04:44
Silver	U		0.10	5.0	µg/L	1	3/23/2016 04:44
Zinc	U		2.4	10	µg/L	1	3/23/2016 04:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**55**	J	**27**	**100**	**µg/L**	1	3/17/2016 19:29
Sulfate	**65,000**		**700**	**5,000**	**µg/L**	5	3/17/2016 20:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 3/16/2016 09:45 AM

Work Order: 1603971
Lab ID: 1603971-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.00074**		**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 13:25
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**21**		**1.1**	**10**	**µg/L**	1	3/24/2016 16:47
Arsenic	**0.86**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 04:50
Barium	**90**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:50
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 04:50
Chromium	**0.31**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 04:50
Copper	**1.2**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:50
Hardness (Calculation)	**510,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 04:50
Iron	**1,700**		**10**	**80**	**µg/L**	1	3/23/2016 04:50
Lead	U		0.10	5.0	µg/L	1	3/23/2016 04:50
Manganese	**440**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:50
Potassium	**1,900**		**34**	**200**	**µg/L**	1	3/23/2016 04:50
Selenium	**2.0**	J	**1.0**	**5.0**	**µg/L**	1	3/23/2016 04:50
Silver	U		0.10	5.0	µg/L	1	3/23/2016 04:50
Zinc	**11**		**2.4**	**10**	**µg/L**	1	3/23/2016 04:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**1,600**		**54**	**200**	**µg/L**	2	3/17/2016 20:50
Sulfate	**190,000**		**2,800**	**20,000**	**µg/L**	20	3/17/2016 21:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 3/16/2016 09:50 AM

Work Order: 1603971
Lab ID: 1603971-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 13:33
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**5.0**	J	**1.1**	**10**	**µg/L**	1	3/23/2016 04:57
Arsenic	U		0.70	5.0	µg/L	1	3/23/2016 04:57
Barium	**140**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:57
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 04:57
Chromium	**0.46**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 04:57
Copper	U		0.20	5.0	µg/L	1	3/23/2016 04:57
Hardness (Calculation)	**510,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 04:57
Iron	**15,000**		**10**	**80**	**µg/L**	1	3/23/2016 04:57
Lead	U		0.10	5.0	µg/L	1	3/23/2016 04:57
Manganese	**360**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:57
Potassium	**6,600**		**34**	**200**	**µg/L**	1	3/23/2016 04:57
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 04:57
Silver	U		0.10	5.0	µg/L	1	3/23/2016 04:57
Zinc	U		2.4	10	µg/L	1	3/23/2016 04:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		54	200	µg/L	2	3/17/2016 21:31
Sulfate	**180,000**		**2,800**	**20,000**	**µg/L**	20	3/17/2016 21:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 3/16/2016 10:40 AM

Work Order: 1603971
Lab ID: 1603971-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.00025**	J	**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 13:40
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**6.7**	J	**1.1**	**10**	**µg/L**	1	3/23/2016 05:03
Arsenic	**3.2**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 05:03
Barium	**43**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:03
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 05:03
Chromium	**0.29**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 05:03
Copper	**1.0**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:03
Hardness (Calculation)	**380,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 05:03
Iron	**7,300**		**10**	**80**	**µg/L**	1	3/23/2016 05:03
Lead	U		0.10	5.0	µg/L	1	3/23/2016 05:03
Manganese	**1,600**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:03
Potassium	**1,600**		**34**	**200**	**µg/L**	1	3/23/2016 05:03
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 05:03
Silver	U		0.10	5.0	µg/L	1	3/23/2016 05:03
Zinc	**2.5**	J	**2.4**	**10**	**µg/L**	1	3/23/2016 05:03
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	3/17/2016 22:11
Sulfate	**51,000**		**700**	**5,000**	**µg/L**	5	3/17/2016 22:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 3/16/2016 10:35 AM

Work Order: 1603971
Lab ID: 1603971-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 13:48
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**8.5**	J	**1.1**	**10**	**µg/L**	1	3/23/2016 05:09
Arsenic	**3.2**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 05:09
Barium	**110**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:09
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 05:09
Chromium	**0.49**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 05:09
Copper	U		0.20	5.0	µg/L	1	3/23/2016 05:09
Hardness (Calculation)	**310,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 05:09
Iron	**7,800**		**10**	**80**	**µg/L**	1	3/23/2016 05:09
Lead	U		0.10	5.0	µg/L	1	3/23/2016 05:09
Manganese	**210**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:09
Potassium	**6,700**		**34**	**200**	**µg/L**	1	3/23/2016 05:09
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 05:09
Silver	U		0.10	5.0	µg/L	1	3/23/2016 05:09
Zinc	**4.6**	J	**2.4**	**10**	**µg/L**	1	3/23/2016 05:09
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**64**	J	**27**	**100**	**µg/L**	1	3/17/2016 22:52
Sulfate	**9,800**		**140**	**1,000**	**µg/L**	1	3/17/2016 22:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 3/16/2016 11:35 AM

Work Order: 1603971
Lab ID: 1603971-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.0014**		**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 13:55
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**18**		**1.1**	**10**	**µg/L**	1	3/24/2016 16:53
Arsenic	**1.4**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 05:16
Barium	**31**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:16
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 05:16
Chromium	**0.26**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 05:16
Copper	**5.1**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:16
Hardness (Calculation)	**130,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 05:16
Iron	**1,200**		**10**	**80**	**µg/L**	1	3/23/2016 05:16
Lead	**0.20**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 05:16
Manganese	**54**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:16
Potassium	**2,700**		**34**	**200**	**µg/L**	1	3/23/2016 05:16
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 05:16
Silver	U		0.10	5.0	µg/L	1	3/23/2016 05:16
Zinc	**5.1**	J	**2.4**	**10**	**µg/L**	1	3/23/2016 05:16
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**640**		**27**	**100**	**µg/L**	1	3/17/2016 23:32
Sulfate	**23,000**		**700**	**5,000**	**µg/L**	5	3/18/2016 00:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 3/16/2016 11:30 AM

Work Order: 1603971
Lab ID: 1603971-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 14:03
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**20**		**1.1**	**10**	**µg/L**	1	3/24/2016 16:59
Arsenic	**0.92**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 05:22
Barium	**77**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:22
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 05:22
Chromium	**0.89**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 05:22
Copper	U		0.20	5.0	µg/L	1	3/23/2016 05:22
Hardness (Calculation)	**250,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 05:22
Iron	**4,400**		**10**	**80**	**µg/L**	1	3/23/2016 05:22
Lead	U		0.10	5.0	µg/L	1	3/23/2016 05:22
Manganese	**1,600**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:22
Potassium	**2,300**		**34**	**200**	**µg/L**	1	3/23/2016 05:22
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 05:22
Silver	U		0.10	5.0	µg/L	1	3/23/2016 05:22
Zinc	U		2.4	10	µg/L	1	3/23/2016 05:22
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	3/18/2016 00:53
Sulfate	**4,300**		**140**	**1,000**	**µg/L**	1	3/18/2016 00:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1S
Collection Date: 3/16/2016 12:15 PM

Work Order: 1603971
Lab ID: 1603971-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.00046**	J	**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 14:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**7.4**	J	**1.1**	**10**	**µg/L**	1	3/23/2016 05:28
Arsenic	**3.4**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 05:28
Barium	**34**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:28
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 05:28
Chromium	**0.26**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 05:28
Copper	**0.31**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:28
Hardness (Calculation)	**250,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 05:28
Iron	**3,400**		**10**	**80**	**µg/L**	1	3/23/2016 05:28
Lead	U		0.10	5.0	µg/L	1	3/23/2016 05:28
Manganese	**1,000**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:28
Potassium	**1,600**		**34**	**200**	**µg/L**	1	3/23/2016 05:28
Selenium	**2.4**	J	**1.0**	**5.0**	**µg/L**	1	3/23/2016 05:28
Silver	U		0.10	5.0	µg/L	1	3/23/2016 05:28
Zinc	**3.3**	J	**2.4**	**10**	**µg/L**	1	3/23/2016 05:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**4,400**		**140**	**500**	**µg/L**	5	3/18/2016 01:34
Sulfate	**45,000**		**700**	**5,000**	**µg/L**	5	3/18/2016 01:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 3/16/2016 12:15 PM

Work Order: 1603971
Lab ID: 1603971-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 14:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**6.2**	J	**1.1**	**10**	**µg/L**	1	3/23/2016 05:35
Arsenic	U		0.70	5.0	µg/L	1	3/23/2016 05:35
Barium	**71**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:35
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 05:35
Chromium	**0.22**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 05:35
Copper	U		0.20	5.0	µg/L	1	3/23/2016 05:35
Hardness (Calculation)	**350,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 05:35
Iron	**5,900**		**10**	**80**	**µg/L**	1	3/23/2016 05:35
Lead	U		0.10	5.0	µg/L	1	3/23/2016 05:35
Manganese	**580**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 05:35
Potassium	**1,900**		**34**	**200**	**µg/L**	1	3/23/2016 05:35
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 05:35
Silver	U		0.10	5.0	µg/L	1	3/23/2016 05:35
Zinc	U		2.4	10	µg/L	1	3/23/2016 05:35
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**95**	J	**27**	**100**	**µg/L**	1	3/18/2016 01:54
Sulfate	U		140	1,000	µg/L	1	3/18/2016 01:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 3/16/2016 02:40 PM

Work Order: 1603971
Lab ID: 1603971-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.0086**		**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 14:33
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**120**		**1.1**	**10**	**µg/L**	1	3/24/2016 17:05
Arsenic	**1.9**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 06:13
Barium	**5.2**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:13
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 06:13
Chromium	**0.92**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 06:13
Copper	**4.1**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:13
Hardness (Calculation)	**80,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 06:13
Iron	**1,300**		**10**	**80**	**µg/L**	1	3/24/2016 17:05
Lead	**0.22**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 06:13
Manganese	**16**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:13
Potassium	**300**		**34**	**200**	**µg/L**	1	3/23/2016 06:13
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 06:13
Silver	U		0.10	5.0	µg/L	1	3/23/2016 06:13
Zinc	**21**		**2.4**	**10**	**µg/L**	1	3/24/2016 17:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	3/18/2016 02:34
Sulfate	**18,000**		**140**	**1,000**	**µg/L**	1	3/18/2016 02:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 3/16/2016 02:45 PM

Work Order: 1603971
Lab ID: 1603971-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 14:41
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**21**		**1.1**	**10**	**µg/L**	1	3/24/2016 17:12
Arsenic	**4.0**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 06:19
Barium	**13**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:19
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 06:19
Chromium	**0.63**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 06:19
Copper	**0.87**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:19
Hardness (Calculation)	**140,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 06:19
Iron	**5,900**		**10**	**80**	**µg/L**	1	3/24/2016 17:12
Lead	U		0.10	5.0	µg/L	1	3/23/2016 06:19
Manganese	**180**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:19
Potassium	**1,100**		**34**	**200**	**µg/L**	1	3/23/2016 06:19
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 06:19
Silver	U		0.10	5.0	µg/L	1	3/23/2016 06:19
Zinc	**34**		**2.4**	**10**	**µg/L**	1	3/24/2016 17:12
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**87**	J	**27**	**100**	**µg/L**	1	3/18/2016 03:15
Sulfate	**12,000**		**140**	**1,000**	**µg/L**	1	3/18/2016 03:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 3/16/2016 03:45 PM

Work Order: 1603971
Lab ID: 1603971-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.00099**		**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 14:48
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**29**		**1.1**	**10**	**µg/L**	1	3/24/2016 17:18
Arsenic	U		0.70	5.0	µg/L	1	3/23/2016 06:25
Barium	**11**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:25
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 06:25
Chromium	**0.56**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 06:25
Copper	**2.2**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:25
Hardness (Calculation)	**470,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 06:25
Iron	**84**		**10**	**80**	**µg/L**	1	3/24/2016 17:18
Lead	U		0.10	5.0	µg/L	1	3/23/2016 06:25
Manganese	**500**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:25
Potassium	**970**		**34**	**200**	**µg/L**	1	3/23/2016 06:25
Selenium	**1.6**	J	**1.0**	**5.0**	**µg/L**	1	3/23/2016 06:25
Silver	U		0.10	5.0	µg/L	1	3/23/2016 06:25
Zinc	**4.5**	J	**2.4**	**10**	**µg/L**	1	3/24/2016 17:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**3,900**		**270**	**1,000**	**µg/L**	10	3/18/2016 12:12
Sulfate	**95,000**		**1,400**	**10,000**	**µg/L**	10	3/18/2016 12:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 3/16/2016 03:55 PM

Work Order: 1603971
Lab ID: 1603971-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 14:56
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**2.6**	J	**1.1**	**10**	**µg/L**	1	3/24/2016 17:42
Arsenic	**3.4**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 06:32
Barium	**62**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:32
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 06:32
Chromium	**0.22**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 06:32
Copper	U		0.20	5.0	µg/L	1	3/23/2016 06:32
Hardness (Calculation)	**240,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 06:32
Iron	**5,500**		**10**	**80**	**µg/L**	1	3/24/2016 17:42
Lead	U		0.10	5.0	µg/L	1	3/23/2016 06:32
Manganese	**190**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:32
Potassium	**2,700**		**34**	**200**	**µg/L**	1	3/23/2016 06:32
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 06:32
Silver	U		0.10	5.0	µg/L	1	3/23/2016 06:32
Zinc	U		2.4	10	µg/L	1	3/24/2016 17:42
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	3/18/2016 12:33
Sulfate	**85,000**		**1,400**	**10,000**	**µg/L**	10	3/18/2016 12:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-GW-31616
Collection Date: 3/16/2016

Work Order: 1603971
Lab ID: 1603971-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 3/23/16			Analyst: **RG**
Mercury	**0.00087**		**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 15:18
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 3/22/16			Analyst: **ML**
Aluminum	**22**		**1.1**	**10**	**µg/L**	1	3/24/2016 18:00
Arsenic	**1.2**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 06:51
Barium	**11**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:51
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 06:51
Chromium	**0.65**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 06:51
Copper	**2.1**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:51
Hardness (Calculation)	**460,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 06:51
Iron	**78**	J	**10**	**80**	**µg/L**	1	3/24/2016 18:00
Lead	U		0.10	5.0	µg/L	1	3/23/2016 06:51
Manganese	**490**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 06:51
Potassium	**970**		**34**	**200**	**µg/L**	1	3/23/2016 06:51
Selenium	**2.1**	J	**1.0**	**5.0**	**µg/L**	1	3/23/2016 06:51
Silver	U		0.10	5.0	µg/L	1	3/23/2016 06:51
Zinc	**2.6**	J	**2.4**	**10**	**µg/L**	1	3/24/2016 18:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**3,800**		**27**	**100**	**µg/L**	1	3/17/2016 18:49
Sulfate	**92,000**		**1,400**	**10,000**	**µg/L**	10	3/17/2016 19:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **83829** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 12:02 PM**
Client ID: Run ID: **HG2_160323A** SeqNo: **3746102** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.2	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 12:47 PM**
Client ID: Run ID: **HG2_160323A** SeqNo: **3746108** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.2	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 02:10 PM**
Client ID: Run ID: **HG2_160323A** SeqNo: **3746119** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.2	0.50	0	0	0		0			

MS Sample ID: **1603971-01CMS** Units: **ng/L** Analysis Date: **3/23/2016 01:02 PM**
Client ID: **MW-5s** Run ID: **HG2_160323A** SeqNo: **3746110** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.62	0.2	0.50	5	1.54	102	71-125	0			

MS Sample ID: **1603971-14CMS** Units: **ng/L** Analysis Date: **3/23/2016 03:03 PM**
Client ID: **MW-6D** Run ID: **HG2_160323A** SeqNo: **3746126** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.15	0.2	0.50	5	0.09	101	71-125	0			

MSD Sample ID: **1603971-01CMSD** Units: **ng/L** Analysis Date: **3/23/2016 01:10 PM**
Client ID: **MW-5s** Run ID: **HG2_160323A** SeqNo: **3746111** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.59	0.2	0.50	5	1.54	101	71-125	6.62	0.454	24	

MSD Sample ID: **1603971-14CMSD** Units: **ng/L** Analysis Date: **3/23/2016 03:11 PM**
Client ID: **MW-6D** Run ID: **HG2_160323A** SeqNo: **3746127** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.13	0.2	0.50	5	0.09	101	71-125	5.15	0.389	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83829** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 11:47 AM**
Client ID: Run ID: **HG2_160323A** SeqNo: **3746100** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.58	0.2	0.50	5	0	112	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 03:26 PM**
Client ID: Run ID: **HG2_160323A** SeqNo: **3746129** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.14	0.2	0.50	5	0	103	77-123	0			

The following samples were analyzed in this batch:

1603971-01C	1603971-02C	1603971-03C
1603971-04C	1603971-05C	1603971-06C
1603971-07C	1603971-08C	1603971-09C
1603971-10C	1603971-11C	1603971-12C
1603971-13C	1603971-14C	1603971-15C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83806** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-83806-83806** Units: **mg/L** Analysis Date: **3/23/2016 03:15 AM**
Client ID: Run ID: **ICPMS1_160322A** SeqNo: **3745042** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.0011	0.010								
Arsenic	U	0.0007	0.0050								
Barium	U	0.0002	0.0050								
Cadmium	U	0.0001	0.0020								
Chromium	U	0.0001	0.0050								
Copper	U	0.0002	0.0050								
Hardness (Calculation)	U	1	2.0								
Iron	U	0.01	0.080								
Lead	U	0.0001	0.0050								
Manganese	U	0.0002	0.0050								
Potassium	U	0.034	0.20								
Selenium	U	0.001	0.0050								
Silver	U	0.0001	0.0050								
Zinc	U	0.0024	0.010								

LCS Sample ID: **LCS-83806-83806** Units: **mg/L** Analysis Date: **3/23/2016 03:21 AM**
Client ID: Run ID: **ICPMS1_160322A** SeqNo: **3745043** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09262	0.0011	0.010	0.1	0	92.6	80-120	0			
Arsenic	0.09683	0.0007	0.0050	0.1	0	96.8	80-120	0			
Barium	0.09388	0.0002	0.0050	0.1	0	93.9	80-120	0			
Cadmium	0.09856	0.0001	0.0020	0.1	0	98.6	80-120	0			
Chromium	0.09728	0.0001	0.0050	0.1	0	97.3	80-120	0			
Copper	0.09707	0.0002	0.0050	0.1	0	97.1	80-120	0			
Hardness (Calculation)	64.36	1	2.0	66.15	0	97.3	80-120	0			
Iron	9.55	0.01	0.080	10	0	95.5	80-120	0			
Lead	0.09383	0.0001	0.0050	0.1	0	93.8	80-120	0			
Manganese	0.09534	0.0002	0.0050	0.1	0	95.3	80-120	0			
Potassium	9.696	0.034	0.20	10	0	97	80-120	0			
Selenium	0.09787	0.001	0.0050	0.1	0	97.9	80-120	0			
Silver	0.09431	0.0001	0.0050	0.1	0	94.3	80-120	0			
Zinc	0.09762	0.0024	0.010	0.1	0	97.6	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83806** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **1603971-14AMS** Units: **mg/L** Analysis Date: **3/23/2016 06:38 AM**
Client ID: **MW-6D** Run ID: **ICPMS1_160322A** SeqNo: **3745071** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.097	0.0007	0.0050	0.1	0.003389	93.6	75-125	0			
Barium	0.1556	0.0002	0.0050	0.1	0.06247	93.1	75-125	0			
Cadmium	0.09505	0.0001	0.0020	0.1	-0.0000816	95.1	75-125	0			
Chromium	0.09203	0.0001	0.0050	0.1	0.0002173	91.8	75-125	0			
Copper	0.08864	0.0002	0.0050	0.1	-7.993E-06	88.6	75-125	0			
Lead	0.09414	0.0001	0.0050	0.1	-0.0000514	94.2	75-125	0			
Manganese	0.2801	0.0002	0.0050	0.1	0.1945	85.6	75-125	0			
Potassium	12.21	0.034	0.20	10	2.71	95	75-125	0			
Selenium	0.0905	0.001	0.0050	0.1	0.0000226	90.5	75-125	0			
Silver	0.0788	0.0001	0.0050	0.1	-2.382E-05	78.8	75-125	0			

MS Sample ID: **1603971-14AMS** Units: **mg/L** Analysis Date: **3/24/2016 05:48 PM**
Client ID: **MW-6D** Run ID: **ICPMS1_160324A** SeqNo: **3748301** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1109	0.0011	0.010	0.1	0.002639	108	75-125	0			
Iron	15.74	0.01	0.080	10	5.518	102	75-125	0			
Zinc	0.09977	0.0024	0.010	0.1	0.0009973	98.8	75-125	0			

MSD Sample ID: **1603971-14AMSD** Units: **mg/L** Analysis Date: **3/23/2016 06:44 AM**
Client ID: **MW-6D** Run ID: **ICPMS1_160322A** SeqNo: **3745072** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09977	0.0007	0.0050	0.1	0.003389	96.4	75-125	0.097	2.82	20	
Barium	0.1597	0.0002	0.0050	0.1	0.06247	97.2	75-125	0.1556	2.6	20	
Cadmium	0.09669	0.0001	0.0020	0.1	-0.0000816	96.8	75-125	0.09505	1.71	20	
Chromium	0.09365	0.0001	0.0050	0.1	0.0002173	93.4	75-125	0.09203	1.74	20	
Copper	0.09108	0.0002	0.0050	0.1	-7.993E-06	91.1	75-125	0.08864	2.72	20	
Lead	0.0955	0.0001	0.0050	0.1	-0.0000514	95.6	75-125	0.09414	1.43	20	
Manganese	0.2913	0.0002	0.0050	0.1	0.1945	96.8	75-125	0.2801	3.92	20	
Potassium	12.44	0.034	0.20	10	2.71	97.3	75-125	12.21	1.87	20	
Selenium	0.0945	0.001	0.0050	0.1	0.0000226	94.5	75-125	0.0905	4.32	20	
Silver	0.08512	0.0001	0.0050	0.1	-2.382E-05	85.1	75-125	0.0788	7.71	20	

MSD Sample ID: **1603971-14AMSD** Units: **mg/L** Analysis Date: **3/24/2016 05:54 PM**
Client ID: **MW-6D** Run ID: **ICPMS1_160324A** SeqNo: **3748302** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1151	0.0011	0.010	0.1	0.002639	112	75-125	0.1109	3.72	20	
Iron	16.19	0.01	0.080	10	5.518	107	75-125	15.74	2.82	20	
Zinc	0.1032	0.0024	0.010	0.1	0.0009973	102	75-125	0.09977	3.38	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83806** Instrument ID **ICPMS1** Method: **SW6020A**

The following samples were analyzed in this batch:

1603971-01A	1603971-02A	1603971-03A
1603971-04A	1603971-05A	1603971-06A
1603971-07A	1603971-08A	1603971-09A
1603971-10A	1603971-11A	1603971-12A
1603971-13A	1603971-14A	1603971-15A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83924** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-83924-83924** Units: **mg/L** Analysis Date: **3/25/2016 12:57 AM**
Client ID: Run ID: **ICPMS1_160324A** SeqNo: **3748398** Prep Date: **3/24/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0007	0.0050								
Barium	U	0.0002	0.0050								
Cadmium	U	0.0001	0.0020								
Chromium	U	0.0001	0.0050								
Copper	U	0.0002	0.0050								
Hardness (Calculation)	U	1	2.0								
Iron	U	0.01	0.080								
Lead	U	0.0001	0.0050								
Manganese	0.000517	0.0002	0.0050								J
Potassium	U	0.034	0.20								
Selenium	U	0.001	0.0050								
Silver	U	0.0001	0.0050								
Zinc	U	0.0024	0.010								

LCS Sample ID: **LCS-83924-83924** Units: **mg/L** Analysis Date: **3/25/2016 01:04 AM**
Client ID: Run ID: **ICPMS1_160324A** SeqNo: **3748399** Prep Date: **3/24/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1016	0.0007	0.0050	0.1	0	102	80-120	0			
Barium	0.1044	0.0002	0.0050	0.1	0	104	80-120	0			
Cadmium	0.1009	0.0001	0.0020	0.1	0	101	80-120	0			
Chromium	0.09693	0.0001	0.0050	0.1	0	96.9	80-120	0			
Copper	0.09757	0.0002	0.0050	0.1	0	97.6	80-120	0			
Iron	9.644	0.01	0.080	10	0	96.4	80-120	0			
Lead	0.102	0.0001	0.0050	0.1	0	102	80-120	0			
Manganese	0.09562	0.0002	0.0050	0.1	0	95.6	80-120	0			
Potassium	10.28	0.034	0.20	10	0	103	80-120	0			
Selenium	0.09693	0.001	0.0050	0.1	0	96.9	80-120	0			
Silver	0.09812	0.0001	0.0050	0.1	0	98.1	80-120	0			
Zinc	0.1005	0.0024	0.010	0.1	0	100	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83924** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **1603971-14DMS** Units: **mg/L** Analysis Date: **3/25/2016 03:03 AM**
Client ID: **MW-6D** Run ID: **ICPMS1_160324A** SeqNo: **3748418** Prep Date: **3/24/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1102	0.0011	0.010	0.1	0.0009277	109	75-125	0			B
Arsenic	0.1086	0.0007	0.0050	0.1	0.002794	106	75-125	0			
Barium	0.1765	0.0002	0.0050	0.1	0.06687	110	75-125	0			
Cadmium	0.1021	0.0001	0.0020	0.1	-0.000207	102	75-125	0			
Chromium	0.1004	0.0001	0.0050	0.1	0.0001396	100	75-125	0			
Copper	0.09781	0.0002	0.0050	0.1	-0.0004672	98.3	75-125	0			
Iron	14.64	0.01	0.080	10	4.75	98.9	75-125	0			
Lead	0.1049	0.0001	0.0050	0.1	0.00001297	105	75-125	0			
Manganese	0.3037	0.0002	0.0050	0.1	0.2048	98.9	75-125	0			
Potassium	13.94	0.034	0.20	10	3.021	109	75-125	0			
Selenium	0.09907	0.001	0.0050	0.1	-0.0001565	99.2	75-125	0			
Silver	0.0984	0.0001	0.0050	0.1	-0.0000179	98.4	75-125	0			
Zinc	0.09701	0.0024	0.010	0.1	0.00008694	96.9	75-125	0			

MSD Sample ID: **1603971-14DMSD** Units: **mg/L** Analysis Date: **3/25/2016 03:40 AM**
Client ID: **MW-6D** Run ID: **ICPMS1_160324A** SeqNo: **3748423** Prep Date: **3/24/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1037	0.0011	0.010	0.1	0.0009277	103	75-125	0.1102	6.08	20	B
Arsenic	0.1075	0.0007	0.0050	0.1	0.002794	105	75-125	0.1086	1.02	20	
Barium	0.1736	0.0002	0.0050	0.1	0.06687	107	75-125	0.1765	1.66	20	
Cadmium	0.1012	0.0001	0.0020	0.1	-0.000207	101	75-125	0.1021	0.885	20	
Chromium	0.09987	0.0001	0.0050	0.1	0.0001396	99.7	75-125	0.1004	0.529	20	
Copper	0.09776	0.0002	0.0050	0.1	-0.0004672	98.2	75-125	0.09781	0.0511	20	
Iron	14.5	0.01	0.080	10	4.75	97.5	75-125	14.64	0.961	20	
Lead	0.1039	0.0001	0.0050	0.1	0.00001297	104	75-125	0.1049	0.958	20	
Manganese	0.298	0.0002	0.0050	0.1	0.2048	93.2	75-125	0.3037	1.89	20	
Potassium	13.53	0.034	0.20	10	3.021	105	75-125	13.94	2.99	20	
Selenium	0.09725	0.001	0.0050	0.1	-0.0001565	97.4	75-125	0.09907	1.85	20	
Silver	0.09802	0.0001	0.0050	0.1	-0.0000179	98	75-125	0.0984	0.387	20	
Zinc	0.09656	0.0024	0.010	0.1	0.00008694	96.5	75-125	0.09701	0.465	20	

The following samples were analyzed in this batch: 1603971-01D 1603971-02D 1603971-14D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R183682** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R183682** Units: **mg/L** Analysis Date: **3/17/2016 10:47 AM**
Client ID: Run ID: **IC3_160317A** SeqNo: **3738839** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.027	0.10								
Sulfate	U	0.14	1.0								

LCS Sample ID: **MLCCV/LCS-R183682** Units: **mg/L** Analysis Date: **3/17/2016 02:50 PM**
Client ID: Run ID: **IC3_160317A** SeqNo: **3738851** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.943	0.027	0.10	2	0	97.2	81-116	0			
Sulfate	9.817	0.14	1.0	10	0	98.2	85-110	0			

MS Sample ID: **1603631-12A MS** Units: **mg/L** Analysis Date: **3/17/2016 01:49 PM**
Client ID: Run ID: **IC3_160317A** SeqNo: **3738848** Prep Date: DF: **5**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	49.62	0.7	5.0	50	0.702	97.8	75-125	0			

MS Sample ID: **1603971-01B MS** Units: **mg/L** Analysis Date: **3/17/2016 06:08 PM**
Client ID: **MW-5s** Run ID: **IC3_160317A** SeqNo: **3738858** Prep Date: DF: **20**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	41.14	0.54	2.0	40	1.941	98	75-125	0			

MSD Sample ID: **1603631-12A MSD** Units: **mg/L** Analysis Date: **3/17/2016 02:10 PM**
Client ID: Run ID: **IC3_160317A** SeqNo: **3738849** Prep Date: DF: **5**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	49.26	0.7	5.0	50	0.702	97.1	75-125	49.62	0.712	20	

MSD Sample ID: **1603971-01B MSD** Units: **mg/L** Analysis Date: **3/17/2016 06:29 PM**
Client ID: **MW-5s** Run ID: **IC3_160317A** SeqNo: **3738859** Prep Date: DF: **20**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	40.79	0.54	2.0	40	1.941	97.1	75-125	41.14	0.854	20	

The following samples were analyzed in this batch:

1603971-01B	1603971-02B	1603971-03B
1603971-04B	1603971-05B	1603971-06B
1603971-07B	1603971-08B	1603971-09B
1603971-10B	1603971-11B	1603971-12B
1603971-15B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1603971
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R183790** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R183790** Units: **mg/L** Analysis Date: **3/18/2016 11:12 AM**
Client ID: Run ID: **IC3_160318A** SeqNo: **3740970** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.027	0.10								
Sulfate	U	0.14	1.0								

LCS Sample ID: **MLCCV/LCS-R183790** Units: **mg/L** Analysis Date: **3/18/2016 03:16 PM**
Client ID: Run ID: **IC3_160318A** SeqNo: **3740982** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.931	0.027	0.10	2	0	96.6	81-116	0			
Sulfate	9.901	0.14	1.0	10	0	99	85-110	0			

MS Sample ID: **1603971-14B MS** Units: **mg/L** Analysis Date: **3/18/2016 01:13 PM**
Client ID: **MW-6D** Run ID: **IC3_160318A** SeqNo: **3740976** Prep Date: DF: **20**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	39.05	0.54	2.0	40	0	97.6	75-125	0			
Sulfate	285.5	2.8	20	200	84.64	100	75-125	0			

MSD Sample ID: **1603971-14B MSD** Units: **mg/L** Analysis Date: **3/18/2016 01:33 PM**
Client ID: **MW-6D** Run ID: **IC3_160318A** SeqNo: **3740977** Prep Date: DF: **20**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	38.95	0.54	2.0	40	0	97.4	75-125	39.05	0.246	20	
Sulfate	285.3	2.8	20	200	84.64	100	75-125	285.5	0.0638	20	

The following samples were analyzed in this batch: 1603971-13B 1603971-14B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Chain of Custody Form

Page 1 of 2

COC ID: 32081

ALS Project Manager: | ALS Work Order #: 1603971

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Metals
Work Order		Project Number		B	Field Filtered Metals
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Low-Level mercury
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Anions
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-5S	3-16-16	0850	W	HNO_3	4	X	X	X	X							
2	MW-5D		0845			4	X	X	X	X							
3	MW-4S		0945			3	X		X	X							
4	MW-4D		0950				X		X	X							
5	MW-3S		1040				X		X	X							
6	MW-3D		1035				X		X	X							
7	MW-2S		1135				X		X	X							
8	MW-2D	1130	~~1030~~ AM				X		X	X							
9	MW-1S		1215				X		X	X							
10	MW-1D		1215				X		X	X							

Sampler(s) Please Print & Sign: Aaron Alexander, Tanner Parker

Shipment Method:

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

	Date:	Time:		
Relinquished by:	3-16-16	1645	Received by:	
Relinquished by:	3/17/16	1225	Received by (Laboratory):	
Logged by (Laboratory): KC	3/17/16	1525	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
	12.4°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☒ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Middletown, PA +1 717 944 5541
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York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

COC ID: 32080

ALS Project Manager: | ALS Work Order #: 1603971

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Metals
Work Order		Project Number		B	Field Filtered Metals
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Low-level Mercury
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Anions
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	MS/MSD
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	BG-1S	3-16-16	1440	W	HNO_3	3	X		X	X							
2	BG-1D		1445			3	X		X	X							
3	MW-6S		1545			3	X		X	X							
4	MW-6D		1555			8	X	X	X	X		X					
5	Dup-GW-31616		—			3	X		X	X							
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aron Alexander, Tanner Lake

Shipment Method: —

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	3-16-16	1645	
Relinquished by:	Date: 3/17/16	Time: 1025	Received by (Laboratory):
Logged by (Laboratory): KR	Date: 3/17/16	Time: 1525	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp
	2.4°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **17-Mar-16 12:25**

Work Order: **1603971** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 17-Mar-16 (Date) Reviewed by: Bill Carey (eSignature) 18-Mar-16 (Date)

Matrices: Water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.4/2.4 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/17/2016 4:06:33 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

28-Mar-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **16031050**

Dear Marty,

ALS Environmental received 4 samples on 18-Mar-2016 12:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 16.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 28-Mar-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **16031050**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
16031050-01	MW-7S	Water		3/17/2016 09:25	3/18/2016 12:30	☐
16031050-02	MW-7D	Water		3/17/2016 09:15	3/18/2016 12:30	☐
16031050-03	MW-8S	Water		3/17/2016 10:00	3/18/2016 12:30	☐
16031050-04	MW-8D	Water		3/17/2016 10:05	3/18/2016 12:30	☐

ALS Group USA, Corp

Date: 28-Mar-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **16031050**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 28-Mar-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 16031050

Case Narrative

Samples for the above noted Work Order were received on 3/18/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 3/17/2016 09:25 AM

Work Order: 16031050
Lab ID: 16031050-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.00033**	J	**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 12:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**9.6**	J	**1.1**	**10**	**µg/L**	1	3/23/2016 03:28
Arsenic	**1.7**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 03:28
Barium	**75**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 03:28
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 03:28
Chromium	**0.43**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 03:28
Copper	**0.69**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 03:28
Hardness (Calculation)	**330,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 03:28
Iron	**7,800**		**10**	**80**	**µg/L**	1	3/23/2016 03:28
Lead	U		0.10	5.0	µg/L	1	3/23/2016 03:28
Manganese	**500**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 03:28
Potassium	**3,300**		**34**	**200**	**µg/L**	1	3/23/2016 03:28
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 03:28
Silver	U		0.10	5.0	µg/L	1	3/23/2016 03:28
Zinc	U		2.4	10	µg/L	1	3/23/2016 03:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		27	100	µg/L	1	3/18/2016 14:57
Sulfate	**34,000**		**700**	**5,000**	**µg/L**	5	3/18/2016 15:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 3/17/2016 09:15 AM

Work Order: 16031050
Lab ID: 16031050-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 12:17
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**17**		**1.1**	**10**	**µg/L**	1	3/24/2016 16:22
Arsenic	U		0.70	5.0	µg/L	1	3/23/2016 03:59
Barium	**33**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 03:59
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 03:59
Chromium	**0.20**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 03:59
Copper	U		0.20	5.0	µg/L	1	3/23/2016 03:59
Hardness (Calculation)	**180,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 03:59
Iron	**1,200**		**10**	**80**	**µg/L**	1	3/23/2016 03:59
Lead	U		0.10	5.0	µg/L	1	3/23/2016 03:59
Manganese	**190**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 03:59
Potassium	**2,500**		**34**	**200**	**µg/L**	1	3/23/2016 03:59
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 03:59
Silver	U		0.10	5.0	µg/L	1	3/23/2016 03:59
Zinc	U		2.4	10	µg/L	1	3/23/2016 03:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**350**		**27**	**100**	**µg/L**	1	3/18/2016 15:38
Sulfate	**8,900**		**140**	**1,000**	**µg/L**	1	3/18/2016 15:38

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 3/17/2016 10:00 AM

Work Order: 16031050
Lab ID: 16031050-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	**0.00042**	J	**0.00020**	**0.00050**	**µg/L**	1	3/23/2016 12:25
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**18**		**1.1**	**10**	**µg/L**	1	3/24/2016 16:29
Arsenic	**0.90**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 04:06
Barium	**21**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:06
Cadmium	**0.13**	J	**0.10**	**2.0**	**µg/L**	1	3/23/2016 04:06
Chromium	**0.33**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 04:06
Copper	**0.83**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:06
Hardness (Calculation)	**240,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 04:06
Iron	**49**	J	**10**	**80**	**µg/L**	1	3/23/2016 04:06
Lead	U		0.10	5.0	µg/L	1	3/23/2016 04:06
Manganese	**1.8**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:06
Potassium	**780**		**34**	**200**	**µg/L**	1	3/23/2016 04:06
Selenium	**1.6**	J	**1.0**	**5.0**	**µg/L**	1	3/23/2016 04:06
Silver	U		0.10	5.0	µg/L	1	3/23/2016 04:06
Zinc	U		2.4	10	µg/L	1	3/23/2016 04:06
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	**5,500**		**140**	**500**	**µg/L**	5	3/18/2016 16:18
Sulfate	**46,000**		**700**	**5,000**	**µg/L**	5	3/18/2016 16:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Mar-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 3/17/2016 10:05 AM

Work Order: 16031050
Lab ID: 16031050-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/23/16		Analyst: **RG**
Mercury	U		0.00020	0.00050	µg/L	1	3/23/2016 12:32
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/22/16		Analyst: **ML**
Aluminum	**6.3**	J	**1.1**	**10**	**µg/L**	1	3/24/2016 16:35
Arsenic	**0.73**	J	**0.70**	**5.0**	**µg/L**	1	3/23/2016 04:12
Barium	**28**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:12
Cadmium	U		0.10	2.0	µg/L	1	3/23/2016 04:12
Chromium	**0.56**	J	**0.10**	**5.0**	**µg/L**	1	3/23/2016 04:12
Copper	**0.58**	J	**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:12
Hardness (Calculation)	**170,000**		**1,000**	**2,000**	**µg/L**	1	3/23/2016 04:12
Iron	**2,200**		**10**	**80**	**µg/L**	1	3/23/2016 04:12
Lead	U		0.10	5.0	µg/L	1	3/23/2016 04:12
Manganese	**290**		**0.20**	**5.0**	**µg/L**	1	3/23/2016 04:12
Potassium	**2,000**		**34**	**200**	**µg/L**	1	3/23/2016 04:12
Selenium	U		1.0	5.0	µg/L	1	3/23/2016 04:12
Silver	U		0.10	5.0	µg/L	1	3/23/2016 04:12
Zinc	**8.6**	J	**2.4**	**10**	**µg/L**	1	3/23/2016 04:12
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**45**	J	**27**	**100**	**µg/L**	1	3/18/2016 16:38
Sulfate	**32,000**		**700**	**5,000**	**µg/L**	5	3/18/2016 16:59

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **83829** Instrument ID **HG2** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 12:02 PM**

Client ID: Run ID: **HG2_160323A** SeqNo: **3746102** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.2	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 12:47 PM**

Client ID: Run ID: **HG2_160323A** SeqNo: **3746108** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.2	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 02:10 PM**

Client ID: Run ID: **HG2_160323A** SeqNo: **3746119** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.2	0.50	0	0	0		0			

MS Sample ID: **1603971-01CMS** Units: **ng/L** Analysis Date: **3/23/2016 01:02 PM**

Client ID: Run ID: **HG2_160323A** SeqNo: **3746110** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.62	0.2	0.50	5	1.54	102	71-125	0			

MS Sample ID: **1603971-14CMS** Units: **ng/L** Analysis Date: **3/23/2016 03:03 PM**

Client ID: Run ID: **HG2_160323A** SeqNo: **3746126** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.15	0.2	0.50	5	0.09	101	71-125	0			

MSD Sample ID: **1603971-01CMSD** Units: **ng/L** Analysis Date: **3/23/2016 01:10 PM**

Client ID: Run ID: **HG2_160323A** SeqNo: **3746111** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.59	0.2	0.50	5	1.54	101	71-125	6.62	0.454	24	

MSD Sample ID: **1603971-14CMSD** Units: **ng/L** Analysis Date: **3/23/2016 03:11 PM**

Client ID: Run ID: **HG2_160323A** SeqNo: **3746127** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.13	0.2	0.50	5	0.09	101	71-125	5.15	0.389	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16031050
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83829** Instrument ID **HG2** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 11:47 AM**
Client ID: Run ID: **HG2_160323A** SeqNo: **3746100** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.58	0.2	0.50	5	0	112	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-83829-83829** Units: **ng/L** Analysis Date: **3/23/2016 03:26 PM**
Client ID: Run ID: **HG2_160323A** SeqNo: **3746129** Prep Date: **3/23/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.14	0.2	0.50	5	0	103	77-123	0			

The following samples were analyzed in this batch:

16031050-01B	16031050-02B	16031050-03B
16031050-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16031050
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83806** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-83806-83806** Units: **mg/L** Analysis Date: **3/23/2016 03:15 AM**
Client ID: Run ID: **ICPMS1_160322A** SeqNo: **3745042** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.0011	0.010								
Arsenic	U	0.0007	0.0050								
Barium	U	0.0002	0.0050								
Cadmium	U	0.0001	0.0020								
Chromium	U	0.0001	0.0050								
Copper	U	0.0002	0.0050								
Hardness (Calculation)	U	1	2.0								
Iron	U	0.01	0.080								
Lead	U	0.0001	0.0050								
Manganese	U	0.0002	0.0050								
Potassium	U	0.034	0.20								
Selenium	U	0.001	0.0050								
Silver	U	0.0001	0.0050								
Zinc	U	0.0024	0.010								

LCS Sample ID: **LCS-83806-83806** Units: **mg/L** Analysis Date: **3/23/2016 03:21 AM**
Client ID: Run ID: **ICPMS1_160322A** SeqNo: **3745043** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09262	0.0011	0.010	0.1	0	92.6	80-120	0			
Arsenic	0.09683	0.0007	0.0050	0.1	0	96.8	80-120	0			
Barium	0.09388	0.0002	0.0050	0.1	0	93.9	80-120	0			
Cadmium	0.09856	0.0001	0.0020	0.1	0	98.6	80-120	0			
Chromium	0.09728	0.0001	0.0050	0.1	0	97.3	80-120	0			
Copper	0.09707	0.0002	0.0050	0.1	0	97.1	80-120	0			
Hardness (Calculation)	64.36	1	2.0	66.15	0	97.3	80-120	0			
Iron	9.55	0.01	0.080	10	0	95.5	80-120	0			
Lead	0.09383	0.0001	0.0050	0.1	0	93.8	80-120	0			
Manganese	0.09534	0.0002	0.0050	0.1	0	95.3	80-120	0			
Potassium	9.696	0.034	0.20	10	0	97	80-120	0			
Selenium	0.09787	0.001	0.0050	0.1	0	97.9	80-120	0			
Silver	0.09431	0.0001	0.0050	0.1	0	94.3	80-120	0			
Zinc	0.09762	0.0024	0.010	0.1	0	97.6	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16031050
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83806** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **1603971-14AMS** Units: **mg/L** Analysis Date: **3/23/2016 06:38 AM**
Client ID: Run ID: **ICPMS1_160322A** SeqNo: **3745071** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.097	0.0007	0.0050	0.1	0.003389	93.6	75-125	0			
Barium	0.1556	0.0002	0.0050	0.1	0.06247	93.1	75-125	0			
Cadmium	0.09505	0.0001	0.0020	0.1	-0.0000816	95.1	75-125	0			
Chromium	0.09203	0.0001	0.0050	0.1	0.0002173	91.8	75-125	0			
Copper	0.08864	0.0002	0.0050	0.1	-7.993E-06	88.6	75-125	0			
Lead	0.09414	0.0001	0.0050	0.1	-0.0000514	94.2	75-125	0			
Manganese	0.2801	0.0002	0.0050	0.1	0.1945	85.6	75-125	0			
Potassium	12.21	0.034	0.20	10	2.71	95	75-125	0			
Selenium	0.0905	0.001	0.0050	0.1	0.0000226	90.5	75-125	0			
Silver	0.0788	0.0001	0.0050	0.1	-2.382E-05	78.8	75-125	0			

MS Sample ID: **1603971-14AMS** Units: **mg/L** Analysis Date: **3/24/2016 05:48 PM**
Client ID: Run ID: **ICPMS1_160324A** SeqNo: **3748301** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1109	0.0011	0.010	0.1	0.002639	108	75-125	0			
Iron	15.74	0.01	0.080	10	5.518	102	75-125	0			
Zinc	0.09977	0.0024	0.010	0.1	0.0009973	98.8	75-125	0			

MSD Sample ID: **1603971-14AMSD** Units: **mg/L** Analysis Date: **3/23/2016 06:44 AM**
Client ID: Run ID: **ICPMS1_160322A** SeqNo: **3745072** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09977	0.0007	0.0050	0.1	0.003389	96.4	75-125	0.097	2.82	20	
Barium	0.1597	0.0002	0.0050	0.1	0.06247	97.2	75-125	0.1556	2.6	20	
Cadmium	0.09669	0.0001	0.0020	0.1	-0.0000816	96.8	75-125	0.09505	1.71	20	
Chromium	0.09365	0.0001	0.0050	0.1	0.0002173	93.4	75-125	0.09203	1.74	20	
Copper	0.09108	0.0002	0.0050	0.1	-7.993E-06	91.1	75-125	0.08864	2.72	20	
Lead	0.0955	0.0001	0.0050	0.1	-0.0000514	95.6	75-125	0.09414	1.43	20	
Manganese	0.2913	0.0002	0.0050	0.1	0.1945	96.8	75-125	0.2801	3.92	20	
Potassium	12.44	0.034	0.20	10	2.71	97.3	75-125	12.21	1.87	20	
Selenium	0.0945	0.001	0.0050	0.1	0.0000226	94.5	75-125	0.0905	4.32	20	
Silver	0.08512	0.0001	0.0050	0.1	-2.382E-05	85.1	75-125	0.0788	7.71	20	

MSD Sample ID: **1603971-14AMSD** Units: **mg/L** Analysis Date: **3/24/2016 05:54 PM**
Client ID: Run ID: **ICPMS1_160324A** SeqNo: **3748302** Prep Date: **3/22/2016** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1151	0.0011	0.010	0.1	0.002639	112	75-125	0.1109	3.72	20	
Iron	16.19	0.01	0.080	10	5.518	107	75-125	15.74	2.82	20	
Zinc	0.1032	0.0024	0.010	0.1	0.0009973	102	75-125	0.09977	3.38	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16031050
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **83806** Instrument ID **ICPMS1** Method: **SW6020A**

The following samples were analyzed in this batch:

16031050-01A	16031050-02A	16031050-03A
16031050-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16031050
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R183788** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R183788** Units: **mg/L** Analysis Date: **3/18/2016 02:13 PM**
Client ID: Run ID: **IC4_160318A** SeqNo: **3740906** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.027	0.10								
Sulfate	U	0.14	1.0								

LCS Sample ID: **MLCCV/LCS-R183788** Units: **mg/L** Analysis Date: **3/18/2016 06:20 PM**
Client ID: Run ID: **IC4_160318A** SeqNo: **3740918** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.904	0.027	0.10	2	0	95.2	81-116	0			
Sulfate	10.87	0.14	1.0	10	0	109	85-110	0			

MS Sample ID: **16031050-01C MS** Units: **mg/L** Analysis Date: **3/18/2016 05:19 PM**
Client ID: **MW-7S** Run ID: **IC4_160318A** SeqNo: **3740915** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20	0.27	1.0	20	0	100	75-125	0			
Sulfate	135.1	1.4	10	100	33.56	101	75-125	0			

MSD Sample ID: **16031050-01C MSD** Units: **mg/L** Analysis Date: **3/18/2016 05:39 PM**
Client ID: **MW-7S** Run ID: **IC4_160318A** SeqNo: **3740916** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	20.22	0.27	1.0	20	0	101	75-125	20	1.11	20	
Sulfate	136.3	1.4	10	100	33.56	103	75-125	135.1	0.925	20	

The following samples were analyzed in this batch:

16031050-01C	16031050-02C	16031050-03C
16031050-04C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 32079

ALS Project Manager: | ALS Work Order #: 1603050

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Metals
Work Order		Project Number		B	Low-Level Mercury
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	F	
Phone	(317) 705-2000	Phone		G	
Fax	(317) 705-2010	Fax		H	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-7S	3-17-16	0925	GW	HNO_3	3	X	X	X								
2	MW-7D		0915			3	X	X	X								
3	MW-8S		1000			3	X	X	X								
4	MW-8D		1005			3	X	X	X								
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Alexander Tanner Parker

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: ERM	Date: 3-17-16	Time: 12:30 1045 PDW	Received by:	
Relinquished by:	Date: 3/18/16	Time: 1230	Received by (Laboratory):	
Logged by (Laboratory): KL	Date: 3/18/16	Time: 1345	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
	3.0°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **18-Mar-16 12:30**

Work Order: **16031050** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 18-Mar-16 (Date) Reviewed by: Bill Carey (eSignature) 21-Mar-16 (Date)

Matrices: Water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0/3.0 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/18/2016 1:53:16 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

21-Jun-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1606797**

Dear Marty,

ALS Environmental received 22 samples on 14-Jun-2016 01:20 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 44.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental www.alsglobal.com
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ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1606797**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1606797-01	SW-BG-2	Water		6/13/2016 11:13	6/14/2016 13:20	☐
1606797-02	SW-BG-4	Water		6/13/2016 11:25	6/14/2016 13:20	☐
1606797-03	SW-BG-5	Water		6/13/2016 11:35	6/14/2016 13:20	☐
1606797-04	SW-BG-3	Water		6/13/2016 11:45	6/14/2016 13:20	☐
1606797-05	SW-BG-1	Water		6/13/2016 11:55	6/14/2016 13:20	☐
1606797-06	Dup-SW-BG	Water		6/13/2016	6/14/2016 13:20	☐
1606797-07	SW-BG-8	Water		6/13/2016 14:07	6/14/2016 13:20	☐
1606797-08	SW-BG-10	Water		6/13/2016 14:20	6/14/2016 13:20	☐
1606797-09	SW-BG-9	Water		6/13/2016 14:36	6/14/2016 13:20	☐
1606797-10	SW-BG-6	Water		6/13/2016 14:49	6/14/2016 13:20	☐
1606797-11	SW-BG-7	Water		6/13/2016 15:01	6/14/2016 13:20	☐
1606797-12	SW-RP-20	Water		6/13/2016 16:27	6/14/2016 13:20	☐
1606797-13	SW-RP-16	Water		6/13/2016 16:35	6/14/2016 13:20	☐
1606797-14	SW-RP-18	Water		6/13/2016 16:40	6/14/2016 13:20	☐
1606797-15	SW-RP-13	Water		6/13/2016 16:45	6/14/2016 13:20	☐
1606797-16	SW-RP-10	Water		6/13/2016 16:56	6/14/2016 13:20	☐
1606797-17	SW-RP-8	Water		6/13/2016 17:03	6/14/2016 13:20	☐
1606797-18	SW-RP-4	Water		6/13/2016 17:09	6/14/2016 13:20	☐
1606797-19	SW-RP-2	Water		6/13/2016 17:19	6/14/2016 13:20	☐
1606797-20	Dup-SW-RP	Water		6/13/2016	6/14/2016 13:20	☐
1606797-21	SW-RP-6	Water		6/13/2016 17:27	6/14/2016 13:20	☐
1606797-22	SW-RP-12	Water		6/13/2016 17:33	6/14/2016 13:20	☐

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1606797**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1606797

Case Narrative

Samples for the above noted Work Order were received on 6/14/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-2
Collection Date: 6/13/2016 11:13 AM

Work Order: 1606797
Lab ID: 1606797-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 13:42
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 06:46
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**6.2**	J	**4.2**	**10**	**µg/L**	1	6/16/2016 21:33
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 21:33
Barium	**24**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 21:33
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 21:33
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 21:33
Copper	U		0.28	5.0	µg/L	1	6/16/2016 21:33
Iron	**1,800**		**4.6**	**80**	**µg/L**	1	6/16/2016 21:33
Lead	U		0.33	5.0	µg/L	1	6/16/2016 21:33
Manganese	**5.1**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 21:33
Potassium	**410**		**17**	**200**	**µg/L**	1	6/16/2016 21:33
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 21:33
Silver	U		0.050	5.0	µg/L	1	6/16/2016 21:33
Zinc	**8.5**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 21:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**90**	J	**48**	**100**	**µg/L**	1	6/14/2016 22:40
Sulfate	U		410	1,000	µg/L	1	6/14/2016 22:40

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-4
Collection Date: 6/13/2016 11:25 AM

Work Order: 1606797
Lab ID: 1606797-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 13:50
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 06:51
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**5.8**	J	**4.2**	**10**	**µg/L**	1	6/16/2016 21:39
Arsenic	**1.7**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 21:39
Barium	**21**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 21:39
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 21:39
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 21:39
Copper	U		0.28	5.0	µg/L	1	6/16/2016 21:39
Iron	**1,500**		**4.6**	**80**	**µg/L**	1	6/16/2016 21:39
Lead	U		0.33	5.0	µg/L	1	6/16/2016 21:39
Manganese	**2.3**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 21:39
Potassium	**400**		**17**	**200**	**µg/L**	1	6/16/2016 21:39
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 21:39
Silver	U		0.050	5.0	µg/L	1	6/16/2016 21:39
Zinc	**5.3**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 21:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/14/2016 23:00
Sulfate	U		410	1,000	µg/L	1	6/14/2016 23:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-5
Collection Date: 6/13/2016 11:35 AM

Work Order: 1606797
Lab ID: 1606797-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.00084**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 13:58
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 06:56
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**5.2**	J	**4.2**	**10**	**µg/L**	1	6/16/2016 21:44
Arsenic	**2.0**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 21:44
Barium	**21**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 21:44
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 21:44
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 21:44
Copper	U		0.28	5.0	µg/L	1	6/16/2016 21:44
Iron	**2,500**		**4.6**	**80**	**µg/L**	1	6/16/2016 21:44
Lead	U		0.33	5.0	µg/L	1	6/16/2016 21:44
Manganese	**3.1**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 21:44
Potassium	**250**		**17**	**200**	**µg/L**	1	6/16/2016 21:44
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 21:44
Silver	U		0.050	5.0	µg/L	1	6/16/2016 21:44
Zinc	**5.5**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 21:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/14/2016 23:20
Sulfate	**540**	J	**410**	**1,000**	**µg/L**	1	6/14/2016 23:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-3
Collection Date: 6/13/2016 11:45 AM

Work Order: 1606797
Lab ID: 1606797-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0029**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 14:06
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:18
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**5.8**	J	**4.2**	**10**	**µg/L**	1	6/16/2016 21:49
Arsenic	**2.2**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 21:49
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 21:49
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 21:49
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 21:49
Copper	U		0.28	5.0	µg/L	1	6/16/2016 21:49
Iron	**1,900**		**4.6**	**80**	**µg/L**	1	6/16/2016 21:49
Lead	U		0.33	5.0	µg/L	1	6/16/2016 21:49
Manganese	**33**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 21:49
Potassium	**270**		**17**	**200**	**µg/L**	1	6/16/2016 21:49
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 21:49
Silver	U		0.050	5.0	µg/L	1	6/16/2016 21:49
Zinc	**6.2**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 21:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**52**	J	**48**	**100**	**µg/L**	1	6/14/2016 23:41
Sulfate	U		410	1,000	µg/L	1	6/14/2016 23:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-1
Collection Date: 6/13/2016 11:55 AM

Work Order: 1606797
Lab ID: 1606797-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0033**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 14:21
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:23
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**13**		**4.2**	**10**	**µg/L**	1	6/16/2016 21:54
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 21:54
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 21:54
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 21:54
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 21:54
Copper	U		0.28	5.0	µg/L	1	6/16/2016 21:54
Iron	**1,400**		**4.6**	**80**	**µg/L**	1	6/16/2016 21:54
Lead	**0.35**	J	**0.33**	**5.0**	**µg/L**	1	6/16/2016 21:54
Manganese	**27**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 21:54
Potassium	**430**		**17**	**200**	**µg/L**	1	6/16/2016 21:54
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 21:54
Silver	U		0.050	5.0	µg/L	1	6/16/2016 21:54
Zinc	**4.7**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 21:54
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 00:41
Sulfate	U		410	1,000	µg/L	1	6/15/2016 00:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup-SW-BG
Collection Date: 6/13/2016

Work Order: 1606797
Lab ID: 1606797-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.0052**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 14:29
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:29
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**9.6**	J	**4.2**	**10**	**µg/L**	1	6/16/2016 22:00
Arsenic	**1.7**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 22:00
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 22:00
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 22:00
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 22:00
Copper	U		0.28	5.0	µg/L	1	6/16/2016 22:00
Iron	**1,300**		**4.6**	**80**	**µg/L**	1	6/16/2016 22:00
Lead	U		0.33	5.0	µg/L	1	6/16/2016 22:00
Manganese	**21**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 22:00
Potassium	**420**		**17**	**200**	**µg/L**	1	6/16/2016 22:00
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 22:00
Silver	U		0.050	5.0	µg/L	1	6/16/2016 22:00
Zinc	**5.6**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 22:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 01:02
Sulfate	U		410	1,000	µg/L	1	6/15/2016 01:02

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-8
Collection Date: 6/13/2016 02:07 PM

Work Order: 1606797
Lab ID: 1606797-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0022**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 14:37
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**41,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:34
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**28**		**4.2**	**10**	**µg/L**	1	6/16/2016 22:20
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 22:20
Barium	**8.8**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 22:20
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 22:20
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 22:20
Copper	**0.46**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 22:20
Iron	**2,600**		**4.6**	**80**	**µg/L**	1	6/16/2016 22:20
Lead	**0.94**	J	**0.33**	**5.0**	**µg/L**	1	6/16/2016 22:20
Manganese	**25**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 22:20
Potassium	**200**		**17**	**200**	**µg/L**	1	6/16/2016 22:20
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 22:20
Silver	U		0.050	5.0	µg/L	1	6/16/2016 22:20
Zinc	**6.7**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 22:20
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 01:22
Sulfate	**460**	J	**410**	**1,000**	**µg/L**	1	6/15/2016 01:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-10
Collection Date: 6/13/2016 02:20 PM

Work Order: 1606797
Lab ID: 1606797-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0090**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 14:45
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**31,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:39
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**26**		**4.2**	**10**	**µg/L**	1	6/16/2016 22:25
Arsenic	**1.0**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 22:25
Barium	**9.7**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 22:25
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 22:25
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 22:25
Copper	**0.30**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 22:25
Iron	**1,600**		**4.6**	**80**	**µg/L**	1	6/16/2016 22:25
Lead	**0.84**	J	**0.33**	**5.0**	**µg/L**	1	6/16/2016 22:25
Manganese	**23**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 22:25
Potassium	**420**		**17**	**200**	**µg/L**	1	6/16/2016 22:25
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 22:25
Silver	U		0.050	5.0	µg/L	1	6/16/2016 22:25
Zinc	**6.3**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 22:25
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 01:42
Sulfate	U		410	1,000	µg/L	1	6/15/2016 01:42

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-9
Collection Date: 6/13/2016 02:36 PM

Work Order: 1606797
Lab ID: 1606797-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0024**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 14:52
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**37,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:45
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/16/2016 22:31
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 22:31
Barium	**5.1**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 22:31
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 22:31
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 22:31
Copper	U		0.28	5.0	µg/L	1	6/16/2016 22:31
Iron	**1,500**		**4.6**	**80**	**µg/L**	1	6/16/2016 22:31
Lead	U		0.33	5.0	µg/L	1	6/16/2016 22:31
Manganese	**3.7**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 22:31
Potassium	**270**		**17**	**200**	**µg/L**	1	6/16/2016 22:31
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 22:31
Silver	U		0.050	5.0	µg/L	1	6/16/2016 22:31
Zinc	**8.1**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 22:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 02:02
Sulfate	**630**	J	**410**	**1,000**	**µg/L**	1	6/15/2016 02:02

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-6
Collection Date: 6/13/2016 02:49 PM

Work Order: 1606797
Lab ID: 1606797-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0044**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 15:00
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**53,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:50
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**24**		**4.2**	**10**	**µg/L**	1	6/16/2016 22:36
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 22:36
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 22:36
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 22:36
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 22:36
Copper	**0.40**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 22:36
Iron	**4,000**		**4.6**	**80**	**µg/L**	1	6/16/2016 22:36
Lead	**0.63**	J	**0.33**	**5.0**	**µg/L**	1	6/16/2016 22:36
Manganese	**5.4**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 22:36
Potassium	**210**		**17**	**200**	**µg/L**	1	6/16/2016 22:36
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 22:36
Silver	U		0.050	5.0	µg/L	1	6/16/2016 22:36
Zinc	**9.8**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 22:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 02:23
Sulfate	U		410	1,000	µg/L	1	6/15/2016 02:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-7
Collection Date: 6/13/2016 03:01 PM

Work Order: 1606797
Lab ID: 1606797-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.0018**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 15:08
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**52,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 07:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**23**		**4.2**	**10**	**µg/L**	1	6/16/2016 22:41
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 22:41
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 22:41
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 22:41
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 22:41
Copper	**0.42**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 22:41
Iron	**3,200**		**4.6**	**80**	**µg/L**	1	6/16/2016 22:41
Lead	**0.88**	J	**0.33**	**5.0**	**µg/L**	1	6/16/2016 22:41
Manganese	**10**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 22:41
Potassium	**140**	J	**17**	**200**	**µg/L**	1	6/16/2016 22:41
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 22:41
Silver	U		0.050	5.0	µg/L	1	6/16/2016 22:41
Zinc	**8.4**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 22:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 02:43
Sulfate	U		410	1,000	µg/L	1	6/15/2016 02:43

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-20
Collection Date: 6/13/2016 04:27 PM

Work Order: 1606797
Lab ID: 1606797-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00044**	J	**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 15:39
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**91,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 08:27
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**72**		**4.2**	**10**	**µg/L**	1	6/16/2016 22:57
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 22:57
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 22:57
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 22:57
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 22:57
Copper	**0.63**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 22:57
Iron	**52**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 22:57
Lead	U		0.33	5.0	µg/L	1	6/16/2016 22:57
Manganese	**2.0**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 22:57
Potassium	**2,300**		**17**	**200**	**µg/L**	1	6/16/2016 22:57
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 22:57
Silver	U		0.050	5.0	µg/L	1	6/16/2016 22:57
Zinc	**2.2**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 22:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 03:43
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 03:43

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-16
Collection Date: 6/13/2016 04:35 PM

Work Order: 1606797
Lab ID: 1606797-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00048**	J	**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 15:47
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**95,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 08:33
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**130**		**4.2**	**10**	**µg/L**	1	6/16/2016 23:02
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:02
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:02
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:02
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:02
Copper	**0.90**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:02
Iron	**33**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 23:02
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:02
Manganese	**1.1**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 23:02
Potassium	**2,000**		**17**	**200**	**µg/L**	1	6/16/2016 23:02
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:02
Silver	U		0.050	5.0	µg/L	1	6/16/2016 23:02
Zinc	**2.3**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 23:02
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 04:44
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 04:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-18
Collection Date: 6/13/2016 04:40 PM

Work Order: 1606797
Lab ID: 1606797-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00047**	J	**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 15:55
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**96,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 08:38
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**110**		**4.2**	**10**	**µg/L**	1	6/16/2016 23:07
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:07
Barium	**20**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:07
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:07
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:07
Copper	**0.75**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:07
Iron	**41**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 23:07
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:07
Manganese	**1.9**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 23:07
Potassium	**2,000**		**17**	**200**	**µg/L**	1	6/16/2016 23:07
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:07
Silver	U		0.050	5.0	µg/L	1	6/16/2016 23:07
Zinc	**5.2**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 23:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 05:04
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 05:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-13
Collection Date: 6/13/2016 04:45 PM

Work Order: 1606797
Lab ID: 1606797-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00048**	J	**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 16:03
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**94,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 08:43
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**110**		**4.2**	**10**	**µg/L**	1	6/18/2016 04:37
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:28
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:28
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:28
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:28
Copper	**0.71**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:28
Iron	**33**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 23:28
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:28
Manganese	**1.5**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 23:28
Potassium	**2,000**		**17**	**200**	**µg/L**	1	6/18/2016 04:37
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:28
Silver	U		0.050	5.0	µg/L	1	6/18/2016 04:37
Zinc	**6.0**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 23:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 05:25
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 05:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-10
Collection Date: 6/13/2016 04:56 PM

Work Order: 1606797
Lab ID: 1606797-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00047**	J	**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 16:10
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**95,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 08:49
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**150**		**4.2**	**10**	**µg/L**	1	6/18/2016 06:08
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:33
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:33
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:33
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:33
Copper	**0.75**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:33
Iron	**33**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 23:33
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:33
Manganese	**1.2**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 23:33
Potassium	**1,900**		**17**	**200**	**µg/L**	1	6/18/2016 06:08
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:33
Silver	U		0.050	5.0	µg/L	1	6/18/2016 06:08
Zinc	**10**		**1.4**	**10**	**µg/L**	1	6/16/2016 23:33
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 05:45
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 05:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-8
Collection Date: 6/13/2016 05:03 PM

Work Order: 1606797
Lab ID: 1606797-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00046**	J	**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 16:18
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**93,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 08:54
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**140**		**4.2**	**10**	**µg/L**	1	6/18/2016 06:13
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:38
Barium	**18**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:38
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:38
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:38
Copper	**0.76**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:38
Iron	**22**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 23:38
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:38
Manganese	**1.7**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 23:38
Potassium	**1,900**		**17**	**200**	**µg/L**	1	6/18/2016 06:13
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:38
Silver	U		0.050	5.0	µg/L	1	6/18/2016 06:13
Zinc	**3.8**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 23:38
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 06:05
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 06:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-4
Collection Date: 6/13/2016 05:09 PM

Work Order: 1606797
Lab ID: 1606797-18
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 16:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	6/16/2016 12:25
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**120**		**4.2**	**10**	**µg/L**	1	6/16/2016 15:10
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 15:10
Barium	**17**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 15:10
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 15:10
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 15:10
Copper	**1.1**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 15:10
Iron	**46**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 15:10
Lead	U		0.33	5.0	µg/L	1	6/16/2016 15:10
Manganese	**1.4**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 15:10
Potassium	**1,800**		**17**	**200**	**µg/L**	1	6/16/2016 15:10
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 15:10
Silver	U		0.050	5.0	µg/L	1	6/16/2016 15:10
Zinc	**4.3**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 15:10
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 09:04
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 09:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-2
Collection Date: 6/13/2016 05:19 PM

Work Order: 1606797
Lab ID: 1606797-19
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.00078**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 16:50
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**78,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 09:00
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**5.2**	J	**4.2**	**10**	**µg/L**	1	6/18/2016 06:19
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:44
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:44
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:44
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:44
Copper	**0.77**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:44
Iron	U		4.6	80	µg/L	1	6/16/2016 23:44
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:44
Manganese	U		0.51	5.0	µg/L	1	6/16/2016 23:44
Potassium	**1,900**		**17**	**200**	**µg/L**	1	6/18/2016 06:19
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:44
Silver	U		0.050	5.0	µg/L	1	6/18/2016 06:19
Zinc	**1.6**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 23:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 10:04
Sulfate	**12,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 10:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup-SW-RP
Collection Date: 6/13/2016

Work Order: 1606797
Lab ID: 1606797-20
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00076**		**0.00020**	**0.00050**	**µg/L**	1	6/16/2016 16:57
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**81,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 09:05
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**5.3**	J	**4.2**	**10**	**µg/L**	1	6/18/2016 06:24
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:49
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:49
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:49
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:49
Copper	**0.75**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:49
Iron	U		4.6	80	µg/L	1	6/16/2016 23:49
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:49
Manganese	U		0.51	5.0	µg/L	1	6/16/2016 23:49
Potassium	**1,900**		**17**	**200**	**µg/L**	1	6/18/2016 06:24
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:49
Silver	U		0.050	5.0	µg/L	1	6/18/2016 06:24
Zinc	**5.3**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 23:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 10:24
Sulfate	**12,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 10:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-6
Collection Date: 6/13/2016 05:27 PM

Work Order: 1606797
Lab ID: 1606797-21
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/16/16			Analyst: **JEC**
Mercury	**0.00052**		**0.00020**	**0.00050**	**µg/L**	1	6/17/2016 09:25
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Hardness (Calculation)	**81,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 09:11
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/16/16			Analyst: **RH**
Aluminum	**110**		**4.2**	**10**	**µg/L**	1	6/18/2016 06:30
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 23:54
Barium	**16**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 23:54
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 23:54
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 23:54
Copper	**0.92**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 23:54
Iron	**16**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 23:54
Lead	U		0.33	5.0	µg/L	1	6/16/2016 23:54
Manganese	**1.3**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 23:54
Potassium	**2,000**		**17**	**200**	**µg/L**	1	6/18/2016 06:30
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 23:54
Silver	U		0.050	5.0	µg/L	1	6/18/2016 06:30
Zinc	**1.6**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 23:54
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 10:45
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 10:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-12
Collection Date: 6/13/2016 05:33 PM

Work Order: 1606797
Lab ID: 1606797-22
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.00046**	J	**0.00020**	**0.00050**	**µg/L**	1	6/17/2016 09:32
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Hardness (Calculation)	**85,000**		**240**	**2,000**	**µg/L**	1	6/16/2016 17:04
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**65**		**4.2**	**10**	**µg/L**	1	6/16/2016 16:59
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 16:59
Barium	**14**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 16:59
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 16:59
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 16:59
Copper	**0.77**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 16:59
Iron	**19**	J	**4.6**	**80**	**µg/L**	1	6/16/2016 16:59
Lead	U		0.33	5.0	µg/L	1	6/16/2016 16:59
Manganese	**2.5**	J	**0.51**	**5.0**	**µg/L**	1	6/16/2016 16:59
Potassium	**2,500**		**17**	**200**	**µg/L**	1	6/16/2016 16:59
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 16:59
Silver	U		0.050	5.0	µg/L	1	6/16/2016 16:59
Zinc	U		1.4	10	µg/L	1	6/16/2016 16:59
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	**120**		**48**	**100**	**µg/L**	1	6/15/2016 11:05
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 11:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc

Work Order: 1606797

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87347** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-87347-87347** Units: **ng/L** Analysis Date: **6/16/2016 01:34 PM**

Client ID: Run ID: **HG3_160616B** SeqNo: **3879114** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-87347-87347** Units: **ng/L** Analysis Date: **6/16/2016 02:13 PM**

Client ID: Run ID: **HG3_160616B** SeqNo: **3879119** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-87347-87347** Units: **ng/L** Analysis Date: **6/16/2016 03:31 PM**

Client ID: Run ID: **HG3_160616B** SeqNo: **3879129** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1606797-11CMS** Units: **ng/L** Analysis Date: **6/16/2016 03:16 PM**

Client ID: **SW-BG-7** Run ID: **HG3_160616B** SeqNo: **3879127** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.85	0.50	5	1.85	100	71-125	0			

MS Sample ID: **1606797-18CMS** Units: **ng/L** Analysis Date: **6/16/2016 04:34 PM**

Client ID: **SW-RP-4** Run ID: **HG3_160616B** SeqNo: **3879137** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.11	0.50	5	1.16	119	71-125	0			

MSD Sample ID: **1606797-11CMSD** Units: **ng/L** Analysis Date: **6/16/2016 03:24 PM**

Client ID: **SW-BG-7** Run ID: **HG3_160616B** SeqNo: **3879128** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.79	0.50	5	1.85	98.8	71-125	6.85	0.88	24	

MSD Sample ID: **1606797-18CMSD** Units: **ng/L** Analysis Date: **6/16/2016 04:42 PM**

Client ID: **SW-RP-4** Run ID: **HG3_160616B** SeqNo: **3879138** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.57	0.50	5	1.16	108	71-125	7.11	7.89	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87347** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-87347-87347** Units: **ng/L** Analysis Date: **6/16/2016 01:27 PM**
Client ID: Run ID: **HG3_160616B** SeqNo: **3879113** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.38	0.50	5	0	108	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-87347-87347** Units: **ng/L** Analysis Date: **6/16/2016 05:05 PM**
Client ID: Run ID: **HG3_160616B** SeqNo: **3879141** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.45	0.50	5	0	109	77-123	0			

The following samples were analyzed in this batch:

1606797-01C	1606797-02C	1606797-03C
1606797-04C	1606797-05C	1606797-06C
1606797-07C	1606797-08C	1606797-09C
1606797-10C	1606797-11C	1606797-12C
1606797-13C	1606797-14C	1606797-15C
1606797-16C	1606797-17C	1606797-18C
1606797-19C	1606797-20C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87440** Instrument ID **HG3** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-87440-87440**				Units: **ng/L**			Analysis Date: **6/17/2016 09:17 AM**			
Client ID:	Run ID: **HG3_160617A**				SeqNo: **3880606**			Prep Date: **6/16/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2	Sample ID: **MBLK2-87440-87440**				Units: **ng/L**			Analysis Date: **6/17/2016 10:04 AM**			
Client ID:	Run ID: **HG3_160617A**				SeqNo: **3880612**			Prep Date: **6/16/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3	Sample ID: **MBLK3-87440-87440**				Units: **ng/L**			Analysis Date: **6/17/2016 11:06 AM**			
Client ID:	Run ID: **HG3_160617A**				SeqNo: **3880620**			Prep Date: **6/16/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS	Sample ID: **1606803-03DMS**				Units: **ng/L**			Analysis Date: **6/17/2016 09:48 AM**			
Client ID:	Run ID: **HG3_160617A**				SeqNo: **3880610**			Prep Date: **6/16/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.29	0.50	5	2.76	90.6	71-125	0			

MS	Sample ID: **1606920-02AMS**				Units: **ng/L**			Analysis Date: **6/17/2016 11:22 AM**			
Client ID:	Run ID: **HG3_160617A**				SeqNo: **3880622**			Prep Date: **6/16/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	8	0.50	5	3.4	92	71-125	0			

MSD	Sample ID: **1606803-03DMSD**				Units: **ng/L**			Analysis Date: **6/17/2016 09:56 AM**			
Client ID:	Run ID: **HG3_160617A**				SeqNo: **3880611**			Prep Date: **6/16/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	8.07	0.50	5	2.76	106	71-125	7.29	10.2	24	

MSD	Sample ID: **1606920-02AMSD**				Units: **ng/L**			Analysis Date: **6/17/2016 11:29 AM**			
Client ID:	Run ID: **HG3_160617A**				SeqNo: **3880623**			Prep Date: **6/16/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	8.12	0.50	5	3.4	94.4	71-125	8	1.49	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87440** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-87440-87440** Units: **ng/L** Analysis Date: **6/17/2016 09:01 AM**
Client ID: Run ID: **HG3_160617A** SeqNo: **3880604** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5	0.50	5	0	100	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-87440-87440** Units: **ng/L** Analysis Date: **6/17/2016 12:01 PM**
Client ID: Run ID: **HG3_160617A** SeqNo: **3880627** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.89	0.50	5	0	97.8	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-87440-87440** Units: **ng/L** Analysis Date: **6/20/2016 04:09 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883668** Prep Date: **6/17/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.51	0.50	5	0	110	77-123	0			

The following samples were analyzed in this batch: 1606797-21C 1606797-22C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87380** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-87380-87380** Units: **mg/L** Analysis Date: **6/16/2016 11:37 AM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3878357** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-87380-87380** Units: **mg/L** Analysis Date: **6/16/2016 11:43 AM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3878358** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09588	0.010	0.1	0	95.9	80-120	0			
Arsenic	0.09958	0.0050	0.1	0	99.6	80-120	0			
Barium	0.09823	0.0050	0.1	0	98.2	80-120	0			
Cadmium	0.09903	0.0020	0.1	0	99	80-120	0			
Chromium	0.0947	0.0050	0.1	0	94.7	80-120	0			
Copper	0.1003	0.0050	0.1	0	100	80-120	0			
Hardness (Calculation)	68	2.0	66.15	0	103	80-120	0			
Iron	9.873	0.080	10	0	98.7	80-120	0			
Lead	0.09301	0.0050	0.1	0	93	80-120	0			
Manganese	0.1004	0.0050	0.1	0	100	80-120	0			
Potassium	10.06	0.20	10	0	101	80-120	0			
Selenium	0.0935	0.0050	0.1	0	93.5	80-120	0			
Silver	0.0931	0.0050	0.1	0	93.1	80-120	0			
Zinc	0.0991	0.010	0.1	0	99.1	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87380** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1606797-18BMS** Units: **mg/L** Analysis Date: **6/16/2016 12:30 PM**
Client ID: **SW-RP-4** Run ID: **ICPMS2_160616A** SeqNo: **3878367** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2987	0.010	0.1	0.197	102	75-125	0			
Arsenic	0.1015	0.0050	0.1	0.00115	100	75-125	0			
Barium	0.1184	0.0050	0.1	0.01847	99.9	75-125	0			
Cadmium	0.0982	0.0020	0.1	-0.0001075	98.3	75-125	0			
Chromium	0.09501	0.0050	0.1	5.248E-06	95	75-125	0			
Copper	0.1008	0.0050	0.1	0.001851	98.9	75-125	0			
Iron	9.966	0.080	10	0.1042	98.6	75-125	0			
Lead	0.09415	0.0050	0.1	0.0001005	94	75-125	0			
Manganese	0.1162	0.0050	0.1	0.01506	101	75-125	0			
Potassium	11.97	0.20	10	1.91	101	75-125	0			
Selenium	0.09576	0.0050	0.1	-0.0001279	95.9	75-125	0			
Silver	0.09139	0.0050	0.1	-0.0001018	91.5	75-125	0			
Zinc	0.09923	0.010	0.1	0.003182	96	75-125	0			

MS Sample ID: **1606797-18AMS** Units: **mg/L** Analysis Date: **6/16/2016 03:31 PM**
Client ID: **SW-RP-4** Run ID: **ICPMS2_160616A** SeqNo: **3879159** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.227	0.010	0.1	0.1232	104	75-125	0			
Arsenic	0.1016	0.0050	0.1	0.00135	100	75-125	0			
Barium	0.1179	0.0050	0.1	0.01688	101	75-125	0			
Cadmium	0.09995	0.0020	0.1	-0.0001038	100	75-125	0			
Chromium	0.09311	0.0050	0.1	-0.0001592	93.3	75-125	0			
Copper	0.09966	0.0050	0.1	0.001121	98.5	75-125	0			
Iron	9.797	0.080	10	0.04604	97.5	75-125	0			
Lead	0.09351	0.0050	0.1	-9.001E-05	93.6	75-125	0			
Manganese	0.1006	0.0050	0.1	0.001414	99.2	75-125	0			
Potassium	11.76	0.20	10	1.812	99.5	75-125	0			
Selenium	0.0965	0.0050	0.1	-0.0003713	96.9	75-125	0			
Silver	0.09046	0.0050	0.1	-0.0001035	90.6	75-125	0			
Zinc	0.102	0.010	0.1	0.004329	97.7	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87380** Instrument ID **ICPMS2** Method: **SW6020A**

MSD Sample ID: **1606797-18BMSD** Units: **mg/L** Analysis Date: **6/16/2016 12:35 PM**
Client ID: **SW-RP-4** Run ID: **ICPMS2_160616A** SeqNo: **3878368** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2999	0.010	0.1	0.197	103	75-125	0.2987	0.401	20	
Arsenic	0.104	0.0050	0.1	0.00115	103	75-125	0.1015	2.43	20	
Barium	0.1188	0.0050	0.1	0.01847	100	75-125	0.1184	0.337	20	
Cadmium	0.1006	0.0020	0.1	-0.0001075	101	75-125	0.0982	2.41	20	
Chromium	0.0963	0.0050	0.1	5.248E-06	96.3	75-125	0.09501	1.35	20	
Copper	0.102	0.0050	0.1	0.001851	100	75-125	0.1008	1.18	20	
Iron	10.13	0.080	10	0.1042	100	75-125	9.966	1.63	20	
Lead	0.09523	0.0050	0.1	0.0001005	95.1	75-125	0.09415	1.14	20	
Manganese	0.1177	0.0050	0.1	0.01506	103	75-125	0.1162	1.28	20	
Potassium	11.97	0.20	10	1.91	101	75-125	11.97	0	20	
Selenium	0.09521	0.0050	0.1	-0.0001279	95.3	75-125	0.09576	0.576	20	
Silver	0.09264	0.0050	0.1	-0.0001018	92.7	75-125	0.09139	1.36	20	
Zinc	0.1009	0.010	0.1	0.003182	97.7	75-125	0.09923	1.67	20	

MSD Sample ID: **1606797-18AMSD** Units: **mg/L** Analysis Date: **6/16/2016 03:36 PM**
Client ID: **SW-RP-4** Run ID: **ICPMS2_160616A** SeqNo: **3879160** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2256	0.010	0.1	0.1232	102	75-125	0.227	0.619	20	
Arsenic	0.1016	0.0050	0.1	0.00135	100	75-125	0.1016	0	20	
Barium	0.1183	0.0050	0.1	0.01688	101	75-125	0.1179	0.339	20	
Cadmium	0.09967	0.0020	0.1	-0.0001038	99.8	75-125	0.09995	0.281	20	
Chromium	0.09225	0.0050	0.1	-0.0001592	92.4	75-125	0.09311	0.928	20	
Copper	0.09899	0.0050	0.1	0.001121	97.9	75-125	0.09966	0.675	20	
Iron	9.712	0.080	10	0.04604	96.7	75-125	9.797	0.871	20	
Lead	0.09322	0.0050	0.1	-9.001E-05	93.3	75-125	0.09351	0.311	20	
Manganese	0.1004	0.0050	0.1	0.001414	99	75-125	0.1006	0.199	20	
Potassium	11.73	0.20	10	1.812	99.2	75-125	11.76	0.255	20	
Selenium	0.0993	0.0050	0.1	-0.0003713	99.7	75-125	0.0965	2.86	20	
Silver	0.08989	0.0050	0.1	-0.0001035	90	75-125	0.09046	0.632	20	
Zinc	0.1004	0.010	0.1	0.004329	96.1	75-125	0.102	1.58	20	

The following samples were analyzed in this batch:

1606797-18A	1606797-18B	1606797-22A
1606797-22B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87382** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK	Sample ID: **MBLK-87382-87382**				Units: **mg/L**			Analysis Date: **6/18/2016 06:35 AM**
Client ID:	Run ID: **ICPMS2_160617A**				SeqNo: **3881467**		Prep Date: **6/16/2016**	DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	U	2.0								

LCS	Sample ID: **LCS-87382-87382**				Units: **mg/L**			Analysis Date: **6/18/2016 06:40 AM**
Client ID:	Run ID: **ICPMS2_160617A**				SeqNo: **3881468**		Prep Date: **6/16/2016**	DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	69.54	2.0	66.15	0	105	80-120	0			

The following samples were analyzed in this batch:

1606797-01B	1606797-02B	1606797-03B
1606797-04B	1606797-05B	1606797-06B
1606797-07B	1606797-08B	1606797-09B
1606797-10B	1606797-11B	1606797-12B
1606797-13B	1606797-14B	1606797-15B
1606797-16B	1606797-17B	1606797-19B
1606797-20B	1606797-21B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87385** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK	Sample ID: **MBLK-87383-87385**				Units: **mg/L**			Analysis Date: **6/16/2016 09:13 PM**	
Client ID:	Run ID: **ICPMS2_160616A**				SeqNo: **3879225**		Prep Date: **6/16/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK	Sample ID: **MBLK-87385-87385**				Units: **mg/L**			Analysis Date: **6/16/2016 09:23 PM**	
Client ID:	Run ID: **ICPMS2_160616A**				SeqNo: **3879227**		Prep Date: **6/16/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87385** Instrument ID **ICPMS2** Method: **SW6020A**

LCS Sample ID: **LCS-87383-87385** Units: **mg/L** Analysis Date: **6/16/2016 09:18 PM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3879226** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09661	0.010	0.1	0	96.6	80-120	0			
Arsenic	0.09625	0.0050	0.1	0	96.2	80-120	0			
Barium	0.09845	0.0050	0.1	0	98.4	80-120	0			
Cadmium	0.09752	0.0020	0.1	0	97.5	80-120	0			
Chromium	0.09022	0.0050	0.1	0	90.2	80-120	0			
Copper	0.09798	0.0050	0.1	0	98	80-120	0			
Iron	9.585	0.080	10	0	95.8	80-120	0			
Lead	0.09177	0.0050	0.1	0	91.8	80-120	0			
Manganese	0.1007	0.0050	0.1	0	101	80-120	0			
Potassium	10.36	0.20	10	0	104	80-120	0			
Selenium	0.09397	0.0050	0.1	0	94	80-120	0			
Silver	0.08849	0.0050	0.1	0	88.5	80-120	0			
Zinc	0.0952	0.010	0.1	0	95.2	80-120	0			

LCS Sample ID: **LCS-87385-87385** Units: **mg/L** Analysis Date: **6/16/2016 09:28 PM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3879228** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09535	0.010	0.1	0	95.4	80-120	0			
Arsenic	0.09578	0.0050	0.1	0	95.8	80-120	0			
Barium	0.09741	0.0050	0.1	0	97.4	80-120	0			
Cadmium	0.09606	0.0020	0.1	0	96.1	80-120	0			
Chromium	0.08979	0.0050	0.1	0	89.8	80-120	0			
Copper	0.09684	0.0050	0.1	0	96.8	80-120	0			
Iron	9.462	0.080	10	0	94.6	80-120	0			
Lead	0.09109	0.0050	0.1	0	91.1	80-120	0			
Manganese	0.0994	0.0050	0.1	0	99.4	80-120	0			
Potassium	10.17	0.20	10	0	102	80-120	0			
Selenium	0.0916	0.0050	0.1	0	91.6	80-120	0			
Silver	0.08811	0.0050	0.1	0	88.1	80-120	0			
Zinc	0.09293	0.010	0.1	0	92.9	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87385** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1606797-11AMS** Units: **mg/L** Analysis Date: **6/16/2016 10:46 PM**
Client ID: **SW-BG-7** Run ID: **ICPMS2_160616A** SeqNo: **3879243** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1296	0.010	0.1	0.0229	107	75-125	0			
Arsenic	0.09974	0.0050	0.1	0.001632	98.1	75-125	0			
Barium	0.1098	0.0050	0.1	0.01214	97.7	75-125	0			
Cadmium	0.09748	0.0020	0.1	-0.0001197	97.6	75-125	0			
Chromium	0.08968	0.0050	0.1	0.00007781	89.6	75-125	0			
Copper	0.09986	0.0050	0.1	0.0004152	99.4	75-125	0			
Iron	12.34	0.080	10	3.218	91.2	75-125	0			
Lead	0.09254	0.0050	0.1	0.0008771	91.7	75-125	0			
Manganese	0.1099	0.0050	0.1	0.01039	99.5	75-125	0			
Potassium	10.63	0.20	10	0.1389	105	75-125	0			
Selenium	0.09499	0.0050	0.1	-0.0002742	95.3	75-125	0			
Silver	0.08719	0.0050	0.1	-0.0001043	87.3	75-125	0			
Zinc	0.1026	0.010	0.1	0.0084	94.2	75-125	0			

MSD Sample ID: **1606797-11AMSD** Units: **mg/L** Analysis Date: **6/16/2016 10:51 PM**
Client ID: **SW-BG-7** Run ID: **ICPMS2_160616A** SeqNo: **3879244** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1305	0.010	0.1	0.0229	108	75-125	0.1296	0.692	20	
Arsenic	0.09863	0.0050	0.1	0.001632	97	75-125	0.09974	1.12	20	
Barium	0.107	0.0050	0.1	0.01214	94.9	75-125	0.1098	2.58	20	
Cadmium	0.09379	0.0020	0.1	-0.0001197	93.9	75-125	0.09748	3.86	20	
Chromium	0.08949	0.0050	0.1	0.00007781	89.4	75-125	0.08968	0.212	20	
Copper	0.1004	0.0050	0.1	0.0004152	100	75-125	0.09986	0.539	20	
Iron	12.34	0.080	10	3.218	91.2	75-125	12.34	0	20	
Lead	0.09253	0.0050	0.1	0.0008771	91.7	75-125	0.09254	0.0108	20	
Manganese	0.11	0.0050	0.1	0.01039	99.6	75-125	0.1099	0.091	20	
Potassium	10.67	0.20	10	0.1389	105	75-125	10.63	0.376	20	
Selenium	0.09362	0.0050	0.1	-0.0002742	93.9	75-125	0.09499	1.45	20	
Silver	0.08714	0.0050	0.1	-0.0001043	87.2	75-125	0.08719	0.0574	20	
Zinc	0.1024	0.010	0.1	0.0084	94	75-125	0.1026	0.195	20	

The following samples were analyzed in this batch:

1606797-01A	1606797-02A	1606797-03A
1606797-04A	1606797-05A	1606797-06A
1606797-07A	1606797-08A	1606797-09A
1606797-10A	1606797-11A	1606797-12A
1606797-13A	1606797-14A	1606797-15A
1606797-16A	1606797-17A	1606797-19A
1606797-20A	1606797-21A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R189565** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R189565** Units: **mg/L** Analysis Date: **6/14/2016 07:58 PM**
Client ID: Run ID: **IC3_160614B** SeqNo: **3875395** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R189565** Units: **mg/L** Analysis Date: **6/14/2016 08:18 PM**
Client ID: Run ID: **IC3_160614B** SeqNo: **3875396** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.911	0.10	2	0	95.6	81-116	0			
Sulfate	9.536	1.0	10	0	95.4	85-110	0			

MS Sample ID: **1606699-02B MS** Units: **mg/L** Analysis Date: **6/14/2016 09:19 PM**
Client ID: Run ID: **IC3_160614B** SeqNo: **3875399** Prep Date: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	48.56	2.5	50	0	97.1	75-125	0			H
Sulfate	388.8	25	250	134.3	102	75-125	0			

MS Sample ID: **1606797-11D MS** Units: **mg/L** Analysis Date: **6/15/2016 03:03 AM**
Client ID: **SW-BG-7** Run ID: **IC3_160614B** SeqNo: **3875416** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.842	0.50	10	0	98.4	75-125	0			
Sulfate	51.8	5.0	50	0.4015	103	75-125	0			

MSD Sample ID: **1606699-02B MSD** Units: **mg/L** Analysis Date: **6/14/2016 09:39 PM**
Client ID: Run ID: **IC3_160614B** SeqNo: **3875400** Prep Date: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	47.95	2.5	50	0	95.9	75-125	48.56	1.27	20	H
Sulfate	387.2	25	250	134.3	101	75-125	388.8	0.401	20	

MSD Sample ID: **1606797-11D MSD** Units: **mg/L** Analysis Date: **6/15/2016 03:23 AM**
Client ID: **SW-BG-7** Run ID: **IC3_160614B** SeqNo: **3875417** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.757	0.50	10	0	97.6	75-125	9.842	0.867	20	
Sulfate	51.16	5.0	50	0.4015	102	75-125	51.8	1.25	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R189565** Instrument ID **IC3** Method: **SW9056A**

The following samples were analyzed in this batch:

1606797-01D	1606797-02D	1606797-03D
1606797-04D	1606797-05D	1606797-06D
1606797-07D	1606797-08D	1606797-09D
1606797-10D	1606797-11D	1606797-12D
1606797-13D	1606797-14D	1606797-15D
1606797-16D	1606797-17D	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606797
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R189648** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R189648** Units: **mg/L** Analysis Date: **6/15/2016 08:23 AM**
Client ID: Run ID: **IC3_160615A** SeqNo: **3877646** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R189648** Units: **mg/L** Analysis Date: **6/15/2016 08:43 AM**
Client ID: Run ID: **IC3_160615A** SeqNo: **3877647** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.902	0.10	2	0	95.1	81-116	0			
Sulfate	9.997	1.0	10	0	100	85-110	0			

MS Sample ID: **1606797-18D MS** Units: **mg/L** Analysis Date: **6/15/2016 09:24 AM**
Client ID: **SW-RP-4** Run ID: **IC3_160615A** SeqNo: **3877649** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.852	0.50	10	0	98.5	75-125	0			
Sulfate	63.03	5.0	50	11.49	103	75-125	0			

MSD Sample ID: **1606797-18D MSD** Units: **mg/L** Analysis Date: **6/15/2016 09:44 AM**
Client ID: **SW-RP-4** Run ID: **IC3_160615A** SeqNo: **3877650** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.631	0.50	10	0	96.3	75-125	9.852	2.27	20	
Sulfate	63.1	5.0	50	11.49	103	75-125	63.03	0.103	20	

The following samples were analyzed in this batch:

1606797-18D	1606797-19D	1606797-20D
1606797-21D	1606797-22D	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
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Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Middletown, PA +1 717 944 5541
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York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

COC ID: 29935

ALS Project Manager:

ALS Work Order #: 1606797

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - lab filter)
Work Order		Project Number		B	Hardness
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-BG-2	6-13-16	1113	W	1-HNO3	4	X	X	X	X							
2	SW-BG-4		1125				X	X	X	X							
3	SW-BG-5		1135				X	X	X	X							
4	SW-BG-3		1145				X	X	X	X							
5	SW-BG-1		1155				X	X	X	X							
6	Dup-SW-BG		—				X	X	X	X							
7	SW-BG-8		1407				X	X	X	X							
8	SW-BG-10		1420				X	X	X	X							
9	SW-BG-9		1436				X	X	X	X							
10	SW-BG-6		1449				X	X	X	X							

Sampler(s) Please Print & Sign: Amy Meade

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 6 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 6-14-16	Time: 0750	Received by: Mandy Brembt	Notes:	
Relinquished by: Mandy Brembt	Date: 6-14-16	Time: 1320	Received by (Laboratory):	Cooler ID	Cooler Temp
Logged by (Laboratory): MB	Date: 6/14/16	Time: 1512	Checked by (Laboratory):		3.2
					3.0
					2.2

QC Package: (Check One Box Below)

☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

COC ID: 29934

ALS Project Manager:

ALS Work Order #: 1606797

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - lab filter)
Work Order		Project Number		B	Hardness
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	MS/MSD
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	SW-BG-7	6-13-16	1501	W	2-HNO_3	8	X	X	X	X		X					
12	SW-RP-20		1627		1-HNO_3	4											
13	SW-RP-16		1635														
14	SW-RP-MW-18		1640														
15	SW-RP-13		1645														
16	SW-RP-10		1656														
17	SW-RP-8		1703														
18	SW-RP-4		1709	W	2-HNO_3	8						X					
19	SW-RP-2		1719	W	1-HNO_3	4											
20	Dup-SW-RP		—	W	1-HNO_3	4											

Sampler(s) Please Print & Sign	Shipment Method	Turnaround Time in Business Days (BD)	Results Due Date:
Brandi Alexander	Courier	☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other	

Relinquished by:	Date:	Time:	Received by:
	6-14-16	0730	Mandy Brendt
Relinquished by: Mandy Brendt	6-14-16	1320	Received by (Laboratory):
Logged by (Laboratory): IIB	Date: 6/14/16	Time: 1512	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp
	5.2
	2.0
	2.2

QC Package: (Check One Box Below)
☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

COC ID: 29933

ALS Project Manager: | ALS Work Order #: 1606797

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - lab filter)
Work Order		Project Number		B	Hardness
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
21	SW-RP-6	6-13-16	1727	W	1-HNO3	4	X	X	X	X							
22	SW-RP-12	6-13-16	1733	W	1-HNO3	4	X	X	X	X							
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Drew Alexander

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 0730 6/13/16	Time: 6-14-16	Received by: Mandy Brandt	Notes:
Relinquished by: Mandy Brandt	Date: 1300 6-14-16	Time: 6-14-16	Received by (Laboratory):	
Logged by (Laboratory): MB	Date: 6/14/16	Time: 1512	Checked by (Laboratory):	

Cooler ID	Cooler Temp
	3C
	3.0
	2.2

QC Package: (Check One Box Below)
☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **14-Jun-16 13:20**

Work Order: **1606797** Received by: **MEB**

Checklist completed by Meghan Broadbent (eSignature) 14-Jun-16 (Date) Reviewed by: Bill Carey (eSignature) 15-Jun-16 (Date)

Matrices: water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2/3.2 3.0/3.0 2.2/2.2	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/14/2016 3:34:02 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

21-Jun-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1606804**

Dear Marty,

ALS Environmental received 4 samples on 14-Jun-2016 01:20 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 18.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1606804**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1606804-01	BG-1D	Water		6/13/2016 11:50	6/14/2016 13:20	☐
1606804-02	BG-1S	Water		6/13/2016 12:30	6/14/2016 13:20	☐
1606804-03	MW-3S	Water		6/13/2016 16:50	6/14/2016 13:20	☐
1606804-04	MW-3D	Water		6/13/2016 17:25	6/14/2016 13:20	☐

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1606804**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1606804

Case Narrative

Samples for the above noted Work Order were received on 6/14/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 6/13/2016 11:50 AM

Work Order: 1606804
Lab ID: 1606804-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/20/2016 12:45
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**26**		**4.2**	**10**	**µg/L**	1	6/16/2016 15:51
Arsenic	**2.2**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 15:51
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 15:51
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 15:51
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 15:51
Copper	**0.61**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 15:51
Iron	**5,100**		**4.6**	**80**	**µg/L**	1	6/16/2016 15:51
Lead	U		0.33	5.0	µg/L	1	6/16/2016 15:51
Manganese	**200**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 15:51
Potassium	**980**		**17**	**200**	**µg/L**	1	6/16/2016 15:51
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 15:51
Silver	U		0.050	5.0	µg/L	1	6/16/2016 15:51
Zinc	**16**		**1.4**	**10**	**µg/L**	1	6/16/2016 15:51
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 11:25
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/15/2016 11:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 6/13/2016 12:30 PM

Work Order: 1606804
Lab ID: 1606804-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/16/16		Analyst: **JEC**
Mercury	**0.013**		**0.00040**	**0.0010**	**µg/L**	1	6/17/2016 10:35
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**170**		**4.2**	**10**	**µg/L**	1	6/16/2016 15:56
Arsenic	**2.4**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 15:56
Barium	**6.5**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 15:56
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 15:56
Chromium	**1.2**	J	**0.65**	**5.0**	**µg/L**	1	6/16/2016 15:56
Copper	**5.3**		**0.28**	**5.0**	**µg/L**	1	6/16/2016 15:56
Iron	**3,100**		**4.6**	**80**	**µg/L**	1	6/16/2016 15:56
Lead	U		0.33	5.0	µg/L	1	6/16/2016 15:56
Manganese	**51**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 15:56
Potassium	**580**		**17**	**200**	**µg/L**	1	6/16/2016 15:56
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 15:56
Silver	U		0.050	5.0	µg/L	1	6/16/2016 15:56
Zinc	**17**		**1.4**	**10**	**µg/L**	1	6/16/2016 15:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 11:45
Sulfate	**45,000**		**2,000**	**5,000**	**µg/L**	5	6/15/2016 12:06

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 6/13/2016 04:50 PM

Work Order: 1606804
Lab ID: 1606804-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00038**	J	**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 12:54
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/16/2016 16:02
Arsenic	**4.3**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 16:02
Barium	**56**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 16:02
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 16:02
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 16:02
Copper	**0.64**	J	**0.28**	**5.0**	**µg/L**	1	6/16/2016 16:02
Iron	**13,000**		**4.6**	**80**	**µg/L**	1	6/16/2016 16:02
Lead	U		0.33	5.0	µg/L	1	6/16/2016 16:02
Manganese	**1,700**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 16:02
Potassium	**1,800**		**17**	**200**	**µg/L**	1	6/16/2016 16:02
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 16:02
Silver	U		0.050	5.0	µg/L	1	6/16/2016 16:02
Zinc	U		1.4	10	µg/L	1	6/16/2016 16:02
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 13:06
Sulfate	**34,000**		**2,000**	**5,000**	**µg/L**	5	6/15/2016 13:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 6/13/2016 05:25 PM

Work Order: 1606804
Lab ID: 1606804-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/20/2016 13:01
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/16/16		Analyst: **RH**
Aluminum	**8.7**	J	**4.2**	**10**	**µg/L**	1	6/16/2016 16:07
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	6/16/2016 16:07
Barium	**120**		**2.2**	**5.0**	**µg/L**	1	6/16/2016 16:07
Cadmium	U		0.050	2.0	µg/L	1	6/16/2016 16:07
Chromium	U		0.65	5.0	µg/L	1	6/16/2016 16:07
Copper	U		0.28	5.0	µg/L	1	6/16/2016 16:07
Iron	**8,300**		**4.6**	**80**	**µg/L**	1	6/16/2016 16:07
Lead	U		0.33	5.0	µg/L	1	6/16/2016 16:07
Manganese	**220**		**0.51**	**5.0**	**µg/L**	1	6/16/2016 16:07
Potassium	**6,700**		**17**	**200**	**µg/L**	1	6/16/2016 16:07
Selenium	U		0.90	5.0	µg/L	1	6/16/2016 16:07
Silver	U		0.050	5.0	µg/L	1	6/16/2016 16:07
Zinc	**2.2**	J	**1.4**	**10**	**µg/L**	1	6/16/2016 16:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 13:47
Sulfate	U		410	1,000	µg/L	1	6/15/2016 13:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc

Work Order: 1606804

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87440** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-87440-87440** Units: **ng/L** Analysis Date: **6/17/2016 09:17 AM**

Client ID: Run ID: **HG3_160617A** SeqNo: **3880606** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-87440-87440** Units: **ng/L** Analysis Date: **6/17/2016 10:04 AM**

Client ID: Run ID: **HG3_160617A** SeqNo: **3880612** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-87440-87440** Units: **ng/L** Analysis Date: **6/17/2016 11:06 AM**

Client ID: Run ID: **HG3_160617A** SeqNo: **3880620** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1606803-03DMS** Units: **ng/L** Analysis Date: **6/17/2016 09:48 AM**

Client ID: Run ID: **HG3_160617A** SeqNo: **3880610** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.29	0.50	5	2.76	90.6	71-125	0			

MS Sample ID: **1606920-02AMS** Units: **ng/L** Analysis Date: **6/17/2016 11:22 AM**

Client ID: Run ID: **HG3_160617A** SeqNo: **3880622** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	8	0.50	5	3.4	92	71-125	0			

MSD Sample ID: **1606803-03DMSD** Units: **ng/L** Analysis Date: **6/17/2016 09:56 AM**

Client ID: Run ID: **HG3_160617A** SeqNo: **3880611** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	8.07	0.50	5	2.76	106	71-125	7.29	10.2	24	

MSD Sample ID: **1606920-02AMSD** Units: **ng/L** Analysis Date: **6/17/2016 11:29 AM**

Client ID: Run ID: **HG3_160617A** SeqNo: **3880623** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	8.12	0.50	5	3.4	94.4	71-125	8	1.49	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606804
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87440** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-87440-87440** Units: **ng/L** Analysis Date: **6/17/2016 09:01 AM**
Client ID: Run ID: **HG3_160617A** SeqNo: **3880604** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5	0.50	5	0	100	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-87440-87440** Units: **ng/L** Analysis Date: **6/17/2016 12:01 PM**
Client ID: Run ID: **HG3_160617A** SeqNo: **3880627** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.89	0.50	5	0	97.8	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-87440-87440** Units: **ng/L** Analysis Date: **6/20/2016 04:09 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883668** Prep Date: **6/17/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.51	0.50	5	0	110	77-123	0			

The following samples were analyzed in this batch: 1606804-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606804
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87468** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 12:37 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883638** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 01:25 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883644** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 02:27 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883653** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1606904-14DMS** Units: **ng/L** Analysis Date: **6/20/2016 03:14 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883661** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.6	0.50	5	0.543	101	71-125	0			

MS Sample ID: **1606904-16DMS** Units: **ng/L** Analysis Date: **6/20/2016 03:45 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883665** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.6	0.50	5	0.471	103	71-125	0			

MSD Sample ID: **1606904-14DMSD** Units: **ng/L** Analysis Date: **6/20/2016 03:22 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883662** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.65	0.50	5	0.543	102	71-125	5.6	0.889	24	

MSD Sample ID: **1606904-16DMSD** Units: **ng/L** Analysis Date: **6/20/2016 03:53 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883666** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.51	0.50	5	0.471	101	71-125	5.6	1.62	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606804
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87468** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 12:21 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883636** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.35	0.50	5	0	107	77-123	0			

The following samples were analyzed in this batch: 1606804-01B 1606804-03B 1606804-04B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606804
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87380** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-87380-87380** Units: **mg/L** Analysis Date: **6/16/2016 11:37 AM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3878357** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-87380-87380** Units: **mg/L** Analysis Date: **6/16/2016 11:43 AM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3878358** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09588	0.010	0.1	0	95.9	80-120	0			
Arsenic	0.09958	0.0050	0.1	0	99.6	80-120	0			
Barium	0.09823	0.0050	0.1	0	98.2	80-120	0			
Cadmium	0.09903	0.0020	0.1	0	99	80-120	0			
Chromium	0.0947	0.0050	0.1	0	94.7	80-120	0			
Copper	0.1003	0.0050	0.1	0	100	80-120	0			
Iron	9.873	0.080	10	0	98.7	80-120	0			
Lead	0.09301	0.0050	0.1	0	93	80-120	0			
Manganese	0.1004	0.0050	0.1	0	100	80-120	0			
Potassium	10.06	0.20	10	0	101	80-120	0			
Selenium	0.0935	0.0050	0.1	0	93.5	80-120	0			
Silver	0.0931	0.0050	0.1	0	93.1	80-120	0			
Zinc	0.0991	0.010	0.1	0	99.1	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606804
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87380** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1606797-18BMS** Units: **mg/L** Analysis Date: **6/16/2016 12:30 PM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3878367** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2987	0.010	0.1	0.197	102	75-125	0			
Arsenic	0.1015	0.0050	0.1	0.00115	100	75-125	0			
Barium	0.1184	0.0050	0.1	0.01847	99.9	75-125	0			
Cadmium	0.0982	0.0020	0.1	-0.0001075	98.3	75-125	0			
Chromium	0.09501	0.0050	0.1	5.248E-06	95	75-125	0			
Copper	0.1008	0.0050	0.1	0.001851	98.9	75-125	0			
Iron	9.966	0.080	10	0.1042	98.6	75-125	0			
Lead	0.09415	0.0050	0.1	0.0001005	94	75-125	0			
Manganese	0.1162	0.0050	0.1	0.01506	101	75-125	0			
Potassium	11.97	0.20	10	1.91	101	75-125	0			
Selenium	0.09576	0.0050	0.1	-0.0001279	95.9	75-125	0			
Silver	0.09139	0.0050	0.1	-0.0001018	91.5	75-125	0			
Zinc	0.09923	0.010	0.1	0.003182	96	75-125	0			

MS Sample ID: **1606797-18AMS** Units: **mg/L** Analysis Date: **6/16/2016 03:31 PM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3879159** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.227	0.010	0.1	0.1232	104	75-125	0			
Arsenic	0.1016	0.0050	0.1	0.00135	100	75-125	0			
Barium	0.1179	0.0050	0.1	0.01688	101	75-125	0			
Cadmium	0.09995	0.0020	0.1	-0.0001038	100	75-125	0			
Chromium	0.09311	0.0050	0.1	-0.0001592	93.3	75-125	0			
Copper	0.09966	0.0050	0.1	0.001121	98.5	75-125	0			
Iron	9.797	0.080	10	0.04604	97.5	75-125	0			
Lead	0.09351	0.0050	0.1	-9.001E-05	93.6	75-125	0			
Manganese	0.1006	0.0050	0.1	0.001414	99.2	75-125	0			
Potassium	11.76	0.20	10	1.812	99.5	75-125	0			
Selenium	0.0965	0.0050	0.1	-0.0003713	96.9	75-125	0			
Silver	0.09046	0.0050	0.1	-0.0001035	90.6	75-125	0			
Zinc	0.102	0.010	0.1	0.004329	97.7	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606804
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87380** Instrument ID **ICPMS2** Method: **SW6020A**

MSD Sample ID: **1606797-18BMSD** Units: **mg/L** Analysis Date: **6/16/2016 12:35 PM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3878368** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2999	0.010	0.1	0.197	103	75-125	0.2987	0.401	20	
Arsenic	0.104	0.0050	0.1	0.00115	103	75-125	0.1015	2.43	20	
Barium	0.1188	0.0050	0.1	0.01847	100	75-125	0.1184	0.337	20	
Cadmium	0.1006	0.0020	0.1	-0.0001075	101	75-125	0.0982	2.41	20	
Chromium	0.0963	0.0050	0.1	5.248E-06	96.3	75-125	0.09501	1.35	20	
Copper	0.102	0.0050	0.1	0.001851	100	75-125	0.1008	1.18	20	
Iron	10.13	0.080	10	0.1042	100	75-125	9.966	1.63	20	
Lead	0.09523	0.0050	0.1	0.0001005	95.1	75-125	0.09415	1.14	20	
Manganese	0.1177	0.0050	0.1	0.01506	103	75-125	0.1162	1.28	20	
Potassium	11.97	0.20	10	1.91	101	75-125	11.97	0	20	
Selenium	0.09521	0.0050	0.1	-0.0001279	95.3	75-125	0.09576	0.576	20	
Silver	0.09264	0.0050	0.1	-0.0001018	92.7	75-125	0.09139	1.36	20	
Zinc	0.1009	0.010	0.1	0.003182	97.7	75-125	0.09923	1.67	20	

MSD Sample ID: **1606797-18AMSD** Units: **mg/L** Analysis Date: **6/16/2016 03:36 PM**
Client ID: Run ID: **ICPMS2_160616A** SeqNo: **3879160** Prep Date: **6/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2256	0.010	0.1	0.1232	102	75-125	0.227	0.619	20	
Arsenic	0.1016	0.0050	0.1	0.00135	100	75-125	0.1016	0	20	
Barium	0.1183	0.0050	0.1	0.01688	101	75-125	0.1179	0.339	20	
Cadmium	0.09967	0.0020	0.1	-0.0001038	99.8	75-125	0.09995	0.281	20	
Chromium	0.09225	0.0050	0.1	-0.0001592	92.4	75-125	0.09311	0.928	20	
Copper	0.09899	0.0050	0.1	0.001121	97.9	75-125	0.09966	0.675	20	
Iron	9.712	0.080	10	0.04604	96.7	75-125	9.797	0.871	20	
Lead	0.09322	0.0050	0.1	-9.001E-05	93.3	75-125	0.09351	0.311	20	
Manganese	0.1004	0.0050	0.1	0.001414	99	75-125	0.1006	0.199	20	
Potassium	11.73	0.20	10	1.812	99.2	75-125	11.76	0.255	20	
Selenium	0.0993	0.0050	0.1	-0.0003713	99.7	75-125	0.0965	2.86	20	
Silver	0.08989	0.0050	0.1	-0.0001035	90	75-125	0.09046	0.632	20	
Zinc	0.1004	0.010	0.1	0.004329	96.1	75-125	0.102	1.58	20	

The following samples were analyzed in this batch:

1606804-01A	1606804-02A	1606804-03A
1606804-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606804
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R189648** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R189648** Units: **mg/L** Analysis Date: **6/15/2016 08:23 AM**
Client ID: Run ID: **IC3_160615A** SeqNo: **3877646** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R189648** Units: **mg/L** Analysis Date: **6/15/2016 08:43 AM**
Client ID: Run ID: **IC3_160615A** SeqNo: **3877647** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.902	0.10	2	0	95.1	81-116	0			
Sulfate	9.997	1.0	10	0	100	85-110	0			

MS Sample ID: **1606797-18D MS** Units: **mg/L** Analysis Date: **6/15/2016 09:24 AM**
Client ID: Run ID: **IC3_160615A** SeqNo: **3877649** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.852	0.50	10	0	98.5	75-125	0			
Sulfate	63.03	5.0	50	11.49	103	75-125	0			

MSD Sample ID: **1606797-18D MSD** Units: **mg/L** Analysis Date: **6/15/2016 09:44 AM**
Client ID: Run ID: **IC3_160615A** SeqNo: **3877650** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.631	0.50	10	0	96.3	75-125	9.852	2.27	20	
Sulfate	63.1	5.0	50	11.49	103	75-125	63.03	0.103	20	

The following samples were analyzed in this batch: 1606804-01C 1606804-02C 1606804-03C 1606804-04C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 29936

ALS Project Manager: | ALS Work Order #: 1606809

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, [redacted]
Work Order		Project Number		B	[redacted]
Company Name	ERM, Inc	Bill To Company	ERM, Inc.	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	BG-1D	6-13-16	1150	wt.	2-HNO_3	3	X		X	X							
2	BG-1S	↓	1230	wt.	↓	3	X		X	X							
3	MW-3S		1650	wt.		3	X		X	X							
4	MW-3D		1725	wt.		3	X		X	X							
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Tanner Potter

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Tanner Potter	6-14-16	0745	Mandy Brewer
Mandy Brewer	6-14-16	1320	
Logged by (Laboratory): MB	6/14/16	1535	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp
	3.4

QC Package: (Check One Box Below)
☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☑ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **14-Jun-16 13:20**

Work Order: **1606804** Received by: **MEB**

Checklist completed by Meghan Broadbent (eSignature) 14-Jun-16 (Date) Reviewed by: Bill Carey (eSignature) 15-Jun-16 (Date)

Matrices: water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.4/3.4	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/14/2016 3:42:47 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

21-Jun-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1606904**

Dear Marty,

ALS Environmental received 17 samples on 15-Jun-2016 04:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

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ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1606904**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1606904-01	SW-LL-1	Water		6/14/2016 08:30	6/15/2016 16:30	☐
1606904-02	SW-LL-2	Water		6/14/2016 08:33	6/15/2016 16:30	☐
1606904-03	SW-LL-3	Water		6/14/2016 08:41	6/15/2016 16:30	☐
1606904-04	SW-LL-5	Water		6/14/2016 08:53	6/15/2016 16:30	☐
1606904-05	SW-LL-8	Water		6/14/2016 08:58	6/15/2016 16:30	☐
1606904-06	SW-LL-7	Water		6/14/2016 09:04	6/15/2016 16:30	☐
1606904-07	SW-LL-6	Water		6/14/2016 09:09	6/15/2016 16:30	☐
1606904-08	SW-LL-4	Water		6/14/2016 09:14	6/15/2016 16:30	☐
1606904-09	SW-LL-9	Water		6/14/2016 09:43	6/15/2016 16:30	☐
1606904-10	SW-LL-12	Water		6/14/2016 09:52	6/15/2016 16:30	☐
1606904-11	SW-LL-15	Water		6/14/2016 10:10	6/15/2016 16:30	☐
1606904-12	SW-LL-18	Water		6/14/2016 10:18	6/15/2016 16:30	☐
1606904-13	SW-LL-14	Water		6/14/2016 10:33	6/15/2016 16:30	☐
1606904-14	SW-LL-13	Water		6/14/2016 10:41	6/15/2016 16:30	☐
1606904-15	SW-LL-10	Water		6/14/2016 10:53	6/15/2016 16:30	☐
1606904-16	SW-LL-11	Water		6/14/2016 09:52	6/15/2016 16:30	☐
1606904-17	DUP-SW-LL	Water		6/14/2016	6/15/2016 16:30	☐

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1606904**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1606904

Case Narrative

Samples for the above noted Work Order were received on 6/15/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-1
Collection Date: 6/14/2016 08:30 AM

Work Order: 1606904
Lab ID: 1606904-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00066**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 13:09
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 01:38
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	6/17/2016 23:07
Arsenic	**1.7**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:07
Barium	**22**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:07
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:07
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:07
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:07
Iron	**310**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:07
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:07
Manganese	**9.6**		**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:07
Potassium	**1,200**		**17**	**200**	**µg/L**	1	6/17/2016 23:07
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:07
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:07
Zinc	**11**		**1.4**	**10**	**µg/L**	1	6/17/2016 23:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**220**		**48**	**100**	**µg/L**	1	6/15/2016 22:04
Sulfate	**2,900**		**410**	**1,000**	**µg/L**	1	6/15/2016 22:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-2
Collection Date: 6/14/2016 08:33 AM

Work Order: 1606904
Lab ID: 1606904-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00088**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 13:17
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 01:44
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**4.7**	J	**4.2**	**10**	**µg/L**	1	6/17/2016 23:13
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:13
Barium	**16**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:13
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:13
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:13
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:13
Iron	**410**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:13
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:13
Manganese	**5.6**		**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:13
Potassium	**1,300**		**17**	**200**	**µg/L**	1	6/17/2016 23:13
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:13
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:13
Zinc	**5.5**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:13
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 22:24
Sulfate	**2,700**		**410**	**1,000**	**µg/L**	1	6/15/2016 22:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-3
Collection Date: 6/14/2016 08:41 AM

Work Order: 1606904
Lab ID: 1606904-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 13:33
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 01:49
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	6/17/2016 23:18
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:18
Barium	**15**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:18
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:18
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:18
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:18
Iron	**580**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:18
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:18
Manganese	**5.6**		**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:18
Potassium	**2,300**		**17**	**200**	**µg/L**	1	6/17/2016 23:18
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:18
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:18
Zinc	**7.1**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 22:45
Sulfate	**1,300**		**410**	**1,000**	**µg/L**	1	6/15/2016 22:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-5
Collection Date: 6/14/2016 08:53 AM

Work Order: 1606904
Lab ID: 1606904-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00051**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 13:40
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 01:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**4.6**	J	**4.2**	**10**	**µg/L**	1	6/17/2016 23:24
Arsenic	**1.7**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:24
Barium	**20**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:24
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:24
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:24
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:24
Iron	**1,000**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:24
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:24
Manganese	**10**		**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:24
Potassium	**960**		**17**	**200**	**µg/L**	1	6/17/2016 23:24
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:24
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:24
Zinc	**6.7**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 23:05
Sulfate	**2,500**		**410**	**1,000**	**µg/L**	1	6/15/2016 23:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-8
Collection Date: 6/14/2016 08:58 AM

Work Order: 1606904
Lab ID: 1606904-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.0022**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 13:48
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:00
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**4.6**	J	**4.2**	**10**	**µg/L**	1	6/17/2016 23:29
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:29
Barium	**20**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:29
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:29
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:29
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:29
Iron	**1,700**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:29
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:29
Manganese	**4.9**	J	**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:29
Potassium	**1,300**		**17**	**200**	**µg/L**	1	6/17/2016 23:29
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:29
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:29
Zinc	**6.4**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:29
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 23:25
Sulfate	**2,100**		**410**	**1,000**	**µg/L**	1	6/15/2016 23:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-7
Collection Date: 6/14/2016 09:04 AM

Work Order: 1606904
Lab ID: 1606904-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 13:56
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:06
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**5.7**	J	**4.2**	**10**	**µg/L**	1	6/17/2016 23:34
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:34
Barium	**21**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:34
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:34
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:34
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:34
Iron	**1,200**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:34
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:34
Manganese	**5.2**		**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:34
Potassium	**600**		**17**	**200**	**µg/L**	1	6/17/2016 23:34
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:34
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:34
Zinc	**7.0**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 23:45
Sulfate	**3,100**		**410**	**1,000**	**µg/L**	1	6/15/2016 23:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-6
Collection Date: 6/14/2016 09:09 AM

Work Order: 1606904
Lab ID: 1606904-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00059**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 14:04
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:11
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	6/17/2016 23:40
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:40
Barium	**24**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:40
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:40
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:40
Copper	**0.29**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2016 23:40
Iron	**290**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:40
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:40
Manganese	**1.9**	J	**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:40
Potassium	**970**		**17**	**200**	**µg/L**	1	6/17/2016 23:40
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:40
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:40
Zinc	**5.6**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:40
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 09:05
Sulfate	**2,500**		**410**	**1,000**	**µg/L**	1	6/16/2016 09:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-4
Collection Date: 6/14/2016 09:14 AM

Work Order: 1606904
Lab ID: 1606904-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/20/16			Analyst: **JEC**
Mercury	**0.00052**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 14:12
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:17
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Aluminum	**5.1**	J	**4.2**	**10**	**µg/L**	1	6/17/2016 23:45
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:45
Barium	**23**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:45
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:45
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:45
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:45
Iron	**650**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:45
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:45
Manganese	**2.9**	J	**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:45
Potassium	**750**		**17**	**200**	**µg/L**	1	6/17/2016 23:45
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:45
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:45
Zinc	**10**		**1.4**	**10**	**µg/L**	1	6/17/2016 23:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 10:06
Sulfate	**3,100**		**410**	**1,000**	**µg/L**	1	6/16/2016 10:06

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-9
Collection Date: 6/14/2016 09:43 AM

Work Order: 1606904
Lab ID: 1606904-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00041**	J	**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 14:19
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:38
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**5.9**	J	**4.2**	**10**	**µg/L**	1	6/17/2016 23:51
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:51
Barium	**18**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:51
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:51
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:51
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:51
Iron	**850**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:51
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:51
Manganese	**4.2**	J	**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:51
Potassium	**650**		**17**	**200**	**µg/L**	1	6/17/2016 23:51
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:51
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:51
Zinc	**9.1**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:51
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 10:26
Sulfate	**3,200**		**410**	**1,000**	**µg/L**	1	6/16/2016 10:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-12
Collection Date: 6/14/2016 09:52 AM

Work Order: 1606904
Lab ID: 1606904-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00045**	J	**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 14:35
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:44
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**4.6**	J	**4.2**	**10**	**µg/L**	1	6/17/2016 23:56
Arsenic	**1.0**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2016 23:56
Barium	**8.6**		**2.2**	**5.0**	**µg/L**	1	6/17/2016 23:56
Cadmium	U		0.050	2.0	µg/L	1	6/17/2016 23:56
Chromium	U		0.65	5.0	µg/L	1	6/17/2016 23:56
Copper	U		0.28	5.0	µg/L	1	6/17/2016 23:56
Iron	**430**		**4.6**	**80**	**µg/L**	1	6/17/2016 23:56
Lead	U		0.33	5.0	µg/L	1	6/17/2016 23:56
Manganese	**1.6**	J	**0.51**	**5.0**	**µg/L**	1	6/17/2016 23:56
Potassium	**570**		**17**	**200**	**µg/L**	1	6/17/2016 23:56
Selenium	U		0.90	5.0	µg/L	1	6/17/2016 23:56
Silver	U		0.050	5.0	µg/L	1	6/17/2016 23:56
Zinc	**8.2**	J	**1.4**	**10**	**µg/L**	1	6/17/2016 23:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 10:46
Sulfate	**3,900**		**410**	**1,000**	**µg/L**	1	6/16/2016 10:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-15
Collection Date: 6/14/2016 10:10 AM

Work Order: 1606904
Lab ID: 1606904-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/20/16			Analyst: **JEC**
Mercury	**0.00059**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 14:43
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:49
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/18/2016 00:17
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2016 00:17
Barium	**13**		**2.2**	**5.0**	**µg/L**	1	6/18/2016 00:17
Cadmium	U		0.050	2.0	µg/L	1	6/18/2016 00:17
Chromium	U		0.65	5.0	µg/L	1	6/18/2016 00:17
Copper	**0.39**	J	**0.28**	**5.0**	**µg/L**	1	6/18/2016 00:17
Iron	**1,500**		**4.6**	**80**	**µg/L**	1	6/18/2016 00:17
Lead	**0.39**	J	**0.33**	**5.0**	**µg/L**	1	6/18/2016 00:17
Manganese	**6.8**		**0.51**	**5.0**	**µg/L**	1	6/18/2016 00:17
Potassium	**1,100**		**17**	**200**	**µg/L**	1	6/18/2016 00:17
Selenium	U		0.90	5.0	µg/L	1	6/18/2016 00:17
Silver	U		0.050	5.0	µg/L	1	6/18/2016 00:17
Zinc	**7.8**	J	**1.4**	**10**	**µg/L**	1	6/18/2016 00:17
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 11:07
Sulfate	**3,800**		**410**	**1,000**	**µg/L**	1	6/16/2016 11:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-18
Collection Date: 6/14/2016 10:18 AM

Work Order: 1606904
Lab ID: 1606904-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.0025**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 14:50
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 02:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**9.2**	J	**4.2**	**10**	**µg/L**	1	6/18/2016 00:23
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2016 00:23
Barium	**9.4**		**2.2**	**5.0**	**µg/L**	1	6/18/2016 00:23
Cadmium	U		0.050	2.0	µg/L	1	6/18/2016 00:23
Chromium	U		0.65	5.0	µg/L	1	6/18/2016 00:23
Copper	**0.38**	J	**0.28**	**5.0**	**µg/L**	1	6/18/2016 00:23
Iron	**840**		**4.6**	**80**	**µg/L**	1	6/18/2016 00:23
Lead	U		0.33	5.0	µg/L	1	6/18/2016 00:23
Manganese	**3.1**	J	**0.51**	**5.0**	**µg/L**	1	6/18/2016 00:23
Potassium	**1,600**		**17**	**200**	**µg/L**	1	6/18/2016 00:23
Selenium	U		0.90	5.0	µg/L	1	6/18/2016 00:23
Silver	U		0.050	5.0	µg/L	1	6/18/2016 00:23
Zinc	**3.3**	J	**1.4**	**10**	**µg/L**	1	6/18/2016 00:23
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 11:27
Sulfate	**2,000**		**410**	**1,000**	**µg/L**	1	6/16/2016 11:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-14
Collection Date: 6/14/2016 10:33 AM

Work Order: 1606904
Lab ID: 1606904-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/20/16			Analyst: **JEC**
Mercury	**0.00063**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 14:58
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 03:00
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Aluminum	**13**		**4.2**	**10**	**µg/L**	1	6/18/2016 00:28
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2016 00:28
Barium	**13**		**2.2**	**5.0**	**µg/L**	1	6/18/2016 00:28
Cadmium	U		0.050	2.0	µg/L	1	6/18/2016 00:28
Chromium	U		0.65	5.0	µg/L	1	6/18/2016 00:28
Copper	**0.32**	J	**0.28**	**5.0**	**µg/L**	1	6/18/2016 00:28
Iron	**620**		**4.6**	**80**	**µg/L**	1	6/18/2016 00:28
Lead	U		0.33	5.0	µg/L	1	6/18/2016 00:28
Manganese	**3.7**	J	**0.51**	**5.0**	**µg/L**	1	6/18/2016 00:28
Potassium	**1,100**		**17**	**200**	**µg/L**	1	6/18/2016 00:28
Selenium	U		0.90	5.0	µg/L	1	6/18/2016 00:28
Silver	U		0.050	5.0	µg/L	1	6/18/2016 00:28
Zinc	**5.9**	J	**1.4**	**10**	**µg/L**	1	6/18/2016 00:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 11:47
Sulfate	**5,900**		**410**	**1,000**	**µg/L**	1	6/16/2016 11:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-13
Collection Date: 6/14/2016 10:41 AM

Work Order: 1606904
Lab ID: 1606904-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/20/16			Analyst: **JEC**
Mercury	**0.00054**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 15:06
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 03:17
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Aluminum	**7.6**	J	**4.2**	**10**	**µg/L**	1	6/18/2016 00:33
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2016 00:33
Barium	**9.8**		**2.2**	**5.0**	**µg/L**	1	6/18/2016 00:33
Cadmium	U		0.050	2.0	µg/L	1	6/18/2016 00:33
Chromium	U		0.65	5.0	µg/L	1	6/18/2016 00:33
Copper	U		0.28	5.0	µg/L	1	6/18/2016 00:33
Iron	**1,200**		**4.6**	**80**	**µg/L**	1	6/18/2016 00:33
Lead	U		0.33	5.0	µg/L	1	6/18/2016 00:33
Manganese	**3.3**	J	**0.51**	**5.0**	**µg/L**	1	6/18/2016 00:33
Potassium	**970**		**17**	**200**	**µg/L**	1	6/18/2016 00:33
Selenium	U		0.90	5.0	µg/L	1	6/18/2016 00:33
Silver	U		0.050	5.0	µg/L	1	6/18/2016 00:33
Zinc	**5.8**	J	**1.4**	**10**	**µg/L**	1	6/18/2016 00:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2016 21:04
Sulfate	**2,600**		**410**	**1,000**	**µg/L**	1	6/15/2016 21:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-10
Collection Date: 6/14/2016 10:53 AM

Work Order: 1606904
Lab ID: 1606904-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 6/20/16			Analyst: **JEC**
Mercury	**0.00058**		**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 15:29
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 03:49
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 6/17/16			Analyst: **RH**
Aluminum	**11**		**4.2**	**10**	**µg/L**	1	6/18/2016 00:49
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2016 00:49
Barium	**9.5**		**2.2**	**5.0**	**µg/L**	1	6/18/2016 00:49
Cadmium	U		0.050	2.0	µg/L	1	6/18/2016 00:49
Chromium	U		0.65	5.0	µg/L	1	6/18/2016 00:49
Copper	**0.28**	J	**0.28**	**5.0**	**µg/L**	1	6/18/2016 00:49
Iron	**1,200**		**4.6**	**80**	**µg/L**	1	6/18/2016 00:49
Lead	U		0.33	5.0	µg/L	1	6/18/2016 00:49
Manganese	**4.8**	J	**0.51**	**5.0**	**µg/L**	1	6/18/2016 00:49
Potassium	**940**		**17**	**200**	**µg/L**	1	6/18/2016 00:49
Selenium	U		0.90	5.0	µg/L	1	6/18/2016 00:49
Silver	U		0.050	5.0	µg/L	1	6/18/2016 00:49
Zinc	**6.2**	J	**1.4**	**10**	**µg/L**	1	6/18/2016 00:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 12:07
Sulfate	**2,000**		**410**	**1,000**	**µg/L**	1	6/16/2016 12:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-11
Collection Date: 6/14/2016 09:52 AM

Work Order: 1606904
Lab ID: 1606904-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00047**	J	**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 15:37
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 03:54
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**5.2**	J	**4.2**	**10**	**µg/L**	1	6/18/2016 00:55
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2016 00:55
Barium	**14**		**2.2**	**5.0**	**µg/L**	1	6/18/2016 00:55
Cadmium	U		0.050	2.0	µg/L	1	6/18/2016 00:55
Chromium	U		0.65	5.0	µg/L	1	6/18/2016 00:55
Copper	U		0.28	5.0	µg/L	1	6/18/2016 00:55
Iron	**480**		**4.6**	**80**	**µg/L**	1	6/18/2016 00:55
Lead	U		0.33	5.0	µg/L	1	6/18/2016 00:55
Manganese	**6.4**		**0.51**	**5.0**	**µg/L**	1	6/18/2016 00:55
Potassium	**660**		**17**	**200**	**µg/L**	1	6/18/2016 00:55
Selenium	U		0.90	5.0	µg/L	1	6/18/2016 00:55
Silver	U		0.050	5.0	µg/L	1	6/18/2016 00:55
Zinc	**7.1**	J	**1.4**	**10**	**µg/L**	1	6/18/2016 00:55
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 12:28
Sulfate	**3,600**		**410**	**1,000**	**µg/L**	1	6/16/2016 12:28

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-SW-LL
Collection Date: 6/14/2016

Work Order: 1606904
Lab ID: 1606904-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/20/16		Analyst: **JEC**
Mercury	**0.00043**	J	**0.00020**	**0.00050**	**µg/L**	1	6/20/2016 16:01
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	6/18/2016 04:00
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 6/17/16		Analyst: **RH**
Aluminum	**4.4**	J	**4.2**	**10**	**µg/L**	1	6/18/2016 01:00
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2016 01:00
Barium	**23**		**2.2**	**5.0**	**µg/L**	1	6/18/2016 01:00
Cadmium	U		0.050	2.0	µg/L	1	6/18/2016 01:00
Chromium	U		0.65	5.0	µg/L	1	6/18/2016 01:00
Copper	**0.29**	J	**0.28**	**5.0**	**µg/L**	1	6/18/2016 01:00
Iron	**650**		**4.6**	**80**	**µg/L**	1	6/18/2016 01:00
Lead	U		0.33	5.0	µg/L	1	6/18/2016 01:00
Manganese	**3.7**	J	**0.51**	**5.0**	**µg/L**	1	6/18/2016 01:00
Potassium	**750**		**17**	**200**	**µg/L**	1	6/18/2016 01:00
Selenium	U		0.90	5.0	µg/L	1	6/18/2016 01:00
Silver	U		0.050	5.0	µg/L	1	6/18/2016 01:00
Zinc	**10**		**1.4**	**10**	**µg/L**	1	6/18/2016 01:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 12:48
Sulfate	**3,100**		**410**	**1,000**	**µg/L**	1	6/16/2016 12:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 21-Jun-16

Client: ERM, Inc

Work Order: 1606904

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87468** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 12:37 PM**

Client ID: Run ID: **HG3_160620A** SeqNo: **3883638** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 01:25 PM**

Client ID: Run ID: **HG3_160620A** SeqNo: **3883644** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 02:27 PM**

Client ID: Run ID: **HG3_160620A** SeqNo: **3883653** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1606904-14DMS** Units: **ng/L** Analysis Date: **6/20/2016 03:14 PM**

Client ID: **SW-LL-13** Run ID: **HG3_160620A** SeqNo: **3883661** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.6	0.50	5	0.543	101	71-125	0			

MS Sample ID: **1606904-16DMS** Units: **ng/L** Analysis Date: **6/20/2016 03:45 PM**

Client ID: **SW-LL-11** Run ID: **HG3_160620A** SeqNo: **3883665** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.6	0.50	5	0.471	103	71-125	0			

MSD Sample ID: **1606904-14DMSD** Units: **ng/L** Analysis Date: **6/20/2016 03:22 PM**

Client ID: **SW-LL-13** Run ID: **HG3_160620A** SeqNo: **3883662** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.65	0.50	5	0.543	102	71-125	5.6	0.889	24	

MSD Sample ID: **1606904-16DMSD** Units: **ng/L** Analysis Date: **6/20/2016 03:53 PM**

Client ID: **SW-LL-11** Run ID: **HG3_160620A** SeqNo: **3883666** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.51	0.50	5	0.471	101	71-125	5.6	1.62	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606904
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87468** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-87468-87468** Units: **ng/L** Analysis Date: **6/20/2016 12:21 PM**
Client ID: Run ID: **HG3_160620A** SeqNo: **3883636** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.35	0.50	5	0	107	77-123	0			

The following samples were analyzed in this batch:

1606904-01D	1606904-02D	1606904-03D
1606904-04D	1606904-05D	1606904-06D
1606904-07D	1606904-08D	1606904-09D
1606904-10D	1606904-11D	1606904-12D
1606904-13D	1606904-14D	1606904-15D
1606904-16D	1606904-17D	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606904
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87458** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-87458-87458** Units: **mg/L** Analysis Date: **6/17/2016 10:36 PM**
Client ID: Run ID: **ICPMS2_160617A** SeqNo: **3881379** Prep Date: **6/17/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-87458-87458** Units: **mg/L** Analysis Date: **6/17/2016 10:41 PM**
Client ID: Run ID: **ICPMS2_160617A** SeqNo: **3881380** Prep Date: **6/17/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1023	0.010	0.1	0	102	80-120	0			
Arsenic	0.1048	0.0050	0.1	0	105	80-120	0			
Barium	0.09901	0.0050	0.1	0	99	80-120	0			
Cadmium	0.09825	0.0020	0.1	0	98.2	80-120	0			
Chromium	0.09742	0.0050	0.1	0	97.4	80-120	0			
Copper	0.1027	0.0050	0.1	0	103	80-120	0			
Iron	10.09	0.080	10	0	101	80-120	0			
Lead	0.09428	0.0050	0.1	0	94.3	80-120	0			
Manganese	0.09889	0.0050	0.1	0	98.9	80-120	0			
Potassium	10.22	0.20	10	0	102	80-120	0			
Selenium	0.1006	0.0050	0.1	0	101	80-120	0			
Silver	0.09816	0.0050	0.1	0	98.2	80-120	0			
Zinc	0.1011	0.010	0.1	0	101	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606904
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87458** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1606904-14AMS** Units: **mg/L** Analysis Date: **6/18/2016 12:39 AM**
Client ID: **SW-LL-13** Run ID: **ICPMS2_160617A** SeqNo: **3881402** Prep Date: **6/17/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1104	0.010	0.1	0.007608	103	75-125	0			
Arsenic	0.1069	0.0050	0.1	0.001585	105	75-125	0			
Barium	0.1158	0.0050	0.1	0.009765	106	75-125	0			
Cadmium	0.1055	0.0020	0.1	-1.884E-05	106	75-125	0			
Chromium	0.0964	0.0050	0.1	0.0000693	96.3	75-125	0			
Copper	0.1022	0.0050	0.1	0.000237	102	75-125	0			
Iron	11.03	0.080	10	1.224	98.1	75-125	0			
Lead	0.09508	0.0050	0.1	0.00006897	95	75-125	0			
Manganese	0.1041	0.0050	0.1	0.003289	101	75-125	0			
Potassium	11.01	0.20	10	0.9735	100	75-125	0			
Selenium	0.09419	0.0050	0.1	-4.071E-05	94.2	75-125	0			
Silver	0.09495	0.0050	0.1	-0.0000109	95	75-125	0			
Zinc	0.1062	0.010	0.1	0.005833	100	75-125	0			

MSD Sample ID: **1606904-14AMSD** Units: **mg/L** Analysis Date: **6/18/2016 12:44 AM**
Client ID: **SW-LL-13** Run ID: **ICPMS2_160617A** SeqNo: **3881403** Prep Date: **6/17/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1127	0.010	0.1	0.007608	105	75-125	0.1104	2.06	20	
Arsenic	0.107	0.0050	0.1	0.001585	105	75-125	0.1069	0.0935	20	
Barium	0.1166	0.0050	0.1	0.009765	107	75-125	0.1158	0.688	20	
Cadmium	0.1068	0.0020	0.1	-1.884E-05	107	75-125	0.1055	1.22	20	
Chromium	0.09711	0.0050	0.1	0.0000693	97	75-125	0.0964	0.734	20	
Copper	0.1035	0.0050	0.1	0.000237	103	75-125	0.1022	1.26	20	
Iron	11.17	0.080	10	1.224	99.5	75-125	11.03	1.26	20	
Lead	0.09635	0.0050	0.1	0.00006897	96.3	75-125	0.09508	1.33	20	
Manganese	0.1061	0.0050	0.1	0.003289	103	75-125	0.1041	1.9	20	
Potassium	11.29	0.20	10	0.9735	103	75-125	11.01	2.51	20	
Selenium	0.1016	0.0050	0.1	-4.071E-05	102	75-125	0.09419	7.57	20	
Silver	0.09683	0.0050	0.1	-0.0000109	96.8	75-125	0.09495	1.96	20	
Zinc	0.1064	0.010	0.1	0.005833	101	75-125	0.1062	0.188	20	

The following samples were analyzed in this batch:

1606904-01A	1606904-02A	1606904-03A
1606904-04A	1606904-05A	1606904-06A
1606904-07A	1606904-08A	1606904-09A
1606904-10A	1606904-11A	1606904-12A
1606904-13A	1606904-14A	1606904-15A
1606904-16A	1606904-17A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606904
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87459** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK	Sample ID: **MBLK-87459-87459**			Units: **mg/L**			Analysis Date: **6/18/2016 01:27 AM**			
Client ID:	Run ID: **ICPMS2_160617A**			SeqNo: **3881411**			Prep Date: **6/17/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	U	2.0								

LCS	Sample ID: **LCS-87459-87459**			Units: **mg/L**			Analysis Date: **6/18/2016 01:33 AM**			
Client ID:	Run ID: **ICPMS2_160617A**			SeqNo: **3881412**			Prep Date: **6/17/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	66.57	2.0	66.15	0	101	80-120	0			

The following samples were analyzed in this batch:

1606904-01C	1606904-02C	1606904-03C
1606904-04C	1606904-05C	1606904-06C
1606904-07C	1606904-08C	1606904-09C
1606904-10C	1606904-11C	1606904-12C
1606904-13C	1606904-14C	1606904-15C
1606904-16C	1606904-17C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606904
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R189673** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R189673** Units: **mg/L** Analysis Date: **6/15/2016 08:23 PM**
Client ID: Run ID: **IC3_160615B** SeqNo: **3878385** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R189673** Units: **mg/L** Analysis Date: **6/15/2016 08:43 PM**
Client ID: Run ID: **IC3_160615B** SeqNo: **3878386** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.912	0.10	2	0	95.6	81-116	0			
Sulfate	9.83	1.0	10	0	98.3	85-110	0			

MS Sample ID: **1606904-14B MS** Units: **mg/L** Analysis Date: **6/15/2016 09:24 PM**
Client ID: **SW-LL-13** Run ID: **IC3_160615B** SeqNo: **3878388** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	11.17	0.50	10	0	112	75-125	0			
Sulfate	55.56	5.0	50	2.648	106	75-125	0			

MSD Sample ID: **1606904-14B MSD** Units: **mg/L** Analysis Date: **6/15/2016 09:44 PM**
Client ID: **SW-LL-13** Run ID: **IC3_160615B** SeqNo: **3878389** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	11.25	0.50	10	0	112	75-125	11.17	0.714	20	
Sulfate	55.58	5.0	50	2.648	106	75-125	55.56	0.0216	20	

The following samples were analyzed in this batch:

1606904-01B	1606904-02B	1606904-03B
1606904-04B	1606904-05B	1606904-06B
1606904-07B	1606904-08B	1606904-09B
1606904-10B	1606904-11B	1606904-12B
1606904-13B	1606904-14B	1606904-15B
1606904-16B	1606904-17B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Chain of Custody Form

Page 1 of 2

COC ID: 29937

ALS Project Manager: | ALS Work Order #: 1606904

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - lab filter)
Work Order		Project Number		B	Hardness
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-LL-1	6-14-16	0830	W	HNO_3	4	X	X	X	X							
2	SW-LL-2		0833				X	X	X	X							
3	SW-LL-3		0841				X	X	X	X							
4	SW-LL-5		0853				X	X	X	X							
5	SW-LL-8		0858				X	X	X	X							
6	SW-LL-7		0904				X	X	X	X							
7	SW-LL-6		0909				X	X	X	X							
8	SW-LL-4		0914				X	X	X	X							
9	SW-LL-9		0943				X	X	X	X							
10	SW-LL-12		0952				X	X	X	X							

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

	Date:	Time:		
Relinquished by:	6-15-16	1130	Received by:	Notes: 6/15/16 1630
Relinquished by:	6/15/16	1530	Received by (Laboratory):	
Logged by (Laboratory): Ken	6/15/16	1035	Checked by (Laboratory):	

Cooler ID	Cooler Temp
	3.8°C
	3.4°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other:

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page ____ of ____

COC ID: 29938

ALS Project Manager: | ALS Work Order #: 1606904

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - lab filter)
Work Order		Project Number		B	Hardness
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	MS/MSD
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	SW-LL-15	6-14-16	1010	W	HNO3	4	X	X	X	X							
12	SW-LL-18		1033 1018	W		4	X	X	X	X							
13	SW-LL-14		1044 1033	W		4	X	X	X	X							
14	SW-LL-13		1041	W		8	X	X	X	X		X					
15	SW-LL-10		1053	W		4	X	X	X	X							
16	SW-LL-11		0952	W		4	X	X	X	X							
17	Dup-SW-LL		—	W		4	X	X	X	X							
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Brian Alexander

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other ____

Results Due Date:

	Date:	Time:		
Relinquished by:	6-15-16	1130	Received by:	Notes: 6/15/16 1630
Relinquished by:	6/15/16	1530	Received by (Laboratory):	
Logged by (Laboratory): KW	6/15/16	1635	Checked by (Laboratory):	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- ☒ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☑ Level IV SW846/CLP
- ☐ Other ____
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **15-Jun-16 16:30**

Work Order: **1606904** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 15-Jun-16 (Date) Reviewed by: Bill Carey (eSignature) 16-Jun-16 (Date)

Matrices: Water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.4/3.4, 3.8/3.8 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/15/2016 4:43:59 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

24-Jun-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1606908**

Dear Marty,

ALS Environmental received 15 samples on 15-Jun-2016 04:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 29.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 24-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1606908**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1606908-01	MW-5S	Water		6/14/2016 08:45	6/15/2016 16:30	☐
1606908-02	MW-5D	Water		6/14/2016 09:45	6/15/2016 16:30	☐
1606908-03	MW-4S	Water		6/14/2016 10:50	6/15/2016 16:30	☐
1606908-04	MW-4D	Water		6/14/2016 11:35	6/15/2016 16:30	☐
1606908-05	MW-1S	Water		6/14/2016 13:55	6/15/2016 16:30	☐
1606908-06	MW-1D	Water		6/14/2016 14:40	6/15/2016 16:30	☐
1606908-07	MW-2S	Water		6/14/2016 16:00	6/15/2016 16:30	☐
1606908-08	MW-2D	Water		6/14/2016 16:30	6/15/2016 16:30	☐
1606908-09	DUP-1	Water		6/14/2016	6/15/2016 16:30	☐
1606908-10	MW-6D	Water		6/15/2016 08:20	6/15/2016 16:30	☐
1606908-11	MW-6S	Water		6/15/2016 09:00	6/15/2016 16:30	☐
1606908-12	MW-7D	Water		6/15/2016 10:15	6/15/2016 16:30	☐
1606908-13	MW-7S	Water		6/15/2016 09:45	6/15/2016 16:30	☐
1606908-14	MW-8D	Water		6/15/2016 11:10	6/15/2016 16:30	☐
1606908-15	MW-8S	Water		6/15/2016 10:40	6/15/2016 16:30	☐

ALS Group USA, Corp

Date: 24-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1606908**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 24-Jun-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1606908

Case Narrative

Samples for the above noted Work Order were received on 6/15/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5S
Collection Date: 6/14/2016 08:45 AM

Work Order: 1606908
Lab ID: 1606908-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.0018**		**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 11:55
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**62**		**4.2**	**10**	**µg/L**	1	6/21/2016 18:50
Arsenic	**4.6**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 20:11
Barium	**55**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 20:11
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 20:11
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 20:11
Copper	**1.5**	J	**0.28**	**5.0**	**µg/L**	1	6/20/2016 20:11
Iron	**3,400**		**4.6**	**80**	**µg/L**	1	6/20/2016 20:11
Lead	U		0.33	5.0	µg/L	1	6/20/2016 20:11
Manganese	**480**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 20:11
Potassium	**4,400**		**17**	**200**	**µg/L**	1	6/21/2016 18:50
Selenium	**1.6**	J	**0.90**	**5.0**	**µg/L**	1	6/20/2016 20:11
Silver	U		0.050	5.0	µg/L	1	6/20/2016 20:11
Zinc	**10**		**1.4**	**10**	**µg/L**	1	6/20/2016 20:11
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 17:11
Sulfate	**190,000**		**10,000**	**25,000**	**µg/L**	25	6/17/2016 02:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 6/14/2016 09:45 AM

Work Order: 1606908
Lab ID: 1606908-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/21/2016 12:02
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **RH**
Aluminum	**8.1**	J	**4.2**	**10**	**µg/L**	1	6/20/2016 20:17
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 20:17
Barium	**77**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 20:17
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 20:17
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 20:17
Copper	U		0.28	5.0	µg/L	1	6/20/2016 20:17
Iron	**9,400**		**4.6**	**80**	**µg/L**	1	6/20/2016 20:17
Lead	U		0.33	5.0	µg/L	1	6/20/2016 20:17
Manganese	**260**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 20:17
Potassium	**4,200**		**17**	**200**	**µg/L**	1	6/21/2016 18:56
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 20:17
Silver	U		0.050	5.0	µg/L	1	6/20/2016 20:17
Zinc	U		1.4	10	µg/L	1	6/20/2016 20:17
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 16:10
Sulfate	**40,000**		**2,000**	**5,000**	**µg/L**	5	6/17/2016 01:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 6/14/2016 10:50 AM

Work Order: 1606908
Lab ID: 1606908-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.00075**		**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 12:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**27**		**4.2**	**10**	**µg/L**	1	6/21/2016 19:03
Arsenic	**3.8**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 20:24
Barium	**150**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 20:24
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 20:24
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 20:24
Copper	**0.95**	J	**0.28**	**5.0**	**µg/L**	1	6/20/2016 20:24
Iron	**4,900**		**4.6**	**80**	**µg/L**	1	6/20/2016 20:24
Lead	U		0.33	5.0	µg/L	1	6/20/2016 20:24
Manganese	**780**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 20:24
Potassium	**2,800**		**17**	**200**	**µg/L**	1	6/21/2016 19:03
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 20:24
Silver	U		0.050	5.0	µg/L	1	6/20/2016 20:24
Zinc	**8.6**	J	**1.4**	**10**	**µg/L**	1	6/20/2016 20:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**75**	J	**48**	**100**	**µg/L**	1	6/16/2016 16:31
Sulfate	**200,000**		**10,000**	**25,000**	**µg/L**	25	6/17/2016 01:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 6/14/2016 11:35 AM

Work Order: 1606908
Lab ID: 1606908-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/21/2016 12:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **RH**
Aluminum	**8.7**	J	**4.2**	**10**	**µg/L**	1	6/20/2016 20:30
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 20:30
Barium	**120**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 20:30
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 20:30
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 20:30
Copper	U		0.28	5.0	µg/L	1	6/20/2016 20:30
Iron	**24,000**		**4.6**	**80**	**µg/L**	1	6/20/2016 20:30
Lead	U		0.33	5.0	µg/L	1	6/20/2016 20:30
Manganese	**370**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 20:30
Potassium	**6,500**		**17**	**200**	**µg/L**	1	6/21/2016 19:09
Selenium	**1.1**	J	**0.90**	**5.0**	**µg/L**	1	6/20/2016 20:30
Silver	U		0.050	5.0	µg/L	1	6/20/2016 20:30
Zinc	**1.9**	J	**1.4**	**10**	**µg/L**	1	6/20/2016 20:30
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 16:51
Sulfate	**91,000**		**4,100**	**10,000**	**µg/L**	10	6/17/2016 01:57

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1S
Collection Date: 6/14/2016 01:55 PM

Work Order: 1606908
Lab ID: 1606908-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.00049**	J	**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 12:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **RH**
Aluminum	**5.9**	J	**4.2**	**10**	**µg/L**	1	6/20/2016 20:36
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 20:36
Barium	**28**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 20:36
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 20:36
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 20:36
Copper	**0.42**	J	**0.28**	**5.0**	**µg/L**	1	6/20/2016 20:36
Iron	**530**		**4.6**	**80**	**µg/L**	1	6/20/2016 20:36
Lead	U		0.33	5.0	µg/L	1	6/20/2016 20:36
Manganese	**140**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 20:36
Potassium	**2,200**		**17**	**200**	**µg/L**	1	6/21/2016 19:15
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 20:36
Silver	U		0.050	5.0	µg/L	1	6/20/2016 20:36
Zinc	U		1.4	10	µg/L	1	6/20/2016 20:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**870**		**48**	**100**	**µg/L**	1	6/16/2016 15:50
Sulfate	**26,000**		**2,000**	**5,000**	**µg/L**	5	6/17/2016 00:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 6/14/2016 02:40 PM

Work Order: 1606908
Lab ID: 1606908-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/21/2016 12:57
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**13**		**4.2**	**10**	**µg/L**	1	6/21/2016 19:34
Arsenic	**1.7**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 20:55
Barium	**74**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 20:55
Cadmium	**0.050**	J	**0.050**	**2.0**	**µg/L**	1	6/20/2016 20:55
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 20:55
Copper	U		0.28	5.0	µg/L	1	6/20/2016 20:55
Iron	**7,300**		**4.6**	**80**	**µg/L**	1	6/20/2016 20:55
Lead	U		0.33	5.0	µg/L	1	6/20/2016 20:55
Manganese	**740**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 20:55
Potassium	**2,100**		**17**	**200**	**µg/L**	1	6/21/2016 19:34
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 20:55
Silver	U		0.050	5.0	µg/L	1	6/20/2016 20:55
Zinc	U		1.4	10	µg/L	1	6/20/2016 20:55
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**850**		**48**	**100**	**µg/L**	1	6/16/2016 17:31
Sulfate	U		410	1,000	µg/L	1	6/16/2016 17:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 6/14/2016 04:00 PM

Work Order: 1606908
Lab ID: 1606908-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.0028**		**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 13:05
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**62**		**4.2**	**10**	**µg/L**	1	6/21/2016 19:59
Arsenic	**6.9**		**0.87**	**5.0**	**µg/L**	1	6/20/2016 21:01
Barium	**39**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 21:01
Cadmium	**0.31**	J	**0.050**	**2.0**	**µg/L**	1	6/20/2016 21:01
Chromium	**0.89**	J	**0.65**	**5.0**	**µg/L**	1	6/20/2016 21:01
Copper	**1.2**	J	**0.28**	**5.0**	**µg/L**	1	6/20/2016 21:01
Iron	**2,800**		**4.6**	**80**	**µg/L**	1	6/20/2016 21:01
Lead	**0.63**	J	**0.33**	**5.0**	**µg/L**	1	6/20/2016 21:01
Manganese	**79**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 21:01
Potassium	**2,400**		**17**	**200**	**µg/L**	1	6/21/2016 19:59
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 21:01
Silver	**0.25**	J	**0.050**	**5.0**	**µg/L**	1	6/20/2016 21:01
Zinc	U		1.4	10	µg/L	1	6/20/2016 21:01
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 17:51
Sulfate	**1,800**		**410**	**1,000**	**µg/L**	1	6/16/2016 17:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 6/14/2016 04:30 PM

Work Order: 1606908
Lab ID: 1606908-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/21/2016 13:13
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**28**		**4.2**	**10**	**µg/L**	1	6/21/2016 20:12
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 21:26
Barium	**89**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 21:26
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 21:26
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 21:26
Copper	U		0.28	5.0	µg/L	1	6/20/2016 21:26
Iron	**2,900**		**4.6**	**80**	**µg/L**	1	6/20/2016 21:26
Lead	U		0.33	5.0	µg/L	1	6/20/2016 21:26
Manganese	**2,100**		**5.1**	**50**	**µg/L**	10	6/21/2016 20:06
Potassium	**3,700**		**17**	**200**	**µg/L**	1	6/21/2016 20:12
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 21:26
Silver	U		0.050	5.0	µg/L	1	6/20/2016 21:26
Zinc	U		1.4	10	µg/L	1	6/20/2016 21:26
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 18:12
Sulfate	**1,800**		**410**	**1,000**	**µg/L**	1	6/16/2016 18:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-1
Collection Date: 6/14/2016

Work Order: 1606908
Lab ID: 1606908-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.00072**		**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 13:20
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**21**		**4.2**	**10**	**µg/L**	1	6/21/2016 20:18
Arsenic	**3.6**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 21:32
Barium	**160**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 21:32
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 21:32
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 21:32
Copper	**1.0**	J	**0.28**	**5.0**	**µg/L**	1	6/20/2016 21:32
Iron	**4,900**		**4.6**	**80**	**µg/L**	1	6/20/2016 21:32
Lead	U		0.33	5.0	µg/L	1	6/20/2016 21:32
Manganese	**820**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 21:32
Potassium	**2,900**		**17**	**200**	**µg/L**	1	6/21/2016 20:18
Selenium	**1.4**	J	**0.90**	**5.0**	**µg/L**	1	6/20/2016 21:32
Silver	U		0.050	5.0	µg/L	1	6/20/2016 21:32
Zinc	**7.9**	J	**1.4**	**10**	**µg/L**	1	6/20/2016 21:32
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**65**	J	**48**	**100**	**µg/L**	1	6/16/2016 15:30
Sulfate	**200,000**		**10,000**	**25,000**	**µg/L**	25	6/17/2016 00:36

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 6/15/2016 08:20 AM

Work Order: 1606908
Lab ID: 1606908-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/21/2016 13:28
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**10**		**4.2**	**10**	**µg/L**	1	6/21/2016 20:24
Arsenic	**3.5**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 21:39
Barium	**100**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 21:39
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 21:39
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 21:39
Copper	U		0.28	5.0	µg/L	1	6/20/2016 21:39
Iron	**9,400**		**4.6**	**80**	**µg/L**	1	6/20/2016 21:39
Lead	U		0.33	5.0	µg/L	1	6/20/2016 21:39
Manganese	**280**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 21:39
Potassium	**2,300**		**17**	**200**	**µg/L**	1	6/21/2016 20:24
Selenium	**1.1**	J	**0.90**	**5.0**	**µg/L**	1	6/20/2016 21:39
Silver	U		0.050	5.0	µg/L	1	6/20/2016 21:39
Zinc	**1.6**	J	**1.4**	**10**	**µg/L**	1	6/20/2016 21:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 19:53
Sulfate	**160,000**		**8,100**	**20,000**	**µg/L**	20	6/16/2016 20:13

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 6/15/2016 09:00 AM

Work Order: 1606908
Lab ID: 1606908-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 13:44
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**35**		**4.2**	**10**	**µg/L**	1	6/21/2016 20:31
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 21:45
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 21:45
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 21:45
Chromium	**0.67**	J	**0.65**	**5.0**	**µg/L**	1	6/20/2016 21:45
Copper	**2.6**	J	**0.28**	**5.0**	**µg/L**	1	6/20/2016 21:45
Iron	**74**	J	**4.6**	**80**	**µg/L**	1	6/20/2016 21:45
Lead	U		0.33	5.0	µg/L	1	6/20/2016 21:45
Manganese	**550**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 21:45
Potassium	**1,300**		**17**	**200**	**µg/L**	1	6/21/2016 20:31
Selenium	**2.4**	J	**0.90**	**5.0**	**µg/L**	1	6/20/2016 21:45
Silver	U		0.050	5.0	µg/L	1	6/20/2016 21:45
Zinc	U		1.4	10	µg/L	1	6/20/2016 21:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**3,900**		**240**	**500**	**µg/L**	5	6/16/2016 20:54
Sulfate	**57,000**		**2,000**	**5,000**	**µg/L**	5	6/16/2016 20:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 6/15/2016 10:15 AM

Work Order: 1606908
Lab ID: 1606908-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/21/2016 14:07
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**17**		**4.2**	**10**	**µg/L**	1	6/21/2016 20:37
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 21:51
Barium	**36**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 21:51
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 21:51
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 21:51
Copper	U		0.28	5.0	µg/L	1	6/20/2016 21:51
Iron	**1,600**		**4.6**	**80**	**µg/L**	1	6/20/2016 21:51
Lead	U		0.33	5.0	µg/L	1	6/20/2016 21:51
Manganese	**230**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 21:51
Potassium	**2,800**		**17**	**200**	**µg/L**	1	6/21/2016 20:37
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 21:51
Silver	U		0.050	5.0	µg/L	1	6/20/2016 21:51
Zinc	**1.6**	J	**1.4**	**10**	**µg/L**	1	6/20/2016 21:51
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 21:14
Sulfate	**18,000**		**410**	**1,000**	**µg/L**	1	6/16/2016 21:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 6/15/2016 09:45 AM

Work Order: 1606908
Lab ID: 1606908-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.00034**	J	**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 14:15
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/21/2016 20:43
Arsenic	**3.3**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 21:57
Barium	**79**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 21:57
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 21:57
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 21:57
Copper	U		0.28	5.0	µg/L	1	6/20/2016 21:57
Iron	**9,100**		**4.6**	**80**	**µg/L**	1	6/20/2016 21:57
Lead	U		0.33	5.0	µg/L	1	6/20/2016 21:57
Manganese	**540**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 21:57
Potassium	**2,900**		**17**	**200**	**µg/L**	1	6/21/2016 20:43
Selenium	**1.0**	J	**0.90**	**5.0**	**µg/L**	1	6/20/2016 21:57
Silver	U		0.050	5.0	µg/L	1	6/20/2016 21:57
Zinc	U		1.4	10	µg/L	1	6/20/2016 21:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 21:54
Sulfate	**8,500**		**410**	**1,000**	**µg/L**	1	6/16/2016 21:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 6/15/2016 11:10 AM

Work Order: 1606908
Lab ID: 1606908-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	6/21/2016 14:23
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**8.0**	J	**4.2**	**10**	**µg/L**	1	6/21/2016 20:49
Arsenic	**2.1**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 22:04
Barium	**31**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 22:04
Cadmium	U		0.050	2.0	µg/L	1	6/20/2016 22:04
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 22:04
Copper	U		0.28	5.0	µg/L	1	6/20/2016 22:04
Iron	**1,800**		**4.6**	**80**	**µg/L**	1	6/20/2016 22:04
Lead	U		0.33	5.0	µg/L	1	6/20/2016 22:04
Manganese	**380**		**0.51**	**5.0**	**µg/L**	1	6/20/2016 22:04
Potassium	**2,000**		**17**	**200**	**µg/L**	1	6/21/2016 20:49
Selenium	U		0.90	5.0	µg/L	1	6/20/2016 22:04
Silver	U		0.050	5.0	µg/L	1	6/20/2016 22:04
Zinc	**3.1**	J	**1.4**	**10**	**µg/L**	1	6/20/2016 22:04
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/16/2016 22:35
Sulfate	**25,000**		**2,000**	**5,000**	**µg/L**	5	6/16/2016 23:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Jun-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 6/15/2016 10:40 AM

Work Order: 1606908
Lab ID: 1606908-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/21/16		Analyst: **JEC**
Mercury	**0.00056**		**0.00020**	**0.00050**	**µg/L**	1	6/21/2016 14:31
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/20/16		Analyst: **ML**
Aluminum	**17**		**4.2**	**10**	**µg/L**	1	6/21/2016 20:55
Arsenic	**2.3**	J	**0.87**	**5.0**	**µg/L**	1	6/20/2016 22:10
Barium	**18**		**2.2**	**5.0**	**µg/L**	1	6/20/2016 22:10
Cadmium	**0.13**	J	**0.050**	**2.0**	**µg/L**	1	6/20/2016 22:10
Chromium	U		0.65	5.0	µg/L	1	6/20/2016 22:10
Copper	**0.97**	J	**0.28**	**5.0**	**µg/L**	1	6/20/2016 22:10
Iron	**24**	J	**4.6**	**80**	**µg/L**	1	6/20/2016 22:10
Lead	U		0.33	5.0	µg/L	1	6/20/2016 22:10
Manganese	U		0.51	5.0	µg/L	1	6/20/2016 22:10
Potassium	**620**		**17**	**200**	**µg/L**	1	6/21/2016 20:55
Selenium	**3.1**	J	**0.90**	**5.0**	**µg/L**	1	6/20/2016 22:10
Silver	U		0.050	5.0	µg/L	1	6/20/2016 22:10
Zinc	U		1.4	10	µg/L	1	6/20/2016 22:10
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**7,000**		**240**	**500**	**µg/L**	5	6/17/2016 00:16
Sulfate	**30,000**		**2,000**	**5,000**	**µg/L**	5	6/17/2016 00:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 24-Jun-16

Client: ERM, Inc

Work Order: 1606908

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87576** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-87576-87576** Units: **ng/L** Analysis Date: **6/21/2016 11:47 AM**

Client ID: Run ID: **HG3_160621A** SeqNo: **3887286** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-87576-87576** Units: **ng/L** Analysis Date: **6/21/2016 12:34 PM**

Client ID: Run ID: **HG3_160621A** SeqNo: **3887292** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-87576-87576** Units: **ng/L** Analysis Date: **6/21/2016 01:36 PM**

Client ID: Run ID: **HG3_160621A** SeqNo: **3887300** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1606908-05BMS** Units: **ng/L** Analysis Date: **6/21/2016 12:41 PM**

Client ID: **MW-1S** Run ID: **HG3_160621A** SeqNo: **3887293** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.61	0.50	5	0.49	102	71-125	0			

MS Sample ID: **1606908-11BMS** Units: **ng/L** Analysis Date: **6/21/2016 01:52 PM**

Client ID: **MW-6S** Run ID: **HG3_160621A** SeqNo: **3887302** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.3	0.50	5	1.29	100	71-125	0			

MSD Sample ID: **1606908-05BMSD** Units: **ng/L** Analysis Date: **6/21/2016 12:49 PM**

Client ID: **MW-1S** Run ID: **HG3_160621A** SeqNo: **3887294** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.62	0.50	5	0.49	103	71-125	5.61	0.178	24	

MSD Sample ID: **1606908-11BMSD** Units: **ng/L** Analysis Date: **6/21/2016 01:59 PM**

Client ID: **MW-6S** Run ID: **HG3_160621A** SeqNo: **3887303** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.33	0.50	5	1.29	101	71-125	6.3	0.475	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606908
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87576** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-87576-87576** Units: **ng/L** Analysis Date: **6/21/2016 11:31 AM**
Client ID: Run ID: **HG3_160621A** SeqNo: **3887284** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.2	0.50	5	0	104	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-87576-87576** Units: **ng/L** Analysis Date: **6/21/2016 04:17 PM**
Client ID: Run ID: **HG3_160621A** SeqNo: **3887319** Prep Date: **6/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.37	0.50	5	0	107	77-123	0			

The following samples were analyzed in this batch:

1606908-01B	1606908-02B	1606908-03B
1606908-04B	1606908-05B	1606908-06B
1606908-07B	1606908-08B	1606908-09B
1606908-10B	1606908-11B	1606908-12B
1606908-13B	1606908-14B	1606908-15B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606908
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87531** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-87531-87531** Units: **mg/L** Analysis Date: **6/20/2016 06:56 PM**
Client ID: Run ID: **ICPMS1_160620A** SeqNo: **3884878** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Iron	0.01387	0.080								J
Lead	U	0.0050								
Manganese	0.002581	0.0050								J
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-87531-87531** Units: **mg/L** Analysis Date: **6/21/2016 06:13 PM**
Client ID: Run ID: **ICPMS1_160621A** SeqNo: **3887559** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								

LCS Sample ID: **LCS-87531-87531** Units: **mg/L** Analysis Date: **6/20/2016 07:02 PM**
Client ID: Run ID: **ICPMS1_160620A** SeqNo: **3884879** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1058	0.0050	0.1	0	106	80-120	0			
Barium	0.1012	0.0050	0.1	0	101	80-120	0			
Cadmium	0.09835	0.0020	0.1	0	98.4	80-120	0			
Chromium	0.1042	0.0050	0.1	0	104	80-120	0			
Copper	0.1062	0.0050	0.1	0	106	80-120	0			
Iron	10.13	0.080	10	0	101	80-120	0			
Lead	0.09749	0.0050	0.1	0	97.5	80-120	0			
Manganese	0.1033	0.0050	0.1	0	103	80-120	0			
Selenium	0.09973	0.0050	0.1	0	99.7	80-120	0			
Silver	0.09231	0.0050	0.1	0	92.3	80-120	0			
Zinc	0.09395	0.010	0.1	0	94	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606908
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87531** Instrument ID **ICPMS1** Method: **SW6020A**

LCS Sample ID: **LCS-87531-87531** Units: **mg/L** Analysis Date: **6/21/2016 06:38 PM**
Client ID: Run ID: **ICPMS1_160621A** SeqNo: **3887563** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1045	0.010	0.1	0	104	80-120	0			
Potassium	9.89	0.20	10	0	98.9	80-120	0			

MS Sample ID: **1606908-05AMS** Units: **mg/L** Analysis Date: **6/20/2016 08:42 PM**
Client ID: **MW-1S** Run ID: **ICPMS1_160620A** SeqNo: **3884893** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1119	0.0050	0.1	0.001606	110	75-125	0			
Barium	0.1309	0.0050	0.1	0.02821	103	75-125	0			
Cadmium	0.09702	0.0020	0.1	0.00001632	97	75-125	0			
Chromium	0.104	0.0050	0.1	0.00003919	104	75-125	0			
Copper	0.1037	0.0050	0.1	0.0004213	103	75-125	0			
Iron	10.88	0.080	10	0.5286	104	75-125	0			
Lead	0.09779	0.0050	0.1	-2.432E-05	97.8	75-125	0			
Manganese	0.239	0.0050	0.1	0.1374	102	75-125	0			
Selenium	0.1038	0.0050	0.1	0.0007178	103	75-125	0			
Silver	0.09118	0.0050	0.1	-6.256E-06	91.2	75-125	0			
Zinc	0.09616	0.010	0.1	0.001227	94.9	75-125	0			

MS Sample ID: **1606908-05AMS** Units: **mg/L** Analysis Date: **6/21/2016 07:21 PM**
Client ID: **MW-1S** Run ID: **ICPMS1_160621A** SeqNo: **3887570** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1089	0.010	0.1	0.005428	103	75-125	0			
Potassium	12.06	0.20	10	2.236	98.2	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606908
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **87531** Instrument ID **ICPMS1** Method: **SW6020A**

MSD Sample ID: **1606908-05AMSD** Units: **mg/L** Analysis Date: **6/20/2016 08:49 PM**
Client ID: **MW-1S** Run ID: **ICPMS1_160620A** SeqNo: **3884894** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1094	0.0050	0.1	0.001606	108	75-125	0.1119	2.26	20	
Barium	0.1301	0.0050	0.1	0.02821	102	75-125	0.1309	0.613	20	
Cadmium	0.09677	0.0020	0.1	0.00001632	96.8	75-125	0.09702	0.258	20	
Chromium	0.1036	0.0050	0.1	0.00003919	104	75-125	0.104	0.385	20	
Copper	0.1039	0.0050	0.1	0.0004213	103	75-125	0.1037	0.193	20	
Iron	10.72	0.080	10	0.5286	102	75-125	10.88	1.48	20	
Lead	0.09787	0.0050	0.1	-2.432E-05	97.9	75-125	0.09779	0.0818	20	
Manganese	0.2366	0.0050	0.1	0.1374	99.2	75-125	0.239	1.01	20	
Selenium	0.1004	0.0050	0.1	0.0007178	99.7	75-125	0.1038	3.33	20	
Silver	0.09025	0.0050	0.1	-6.256E-06	90.3	75-125	0.09118	1.03	20	
Zinc	0.09399	0.010	0.1	0.001227	92.8	75-125	0.09616	2.28	20	

MSD Sample ID: **1606908-05AMSD** Units: **mg/L** Analysis Date: **6/21/2016 07:27 PM**
Client ID: **MW-1S** Run ID: **ICPMS1_160621A** SeqNo: **3887571** Prep Date: **6/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1132	0.010	0.1	0.005428	108	75-125	0.1089	3.87	20	
Potassium	12.5	0.20	10	2.236	103	75-125	12.06	3.58	20	

The following samples were analyzed in this batch:

1606908-01A	1606908-02A	1606908-03A
1606908-04A	1606908-05A	1606908-06A
1606908-07A	1606908-08A	1606908-09A
1606908-10A	1606908-11A	1606908-12A
1606908-13A	1606908-14A	1606908-15A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1606908
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R189723** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R189723** Units: **mg/L** Analysis Date: **6/16/2016 02:49 PM**
Client ID: Run ID: **IC3_160616A** SeqNo: **3879404** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R189723** Units: **mg/L** Analysis Date: **6/16/2016 03:10 PM**
Client ID: Run ID: **IC3_160616A** SeqNo: **3879405** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.885	0.10	2	0	94.3	81-116	0			
Sulfate	10.08	1.0	10	0	101	85-110	0			

MS Sample ID: **1606908-05C MS** Units: **mg/L** Analysis Date: **6/16/2016 06:32 PM**
Client ID: **MW-1S** Run ID: **IC3_160616A** SeqNo: **3879415** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.75	0.50	10	0.8515	99	75-125	0			
Sulfate	78.24	5.0	50	26.41	104	75-125	0			

MSD Sample ID: **1606908-05C MSD** Units: **mg/L** Analysis Date: **6/16/2016 07:33 PM**
Client ID: **MW-1S** Run ID: **IC3_160616A** SeqNo: **3879418** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.63	0.50	10	0.8515	97.8	75-125	10.75	1.15	20	
Sulfate	77.82	5.0	50	26.41	103	75-125	78.24	0.541	20	

The following samples were analyzed in this batch:

1606908-01C	1606908-02C	1606908-03C
1606908-04C	1606908-05C	1606908-06C
1606908-07C	1606908-08C	1606908-09C
1606908-10C	1606908-11C	1606908-12C
1606908-13C	1606908-14C	1606908-15C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

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Chain of Custody Form

COC ID: 29932

ALS Project Manager: | ALS Work Order #: 1606904

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K
Work Order		Project Number		B	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - field filter)
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	Hold per client until further notice

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-5S	6-14-16	0845	Wt.	2-HNO_3	3	X		X	X							
2	MW-5D		0945			4	X	X	X	X							
3	MW-4S		1050			3	X		X	X							
4	MW-4D		1135			3	X		X	X							
5	MW-1S		1355			6	X		X	X							
6	MW-1D		1440			3	X		X	X							
7	MW-2S		1600			3	X		X	X							
8	MW-2D		1630			3	X		X	X							
9	Dup-1		—			3	X		X	X							
10																	

Sampler(s) Please Print & Sign: Tanner Parker

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	6-15-16	1115	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	6/15/16	1630	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
KRJ	6/15/16	1645	

Notes: 6/15/16 1630

Cooler ID	Cooler Temp
	2.8°C
	3.2°C

QC Package: (Check One Box Below)
☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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York, PA +1 717 505 5280

Chain of Custody Form

Page 2 of 2

COC ID: 29927

ALS Project Manager:

ALS Work Order #: 1600698

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW	A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K
Work Order		Project Number		B	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - field filter)
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
10	MW-6D	6-15-16	0820	W	HNO_3	3	X		X	X							
11	MW-6S		0900			3	X		X	X							
12	MW-7D		0945			3	X		X	X							
13	MW-7S		0945			3	X		X	X							
14	MW-8D		1110			3	X		X	X							
15	MW-8S		1040			3	X		X	X							
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Tamara Parker

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 6-15-16	Time: 1115	Received by:	Notes:	1630
Relinquished by:	Date: 6/15/16	Time: 1530	Received by (Laboratory):	Cooler ID	Cooler Temp
Logged by (Laboratory):	Date: 6/15/16	Time: 1045	Checked by (Laboratory):		

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

QC Package: (Check One Box Below)

- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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3. The Chain of Custody is a legal document. All information must be completed accurately.

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Bill Carey

From: Aaron Alexander <Aaron.Alexander@erm.com>
Sent: Thursday, June 16, 2016 11:08 AM
To: Bill Carey
Cc: Tanner Parker
Subject: IAW - Ogden Dunes, Sampling

Bill,

I was reviewing the chain-of custody for the IAW, and noted one change that needs to be made. Sample MW-5D, collected on 6/14/16 @ 0945, has a field filtered metals sample that needs to be marked as held pending results of the totals metals sample. Could this change be made?

I wanted to thank you and your team for your help with this project. Things went smoothly and were completed in record time!

Aaron

Aaron Alexander
Project Geologist
ERM

Please note new address
8425 Woodfield Crossing Blvd Suite 560-W | Indianapolis, Indiana | 46240
T 317 706 2000 | **D** 317 249 4734 | **C** 765 438 7426
E aaron.alexander@erm.com | **W** www.erm.com

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **15-Jun-16 16:30**

Work Order: **1606908** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 15-Jun-16 (Date) Reviewed by: Bill Carey (eSignature) 16-Jun-16 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.8/2.8 , 3.2/3.2 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/15/2016 4:54:16 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

29-Sep-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **16091117**

Dear Marty,

ALS Environmental received 19 samples on 20-Sep-2016 12:50 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 34.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 29-Sep-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **16091117**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
16091117-01	MW-5S	Water		9/19/2016 09:45	9/20/2016 12:50	☐
16091117-02	MW-5D	Water		9/19/2016 09:45	9/20/2016 12:50	☐
16091117-03	MW-6S	Water		9/19/2016 11:00	9/20/2016 12:50	☐
16091117-04	MW-6D	Water		9/19/2016 11:00	9/20/2016 12:50	☐
16091117-05	MW-4S	Water		9/19/2016 13:05	9/20/2016 12:50	☐
16091117-06	MW-4D	Water		9/19/2016 13:10	9/20/2016 12:50	☐
16091117-07	MW-3S	Water		9/19/2016 13:45	9/20/2016 12:50	☐
16091117-08	MW-3D	Water		9/19/2016 13:50	9/20/2016 12:50	☐
16091117-09	MW-2S	Water		9/19/2016 14:20	9/20/2016 12:50	☐
16091117-10	MW-2D	Water		9/19/2016 14:25	9/20/2016 12:50	☐
16091117-11	MW-1S	Water		9/19/2016 15:15	9/20/2016 12:50	☐
16091117-12	MW-1D	Water		9/19/2016 15:10	9/20/2016 12:50	☐
16091117-13	BG-1S	Water		9/20/2016 07:55	9/20/2016 12:50	☐
16091117-14	BG-1D	Water		9/20/2016 07:50	9/20/2016 12:50	☐
16091117-15	MW-8S	Water		9/20/2016 08:30	9/20/2016 12:50	☐
16091117-16	MW-8D	Water		9/20/2016 08:35	9/20/2016 12:50	☐
16091117-17	MW-7S	Water		9/20/2016 09:10	9/20/2016 12:50	☐
16091117-18	MW-7D	Water		9/20/2016 09:15	9/20/2016 12:50	☐
16091117-19	Dup-A	Water		9/19/2016	9/20/2016 12:50	☐

ALS Group USA, Corp

Date: 29-Sep-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **16091117**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 29-Sep-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 16091117

Case Narrative

Samples for the above noted Work Order were received on 9/20/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5S
Collection Date: 9/19/2016 09:45 AM

Work Order: 16091117
Lab ID: 16091117-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/16		Analyst: **JEC**
Mercury	**0.0020**		**0.00020**	**0.00050**	**µg/L**	1	9/27/2016 17:55
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**14**		**4.2**	**10**	**µg/L**	1	9/22/2016 15:01
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 15:01
Barium	**52**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 15:01
Cadmium	**0.061**	J	**0.050**	**2.0**	**µg/L**	1	9/22/2016 15:01
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 15:01
Copper	**4.9**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 15:01
Iron	**740**		**4.6**	**80**	**µg/L**	1	9/22/2016 15:01
Lead	U		0.33	5.0	µg/L	1	9/22/2016 15:01
Manganese	**510**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 15:01
Potassium	**4,800**		**17**	**200**	**µg/L**	1	9/22/2016 15:01
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 15:01
Silver	U		0.050	5.0	µg/L	1	9/22/2016 15:01
Zinc	**12**		**1.4**	**10**	**µg/L**	1	9/22/2016 15:01
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/20/2016 20:54
Sulfate	**190,000**		**4,100**	**10,000**	**µg/L**	10	9/20/2016 21:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 9/19/2016 09:45 AM

Work Order: 16091117
Lab ID: 16091117-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	9/27/2016 18:02
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	9/22/2016 16:30
Arsenic	U		0.87	5.0	µg/L	1	9/22/2016 16:30
Barium	**99**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 16:30
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 16:30
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 16:30
Copper	**1.2**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 16:30
Iron	**8,400**		**4.6**	**80**	**µg/L**	1	9/22/2016 16:30
Lead	U		0.33	5.0	µg/L	1	9/22/2016 16:30
Manganese	**250**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 16:30
Potassium	**4,400**		**17**	**200**	**µg/L**	1	9/22/2016 16:30
Selenium	U		0.90	5.0	µg/L	1	9/23/2016 11:36
Silver	U		0.050	5.0	µg/L	1	9/22/2016 16:30
Zinc	U		1.4	10	µg/L	1	9/22/2016 16:30
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/20/2016 21:34
Sulfate	**40,000**		**2,000**	**5,000**	**µg/L**	5	9/20/2016 21:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 9/19/2016 11:00 AM

Work Order: 16091117
Lab ID: 16091117-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/16		Analyst: **JEC**
Mercury	**0.00080**		**0.00020**	**0.00050**	**µg/L**	1	9/27/2016 18:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	9/22/2016 19:24
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 19:24
Barium	**13**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 19:24
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 19:24
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 19:24
Copper	**4.6**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 19:24
Iron	**17**	J	**4.6**	**80**	**µg/L**	1	9/22/2016 19:24
Lead	U		0.33	5.0	µg/L	1	9/22/2016 19:24
Manganese	**760**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 19:24
Potassium	**1,500**		**17**	**200**	**µg/L**	1	9/22/2016 19:24
Selenium	**5.0**	J	**0.90**	**5.0**	**µg/L**	1	9/22/2016 19:24
Silver	U		0.050	5.0	µg/L	1	9/22/2016 19:24
Zinc	**1.5**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 19:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**11,000**		**240**	**500**	**µg/L**	5	9/20/2016 22:35
Sulfate	**91,000**		**2,000**	**5,000**	**µg/L**	5	9/20/2016 22:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 9/19/2016 11:00 AM

Work Order: 16091117
Lab ID: 16091117-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	9/27/2016 18:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	9/22/2016 19:29
Arsenic	**3.4**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 19:29
Barium	**130**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 19:29
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 19:29
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 19:29
Copper	**4.5**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 19:29
Iron	**9,500**		**4.6**	**80**	**µg/L**	1	9/22/2016 19:29
Lead	U		0.33	5.0	µg/L	1	9/22/2016 19:29
Manganese	**320**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 19:29
Potassium	**2,100**		**17**	**200**	**µg/L**	1	9/22/2016 19:29
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 19:29
Silver	U		0.050	5.0	µg/L	1	9/22/2016 19:29
Zinc	**2.3**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 19:29
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		96	200	µg/L	2	9/20/2016 22:55
Sulfate	**270,000**		**8,100**	**20,000**	**µg/L**	20	9/20/2016 23:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 9/19/2016 01:05 PM

Work Order: 16091117
Lab ID: 16091117-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/16		Analyst: **JEC**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	9/27/2016 18:34
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**130**		**4.2**	**10**	**µg/L**	1	9/22/2016 19:35
Arsenic	**12**		**0.87**	**5.0**	**µg/L**	1	9/22/2016 19:35
Barium	**63**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 19:35
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 19:35
Chromium	**2.3**	J	**0.65**	**5.0**	**µg/L**	1	9/22/2016 19:35
Copper	**0.58**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 19:35
Iron	**18,000**		**4.6**	**80**	**µg/L**	1	9/22/2016 19:35
Lead	**0.82**	J	**0.33**	**5.0**	**µg/L**	1	9/22/2016 19:35
Manganese	**460**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 19:35
Potassium	**1,900**		**17**	**200**	**µg/L**	1	9/22/2016 19:35
Selenium	**0.99**	J	**0.90**	**5.0**	**µg/L**	1	9/22/2016 19:35
Silver	U		0.050	5.0	µg/L	1	9/22/2016 19:35
Zinc	**11**		**1.4**	**10**	**µg/L**	1	9/22/2016 19:35
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/20/2016 23:35
Sulfate	**1,100**		**410**	**1,000**	**µg/L**	1	9/20/2016 23:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 9/19/2016 01:10 PM

Work Order: 16091117
Lab ID: 16091117-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	9/27/2016 18:41
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	9/22/2016 19:40
Arsenic	**2.1**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 19:40
Barium	**160**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 19:40
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 19:40
Chromium	**0.78**	J	**0.65**	**5.0**	**µg/L**	1	9/22/2016 19:40
Copper	**3.6**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 19:40
Iron	**24,000**		**4.6**	**80**	**µg/L**	1	9/22/2016 19:40
Lead	U		0.33	5.0	µg/L	1	9/22/2016 19:40
Manganese	**620**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 19:40
Potassium	**3,400**		**17**	**200**	**µg/L**	1	9/22/2016 19:40
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 19:40
Silver	U		0.050	5.0	µg/L	1	9/22/2016 19:40
Zinc	**2.0**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 19:40
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		96	200	µg/L	2	9/20/2016 23:56
Sulfate	**170,000**		**8,100**	**20,000**	**µg/L**	20	9/21/2016 00:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 9/19/2016 01:45 PM

Work Order: 16091117
Lab ID: 16091117-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/16		Analyst: **JEC**
Mercury	U		0.00020	0.00050	µg/L	1	9/27/2016 18:49
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**5.1**	J	**4.2**	**10**	**µg/L**	1	9/22/2016 19:45
Arsenic	**2.9**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 19:45
Barium	**59**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 19:45
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 19:45
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 19:45
Copper	**0.61**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 19:45
Iron	**9,300**		**4.6**	**80**	**µg/L**	1	9/22/2016 19:45
Lead	U		0.33	5.0	µg/L	1	9/22/2016 19:45
Manganese	**1,300**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 19:45
Potassium	**3,400**		**17**	**200**	**µg/L**	1	9/22/2016 19:45
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 19:45
Silver	U		0.050	5.0	µg/L	1	9/22/2016 19:45
Zinc	U		1.4	10	µg/L	1	9/22/2016 19:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/21/2016 01:17
Sulfate	**1,300**		**410**	**1,000**	**µg/L**	1	9/21/2016 01:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 9/19/2016 01:50 PM

Work Order: 16091117
Lab ID: 16091117-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 13:58
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	9/22/2016 19:50
Arsenic	**6.4**		**0.87**	**5.0**	**µg/L**	1	9/22/2016 19:50
Barium	**120**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 19:50
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 19:50
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 19:50
Copper	**0.59**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 19:50
Iron	**8,900**		**4.6**	**80**	**µg/L**	1	9/22/2016 19:50
Lead	U		0.33	5.0	µg/L	1	9/22/2016 19:50
Manganese	**370**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 19:50
Potassium	**4,100**		**17**	**200**	**µg/L**	1	9/22/2016 19:50
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 19:50
Silver	U		0.050	5.0	µg/L	1	9/22/2016 19:50
Zinc	U		1.4	10	µg/L	1	9/22/2016 19:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**57**	J	**48**	**100**	**µg/L**	1	9/21/2016 01:37
Sulfate	**510**	J	**410**	**1,000**	**µg/L**	1	9/21/2016 01:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 9/19/2016 02:20 PM

Work Order: 16091117
Lab ID: 16091117-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 14:06
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**15**		**4.2**	**10**	**µg/L**	1	9/22/2016 19:56
Arsenic	**4.2**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 19:56
Barium	**32**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 19:56
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 19:56
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 19:56
Copper	U		0.28	5.0	µg/L	1	9/22/2016 19:56
Iron	**2,400**		**4.6**	**80**	**µg/L**	1	9/22/2016 19:56
Lead	U		0.33	5.0	µg/L	1	9/22/2016 19:56
Manganese	**85**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 19:56
Potassium	**1,500**		**17**	**200**	**µg/L**	1	9/22/2016 19:56
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 19:56
Silver	U		0.050	5.0	µg/L	1	9/22/2016 19:56
Zinc	**1.4**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 19:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/21/2016 01:57
Sulfate	**1,200**		**410**	**1,000**	**µg/L**	1	9/21/2016 01:57

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 9/19/2016 02:25 PM

Work Order: 16091117
Lab ID: 16091117-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 14:14
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**5.0**	J	**4.2**	**10**	**µg/L**	1	9/22/2016 20:01
Arsenic	U		0.87	5.0	µg/L	1	9/22/2016 20:01
Barium	**95**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 20:01
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 20:01
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 20:01
Copper	**0.36**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 20:01
Iron	**2,800**		**4.6**	**80**	**µg/L**	1	9/22/2016 20:01
Lead	U		0.33	5.0	µg/L	1	9/22/2016 20:01
Manganese	**2,200**		**5.1**	**50**	**µg/L**	10	9/23/2016 11:41
Potassium	**3,800**		**17**	**200**	**µg/L**	1	9/22/2016 20:01
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 20:01
Silver	U		0.050	5.0	µg/L	1	9/22/2016 20:01
Zinc	**2.4**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 20:01
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/21/2016 02:17
Sulfate	**1,200**		**410**	**1,000**	**µg/L**	1	9/21/2016 02:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1S
Collection Date: 9/19/2016 03:15 PM

Work Order: 16091117
Lab ID: 16091117-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 14:22
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	9/22/2016 20:06
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 20:06
Barium	**28**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 20:06
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 20:06
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 20:06
Copper	**1.1**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 20:06
Iron	**340**		**4.6**	**80**	**µg/L**	1	9/22/2016 20:06
Lead	U		0.33	5.0	µg/L	1	9/22/2016 20:06
Manganese	**330**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 20:06
Potassium	**1,300**		**17**	**200**	**µg/L**	1	9/22/2016 20:06
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 20:06
Silver	U		0.050	5.0	µg/L	1	9/22/2016 20:06
Zinc	**2.1**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 20:06
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**680**		**48**	**100**	**µg/L**	1	9/21/2016 02:38
Sulfate	**25,000**		**810**	**2,000**	**µg/L**	2	9/21/2016 09:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 9/19/2016 03:10 PM

Work Order: 16091117
Lab ID: 16091117-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 14:30
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**4.6**	J	**4.2**	**10**	**µg/L**	1	9/22/2016 21:47
Arsenic	U		0.87	5.0	µg/L	1	9/22/2016 21:47
Barium	**47**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 21:47
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 21:47
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 21:47
Copper	**0.42**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 21:47
Iron	**3,700**		**4.6**	**80**	**µg/L**	1	9/22/2016 21:47
Lead	U		0.33	5.0	µg/L	1	9/22/2016 21:47
Manganese	**460**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 21:47
Potassium	**2,200**		**17**	**200**	**µg/L**	1	9/22/2016 21:47
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 21:47
Silver	U		0.050	5.0	µg/L	1	9/22/2016 21:47
Zinc	U		1.4	10	µg/L	1	9/22/2016 21:47
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/21/2016 02:58
Sulfate	**500**	J	**410**	**1,000**	**µg/L**	1	9/21/2016 02:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 9/20/2016 07:55 AM

Work Order: 16091117
Lab ID: 16091117-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	**0.033**		**0.0020**	**0.0050**	**µg/L**	1	9/27/2016 14:45
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**160**		**4.2**	**10**	**µg/L**	1	9/22/2016 21:52
Arsenic	**1.9**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 21:52
Barium	**6.2**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 21:52
Cadmium	**0.11**	J	**0.050**	**2.0**	**µg/L**	1	9/22/2016 21:52
Chromium	**1.5**	J	**0.65**	**5.0**	**µg/L**	1	9/22/2016 21:52
Copper	**11**		**0.28**	**5.0**	**µg/L**	1	9/22/2016 21:52
Iron	**300**		**4.6**	**80**	**µg/L**	1	9/22/2016 21:52
Lead	**0.40**	J	**0.33**	**5.0**	**µg/L**	1	9/22/2016 21:52
Manganese	**17**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 21:52
Potassium	**520**		**17**	**200**	**µg/L**	1	9/22/2016 21:52
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 21:52
Silver	U		0.050	5.0	µg/L	1	9/22/2016 21:52
Zinc	**10**		**1.4**	**10**	**µg/L**	1	9/22/2016 21:52
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**67**	J	**48**	**100**	**µg/L**	1	9/21/2016 03:18
Sulfate	**28,000**		**810**	**2,000**	**µg/L**	2	9/21/2016 09:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 9/20/2016 07:50 AM

Work Order: 16091117
Lab ID: 16091117-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 15:09
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**11**		**4.2**	**10**	**µg/L**	1	9/22/2016 22:08
Arsenic	**5.2**		**0.87**	**5.0**	**µg/L**	1	9/22/2016 22:08
Barium	**14**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 22:08
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 22:08
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 22:08
Copper	**0.51**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 22:08
Iron	**8,000**		**4.6**	**80**	**µg/L**	1	9/22/2016 22:08
Lead	U		0.33	5.0	µg/L	1	9/22/2016 22:08
Manganese	**180**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 22:08
Potassium	**870**		**17**	**200**	**µg/L**	1	9/22/2016 22:08
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 22:08
Silver	U		0.050	5.0	µg/L	1	9/22/2016 22:08
Zinc	**8.5**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 22:08
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**62**	J	**48**	**100**	**µg/L**	1	9/21/2016 04:59
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	9/21/2016 04:59

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 9/20/2016 08:30 AM

Work Order: 16091117
Lab ID: 16091117-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 15:16
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**5.9**	J	**4.2**	**10**	**µg/L**	1	9/22/2016 22:13
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 22:13
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 22:13
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 22:13
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 22:13
Copper	**1.2**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 22:13
Iron	**8.5**	J	**4.6**	**80**	**µg/L**	1	9/22/2016 22:13
Lead	U		0.33	5.0	µg/L	1	9/22/2016 22:13
Manganese	**0.59**	J	**0.51**	**5.0**	**µg/L**	1	9/22/2016 22:13
Potassium	**610**		**17**	**200**	**µg/L**	1	9/22/2016 22:13
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 22:13
Silver	U		0.050	5.0	µg/L	1	9/22/2016 22:13
Zinc	**1.4**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 22:13
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**550**		**48**	**100**	**µg/L**	1	9/21/2016 05:19
Sulfate	**27,000**		**810**	**2,000**	**µg/L**	2	9/21/2016 09:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 9/20/2016 08:35 AM

Work Order: 16091117
Lab ID: 16091117-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 15:24
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	9/22/2016 22:19
Arsenic	U		0.87	5.0	µg/L	1	9/22/2016 22:19
Barium	**31**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 22:19
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 22:19
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 22:19
Copper	**0.59**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 22:19
Iron	**2,500**		**4.6**	**80**	**µg/L**	1	9/22/2016 22:19
Lead	U		0.33	5.0	µg/L	1	9/22/2016 22:19
Manganese	**350**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 22:19
Potassium	**2,000**		**17**	**200**	**µg/L**	1	9/22/2016 22:19
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 22:19
Silver	U		0.050	5.0	µg/L	1	9/22/2016 22:19
Zinc	**2.4**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 22:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**56**	J	**48**	**100**	**µg/L**	1	9/21/2016 05:40
Sulfate	**22,000**		**810**	**2,000**	**µg/L**	2	9/21/2016 10:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 9/20/2016 09:10 AM

Work Order: 16091117
Lab ID: 16091117-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 15:32
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**23**		**4.2**	**10**	**µg/L**	1	9/22/2016 22:24
Arsenic	**4.9**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2016 22:24
Barium	**73**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 22:24
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 22:24
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 22:24
Copper	**0.70**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 22:24
Iron	**9,600**		**4.6**	**80**	**µg/L**	1	9/22/2016 22:24
Lead	U		0.33	5.0	µg/L	1	9/22/2016 22:24
Manganese	**390**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 22:24
Potassium	**3,400**		**17**	**200**	**µg/L**	1	9/22/2016 22:24
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 22:24
Silver	U		0.050	5.0	µg/L	1	9/22/2016 22:24
Zinc	U		1.4	10	µg/L	1	9/22/2016 22:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/21/2016 06:00
Sulfate	**3,300**		**410**	**1,000**	**µg/L**	1	9/21/2016 06:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 9/20/2016 09:15 AM

Work Order: 16091117
Lab ID: 16091117-18
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 15:48
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	9/22/2016 22:29
Arsenic	U		0.87	5.0	µg/L	1	9/22/2016 22:29
Barium	**32**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 22:29
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 22:29
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 22:29
Copper	**0.39**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 22:29
Iron	**1,500**		**4.6**	**80**	**µg/L**	1	9/22/2016 22:29
Lead	U		0.33	5.0	µg/L	1	9/22/2016 22:29
Manganese	**190**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 22:29
Potassium	**2,600**		**17**	**200**	**µg/L**	1	9/22/2016 22:29
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 22:29
Silver	U		0.050	5.0	µg/L	1	9/22/2016 22:29
Zinc	**3.3**	J	**1.4**	**10**	**µg/L**	1	9/22/2016 22:29
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**59**	J	**48**	**100**	**µg/L**	1	9/21/2016 06:20
Sulfate	**9,900**		**410**	**1,000**	**µg/L**	1	9/21/2016 06:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *29-Sep-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup-A
Collection Date: 9/19/2016

Work Order: 16091117
Lab ID: 16091117-19
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/16		Analyst: **JEC**
Mercury	U		0.0020	0.0050	µg/L	1	9/27/2016 15:55
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/16		Analyst: **ML**
Aluminum	**8.9**	J	**4.2**	**10**	**µg/L**	1	9/22/2016 22:35
Arsenic	U		0.87	5.0	µg/L	1	9/22/2016 22:35
Barium	**48**		**2.2**	**5.0**	**µg/L**	1	9/22/2016 22:35
Cadmium	U		0.050	2.0	µg/L	1	9/22/2016 22:35
Chromium	U		0.65	5.0	µg/L	1	9/22/2016 22:35
Copper	**0.31**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2016 22:35
Iron	**5,100**		**4.6**	**80**	**µg/L**	1	9/22/2016 22:35
Lead	U		0.33	5.0	µg/L	1	9/22/2016 22:35
Manganese	**460**		**0.51**	**5.0**	**µg/L**	1	9/22/2016 22:35
Potassium	**2,200**		**17**	**200**	**µg/L**	1	9/22/2016 22:35
Selenium	U		0.90	5.0	µg/L	1	9/22/2016 22:35
Silver	U		0.050	5.0	µg/L	1	9/22/2016 22:35
Zinc	U		1.4	10	µg/L	1	9/22/2016 22:35
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	9/21/2016 06:40
Sulfate	**450**	J	**410**	**1,000**	**µg/L**	1	9/21/2016 06:40

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **91957** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-91957-91957** Units: **ng/L** Analysis Date: **9/27/2016 01:51 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051251** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-91957-91957** Units: **ng/L** Analysis Date: **9/27/2016 02:37 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051257** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-91957-91957** Units: **ng/L** Analysis Date: **9/27/2016 03:40 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051265** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **16091117-13CMS** Units: **ng/L** Analysis Date: **9/27/2016 02:53 PM**
Client ID: **BG-1S** Run ID: **HG3_160927A** SeqNo: **4051259** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	82.7	5.0	50	33.3	98.8	71-125	0			

MS Sample ID: **16091233-02BMS** Units: **ng/L** Analysis Date: **9/27/2016 04:27 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051271** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.32	0.50	5	0.474	96.9	71-125	0			

MSD Sample ID: **16091117-13CMSD** Units: **ng/L** Analysis Date: **9/27/2016 03:01 PM**
Client ID: **BG-1S** Run ID: **HG3_160927A** SeqNo: **4051260** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	88.9	5.0	50	33.3	111	71-125	82.7	7.23	24	

MSD Sample ID: **16091233-02BMSD** Units: **ng/L** Analysis Date: **9/27/2016 04:34 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051272** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.88	0.50	5	0.474	88.1	71-125	5.32	8.63	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16091117
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **91957** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-91957-91957** Units: **ng/L** Analysis Date: **9/27/2016 01:35 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051249** Prep Date: **9/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.58	0.50	5	0	112	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-91957-91957** Units: **ng/L** Analysis Date: **9/27/2016 05:13 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051277** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.08	0.50	5	0	102	77-123	0			

The following samples were analyzed in this batch:

16091117-08C	16091117-09C	16091117-10C
16091117-11C	16091117-12C	16091117-13C
16091117-14C	16091117-15C	16091117-16C
16091117-17C	16091117-18C	16091117-19C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16091117
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **91963** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-91963-91963** Units: **ng/L** Analysis Date: **9/27/2016 05:47 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051783** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-91963-91963** Units: **ng/L** Analysis Date: **9/27/2016 06:26 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051788** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-91963-91963** Units: **ng/L** Analysis Date: **9/27/2016 07:05 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051793** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **16091336-01AMS** Units: **ng/L** Analysis Date: **9/27/2016 07:13 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051794** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	84.6	5.0	50	45.4	78.4	71-125	0			

MS Sample ID: **16091351-01AMS** Units: **ng/L** Analysis Date: **9/27/2016 07:52 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051799** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	27.3	0.50	5	24.5	56	71-125	0			SO

MSD Sample ID: **16091336-01AMSD** Units: **ng/L** Analysis Date: **9/27/2016 07:20 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051795** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	88	5.0	50	45.4	85.2	71-125	84.6	3.94	24	

MSD Sample ID: **16091351-01AMSD** Units: **ng/L** Analysis Date: **9/27/2016 07:59 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051800** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	26.4	0.50	5	24.5	38	71-125	27.3	3.35	24	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16091117
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **91963** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-91963-91963** Units: **ng/L** Analysis Date: **9/27/2016 05:39 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051782** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.88	0.50	5	0	97.6	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-91963-91963** Units: **ng/L** Analysis Date: **9/27/2016 08:23 PM**
Client ID: Run ID: **HG3_160927A** SeqNo: **4051803** Prep Date: **9/27/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.09	0.50	5	0	102	77-123	0			

The following samples were analyzed in this batch:

16091117-01C	16091117-02C	16091117-03C
16091117-04C	16091117-05C	16091117-06C
16091117-07C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16091117
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **91777** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-91777-91777** Units: **mg/L** Analysis Date: **9/22/2016 02:50 PM**
Client ID: Run ID: **ICPMS2_160922A** SeqNo: **4041841** Prep Date: **9/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-91777-91777** Units: **mg/L** Analysis Date: **9/22/2016 02:56 PM**
Client ID: Run ID: **ICPMS2_160922A** SeqNo: **4041842** Prep Date: **9/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1043	0.010	0.1	0	104	80-120	0			
Arsenic	0.102	0.0050	0.1	0	102	80-120	0			
Barium	0.09578	0.0050	0.1	0	95.8	80-120	0			
Cadmium	0.09619	0.0020	0.1	0	96.2	80-120	0			
Chromium	0.0953	0.0050	0.1	0	95.3	80-120	0			
Copper	0.09651	0.0050	0.1	0	96.5	80-120	0			
Iron	9.687	0.080	10	0	96.9	80-120	0			
Lead	0.09685	0.0050	0.1	0	96.8	80-120	0			
Manganese	0.09151	0.0050	0.1	0	91.5	80-120	0			
Potassium	9.613	0.20	10	0	96.1	80-120	0			
Selenium	0.09973	0.0050	0.1	0	99.7	80-120	0			
Silver	0.08357	0.0050	0.1	0	83.6	80-120	0			
Zinc	0.0988	0.010	0.1	0	98.8	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16091117
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **91777** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **16091117-13BMS** Units: **mg/L** Analysis Date: **9/22/2016 09:58 PM**
Client ID: **BG-1S** Run ID: **ICPMS2_160922A** SeqNo: **4042039** Prep Date: **9/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2462	0.010	0.1	0.1572	89	75-125	0			
Arsenic	0.1033	0.0050	0.1	0.001926	101	75-125	0			
Barium	0.09682	0.0050	0.1	0.00621	90.6	75-125	0			
Cadmium	0.09189	0.0020	0.1	0.0001136	91.8	75-125	0			
Chromium	0.09752	0.0050	0.1	0.001503	96	75-125	0			
Copper	0.104	0.0050	0.1	0.01134	92.7	75-125	0			
Iron	9.954	0.080	10	0.3015	96.5	75-125	0			
Lead	0.09275	0.0050	0.1	0.0004004	92.3	75-125	0			
Manganese	0.1056	0.0050	0.1	0.0167	88.9	75-125	0			
Potassium	9.63	0.20	10	0.5205	91.1	75-125	0			
Selenium	0.09731	0.0050	0.1	0.00004807	97.3	75-125	0			
Silver	0.07964	0.0050	0.1	-1.554E-05	79.7	75-125	0			
Zinc	0.107	0.010	0.1	0.0102	96.8	75-125	0			

MSD Sample ID: **16091117-13BMSD** Units: **mg/L** Analysis Date: **9/22/2016 10:03 PM**
Client ID: **BG-1S** Run ID: **ICPMS2_160922A** SeqNo: **4042040** Prep Date: **9/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2697	0.010	0.1	0.1572	112	75-125	0.2462	9.11	20	
Arsenic	0.1032	0.0050	0.1	0.001926	101	75-125	0.1033	0.0969	20	
Barium	0.105	0.0050	0.1	0.00621	98.8	75-125	0.09682	8.11	20	
Cadmium	0.09891	0.0020	0.1	0.0001136	98.8	75-125	0.09189	7.36	20	
Chromium	0.09773	0.0050	0.1	0.001503	96.2	75-125	0.09752	0.215	20	
Copper	0.111	0.0050	0.1	0.01134	99.7	75-125	0.104	6.51	20	
Iron	9.982	0.080	10	0.3015	96.8	75-125	9.954	0.281	20	
Lead	0.09879	0.0050	0.1	0.0004004	98.4	75-125	0.09275	6.31	20	
Manganese	0.1126	0.0050	0.1	0.0167	95.9	75-125	0.1056	6.42	20	
Potassium	10.3	0.20	10	0.5205	97.8	75-125	9.63	6.72	20	
Selenium	0.09306	0.0050	0.1	0.00004807	93	75-125	0.09731	4.46	20	
Silver	0.08014	0.0050	0.1	-1.554E-05	80.2	75-125	0.07964	0.626	20	
Zinc	0.1145	0.010	0.1	0.0102	104	75-125	0.107	6.77	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16091117
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **91777** Instrument ID **ICPMS2** Method: **SW6020A**

The following samples were analyzed in this batch:

16091117-01B	16091117-02B	16091117-03B
16091117-04B	16091117-05B	16091117-06B
16091117-07B	16091117-08B	16091117-09B
16091117-10B	16091117-11B	16091117-12B
16091117-13B	16091117-14B	16091117-15B
16091117-16B	16091117-17B	16091117-18B
16091117-19B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 16091117
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R196192** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R196192** Units: **mg/L** Analysis Date: **9/20/2016 08:13 PM**
Client ID: Run ID: **IC3_160920B** SeqNo: **4038448** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	0.474	1.0								J

LCS Sample ID: **LCS-R196192** Units: **mg/L** Analysis Date: **9/20/2016 08:33 PM**
Client ID: Run ID: **IC3_160920B** SeqNo: **4038449** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.921	0.10	2	0	96	81-116	0			
Sulfate	9.516	1.0	10	0	95.2	85-110	0			

MS Sample ID: **16091117-13A MS** Units: **mg/L** Analysis Date: **9/21/2016 03:38 AM**
Client ID: **BG-1S** Run ID: **IC3_160920B** SeqNo: **4038470** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.848	0.50	10	0.125	97.2	75-125	0			
Sulfate	82.3	5.0	50	27.57	109	75-125	0			

MSD Sample ID: **16091117-13A MSD** Units: **mg/L** Analysis Date: **9/21/2016 03:58 AM**
Client ID: **BG-1S** Run ID: **IC3_160920B** SeqNo: **4038471** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.856	0.50	10	0.125	97.3	75-125	9.848	0.0812	20	
Sulfate	81.95	5.0	50	27.57	109	75-125	82.3	0.432	20	

The following samples were analyzed in this batch:

16091117-01A	16091117-02A	16091117-03A
16091117-04A	16091117-05A	16091117-06A
16091117-07A	16091117-08A	16091117-09A
16091117-10A	16091117-11A	16091117-12A
16091117-13A	16091117-14A	16091117-15A
16091117-16A	16091117-17A	16091117-18A
16091117-19A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Middletown, PA +1 717 944 5541
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ALS Environmental

Chain of Custody Form

Page ____ of ____

COC ID: 32060

ALS Project Manager: | ALS Work Order #: 1609117

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Ogden Dunes - IAW	A	Anions
Work Order		Project Number		B	Total Metals
Company Name	ERM	Bill To Company		C	Low-Level Mercury
Send Report To	Martin Ryan	Invoice Attn		D	
Address	8425 Woodfield Crossing Blvd. Suite 560 W	Address		E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip		G	
Phone	317-706-2000	Phone		H	
Fax	317-706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-5S	9-19-16	0945	wt	2	6	X	X	X								
2	MW-5D	9-19-16	0945														
3	MW-6S	9-19-16	1100														
4	MW-6D	9-19-16	1100														
5	MW-4S	9-19-16	1305														
6	MW-4D	9-19-16	1310														
7	MW-3S	9-19-16	1345														
8	MW-3D	9-19-16	1350														
9	MW-2S	9-19-16	1420														
10	MW-2D	9-19-16	1425														

Sampler(s) Please Print & Sign: Tanner Parker, Aaron Ahearn | Shipment Method: ALS Courier

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☑ Other Standard

Results Due Date:

Relinquished by:	Date: 9-20-16	Time: 0920	Received by: Randy Brenda	Notes:	
Relinquished by: Mandy Brenda	Date: 9-20-16	Time: 1250	Received by (Laboratory):	Cooler ID	Cooler Temp
Logged by (Laboratory): MB	Date: 9/20/16	Time: 1415	Checked by (Laboratory):		3.2
					2.0
					1.6

QC Package: (Check One Box Below)
☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page 2 of 2

COC ID: 32059

ALS Project Manager:

ALS Work Order #: 1609117

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Ogden Dunes - IAW	A	Anions
Work Order		Project Number		B	Total Metals
Company Name	ERM	Bill To Company		C	Low-Level Mercury
Send Report To	Martin Ryan	Invoice Attn		D	
Address	8425 Woodfield Crossing Blvd Ste 560-W Indpls	Address		E	MS/MSD
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip		G	
Phone	317-706-2000	Phone		H	
Fax	317-706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	MW-1S	9-19-16	1515	W	2	6	X	X	X								
12	MW-1D	9-19-16	1510			6	X	X	X								
13	BG-1S	9-20-16	0755			12	X	X	X		X						
14	BG-1D		0750			6	X	X	X		X						
15	MW-8S		0830			6	X	X	X								
16	MW-8D		0835			6	X	X	X								
17	MW-7S		0910			6	X	X	X								
18	MW-7D		0915			6	X	X	X								
19	Dup-A	9-19-16	—	W	2	6	X	X	X								
10																	

Sampler(s) Please Print & Sign: Tanner Baker

Shipment Method: ALS Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 9-20-16	Time: 0980	Received by: Mandy Brombt	Notes:
Relinquished by: Mandy Brombt	Date: 9-20-16	Time: 1250	Received by (Laboratory):	
Logged by (Laboratory): MB	Date: 9/20/16	Time: 1415	Checked by (Laboratory):	

Cooler ID	Cooler Temp
	3.2
	2.0
	1.6

QC Package: (Check One Box Below)
☒ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **20-Sep-16 12:50**

Work Order: **16091117** Received by: **DS**

Checklist completed by Meghan Broadbent (eSignature) 20-Sep-16 (Date) Reviewed by: Bill Carey (eSignature) 20-Sep-16 (Date)

Matrices: water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2/3.2 2.0/2.0 1.6/1.6	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	9/20/2016 3:05:33 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

28-Oct-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1610910**

Dear Marty,

ALS Environmental received 39 samples on 14-Oct-2016 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 71.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 28-Oct-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1610910**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1610910-01	SW-BG-2	Water		10/11/2016 10:00	10/14/2016 09:00	☐
1610910-02	SW-BG-4	Water		10/11/2016 10:22	10/14/2016 09:00	☐
1610910-03	SW-BG-5	Water		10/11/2016 10:40	10/14/2016 09:00	☐
1610910-04	SW-BG-3	Water		10/11/2016 11:00	10/14/2016 09:00	☐
1610910-05	SW-BG-1	Water		10/11/2016 11:10	10/14/2016 09:00	☐
1610910-06	DUP-SW-BG	Water		10/11/2016	10/14/2016 09:00	☐
1610910-07	SW-BG-8	Water		10/11/2016 12:00	10/14/2016 09:00	☐
1610910-08	SW-BG-10	Water		10/11/2016 12:15	10/14/2016 09:00	☐
1610910-09	SW-BG-9	Water		10/11/2016 12:35	10/14/2016 09:00	☐
1610910-10	SW-BG-6	Water		10/11/2016 12:45	10/14/2016 09:00	☐
1610910-11	SW-BG-7	Water		10/11/2016 13:00	10/14/2016 09:00	☐
1610910-12	SW-LL-9	Water		10/12/2016 09:05	10/14/2016 09:00	☐
1610910-13	SW-LL-11	Water		10/12/2016 09:25	10/14/2016 09:00	☐
1610910-14	SW-LL-12	Water		10/12/2016 09:45	10/14/2016 09:00	☐
1610910-15	SW-LL-15	Water		10/12/2016 10:05	10/14/2016 09:00	☐
1610910-16	SW-LL-16	Water		10/12/2016 10:30	10/14/2016 09:00	☐
1610910-17	SW-LL-14	Water		10/12/2016 10:45	10/14/2016 09:00	☐
1610910-18	SW-LL-13	Water		10/12/2016 11:00	10/14/2016 09:00	☐
1610910-19	SW-LL-10	Water		10/12/2016 11:25	10/14/2016 09:00	☐
1610910-20	DUP-SW-LL	Water		10/12/2016	10/14/2016 09:00	☐
1610910-21	SW-LL-8	Water		10/12/2016 12:00	10/14/2016 09:00	☐
1610910-22	SW-LL-5	Water		10/12/2016 12:15	10/14/2016 09:00	☐
1610910-23	SW-LL-3	Water		10/12/2016 12:35	10/14/2016 09:00	☐
1610910-24	SW-LL-7	Water		10/12/2016 12:50	10/14/2016 09:00	☐
1610910-25	SW-LL-6	Water		10/12/2016 13:00	10/14/2016 09:00	☐
1610910-26	SW-LL-4	Water		10/12/2016 13:10	10/14/2016 09:00	☐
1610910-27	SW-LL-2	Water		10/12/2016 13:25	10/14/2016 09:00	☐
1610910-28	SW-LL-1	Water		10/12/2016 13:30	10/14/2016 09:00	☐
1610910-29	SW-RP-20	Water		10/13/2016 09:30	10/14/2016 09:00	☐
1610910-30	SW-RP-16	Water		10/13/2016 09:45	10/14/2016 09:00	☐
1610910-31	SW-RP-12	Water		10/13/2016 10:00	10/14/2016 09:00	☐
1610910-32	SW-RP-6	Water		10/13/2016 10:15	10/14/2016 09:00	☐
1610910-33	DUP-SW-RP	Water		10/13/2016	10/14/2016 09:00	☐
1610910-34	SW-RP-2	Water		10/13/2016 10:45	10/14/2016 09:00	☐
1610910-35	SW-RP-4	Water		10/13/2016 11:45	10/14/2016 09:00	☐
1610910-36	SW-RP-8	Water		10/13/2016 12:05	10/14/2016 09:00	☐
1610910-37	SW-RP-10	Water		10/13/2016 12:15	10/14/2016 09:00	☐
1610910-38	SW-RP-13	Water		10/13/2016 12:25	10/14/2016 09:00	☐
1610910-39	SW-RP-18	Water		10/13/2016 13:00	10/14/2016 09:00	☐

ALS Group USA, Corp

Date: 28-Oct-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1610910**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1610910

Case Narrative

Samples for the above noted Work Order were received on 10/14/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 93097, Method ICP_6020_W, Sample 1610910-07AMS: The MS/MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Zn

Batch 93097, Method ICP_6020_W, Sample 1610910-07AMSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Zn

Wet Chemistry:
Batch R198236, Method IC_9056_W, Sample 1610910-01B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-02B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-03B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-04B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-05B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-06B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-07B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-08B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-09B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-10B: Sample holding time expired before receipt by laboratory.

Batch R198236, Method IC_9056_W, Sample 1610910-11B: Sample holding time expired before receipt by laboratory.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-2
Collection Date: 10/11/2016 10:00 AM

Work Order: 1610910
Lab ID: 1610910-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/21/16		Analyst: **CC**
Mercury	**0.00099**		**0.00020**	**0.00050**	**µg/L**	1	10/21/2016 14:04
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**90,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 00:44
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**4.8**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 06:00
Arsenic	**1.0**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 06:00
Barium	**21**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 06:00
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 06:00
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 06:00
Copper	U		0.28	5.0	µg/L	1	10/19/2016 06:00
Hardness (Calculation)	**90,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 06:00
Iron	**690**		**4.6**	**80**	**µg/L**	1	10/19/2016 06:00
Lead	U		0.33	5.0	µg/L	1	10/19/2016 06:00
Manganese	**0.97**	J	**0.51**	**5.0**	**µg/L**	1	10/19/2016 06:00
Potassium	**270**		**17**	**200**	**µg/L**	1	10/19/2016 06:00
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 06:00
Silver	U		0.050	5.0	µg/L	1	10/19/2016 06:00
Zinc	**3.7**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 06:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/14/2016 23:51
Sulfate	**650**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 23:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-4
Collection Date: 10/11/2016 10:22 AM

Work Order: 1610910
Lab ID: 1610910-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/21/16		Analyst: **CC**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	10/21/2016 14:28
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**81,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 00:50
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**4.7**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 06:07
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 06:07
Barium	**18**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 06:07
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 06:07
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 06:07
Copper	U		0.28	5.0	µg/L	1	10/19/2016 06:07
Hardness (Calculation)	**83,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 06:07
Iron	**520**		**4.6**	**80**	**µg/L**	1	10/19/2016 06:07
Lead	U		0.33	5.0	µg/L	1	10/19/2016 06:07
Manganese	**2.7**	J	**0.51**	**5.0**	**µg/L**	1	10/19/2016 06:07
Potassium	**170**	J	**17**	**200**	**µg/L**	1	10/19/2016 06:07
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 06:07
Silver	U		0.050	5.0	µg/L	1	10/19/2016 06:07
Zinc	**9.8**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 06:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/15/2016 00:11
Sulfate	**490**	J	**410**	**1,000**	**µg/L**	1	10/15/2016 00:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-5
Collection Date: 10/11/2016 10:40 AM

Work Order: 1610910
Lab ID: 1610910-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00070**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 13:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 00:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**31**		**4.2**	**10**	**µg/L**	1	10/19/2016 06:13
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 06:13
Barium	**21**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 06:13
Cadmium	**0.28**	J	**0.050**	**2.0**	**µg/L**	1	10/19/2016 06:13
Chromium	**2.7**	J	**0.65**	**5.0**	**µg/L**	1	10/19/2016 06:13
Copper	**3.4**	J	**0.28**	**5.0**	**µg/L**	1	10/19/2016 06:13
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 06:13
Iron	**310**		**4.6**	**80**	**µg/L**	1	10/19/2016 06:13
Lead	**6.9**		**0.33**	**5.0**	**µg/L**	1	10/19/2016 06:13
Manganese	**9.2**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 06:13
Potassium	**3,700**		**17**	**200**	**µg/L**	1	10/19/2016 06:13
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 06:13
Silver	U		0.050	5.0	µg/L	1	10/19/2016 06:13
Zinc	**25**		**1.4**	**10**	**µg/L**	1	10/19/2016 06:13
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/15/2016 00:32
Sulfate	**3,000**		**410**	**1,000**	**µg/L**	1	10/15/2016 00:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-3
Collection Date: 10/11/2016 11:00 AM

Work Order: 1610910
Lab ID: 1610910-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 13:34
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 01:01
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**6.4**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 06:19
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 06:19
Barium	**23**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 06:19
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 06:19
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 06:19
Copper	U		0.28	5.0	µg/L	1	10/19/2016 06:19
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 06:19
Iron	**680**		**4.6**	**80**	**µg/L**	1	10/19/2016 06:19
Lead	U		0.33	5.0	µg/L	1	10/19/2016 06:19
Manganese	**16**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 06:19
Potassium	**150**	J	**17**	**200**	**µg/L**	1	10/19/2016 06:19
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 06:19
Silver	U		0.050	5.0	µg/L	1	10/19/2016 06:19
Zinc	**5.7**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 06:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/15/2016 00:52
Sulfate	**1,800**		**410**	**1,000**	**µg/L**	1	10/15/2016 00:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-1
Collection Date: 10/11/2016 11:10 AM

Work Order: 1610910
Lab ID: 1610910-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.0027**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 13:42
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**89,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 01:06
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**8.9**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 06:25
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 06:25
Barium	**20**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 06:25
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 06:25
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 06:25
Copper	U		0.28	5.0	µg/L	1	10/19/2016 06:25
Hardness (Calculation)	**86,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 06:25
Iron	**440**		**4.6**	**80**	**µg/L**	1	10/19/2016 06:25
Lead	**0.52**	J	**0.33**	**5.0**	**µg/L**	1	10/19/2016 06:25
Manganese	**7.3**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 06:25
Potassium	**250**		**17**	**200**	**µg/L**	1	10/19/2016 06:25
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 06:25
Silver	U		0.050	5.0	µg/L	1	10/19/2016 06:25
Zinc	**3.5**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 06:25
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**78**	JH	**48**	**100**	**µg/L**	1	10/15/2016 01:12
Sulfate	**1,100**		**410**	**1,000**	**µg/L**	1	10/15/2016 01:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-SW-BG
Collection Date: 10/11/2016

Work Order: 1610910
Lab ID: 1610910-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00066**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 13:49
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 01:29
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**4.3**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 06:31
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 06:31
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 06:31
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 06:31
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 06:31
Copper	U		0.28	5.0	µg/L	1	10/19/2016 06:31
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 06:31
Iron	**100**		**4.6**	**80**	**µg/L**	1	10/19/2016 06:31
Lead	U		0.33	5.0	µg/L	1	10/19/2016 06:31
Manganese	**1.2**	J	**0.51**	**5.0**	**µg/L**	1	10/19/2016 06:31
Potassium	**490**		**17**	**200**	**µg/L**	1	10/19/2016 06:31
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 06:31
Silver	U		0.050	5.0	µg/L	1	10/19/2016 06:31
Zinc	**6.1**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 06:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/15/2016 01:32
Sulfate	**3,000**		**410**	**1,000**	**µg/L**	1	10/15/2016 01:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-8
Collection Date: 10/11/2016 12:00 PM

Work Order: 1610910
Lab ID: 1610910-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.0026**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 13:57
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**33,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 01:34
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**24**		**4.2**	**10**	**µg/L**	1	10/19/2016 06:38
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 06:38
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 06:38
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 06:38
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 06:38
Copper	**11**		**0.28**	**5.0**	**µg/L**	1	10/19/2016 06:38
Hardness (Calculation)	**31,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 06:38
Iron	**1,600**		**4.6**	**80**	**µg/L**	1	10/19/2016 06:38
Lead	**1.4**	J	**0.33**	**5.0**	**µg/L**	1	10/19/2016 06:38
Manganese	**21**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 06:38
Potassium	**1,200**		**17**	**200**	**µg/L**	1	10/19/2016 06:38
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 06:38
Silver	U		0.050	5.0	µg/L	1	10/19/2016 06:38
Zinc	**37**		**1.4**	**10**	**µg/L**	1	10/19/2016 06:38
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/15/2016 01:53
Sulfate	U		410	1,000	µg/L	1	10/15/2016 01:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-10
Collection Date: 10/11/2016 12:15 PM

Work Order: 1610910
Lab ID: 1610910-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00095**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 14:05
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**33,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 01:39
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**19**		**4.2**	**10**	**µg/L**	1	10/22/2016 16:49
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 22:31
Barium	**14**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 22:31
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 22:31
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 22:31
Copper	**0.53**	J	**0.28**	**5.0**	**µg/L**	1	10/19/2016 22:31
Hardness (Calculation)	**35,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 22:31
Iron	**810**		**4.6**	**80**	**µg/L**	1	10/19/2016 22:31
Lead	**0.55**	J	**0.33**	**5.0**	**µg/L**	1	10/19/2016 22:31
Manganese	**8.8**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 22:31
Potassium	**1,700**		**17**	**200**	**µg/L**	1	10/19/2016 22:31
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 22:31
Silver	U		0.050	5.0	µg/L	1	10/19/2016 22:31
Zinc	**6.5**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 22:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/14/2016 18:48
Sulfate	U		410	1,000	µg/L	1	10/17/2016 06:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-9
Collection Date: 10/11/2016 12:35 PM

Work Order: 1610910
Lab ID: 1610910-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.0020**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 14:36
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**56,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 01:44
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**15**		**4.2**	**10**	**µg/L**	1	10/22/2016 16:55
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 22:49
Barium	**17**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 22:49
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 22:49
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 22:49
Copper	**0.34**	J	**0.28**	**5.0**	**µg/L**	1	10/19/2016 22:49
Hardness (Calculation)	**60,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 22:49
Iron	**830**		**4.6**	**80**	**µg/L**	1	10/19/2016 22:49
Lead	U		0.33	5.0	µg/L	1	10/19/2016 22:49
Manganese	**3.0**	J	**0.51**	**5.0**	**µg/L**	1	10/19/2016 22:49
Potassium	**880**		**17**	**200**	**µg/L**	1	10/19/2016 22:49
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 22:49
Silver	U		0.050	5.0	µg/L	1	10/19/2016 22:49
Zinc	**6.9**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 22:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**97**	JH	**48**	**100**	**µg/L**	1	10/15/2016 02:53
Sulfate	**720**	J	**410**	**1,000**	**µg/L**	1	10/15/2016 02:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-6
Collection Date: 10/11/2016 12:45 PM

Work Order: 1610910
Lab ID: 1610910-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00077**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 14:44
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**62,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 01:49
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**6.8**	J	**4.2**	**10**	**µg/L**	1	10/22/2016 17:01
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 23:13
Barium	**18**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:13
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:13
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:13
Copper	**0.41**	J	**0.28**	**5.0**	**µg/L**	1	10/19/2016 23:13
Hardness (Calculation)	**60,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:13
Iron	**610**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:13
Lead	**0.39**	J	**0.33**	**5.0**	**µg/L**	1	10/19/2016 23:13
Manganese	**5.6**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:13
Potassium	**1,300**		**17**	**200**	**µg/L**	1	10/19/2016 23:13
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:13
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:13
Zinc	**6.4**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 23:13
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/15/2016 03:13
Sulfate	**1,200**		**410**	**1,000**	**µg/L**	1	10/15/2016 03:13

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-7
Collection Date: 10/11/2016 01:00 PM

Work Order: 1610910
Lab ID: 1610910-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.0016**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 14:52
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**33,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 01:54
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/18/16		Analyst: **ML**
Aluminum	**19**		**4.2**	**10**	**µg/L**	1	10/22/2016 17:07
Arsenic	**1.9**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 23:19
Barium	**17**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:19
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:19
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:19
Copper	**0.47**	J	**0.28**	**5.0**	**µg/L**	1	10/19/2016 23:19
Hardness (Calculation)	**36,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:19
Iron	**1,800**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:19
Lead	**1.1**	J	**0.33**	**5.0**	**µg/L**	1	10/19/2016 23:19
Manganese	**80**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:19
Potassium	**960**		**17**	**200**	**µg/L**	1	10/19/2016 23:19
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:19
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:19
Zinc	**8.5**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 23:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U	H	48	100	µg/L	1	10/15/2016 03:34
Sulfate	**420**	J	**410**	**1,000**	**µg/L**	1	10/15/2016 03:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-9
Collection Date: 10/12/2016 09:05 AM

Work Order: 1610910
Lab ID: 1610910-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00061**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 15:00
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:14
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**7.9**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 23:26
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 23:26
Barium	**20**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:26
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:26
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:26
Copper	U		0.28	5.0	µg/L	1	10/19/2016 23:26
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:26
Iron	**1,300**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:26
Lead	**0.48**	J	**0.33**	**5.0**	**µg/L**	1	10/19/2016 23:26
Manganese	**16**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:26
Potassium	**900**		**17**	**200**	**µg/L**	1	10/19/2016 23:26
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:26
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:26
Zinc	**8.5**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 23:26
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 13:08
Sulfate	**780**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 13:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-11
Collection Date: 10/12/2016 09:25 AM

Work Order: 1610910
Lab ID: 1610910-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00047**	J	**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 15:07
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:20
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	10/19/2016 23:32
Arsenic	**0.96**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 23:32
Barium	**22**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:32
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:32
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:32
Copper	U		0.28	5.0	µg/L	1	10/19/2016 23:32
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:32
Iron	**1,100**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:32
Lead	U		0.33	5.0	µg/L	1	10/19/2016 23:32
Manganese	**12**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:32
Potassium	**810**		**17**	**200**	**µg/L**	1	10/19/2016 23:32
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:32
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:32
Zinc	**8.4**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 23:32
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 13:28
Sulfate	**530**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 13:28

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-12
Collection Date: 10/12/2016 09:45 AM

Work Order: 1610910
Lab ID: 1610910-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00039**	J	**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 15:23
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:25
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	10/19/2016 23:38
Arsenic	U		0.87	5.0	µg/L	1	10/19/2016 23:38
Barium	**25**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:38
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:38
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:38
Copper	U		0.28	5.0	µg/L	1	10/19/2016 23:38
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:38
Iron	**710**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:38
Lead	U		0.33	5.0	µg/L	1	10/19/2016 23:38
Manganese	**9.1**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:38
Potassium	**730**		**17**	**200**	**µg/L**	1	10/19/2016 23:38
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:38
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:38
Zinc	**7.5**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 23:38
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 13:49
Sulfate	**1,300**		**410**	**1,000**	**µg/L**	1	10/14/2016 13:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-15
Collection Date: 10/12/2016 10:05 AM

Work Order: 1610910
Lab ID: 1610910-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00021**	J	**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 15:31
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:30
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	U		4.2	10	µg/L	1	10/19/2016 23:44
Arsenic	U		0.87	5.0	µg/L	1	10/19/2016 23:44
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:44
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:44
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:44
Copper	U		0.28	5.0	µg/L	1	10/19/2016 23:44
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:44
Iron	**500**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:44
Lead	U		0.33	5.0	µg/L	1	10/19/2016 23:44
Manganese	**4.9**	J	**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:44
Potassium	**680**		**17**	**200**	**µg/L**	1	10/19/2016 23:44
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:44
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:44
Zinc	**11**		**1.4**	**10**	**µg/L**	1	10/19/2016 23:44
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 14:09
Sulfate	**2,100**		**410**	**1,000**	**µg/L**	1	10/14/2016 14:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-16
Collection Date: 10/12/2016 10:30 AM

Work Order: 1610910
Lab ID: 1610910-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.0014**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 15:39
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:35
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**7.9**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 23:50
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 23:50
Barium	**29**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:50
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:50
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:50
Copper	U		0.28	5.0	µg/L	1	10/19/2016 23:50
Hardness (Calculation)	**180,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:50
Iron	**730**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:50
Lead	U		0.33	5.0	µg/L	1	10/19/2016 23:50
Manganese	**8.1**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:50
Potassium	**1,100**		**17**	**200**	**µg/L**	1	10/19/2016 23:50
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:50
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:50
Zinc	**7.6**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 23:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 14:29
Sulfate	**2,700**		**410**	**1,000**	**µg/L**	1	10/14/2016 14:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-14
Collection Date: 10/12/2016 10:45 AM

Work Order: 1610910
Lab ID: 1610910-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00023**	J	**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 15:46
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:40
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 10/18/16		Analyst: **ML**
Aluminum	**6.9**	J	**4.2**	**10**	**µg/L**	1	10/19/2016 23:56
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	10/19/2016 23:56
Barium	**29**		**2.2**	**5.0**	**µg/L**	1	10/19/2016 23:56
Cadmium	U		0.050	2.0	µg/L	1	10/19/2016 23:56
Chromium	U		0.65	5.0	µg/L	1	10/19/2016 23:56
Copper	U		0.28	5.0	µg/L	1	10/19/2016 23:56
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	10/19/2016 23:56
Iron	**730**		**4.6**	**80**	**µg/L**	1	10/19/2016 23:56
Lead	U		0.33	5.0	µg/L	1	10/19/2016 23:56
Manganese	**21**		**0.51**	**5.0**	**µg/L**	1	10/19/2016 23:56
Potassium	**890**		**17**	**200**	**µg/L**	1	10/19/2016 23:56
Selenium	U		0.90	5.0	µg/L	1	10/19/2016 23:56
Silver	U		0.050	5.0	µg/L	1	10/19/2016 23:56
Zinc	**9.4**	J	**1.4**	**10**	**µg/L**	1	10/19/2016 23:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 14:49
Sulfate	**3,200**		**410**	**1,000**	**µg/L**	1	10/14/2016 14:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-13
Collection Date: 10/12/2016 11:00 AM

Work Order: 1610910
Lab ID: 1610910-18
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00022**	J	**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 15:54
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:46
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 20:53
Arsenic	**0.92**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 20:53
Barium	**23**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 20:53
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 20:53
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 20:53
Copper	**0.39**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 20:53
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 20:53
Iron	**270**		**4.6**	**80**	**µg/L**	1	10/24/2016 20:53
Lead	U		0.33	5.0	µg/L	1	10/24/2016 20:53
Manganese	**1.6**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 20:53
Potassium	**860**		**17**	**200**	**µg/L**	1	10/24/2016 20:53
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 20:53
Silver	**0.11**	J	**0.050**	**5.0**	**µg/L**	1	10/27/2016 09:22
Zinc	**6.2**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 20:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 15:10
Sulfate	**2,300**		**410**	**1,000**	**µg/L**	1	10/14/2016 15:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-10
Collection Date: 10/12/2016 11:25 AM

Work Order: 1610910
Lab ID: 1610910-19
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00036**	J	**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 16:02
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:51
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 21:09
Arsenic	**0.98**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 21:09
Barium	**17**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 21:09
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 21:09
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 21:09
Copper	**0.32**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 21:09
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 21:09
Iron	**350**		**4.6**	**80**	**µg/L**	1	10/24/2016 21:09
Lead	U		0.33	5.0	µg/L	1	10/24/2016 21:09
Manganese	**2.1**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 21:09
Potassium	**1,000**		**17**	**200**	**µg/L**	1	10/24/2016 21:09
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 21:09
Silver	U		0.050	5.0	µg/L	1	10/27/2016 09:28
Zinc	**5.5**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 21:09
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 16:51
Sulfate	**1,500**		**410**	**1,000**	**µg/L**	1	10/14/2016 16:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-SW-LL
Collection Date: 10/12/2016

Work Order: 1610910
Lab ID: 1610910-20
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00061**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 16:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 02:56
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 21:14
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 21:14
Barium	**18**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 21:14
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 21:14
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 21:14
Copper	**0.78**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 21:14
Hardness (Calculation)	**98,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 21:14
Iron	**620**		**4.6**	**80**	**µg/L**	1	10/24/2016 21:14
Lead	U		0.33	5.0	µg/L	1	10/24/2016 21:14
Manganese	**0.97**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 21:14
Potassium	**780**		**17**	**200**	**µg/L**	1	10/24/2016 21:14
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 21:14
Silver	U		0.050	5.0	µg/L	1	10/27/2016 17:57
Zinc	**4.5**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 21:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 17:11
Sulfate	**810**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 17:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-8
Collection Date: 10/12/2016 12:00 PM

Work Order: 1610910
Lab ID: 1610910-21
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00034**	J	**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 16:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 03:02
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**16**		**4.2**	**10**	**µg/L**	1	10/24/2016 21:46
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 21:46
Barium	**16**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 21:46
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 21:46
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 21:46
Copper	U		0.28	5.0	µg/L	1	10/24/2016 21:46
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 21:46
Iron	**460**		**4.6**	**80**	**µg/L**	1	10/24/2016 21:46
Lead	U		0.33	5.0	µg/L	1	10/24/2016 21:46
Manganese	**3.8**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 21:46
Potassium	**1,300**		**17**	**200**	**µg/L**	1	10/24/2016 21:46
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 21:46
Silver	U		0.050	5.0	µg/L	1	10/27/2016 18:02
Zinc	**8.5**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 21:46
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 17:31
Sulfate	**1,700**		**410**	**1,000**	**µg/L**	1	10/14/2016 17:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-5
Collection Date: 10/12/2016 12:15 PM

Work Order: 1610910
Lab ID: 1610910-22
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **ML**
Mercury	**0.00066**		**0.00020**	**0.00050**	**µg/L**	1	10/22/2016 16:25
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 04:27
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 21:51
Arsenic	U		0.87	5.0	µg/L	1	10/24/2016 21:51
Barium	**17**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 21:51
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 21:51
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 21:51
Copper	U		0.28	5.0	µg/L	1	10/24/2016 21:51
Hardness (Calculation)	**92,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 21:51
Iron	**480**		**4.6**	**80**	**µg/L**	1	10/24/2016 21:51
Lead	U		0.33	5.0	µg/L	1	10/24/2016 21:51
Manganese	**0.98**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 21:51
Potassium	**1,000**		**17**	**200**	**µg/L**	1	10/24/2016 21:51
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 21:51
Silver	U		0.050	5.0	µg/L	1	10/27/2016 18:07
Zinc	**8.4**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 21:51
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 12:48
Sulfate	**680**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 12:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-3
Collection Date: 10/12/2016 12:35 PM

Work Order: 1610910
Lab ID: 1610910-23
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/21/16		Analyst: **CC**
Mercury	**0.00048**	J	**0.00020**	**0.00050**	**µg/L**	1	10/21/2016 14:51
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**95,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 04:53
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 21:57
Arsenic	U		0.87	5.0	µg/L	1	10/24/2016 21:57
Barium	**13**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 21:57
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 21:57
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 21:57
Copper	U		0.28	5.0	µg/L	1	10/24/2016 21:57
Hardness (Calculation)	**84,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 21:57
Iron	**150**		**4.6**	**80**	**µg/L**	1	10/24/2016 21:57
Lead	U		0.33	5.0	µg/L	1	10/24/2016 21:57
Manganese	**0.80**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 21:57
Potassium	**1,900**		**17**	**200**	**µg/L**	1	10/24/2016 21:57
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 21:57
Silver	U		0.050	5.0	µg/L	1	10/27/2016 18:22
Zinc	**6.2**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 21:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 17:51
Sulfate	**780**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 17:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-7
Collection Date: 10/12/2016 12:50 PM

Work Order: 1610910
Lab ID: 1610910-24
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00027**	J	**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 14:27
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 04:58
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 22:02
Arsenic	**0.99**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 22:02
Barium	**15**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:02
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:02
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:02
Copper	U		0.28	5.0	µg/L	1	10/24/2016 22:02
Hardness (Calculation)	**97,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:02
Iron	**590**		**4.6**	**80**	**µg/L**	1	10/24/2016 22:02
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:02
Manganese	**4.2**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 22:02
Potassium	**780**		**17**	**200**	**µg/L**	1	10/24/2016 22:02
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:02
Silver	U		0.050	5.0	µg/L	1	10/27/2016 18:28
Zinc	**6.6**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:02
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 18:12
Sulfate	**840**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 18:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-6
Collection Date: 10/12/2016 01:00 PM

Work Order: 1610910
Lab ID: 1610910-25
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/21/16		Analyst: **CC**
Mercury	**0.00027**	J	**0.00020**	**0.00050**	**µg/L**	1	10/21/2016 14:59
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	10/22/2016 05:03
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 22:07
Arsenic	U		0.87	5.0	µg/L	1	10/24/2016 22:07
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:07
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:07
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:07
Copper	U		0.28	5.0	µg/L	1	10/24/2016 22:07
Hardness (Calculation)	**92,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:07
Iron	**190**		**4.6**	**80**	**µg/L**	1	10/24/2016 22:07
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:07
Manganese	U		0.51	5.0	µg/L	1	10/24/2016 22:07
Potassium	**1,100**		**17**	**200**	**µg/L**	1	10/24/2016 22:07
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:07
Silver	U		0.050	5.0	µg/L	1	10/27/2016 18:48
Zinc	**3.8**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 18:32
Sulfate	**600**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 18:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-4
Collection Date: 10/12/2016 01:10 PM

Work Order: 1610910
Lab ID: 1610910-26
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00045**	J	**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 14:35
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 01:11
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 22:12
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 22:12
Barium	**16**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:12
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:12
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:12
Copper	**0.29**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 22:12
Hardness (Calculation)	**92,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:12
Iron	**560**		**4.6**	**80**	**µg/L**	1	10/24/2016 22:12
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:12
Manganese	**1.6**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 22:12
Potassium	**940**		**17**	**200**	**µg/L**	1	10/24/2016 22:12
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:12
Silver	U		0.050	5.0	µg/L	1	10/27/2016 18:53
Zinc	**3.4**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:12
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 18:52
Sulfate	**710**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 18:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-2
Collection Date: 10/12/2016 01:25 PM

Work Order: 1610910
Lab ID: 1610910-27
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00034**	J	**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 14:50
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 01:17
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 22:18
Arsenic	**0.89**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 22:18
Barium	**15**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:18
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:18
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:18
Copper	U		0.28	5.0	µg/L	1	10/24/2016 22:18
Hardness (Calculation)	**95,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:18
Iron	**490**		**4.6**	**80**	**µg/L**	1	10/24/2016 22:18
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:18
Manganese	**0.79**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 22:18
Potassium	**1,200**		**17**	**200**	**µg/L**	1	10/24/2016 22:18
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:18
Silver	U		0.050	5.0	µg/L	1	10/27/2016 18:58
Zinc	**6.7**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 19:12
Sulfate	**600**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 19:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-1
Collection Date: 10/12/2016 01:30 PM

Work Order: 1610910
Lab ID: 1610910-28
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/21/16		Analyst: **CC**
Mercury	**0.00036**	J	**0.00020**	**0.00050**	**µg/L**	1	10/21/2016 15:07
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**99,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 01:22
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	10/24/2016 22:23
Arsenic	**1.0**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 22:23
Barium	**14**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:23
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:23
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:23
Copper	**0.36**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 22:23
Hardness (Calculation)	**93,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:23
Iron	**630**		**4.6**	**80**	**µg/L**	1	10/24/2016 22:23
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:23
Manganese	**1.7**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 22:23
Potassium	**1,400**		**17**	**200**	**µg/L**	1	10/24/2016 22:23
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:23
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:03
Zinc	**7.8**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:23
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 19:33
Sulfate	**630**	J	**410**	**1,000**	**µg/L**	1	10/14/2016 19:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-20
Collection Date: 10/13/2016 09:30 AM

Work Order: 1610910
Lab ID: 1610910-29
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00049**	J	**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 14:58
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 01:28
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**23**		**4.2**	**10**	**µg/L**	1	10/24/2016 22:45
Arsenic	**0.98**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 22:45
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:45
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:45
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:45
Copper	**0.63**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 22:45
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:45
Iron	**65**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 22:45
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:45
Manganese	**2.1**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 22:45
Potassium	**1,800**		**17**	**200**	**µg/L**	1	10/24/2016 22:45
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:45
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:08
Zinc	**5.6**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 19:53
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/14/2016 19:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-16
Collection Date: 10/13/2016 09:45 AM

Work Order: 1610910
Lab ID: 1610910-30
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00089**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 15:06
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/19/16		Analyst: **RH**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/20/2016 01:33
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**29**		**4.2**	**10**	**µg/L**	1	10/24/2016 22:50
Arsenic	**0.97**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 22:50
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:50
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:50
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:50
Copper	**0.59**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 22:50
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:50
Iron	**47**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 22:50
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:50
Manganese	**2.2**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 22:50
Potassium	**1,800**		**17**	**200**	**µg/L**	1	10/24/2016 22:50
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:50
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:14
Zinc	**7.2**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:50
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 20:54
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/14/2016 20:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-12
Collection Date: 10/13/2016 10:00 AM

Work Order: 1610910
Lab ID: 1610910-31
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00046**	J	**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 15:14
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 02:31
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**21**		**4.2**	**10**	**µg/L**	1	10/24/2016 22:55
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 22:55
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 22:55
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 22:55
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 22:55
Copper	**1.1**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 22:55
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 22:55
Iron	**44**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 22:55
Lead	U		0.33	5.0	µg/L	1	10/24/2016 22:55
Manganese	**1.1**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 22:55
Potassium	**1,800**		**17**	**200**	**µg/L**	1	10/24/2016 22:55
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 22:55
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:19
Zinc	**6.2**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 22:55
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 21:14
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/14/2016 21:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-6
Collection Date: 10/13/2016 10:15 AM

Work Order: 1610910
Lab ID: 1610910-32
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00057**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 15:21
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 02:37
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**41**		**4.2**	**10**	**µg/L**	1	10/24/2016 23:01
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 23:01
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 23:01
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 23:01
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 23:01
Copper	**0.65**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 23:01
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 23:01
Iron	**43**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 23:01
Lead	U		0.33	5.0	µg/L	1	10/24/2016 23:01
Manganese	**1.9**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 23:01
Potassium	**1,800**		**17**	**200**	**µg/L**	1	10/24/2016 23:01
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 23:01
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:24
Zinc	**4.9**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 23:01
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 19:48
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/17/2016 07:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-SW-RP
Collection Date: 10/13/2016

Work Order: 1610910
Lab ID: 1610910-33
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.0021**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 15:29
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 02:43
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**33**		**4.2**	**10**	**µg/L**	1	10/24/2016 23:06
Arsenic	U		0.87	5.0	µg/L	1	10/24/2016 23:06
Barium	**24**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 23:06
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 23:06
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 23:06
Copper	**0.65**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 23:06
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 23:06
Iron	**22**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 23:06
Lead	U		0.33	5.0	µg/L	1	10/24/2016 23:06
Manganese	U		0.51	5.0	µg/L	1	10/24/2016 23:06
Potassium	**1,700**		**17**	**200**	**µg/L**	1	10/24/2016 23:06
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 23:06
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:29
Zinc	**5.8**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 23:06
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 20:09
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/17/2016 07:36

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-2
Collection Date: 10/13/2016 10:45 AM

Work Order: 1610910
Lab ID: 1610910-34
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 15:45
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 02:49
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**30**		**4.2**	**10**	**µg/L**	1	10/24/2016 23:11
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 23:11
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 23:11
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 23:11
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 23:11
Copper	**0.68**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 23:11
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 23:11
Iron	**31**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 23:11
Lead	U		0.33	5.0	µg/L	1	10/24/2016 23:11
Manganese	**1.2**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 23:11
Potassium	**1,800**		**17**	**200**	**µg/L**	1	10/24/2016 23:11
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 23:11
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:34
Zinc	**8.1**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 23:11
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 20:29
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/17/2016 07:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-4
Collection Date: 10/13/2016 11:45 AM

Work Order: 1610910
Lab ID: 1610910-35
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.0027**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 15:53
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 02:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**27**		**4.2**	**10**	**µg/L**	1	10/24/2016 23:17
Arsenic	**0.98**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 23:17
Barium	**24**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 23:17
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 23:17
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 23:17
Copper	**1.9**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 23:17
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 23:17
Iron	**24**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 23:17
Lead	U		0.33	5.0	µg/L	1	10/24/2016 23:17
Manganese	**1.5**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 23:17
Potassium	**1,800**		**17**	**200**	**µg/L**	1	10/24/2016 23:17
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 23:17
Silver	U		0.050	5.0	µg/L	1	10/27/2016 19:55
Zinc	**8.5**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 23:17
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**81**	J	**48**	**100**	**µg/L**	1	10/14/2016 20:49
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	10/17/2016 08:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-8
Collection Date: 10/13/2016 12:05 PM

Work Order: 1610910
Lab ID: 1610910-36
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.0029**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 16:16
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 03:45
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**37**		**4.2**	**10**	**µg/L**	1	10/24/2016 23:22
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	10/24/2016 23:22
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 23:22
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 23:22
Chromium	U		0.65	5.0	µg/L	1	10/24/2016 23:22
Copper	**0.55**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 23:22
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 23:22
Iron	**12**	J	**4.6**	**80**	**µg/L**	1	10/24/2016 23:22
Lead	U		0.33	5.0	µg/L	1	10/25/2016 22:09
Manganese	U		0.51	5.0	µg/L	1	10/24/2016 23:22
Potassium	**1,900**		**17**	**200**	**µg/L**	1	10/24/2016 23:22
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 23:22
Silver	U		0.050	5.0	µg/L	1	10/27/2016 20:00
Zinc	**3.4**	J	**1.4**	**10**	**µg/L**	1	10/24/2016 23:22
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 21:50
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/17/2016 08:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-10
Collection Date: 10/13/2016 12:15 PM

Work Order: 1610910
Lab ID: 1610910-37
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 16:24
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 03:51
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/24/16		Analyst: **RH**
Aluminum	**37**		**4.2**	**10**	**µg/L**	1	10/24/2016 23:27
Arsenic	U		0.87	5.0	µg/L	1	10/24/2016 23:27
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	10/24/2016 23:27
Cadmium	U		0.050	2.0	µg/L	1	10/24/2016 23:27
Chromium	**1.5**	J	**0.65**	**5.0**	**µg/L**	1	10/24/2016 23:27
Copper	**2.3**	J	**0.28**	**5.0**	**µg/L**	1	10/24/2016 23:27
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	10/24/2016 23:27
Iron	**130**		**4.6**	**80**	**µg/L**	1	10/24/2016 23:27
Lead	**8.3**		**0.33**	**5.0**	**µg/L**	1	10/24/2016 23:27
Manganese	**2.4**	J	**0.51**	**5.0**	**µg/L**	1	10/24/2016 23:27
Potassium	**2,600**		**17**	**200**	**µg/L**	1	10/24/2016 23:27
Selenium	U		0.90	5.0	µg/L	1	10/24/2016 23:27
Silver	U		0.050	5.0	µg/L	1	10/27/2016 20:05
Zinc	**11**		**1.4**	**10**	**µg/L**	1	10/24/2016 23:27
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 22:50
Sulfate	**12,000**		**410**	**1,000**	**µg/L**	1	10/14/2016 22:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-13
Collection Date: 10/13/2016 12:25 PM

Work Order: 1610910
Lab ID: 1610910-38
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.0066**		**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 16:32
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 03:57
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/25/16		Analyst: **RH**
Aluminum	**37**		**4.2**	**10**	**µg/L**	1	10/25/2016 22:14
Arsenic	**1.0**	J	**0.87**	**5.0**	**µg/L**	1	10/25/2016 22:14
Barium	**28**		**2.2**	**5.0**	**µg/L**	1	10/25/2016 22:14
Cadmium	U		0.050	2.0	µg/L	1	10/25/2016 22:14
Chromium	U		0.65	5.0	µg/L	1	10/25/2016 22:14
Copper	U		0.28	5.0	µg/L	1	10/26/2016 08:56
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/25/2016 22:14
Iron	**33**	J	**4.6**	**80**	**µg/L**	1	10/25/2016 22:14
Lead	U		0.33	5.0	µg/L	1	10/25/2016 22:14
Manganese	**3.5**	J	**0.51**	**5.0**	**µg/L**	1	10/25/2016 22:14
Potassium	**2,000**		**17**	**200**	**µg/L**	1	10/25/2016 22:14
Selenium	U		0.90	5.0	µg/L	1	10/25/2016 22:14
Silver	U		0.050	5.0	µg/L	1	10/25/2016 22:14
Zinc	**12**		**1.4**	**10**	**µg/L**	1	10/25/2016 22:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 23:11
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/14/2016 23:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-18
Collection Date: 10/13/2016 01:00 PM

Work Order: 1610910
Lab ID: 1610910-39
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 10/22/16		Analyst: **CC**
Mercury	**0.00037**	J	**0.00020**	**0.00050**	**µg/L**	1	10/23/2016 16:39
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 10/20/16		Analyst: **ML**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/21/2016 04:03
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 10/25/16		Analyst: **RH**
Aluminum	**39**		**4.2**	**10**	**µg/L**	1	10/25/2016 22:30
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	10/25/2016 22:30
Barium	**29**		**2.2**	**5.0**	**µg/L**	1	10/25/2016 22:30
Cadmium	U		0.050	2.0	µg/L	1	10/25/2016 22:30
Chromium	U		0.65	5.0	µg/L	1	10/25/2016 22:30
Copper	U		0.28	5.0	µg/L	1	10/26/2016 09:01
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	10/25/2016 22:30
Iron	**39**	J	**4.6**	**80**	**µg/L**	1	10/25/2016 22:30
Lead	U		0.33	5.0	µg/L	1	10/25/2016 22:30
Manganese	**1.4**	J	**0.51**	**5.0**	**µg/L**	1	10/25/2016 22:30
Potassium	**2,000**		**17**	**200**	**µg/L**	1	10/25/2016 22:30
Selenium	U		0.90	5.0	µg/L	1	10/25/2016 22:30
Silver	U		0.050	5.0	µg/L	1	10/25/2016 22:30
Zinc	**6.3**	J	**1.4**	**10**	**µg/L**	1	10/25/2016 22:30
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	10/14/2016 23:31
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	10/14/2016 23:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 28-Oct-16

Client: ERM, Inc

Work Order: 1610910

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93283** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-93283-93283** Units: **ng/L** Analysis Date: **10/21/2016 11:52 A**

Client ID: Run ID: **HG3_161021A** SeqNo: **4102830** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-93283-93283** Units: **ng/L** Analysis Date: **10/21/2016 12:54 PM**

Client ID: Run ID: **HG3_161021A** SeqNo: **4102838** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-93283-93283** Units: **ng/L** Analysis Date: **10/21/2016 01:49 PM**

Client ID: Run ID: **HG3_161021A** SeqNo: **4102845** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1610910-01CMS** Units: **ng/L** Analysis Date: **10/21/2016 02:12 PM**

Client ID: **SW-BG-2** Run ID: **HG3_161021A** SeqNo: **4102848** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.96	0.50	6.25	0.99	112	71-125	0			

MS Sample ID: **1610910-02CMS** Units: **ng/L** Analysis Date: **10/21/2016 02:35 PM**

Client ID: **SW-BG-4** Run ID: **HG3_161021A** SeqNo: **4102851** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.57	0.50	6.25	1.11	87.4	71-125	0			

MSD Sample ID: **1610910-01CMSD** Units: **ng/L** Analysis Date: **10/21/2016 02:20 PM**

Client ID: **SW-BG-2** Run ID: **HG3_161021A** SeqNo: **4102849** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.03	0.50	6.25	0.99	96.6	71-125	7.96	12.4	24	

MSD Sample ID: **1610910-02CMSD** Units: **ng/L** Analysis Date: **10/21/2016 02:43 PM**

Client ID: **SW-BG-4** Run ID: **HG3_161021A** SeqNo: **4102852** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.72	0.50	6.25	1.11	89.8	71-125	6.57	2.26	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93283** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-93283-93283** Units: **ng/L** Analysis Date: **10/21/2016 11:36 A**
Client ID: Run ID: **HG3_161021A** SeqNo: **4102828** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.16	0.50	5	0	103	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-93283-93283** Units: **ng/L** Analysis Date: **10/21/2016 03:22 PM**
Client ID: Run ID: **HG3_161021A** SeqNo: **4102857** Prep Date: **10/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.83	0.50	5	0	96.6	77-123	0			

The following samples were analyzed in this batch:

1610910-01C	1610910-02C	1610910-23C
1610910-25C	1610910-28C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93284** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-93284-93284** Units: **ng/L** Analysis Date: **10/22/2016 01:13 PM**
Client ID: Run ID: **HG3_161022A** SeqNo: **4103852** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-93284-93284** Units: **ng/L** Analysis Date: **10/22/2016 02:21 PM**
Client ID: Run ID: **HG3_161022A** SeqNo: **4103860** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-93284-93284** Units: **ng/L** Analysis Date: **10/22/2016 03:15 PM**
Client ID: Run ID: **HG3_161022A** SeqNo: **4103867** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1610910-08CMS** Units: **ng/L** Analysis Date: **10/22/2016 02:13 PM**
Client ID: **SW-BG-10** Run ID: **HG3_161022A** SeqNo: **4103859** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.2	0.50	6.25	0.95	84	71-125	0			

MS Sample ID: **1610910-22CMS** Units: **ng/L** Analysis Date: **10/22/2016 04:33 PM**
Client ID: **SW-LL-5** Run ID: **HG3_161022A** SeqNo: **4103877** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.13	0.50	6.25	0.66	87.5	71-125	0			

MSD Sample ID: **1610910-08CMSD** Units: **ng/L** Analysis Date: **10/22/2016 02:28 PM**
Client ID: **SW-BG-10** Run ID: **HG3_161022A** SeqNo: **4103861** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.51	0.50	6.25	0.95	89	71-125	6.2	4.88	24	

MSD Sample ID: **1610910-22CMSD** Units: **ng/L** Analysis Date: **10/22/2016 04:41 PM**
Client ID: **SW-LL-5** Run ID: **HG3_161022A** SeqNo: **4103878** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.19	0.50	6.25	0.66	88.5	71-125	6.13	0.974	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93284** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-93284-93284** Units: **ng/L** Analysis Date: **10/22/2016 12:58 PM**
Client ID: Run ID: **HG3_161022A** SeqNo: **4103850** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.43	0.50	5	0	109	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-93284-93284** Units: **ng/L** Analysis Date: **10/22/2016 04:49 PM**
Client ID: Run ID: **HG3_161022A** SeqNo: **4103879** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.88	0.50	5	0	97.6	77-123	0			

The following samples were analyzed in this batch:

1610910-03C	1610910-04C	1610910-05C
1610910-06C	1610910-07C	1610910-08C
1610910-09C	1610910-10C	1610910-11C
1610910-12C	1610910-13C	1610910-14C
1610910-15C	1610910-16C	1610910-17C
1610910-18C	1610910-19C	1610910-20C
1610910-21C	1610910-22C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93341** Instrument ID **HG3** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-93341-93341**				Units: **ng/L**			Analysis Date: **10/23/2016 01:27 PM**		
Client ID:	Run ID: **HG3_161023A**				SeqNo: **4104439**			Prep Date: **10/22/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2	Sample ID: **MBLK2-93341-93341**				Units: **ng/L**			Analysis Date: **10/23/2016 02:42 PM**		
Client ID:	Run ID: **HG3_161023A**				SeqNo: **4104447**			Prep Date: **10/22/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3	Sample ID: **MBLK3-93341-93341**				Units: **ng/L**			Analysis Date: **10/23/2016 03:37 PM**		
Client ID:	Run ID: **HG3_161023A**				SeqNo: **4104454**			Prep Date: **10/22/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS	Sample ID: **16101031-04AMS**				Units: **ng/L**			Analysis Date: **10/23/2016 01:56 PM**		
Client ID:	Run ID: **HG3_161023A**				SeqNo: **4104441**			Prep Date: **10/22/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.59	0.50	5	0.96	92.6	71-125	0			

MS	Sample ID: **1610910-35CMS**				Units: **ng/L**			Analysis Date: **10/23/2016 04:00 PM**		
Client ID: **SW-RP-4**	Run ID: **HG3_161023A**				SeqNo: **4104457**			Prep Date: **10/22/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.7	0.50	6.25	2.71	79.8	71-125	0			

MSD	Sample ID: **16101031-04AMSD**				Units: **ng/L**			Analysis Date: **10/23/2016 02:04 PM**		
Client ID:	Run ID: **HG3_161023A**				SeqNo: **4104442**			Prep Date: **10/22/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.59	0.50	5	0.96	92.6	71-125	5.59	0	24	

MSD	Sample ID: **1610910-35CMSD**				Units: **ng/L**			Analysis Date: **10/23/2016 04:08 PM**		
Client ID: **SW-RP-4**	Run ID: **HG3_161023A**				SeqNo: **4104458**			Prep Date: **10/22/2016**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.61	0.50	6.25	2.71	78.4	71-125	7.7	1.18	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93341** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-93341-93341** Units: **ng/L** Analysis Date: **10/23/2016 01:11 PM**
Client ID: Run ID: **HG3_161023A** SeqNo: **4104437** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5	0.50	5	0	100	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-93341-93341** Units: **ng/L** Analysis Date: **10/23/2016 05:11 PM**
Client ID: Run ID: **HG3_161023A** SeqNo: **4104466** Prep Date: **10/22/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.74	0.50	5	0	94.8	77-123	0			

The following samples were analyzed in this batch:

1610910-24C	1610910-26C	1610910-27C
1610910-29C	1610910-30C	1610910-31C
1610910-32C	1610910-33C	1610910-34C
1610910-35C	1610910-36C	1610910-37C
1610910-38C	1610910-39C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **93097** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-93097-93097** Units: **mg/L** Analysis Date: **10/19/2016 04:59 A**
Client ID: Run ID: **ICPMS1_161018A** SeqNo: **4095349** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.001188	0.0050								J
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	0.07317	0.20								J
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-93109-93097** Units: **mg/L** Analysis Date: **10/19/2016 05:11 A**
Client ID: Run ID: **ICPMS1_161018A** SeqNo: **4095351** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.001117	0.0050								J
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	0.004667	0.080								J
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	0.01959	0.20								J
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93097** Instrument ID **ICPMS1** Method: **SW6020A**

LCS Sample ID: **LCS-93097-93097** Units: **mg/L** Analysis Date: **10/19/2016 05:05 A**
Client ID: Run ID: **ICPMS1_161018A** SeqNo: **4095350** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1001	0.0050	0.1	0	100	80-120	0			
Barium	0.09649	0.0050	0.1	0	96.5	80-120	0			
Cadmium	0.09844	0.0020	0.1	0	98.4	80-120	0			
Chromium	0.09598	0.0050	0.1	0	96	80-120	0			
Copper	0.09816	0.0050	0.1	0	98.2	80-120	0			
Iron	9.709	0.080	10	0	97.1	80-120	0			
Lead	0.0982	0.0050	0.1	0	98.2	80-120	0			
Manganese	0.09489	0.0050	0.1	0	94.9	80-120	0			
Potassium	9.498	0.20	10	0	95	80-120	0			
Selenium	0.09466	0.0050	0.1	0	94.7	80-120	0			
Silver	0.09831	0.0050	0.1	0	98.3	80-120	0			
Zinc	0.09743	0.010	0.1	0	97.4	80-120	0			

LCS Sample ID: **LCS-93109-93097** Units: **mg/L** Analysis Date: **10/19/2016 05:17 A**
Client ID: Run ID: **ICPMS1_161018A** SeqNo: **4095352** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09939	0.0050	0.1	0	99.4	80-120	0			
Barium	0.09798	0.0050	0.1	0	98	80-120	0			
Cadmium	0.09861	0.0020	0.1	0	98.6	80-120	0			
Chromium	0.0957	0.0050	0.1	0	95.7	80-120	0			
Copper	0.096	0.0050	0.1	0	96	80-120	0			
Iron	9.624	0.080	10	0	96.2	80-120	0			
Lead	0.09888	0.0050	0.1	0	98.9	80-120	0			
Manganese	0.09473	0.0050	0.1	0	94.7	80-120	0			
Potassium	9.379	0.20	10	0	93.8	80-120	0			
Selenium	0.09595	0.0050	0.1	0	96	80-120	0			
Silver	0.09717	0.0050	0.1	0	97.2	80-120	0			
Zinc	0.09707	0.010	0.1	0	97.1	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93097** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **1610910-07AMS** Units: **mg/L** Analysis Date: **10/19/2016 06:44 A**
Client ID: **SW-BG-8** Run ID: **ICPMS1_161018A** SeqNo: **4095365** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09651	0.0050	0.1	0.001406	95.1	75-125	0			
Barium	0.1072	0.0050	0.1	0.01237	94.8	75-125	0			
Cadmium	0.0959	0.0020	0.1	0.00001662	95.9	75-125	0			
Chromium	0.09098	0.0050	0.1	0.0001197	90.9	75-125	0			
Copper	0.09523	0.0050	0.1	0.01087	84.4	75-125	0			
Iron	10.77	0.080	10	1.567	92	75-125	0			
Lead	0.09784	0.0050	0.1	0.001383	96.5	75-125	0			
Manganese	0.1131	0.0050	0.1	0.02133	91.8	75-125	0			
Potassium	10.18	0.20	10	1.2	89.8	75-125	0			
Selenium	0.09405	0.0050	0.1	0.000483	93.6	75-125	0			
Silver	0.09562	0.0050	0.1	-6.826E-05	95.7	75-125	0			
Zinc	0.09894	0.010	0.1	0.03742	61.5	75-125	0			S

MS Sample ID: **1610910-08AMS** Units: **mg/L** Analysis Date: **10/19/2016 10:37 PM**
Client ID: **SW-BG-10** Run ID: **ICPMS1_161019A** SeqNo: **4098658** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1034	0.0050	0.1	0.001174	102	75-125	0			
Barium	0.1139	0.0050	0.1	0.01448	99.4	75-125	0			
Cadmium	0.09905	0.0020	0.1	-1.282E-06	99.1	75-125	0			
Chromium	0.09653	0.0050	0.1	-0.0001637	96.7	75-125	0			
Copper	0.09866	0.0050	0.1	0.0005294	98.1	75-125	0			
Iron	10.28	0.080	10	0.8098	94.7	75-125	0			
Lead	0.09819	0.0050	0.1	0.0005521	97.6	75-125	0			
Manganese	0.104	0.0050	0.1	0.008843	95.2	75-125	0			
Potassium	11.69	0.20	10	1.722	99.7	75-125	0			
Selenium	0.09712	0.0050	0.1	0.0005997	96.5	75-125	0			
Silver	0.09373	0.0050	0.1	-1.899E-05	93.7	75-125	0			
Zinc	0.1025	0.010	0.1	0.006497	96	75-125	0			

MS Sample ID: **1610910-08AMS** Units: **mg/L** Analysis Date: **10/20/2016 12:47 PM**
Client ID: **SW-BG-10** Run ID: **ICPMS1_161019A** SeqNo: **4099744** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1195	0.010	0.1	0.0176	102	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93097** Instrument ID **ICPMS1** Method: **SW6020A**

MSD Sample ID: **1610910-07AMSD** Units: **mg/L** Analysis Date: **10/19/2016 06:50 A**
Client ID: **SW-BG-8** Run ID: **ICPMS1_161018A** SeqNo: **4095366** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1002	0.0050	0.1	0.001406	98.8	75-125	0.09651	3.75	20	
Barium	0.1122	0.0050	0.1	0.01237	99.8	75-125	0.1072	4.56	20	
Cadmium	0.09922	0.0020	0.1	0.00001662	99.2	75-125	0.0959	3.4	20	
Chromium	0.09443	0.0050	0.1	0.0001197	94.3	75-125	0.09098	3.72	20	
Copper	0.09835	0.0050	0.1	0.01087	87.5	75-125	0.09523	3.22	20	
Iron	11.17	0.080	10	1.567	96	75-125	10.77	3.65	20	
Lead	0.1005	0.0050	0.1	0.001383	99.1	75-125	0.09784	2.68	20	
Manganese	0.1141	0.0050	0.1	0.02133	92.8	75-125	0.1131	0.88	20	
Potassium	10.46	0.20	10	1.2	92.6	75-125	10.18	2.71	20	
Selenium	0.09535	0.0050	0.1	0.000483	94.9	75-125	0.09405	1.37	20	
Silver	0.09964	0.0050	0.1	-6.826E-05	99.7	75-125	0.09562	4.12	20	
Zinc	0.1039	0.010	0.1	0.03742	66.5	75-125	0.09894	4.89	20	S

MSD Sample ID: **1610910-08AMSD** Units: **mg/L** Analysis Date: **10/19/2016 10:43 PM**
Client ID: **SW-BG-10** Run ID: **ICPMS1_161019A** SeqNo: **4098659** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1052	0.0050	0.1	0.001174	104	75-125	0.1034	1.73	20	
Barium	0.1147	0.0050	0.1	0.01448	100	75-125	0.1139	0.7	20	
Cadmium	0.1011	0.0020	0.1	-1.282E-06	101	75-125	0.09905	2.05	20	
Chromium	0.09818	0.0050	0.1	-0.0001637	98.3	75-125	0.09653	1.69	20	
Copper	0.09956	0.0050	0.1	0.0005294	99	75-125	0.09866	0.908	20	
Iron	10.34	0.080	10	0.8098	95.3	75-125	10.28	0.582	20	
Lead	0.1008	0.0050	0.1	0.0005521	100	75-125	0.09819	2.62	20	
Manganese	0.1046	0.0050	0.1	0.008843	95.8	75-125	0.104	0.575	20	
Potassium	11.78	0.20	10	1.722	101	75-125	11.69	0.767	20	
Selenium	0.09806	0.0050	0.1	0.0005997	97.5	75-125	0.09712	0.963	20	
Silver	0.09473	0.0050	0.1	-1.899E-05	94.7	75-125	0.09373	1.06	20	
Zinc	0.1066	0.010	0.1	0.006497	100	75-125	0.1025	3.92	20	

MSD Sample ID: **1610910-08AMSD** Units: **mg/L** Analysis Date: **10/20/2016 12:53 PM**
Client ID: **SW-BG-10** Run ID: **ICPMS1_161019A** SeqNo: **4099745** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1207	0.010	0.1	0.0176	103	75-125	0.1195	0.999	20	

The following samples were analyzed in this batch:

1610910-01A	1610910-02A	1610910-03A
1610910-04A	1610910-05A	1610910-06A
1610910-07A	1610910-08A	1610910-09A
1610910-10A	1610910-11A	1610910-12A
1610910-13A	1610910-14A	1610910-15A
1610910-16A	1610910-17A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93169** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-93169-93169** Units: **mg/L** Analysis Date: **10/19/2016 08:44 PM**
Client ID: Run ID: **ICPMS2_161019A** SeqNo: **4099477** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	U	2.0								

LCS Sample ID: **LCS-93169-93169** Units: **mg/L** Analysis Date: **10/19/2016 08:49 PM**
Client ID: Run ID: **ICPMS2_161019A** SeqNo: **4099478** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	59.91	2.0	66.15	0	90.6	80-120	0			

The following samples were analyzed in this batch:

1610910-01D	1610910-02D	1610910-03C
1610910-04D	1610910-05D	1610910-26D
1610910-27D	1610910-28D	1610910-29D
1610910-30D		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93171** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK	Sample ID: **MBLK-93171-93171**				Units: **mg/L**			Analysis Date: **10/22/2016 01:18 A**
Client ID:	Run ID: **ICPMS2_161021A**			SeqNo: **4103465**	Prep Date: **10/19/2016**		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	U	2.0								

LCS	Sample ID: **LCS-93171-93171**				Units: **mg/L**			Analysis Date: **10/22/2016 01:24 A**
Client ID:	Run ID: **ICPMS2_161021A**			SeqNo: **4103466**	Prep Date: **10/19/2016**		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	62.04	2.0	66.15	0	93.8	80-120	0			

The following samples were analyzed in this batch:

1610910-06D	1610910-07D	1610910-08D
1610910-09D	1610910-10D	1610910-11D
1610910-12D	1610910-13D	1610910-14D
1610910-15D	1610910-16D	1610910-17D
1610910-18D	1610910-19D	1610910-20D
1610910-21D	1610910-22D	1610910-23D
1610910-24D	1610910-25D	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93234** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK	Sample ID: **MBLK-93234-93234**			Units: **mg/L**		Analysis Date: **10/21/2016 12:22 A**			
Client ID:		Run ID: **ICPMS1_161020A**		SeqNo: **4101088**		Prep Date: **10/20/2016**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	U	2.0								

The following samples were analyzed in this batch:

1610910-31D	1610910-32D	1610910-33D
1610910-34D	1610910-35D	1610910-36D
1610910-37D	1610910-38D	1610910-39D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93419** Instrument ID **ICPMS2** Method: **SW6020A** **(Dissolve)**

MBLK Sample ID: **MBLK-93419-93419** Units: **mg/L** Analysis Date: **10/24/2016 08:43 PM**
Client ID: Run ID: **ICPMS2_161024A** SeqNo: **4108312** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-93419-93419** Units: **mg/L** Analysis Date: **10/24/2016 08:48 PM**
Client ID: Run ID: **ICPMS2_161024A** SeqNo: **4108315** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09046	0.010	0.1	0	90.5	80-120	0			
Arsenic	0.09777	0.0050	0.1	0	97.8	80-120	0			
Barium	0.09453	0.0050	0.1	0	94.5	80-120	0			
Cadmium	0.09738	0.0020	0.1	0	97.4	80-120	0			
Chromium	0.0879	0.0050	0.1	0	87.9	80-120	0			
Copper	0.09578	0.0050	0.1	0	95.8	80-120	0			
Hardness (Calculation)	61.37	2.0	66.15	0	92.8	80-120	0			
Iron	9.091	0.080	10	0	90.9	80-120	0			
Lead	0.1088	0.0050	0.1	0	109	80-120	0			
Manganese	0.08836	0.0050	0.1	0	88.4	80-120	0			
Potassium	9.2	0.20	10	0	92	80-120	0			
Selenium	0.0972	0.0050	0.1	0	97.2	80-120	0			
Zinc	0.1022	0.010	0.1	0	102	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93419** Instrument ID **ICPMS2** Method: **SW6020A** **(Dissolve)**

MS Sample ID: **1610910-18AMS** Units: **mg/L** Analysis Date: **10/24/2016 08:58 PM**
Client ID: **SW-LL-13** Run ID: **ICPMS2_161024A** SeqNo: **4108318** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09289	0.010	0.1	0.0001186	92.8	75-125	0			
Arsenic	0.09437	0.0050	0.1	0.0009204	93.4	75-125	0			
Barium	0.1168	0.0050	0.1	0.02255	94.2	75-125	0			
Cadmium	0.09561	0.0020	0.1	0.00003339	95.6	75-125	0			
Chromium	0.09154	0.0050	0.1	0.00008596	91.5	75-125	0			
Copper	0.09324	0.0050	0.1	0.0003924	92.8	75-125	0			
Iron	9.514	0.080	10	0.273	92.4	75-125	0			
Lead	0.09305	0.0050	0.1	0.0001886	92.9	75-125	0			
Manganese	0.08905	0.0050	0.1	0.001604	87.4	75-125	0			
Potassium	10.01	0.20	10	0.863	91.5	75-125	0			
Selenium	0.09497	0.0050	0.1	0.0002798	94.7	75-125	0			
Zinc	0.09889	0.010	0.1	0.006217	92.7	75-125	0			

MSD Sample ID: **1610910-18AMSD** Units: **mg/L** Analysis Date: **10/24/2016 09:04 PM**
Client ID: **SW-LL-13** Run ID: **ICPMS2_161024A** SeqNo: **4108320** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09289	0.010	0.1	0.0001186	92.8	75-125	0.09289	0	20	
Arsenic	0.0966	0.0050	0.1	0.0009204	95.7	75-125	0.09437	2.34	20	
Barium	0.1181	0.0050	0.1	0.02255	95.6	75-125	0.1168	1.11	20	
Cadmium	0.09521	0.0020	0.1	0.00003339	95.2	75-125	0.09561	0.419	20	
Chromium	0.09195	0.0050	0.1	0.00008596	91.9	75-125	0.09154	0.447	20	
Copper	0.0935	0.0050	0.1	0.0003924	93.1	75-125	0.09324	0.278	20	
Iron	9.56	0.080	10	0.273	92.9	75-125	9.514	0.482	20	
Lead	0.09338	0.0050	0.1	0.0001886	93.2	75-125	0.09305	0.354	20	
Manganese	0.08935	0.0050	0.1	0.001604	87.7	75-125	0.08905	0.336	20	
Potassium	9.981	0.20	10	0.863	91.2	75-125	10.01	0.29	20	
Selenium	0.1021	0.0050	0.1	0.0002798	102	75-125	0.09497	7.24	20	
Zinc	0.09885	0.010	0.1	0.006217	92.6	75-125	0.09889	0.0405	20	

The following samples were analyzed in this batch:

1610910-18A	1610910-19A	1610910-20A
1610910-21A	1610910-22A	1610910-23A
1610910-24A	1610910-25A	1610910-26A
1610910-27A	1610910-28A	1610910-29A
1610910-30A	1610910-31A	1610910-32A
1610910-33A	1610910-34A	1610910-35A
1610910-36A	1610910-37A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93458** Instrument ID **ICPMS2** Method: **SW6020A** **(Dissolve)**

MBLK Sample ID: **MBLK-93458-93458** Units: **mg/L** Analysis Date: **10/25/2016 09:44 PM**
Client ID: Run ID: **ICPMS2_161025A** SeqNo: **4109913** Prep Date: **10/25/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	0.001694	0.010								J

MBLK Sample ID: **MBLK-93458-93458** Units: **mg/L** Analysis Date: **10/26/2016 08:51 A**
Client ID: Run ID: **ICPMS2_161025A** SeqNo: **4110522** Prep Date: **10/25/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	U	0.0050								

LCS Sample ID: **LCS-93458-93458** Units: **mg/L** Analysis Date: **10/25/2016 10:04 PM**
Client ID: Run ID: **ICPMS2_161025A** SeqNo: **4109917** Prep Date: **10/25/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.0912	0.010	0.1	0	91.2	80-120	0			
Arsenic	0.09466	0.0050	0.1	0	94.7	80-120	0			
Barium	0.09685	0.0050	0.1	0	96.8	80-120	0			
Cadmium	0.0939	0.0020	0.1	0	93.9	80-120	0			
Chromium	0.0853	0.0050	0.1	0	85.3	80-120	0			
Copper	0.09027	0.0050	0.1	0	90.3	80-120	0			
Hardness (Calculation)	60.92	2.0	66.15	0	92.1	80-120	0			
Iron	8.878	0.080	10	0	88.8	80-120	0			
Lead	0.09653	0.0050	0.1	0	96.5	80-120	0			
Manganese	0.09431	0.0050	0.1	0	94.3	80-120	0			
Potassium	9.42	0.20	10	0	94.2	80-120	0			
Selenium	0.08878	0.0050	0.1	0	88.8	80-120	0			
Silver	0.09084	0.0050	0.1	0	90.8	80-120	0			
Zinc	0.0942	0.010	0.1	0	94.2	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93458** Instrument ID **ICPMS2** Method: **SW6020A** **(Dissolve)**

MS Sample ID: **1610910-38AMS** Units: **mg/L** Analysis Date: **10/25/2016 10:20 PM**
Client ID: **SW-RP-13** Run ID: **ICPMS2_161025A** SeqNo: **4109920** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1314	0.010	0.1	0.03728	94.1	75-125	0			
Arsenic	0.1057	0.0050	0.1	0.001001	105	75-125	0			
Barium	0.13	0.0050	0.1	0.02837	102	75-125	0			
Cadmium	0.09955	0.0020	0.1	-2.642E-05	99.6	75-125	0			
Chromium	0.09334	0.0050	0.1	0.00001167	93.3	75-125	0			
Copper	0.09541	0.0050	0.1	-0.0009753	96.4	75-125	0			
Iron	9.778	0.080	10	0.03295	97.5	75-125	0			
Lead	0.1027	0.0050	0.1	0.00005393	103	75-125	0			
Manganese	0.1021	0.0050	0.1	0.003511	98.6	75-125	0			
Potassium	11.82	0.20	10	1.964	98.6	75-125	0			
Selenium	0.09818	0.0050	0.1	0.000174	98	75-125	0			
Silver	0.09152	0.0050	0.1	1.971E-06	91.5	75-125	0			
Zinc	0.1074	0.010	0.1	0.01214	95.3	75-125	0			

MSD Sample ID: **1610910-38AMSD** Units: **mg/L** Analysis Date: **10/25/2016 10:25 PM**
Client ID: **SW-RP-13** Run ID: **ICPMS2_161025A** SeqNo: **4109921** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1328	0.010	0.1	0.03728	95.5	75-125	0.1314	1.06	20	
Arsenic	0.1065	0.0050	0.1	0.001001	105	75-125	0.1057	0.754	20	
Barium	0.1318	0.0050	0.1	0.02837	103	75-125	0.13	1.38	20	
Cadmium	0.101	0.0020	0.1	-2.642E-05	101	75-125	0.09955	1.45	20	
Chromium	0.09472	0.0050	0.1	0.00001167	94.7	75-125	0.09334	1.47	20	
Copper	0.09767	0.0050	0.1	-0.0009753	98.6	75-125	0.09541	2.34	20	
Iron	9.883	0.080	10	0.03295	98.5	75-125	9.778	1.07	20	
Lead	0.1044	0.0050	0.1	0.00005393	104	75-125	0.1027	1.64	20	
Manganese	0.1042	0.0050	0.1	0.003511	101	75-125	0.1021	2.04	20	
Potassium	12.09	0.20	10	1.964	101	75-125	11.82	2.26	20	
Selenium	0.101	0.0050	0.1	0.000174	101	75-125	0.09818	2.83	20	
Silver	0.09221	0.0050	0.1	1.971E-06	92.2	75-125	0.09152	0.751	20	
Zinc	0.1093	0.010	0.1	0.01214	97.2	75-125	0.1074	1.75	20	

The following samples were analyzed in this batch: 1610910-38A 1610910-39A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93566** Instrument ID **ICPMS2** Method: **SW6020A** **(Dissolve)**

MBLK Sample ID: **MBLK-93566-93566** Units: **mg/L** Analysis Date: **10/27/2016 09:11 A**
Client ID: Run ID: **ICPMS2_161026A** SeqNo: **4113292** Prep Date: **10/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Silver	0.0001058	0.0050								J

LCS Sample ID: **LCS-93566-93566** Units: **mg/L** Analysis Date: **10/27/2016 09:17 A**
Client ID: Run ID: **ICPMS2_161026A** SeqNo: **4113294** Prep Date: **10/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Silver	0.08607	0.0050	0.1	0	86.1	80-120	0			

MS Sample ID: **1610910-22AMS** Units: **mg/L** Analysis Date: **10/27/2016 06:12 PM**
Client ID: **SW-LL-5** Run ID: **ICPMS2_161027A** SeqNo: **4117228** Prep Date: **10/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Silver	0.08174	0.0050	0.1	-5.511E-06	81.7	75-125	0			

MSD Sample ID: **1610910-22AMSD** Units: **mg/L** Analysis Date: **10/27/2016 06:17 PM**
Client ID: **SW-LL-5** Run ID: **ICPMS2_161027A** SeqNo: **4117229** Prep Date: **10/26/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Silver	0.08184	0.0050	0.1	-5.511E-06	81.8	75-125	0.08174	0.122	20	

The following samples were analyzed in this batch:

1610910-18A	1610910-19A	1610910-20A
1610910-21A	1610910-22A	1610910-23A
1610910-24A	1610910-25A	1610910-26A
1610910-27A	1610910-28A	1610910-29A
1610910-30A	1610910-31A	1610910-32A
1610910-33A	1610910-34A	1610910-35A
1610910-36A	1610910-37A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198235** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R198235** Units: **mg/L** Analysis Date: **10/14/2016 12:08 PM**
Client ID: Run ID: **IC4_161014A** SeqNo: **4089351** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R198235** Units: **mg/L** Analysis Date: **10/14/2016 12:28 PM**
Client ID: Run ID: **IC4_161014A** SeqNo: **4089352** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.928	0.10	2	0	96.4	81-116	0			
Sulfate	9.443	1.0	10	0	94.4	85-110	0			

MS Sample ID: **1610910-22B MS** Units: **mg/L** Analysis Date: **10/14/2016 03:30 PM**
Client ID: **SW-LL-5** Run ID: **IC4_161014A** SeqNo: **4089361** Prep Date: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	3.84	0.20	4	0.0293	95.3	75-125	0			
Sulfate	20.94	2.0	20	0.6758	101	75-125	0			

MSD Sample ID: **1610910-22B MSD** Units: **mg/L** Analysis Date: **10/14/2016 03:50 PM**
Client ID: **SW-LL-5** Run ID: **IC4_161014A** SeqNo: **4089362** Prep Date: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	3.868	0.20	4	0.0293	96	75-125	3.84	0.737	20	
Sulfate	20.88	2.0	20	0.6758	101	75-125	20.94	0.293	20	

The following samples were analyzed in this batch:

1610910-12B	1610910-13B	1610910-14B
1610910-15B	1610910-16B	1610910-17B
1610910-18B	1610910-19B	1610910-20B
1610910-21B	1610910-22B	1610910-23B
1610910-24B	1610910-25B	1610910-26B
1610910-27B	1610910-28B	1610910-29B
1610910-30B	1610910-31B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198236** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R198236** Units: **mg/L** Analysis Date: **10/14/2016 06:07 PM**
Client ID: Run ID: **IC3_161014A** SeqNo: **4089384** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **MLCCV/LCS-R198236** Units: **mg/L** Analysis Date: **10/14/2016 10:10 PM**
Client ID: Run ID: **IC3_161014A** SeqNo: **4089396** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.949	0.10	2	0	97.5	81-116	0			
Sulfate	10.08	1.0	10	0	101	85-110	0			

MS Sample ID: **1610910-08B MS** Units: **mg/L** Analysis Date: **10/14/2016 07:08 PM**
Client ID: **SW-BG-10** Run ID: **IC3_161014A** SeqNo: **4089387** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.04	0.50	10	0	100	75-125	0			H
Sulfate	42.68	5.0	50	0.7933	83.8	75-125	0			

MS Sample ID: **1610910-35B MS** Units: **mg/L** Analysis Date: **10/14/2016 09:09 PM**
Client ID: **SW-RP-4** Run ID: **IC3_161014A** SeqNo: **4089393** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.974	0.50	10	0.0807	98.9	75-125	0			
Sulfate	62.43	5.0	50	13.5	97.9	75-125	0			

MSD Sample ID: **1610910-08B MSD** Units: **mg/L** Analysis Date: **10/14/2016 07:28 PM**
Client ID: **SW-BG-10** Run ID: **IC3_161014A** SeqNo: **4089388** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.902	0.50	10	0	99	75-125	10.04	1.4	20	H
Sulfate	44.02	5.0	50	0.7933	86.5	75-125	42.68	3.1	20	

MSD Sample ID: **1610910-35B MSD** Units: **mg/L** Analysis Date: **10/14/2016 09:30 PM**
Client ID: **SW-RP-4** Run ID: **IC3_161014A** SeqNo: **4089394** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.86	0.50	10	0.0807	97.8	75-125	9.974	1.14	20	
Sulfate	61.6	5.0	50	13.5	96.2	75-125	62.43	1.34	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198236** Instrument ID **IC3** Method: **SW9056A**

The following samples were analyzed in this batch:

1610910-01B	1610910-02B	1610910-03B
1610910-04B	1610910-05B	1610910-06B
1610910-07B	1610910-08B	1610910-09B
1610910-10B	1610910-11B	1610910-32B
1610910-33B	1610910-34B	1610910-35B
1610910-36B	1610910-37B	1610910-38B
1610910-39B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610910
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198380** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R198380** Units: **mg/L** Analysis Date: **10/17/2016 06:15 A**
Client ID: Run ID: **IC3_161017A** SeqNo: **4093060** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	1.0								

LCS Sample ID: **LCS-R198380** Units: **mg/L** Analysis Date: **10/17/2016 06:35 A**
Client ID: Run ID: **IC3_161017A** SeqNo: **4093061** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.161	1.0	10	0	91.6	85-110	0			

MS Sample ID: **1610910-08B MS** Units: **mg/L** Analysis Date: **10/17/2016 10:14 A**
Client ID: **SW-BG-10** Run ID: **IC3_161017A** SeqNo: **4093068** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	10.17	1.0	10	0.3418	98.3	75-125	0			

MS Sample ID: **1610659-03A MS** Units: **mg/L** Analysis Date: **10/17/2016 05:19 PM**
Client ID: Run ID: **IC3_161017A** SeqNo: **4093089** Prep Date: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	293.9	20	200	86.08	104	75-125	0			

MSD Sample ID: **1610910-08B MSD** Units: **mg/L** Analysis Date: **10/17/2016 10:35 A**
Client ID: **SW-BG-10** Run ID: **IC3_161017A** SeqNo: **4093069** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.977	1.0	10	0.3418	96.4	75-125	10.17	1.89	20	

MSD Sample ID: **1610659-03A MSD** Units: **mg/L** Analysis Date: **10/17/2016 05:39 PM**
Client ID: Run ID: **IC3_161017A** SeqNo: **4093090** Prep Date: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	292.4	20	200	86.08	103	75-125	293.9	0.505	20	

The following samples were analyzed in this batch:

1610910-08B	1610910-32B	1610910-33B
1610910-34B	1610910-35B	1610910-36B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Chain of Custody Form

COC ID: 34677

ALS Project Manager: | ALS Work Order #: 1610910

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW-Ogden Dunes	A	Metals (Dissolved)
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	LL Hg
Send Report To	Martin Ryan	Invoice Attn	Debra Mosa/Accounts Payable	D	Hardness
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	MS/MSD
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-BG-2	10-11-16	1000	SW	—	6	X	X	X	X							
2	SW-BG-4		1022		—	6	X	X	X	X							
3	SW-BG-5		1040		—	6	X	X	X	X							
4	SW-BG-3		1100		—	6	X	X	X	X							
5	SW-BG-1		1110		—	6	X	X	X	X							
6	Dup-SW-BG		~~1200~~ AA		—	6	X	X	X	X							
7	SW-BG-8		1200		—	6	X	X	X	X							
8	SW-BG-10		1215		—	12	X	X	X	X	X						
9	SW-BG-9		1235		—	6	X	X	X	X							
10	SW-BG-6		1245		—	6	X	X	X	X							

Sampler(s) Please Print & Sign: [signature]

Shipment Method: Drop Off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

	Date:	Time:		
Relinquished by: [signature]	10-13-16	1430	Received by: [signature]	
Relinquished by: [signature]	10-14-16	0900	Received by (Laboratory): [signature]	
Logged by (Laboratory): KR	10/14/16	0945	Checked by (Laboratory): [signature]	

Notes:

Cooler ID	Cooler Temp
3.0°C	2.4°C
3.0°C	1.8°C
2.8°C	3.0°C
	1.8°C

QC Package: (Check One Box Below)
☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

COC ID: 34676

ALS Environmental

ALS Project Manager: | ALS Work Order #: 1610910

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW - Ogden ~~Dunes~~ Dunes	A	Metals (Dissolved)
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	LL Hg
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Hardness
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	SW-BG-7	10-11-16	1300	SW	—	6	X	X	X	X							
12	SW-LL-9	10-12-16	0905		—		X	X	X	X							
13	SW-LL-~~8~~ 11		0925		—		X	X	X	X							
14	SW-LL-12		0945		—		X	X	X	X							
15	SW-LL-15		1005		—		X	X	X	X							
16	SW-LL-16		1030		—		X	X	X	X							
17	SW-LL-14		1045		—		X	X	X	X							
18	SW-LL-13		1100		—		X	X	X	X							
19	SW-LL-10		1125		—		X	X	X	X							
20	Dup-SW-LL		—		—		X	X	X	X							

Sampler(s) Please Print & Sign: Aaron Herndon

Shipment Method: Drop-off

Turnaround Time in Business Days (BD): ☐ Other ____ ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date: 10-13-16	Time: 1430	Received by:	Notes:
Relinquished by:	Date: 10-14-16	Time: 0900	Received by (Laboratory):	Cooler ID / Cooler Temp
Logged by (Laboratory): KEJ	Date: 10/14/16	Time: 0945	Checked by (Laboratory):	

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other ____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

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COC ID: 34669

ALS Project Manager: | ALS Work Order #: L1109116

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW-Ogden Dunes	A	Metals (Dissolved)
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	LL Hg
Send Report To	Martin, Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	Hardness
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	MS/MSD
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	F	
Phone	(317) 706-2000	Phone		G	
Fax	(317) 706-2010	Fax		H	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
21	SW-LL-8	10-12-16	1200	SW	—	6	X	X	X	X							
22	SW-LL-5		1215			12	X	X	X	X	X						
23	SW-LL-3		1235			6	X	X	X	X							
24	SW-LL-7		1250			6	X	X	X	X							
25	SW-LL-6		1300			6	X	X	X	X							
26	SW-LL-4		1310			6	X	X	X	X							
27	SW-LL-2		1325			6	X	X	X	X							
28	SW-LL-1	"	1330			6	X	X	X	X							
29	SW-RP-20	10-13-16	0930			6	X	X	X	X							
30	SW-RP-16	10-13-16	0945			6	X	X	X	X							

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: Drop-off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

	Date:	Time:		
Relinquished by:	10-13-16	1430	Received by:	
Relinquished by:	10/14/16	0900	Received by (Laboratory):	
Logged by (Laboratory):	10/14/16	0945	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

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COC ID: 34670

ALS Environmental

ALS Project Manager: | ALS Work Order #: 1610910

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAV-Ogden Dunes	A	
Work Order		Project Number		B	
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
31	SW-RP-12	10-13-16	1000	SW	—	6	X	X	X	X							
32	SW-RP-6		1015			6	X	X	X	X							
33	Dup-SW-RP		—			6	X	X	X	X							
34	SW-RP-2		1045			6	X	X	X	X							
35	SW-RP-4		1145			12	X	X	X	X	X						
36	SW-RP-8		1205			6	X	X	X	X							
37	SW-RP-10		1215			6	X	X	X	X							
38	SW-RP-13		1225			6	X	X	X	X							
39	SW-RP-18		1300			6	X	X	X	X							
10																	

Sampler(s) Please Print & Sign: Aron Alexander

Shipment Method: Drop-off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

	Date:	Time:		Notes:
Relinquished by:	10-13-16	1430	Received by:	
Relinquished by:	10-14-16	0900	Received by (Laboratory):	
Logged by (Laboratory): KEJ	10/14/16	0945	Checked by (Laboratory):	

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Date
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **14-Oct-16 09:00**

Work Order: **1610910** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 14-Oct-16 (Date) Reviewed by: Bill Carey (eSignature) 14-Oct-16 (Date)

Matrices: Water
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☐	No ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.8-3.0 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	10/14/2016 10:09:30 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes: Seven Cooler Temperatures are listed on the COC
NO3 received past hold time for samples 01 thru -11.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

27-Oct-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1610913**

Dear Marty,

ALS Environmental received 38 samples on 14-Oct-2016 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 67.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 27-Oct-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1610913**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1610913-01	Sed-LL-9	Sediment		10/12/2016 09:10	10/14/2016 09:00	☐
1610913-02	Sed-LL-11	Sediment		10/12/2016 09:30	10/14/2016 09:00	☐
1610913-03	Sed-LL-12	Sediment		10/12/2016 09:50	10/14/2016 09:00	☐
1610913-04	Sed-LL-15	Sediment		10/12/2016 10:10	10/14/2016 09:00	☐
1610913-05	Sed-LL-16	Sediment		10/12/2016 00:35	10/14/2016 09:00	☐
1610913-06	Sed-LL-14	Sediment		10/12/2016 10:50	10/14/2016 09:00	☐
1610913-07	Sed-LL-13	Sediment		10/12/2016 11:05	10/14/2016 09:00	☐
1610913-08	Sed-LL-10	Sediment		10/12/2016 11:30	10/14/2016 09:00	☐
1610913-09	Sed-LL-8	Sediment		10/12/2016 12:05	10/14/2016 09:00	☐
1610913-10	Sed-LL-5	Sediment		10/12/2016 12:20	10/14/2016 09:00	☐
1610913-11	DUP-Sed-LL	Sediment		10/12/2016	10/14/2016 09:00	☐
1610913-12	Sed-LL-3	Sediment		10/12/2016 12:40	10/14/2016 09:00	☐
1610913-13	Sed-LL-7	Sediment		10/12/2016 12:55	10/14/2016 09:00	☐
1610913-14	Sed-LL-6	Sediment		10/12/2016 13:05	10/14/2016 09:00	☐
1610913-15	Sed-LL-4	Sediment		10/12/2016 13:15	10/14/2016 09:00	☐
1610913-16	Sed-LL-2	Sediment		10/12/2016 13:30	10/14/2016 09:00	☐
1610913-17	Sed-LL-1	Sediment		10/12/2016 13:35	10/14/2016 09:00	☐
1610913-18	Sed-RP-20	Sediment		10/13/2016 09:35	10/14/2016 09:00	☐
1610913-19	Sed-RP-16	Sediment		10/13/2016 09:50	10/14/2016 09:00	☐
1610913-20	Sed-RP-11	Sediment		10/13/2016 10:10	10/14/2016 09:00	☐
1610913-21	Sed-RP-6	Sediment		10/13/2016 10:20	10/14/2016 09:00	☐
1610913-22	Sed-RP-2	Sediment		10/13/2016 10:50	10/14/2016 09:00	☐
1610913-23	Sed-RP-1	Sediment		10/13/2016 10:55	10/14/2016 09:00	☐
1610913-24	Sed-RP-5	Sediment		10/13/2016 11:05	10/14/2016 09:00	☐
1610913-25	Sed-RP-9	Sediment		10/13/2016 11:15	10/14/2016 09:00	☐
1610913-26	Sed-RP-3	Sediment		10/13/2016 11:40	10/14/2016 09:00	☐
1610913-27	Sed-RP-12	Sediment		10/13/2016 10:05	10/14/2016 09:00	☐
1610913-28	DUP-Sed-RP	Sediment		10/13/2016	10/14/2016 09:00	☐
1610913-29	Sed-RP-4	Sediment		10/13/2016 11:50	10/14/2016 09:00	☐
1610913-30	Sed-RP-7	Sediment		10/13/2016 12:00	10/14/2016 09:00	☐
1610913-31	Sed-RP-8	Sediment		10/13/2016 12:10	10/14/2016 09:00	☐
1610913-32	Sed-RP-10	Sediment		10/13/2016 12:20	10/14/2016 09:00	☐
1610913-33	Sed-RP-13	Sediment		10/13/2016 12:30	10/14/2016 09:00	☐
1610913-34	Sed-RP-14	Sediment		10/13/2016 12:35	10/14/2016 09:00	☐
1610913-35	Sed-RP-15	Sediment		10/13/2016 12:40	10/14/2016 09:00	☐
1610913-36	Sed-RP-19	Sediment		10/13/2016 12:50	10/14/2016 09:00	☐
1610913-37	Sed-RP-18	Sediment		10/13/2016 13:05	10/14/2016 09:00	☐
1610913-38	Sed-RP-17	Sediment		10/13/2016 13:10	10/14/2016 09:00	☐

ALS Group USA, Corp

Date: 27-Oct-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1610913**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1610913

Case Narrative

Samples for the above noted Work Order were received on 10/14/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 93173, Method ICP_6010_S, Sample 1610913-03AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al, Fe, Mn, Zn

Batch 93173, Method ICP_6010_S, Sample 1610913-03AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al, Fe, Mn

Batch 93242, Method ICP_6010_S, Sample 1610913-22AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al

Batch 93242, Method ICP_6010_S, Sample 1610913-22AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Fe, Mn

Batch 93242, Method ICP_6010_S, Sample 1610913-22AMSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Mg

Batch 93242, Method ICP_6010_S, Sample 1610913-22AMSD: The MSD recovery was outside of the control limit. However, the MS recovery and the RPD between the MS and MSD was in control. No qualification is required for this analyte: Ba, Be, Cu, Pb, Sr, Sn

Batch 93242, Method ICP_6010_S, Sample 1610913-22AMSD: The RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for this analyte: Ca, Mg

Batch 93242, Method ICP_6010_S, Sample 1610913-22AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Al

Batch 93242, Method ICP_6010_S, Sample 1610913-22AMSD: The MSD recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Ca, Fe, Mn, Zn

Wet Chemistry:
Batch 93367, Method IC_9056_S, Sample 1610913-03A MS: The MS/MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Nitrate

Batch 93367, Method IC_9056_S, Sample 1610913-03A MSD: The MSD recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: Nitrate

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-9
Collection Date: 10/12/2016 09:10 AM

Work Order: 1610913
Lab ID: 1610913-01
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.062**	J	**0.019**	**0.12**	**mg/Kg-dry**	1	10/24/2016 16:31
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/18/16		Analyst: **RH**
Aluminum	**2,900**		**1.0**	**6.5**	**mg/Kg-dry**	1	10/20/2016 20:43
Arsenic	**24**		**0.85**	**3.3**	**mg/Kg-dry**	1	10/20/2016 20:43
Barium	**52**		**1.3**	**3.3**	**mg/Kg-dry**	1	10/20/2016 20:43
Cadmium	**0.60**	J	**0.31**	**6.5**	**mg/Kg-dry**	1	10/20/2016 20:43
Chromium	**12**		**0.18**	**3.3**	**mg/Kg-dry**	1	10/20/2016 20:43
Copper	**10**		**1.4**	**6.5**	**mg/Kg-dry**	1	10/20/2016 20:43
Iron	**17,000**		**3.9**	**52**	**mg/Kg-dry**	1	10/20/2016 20:43
Lead	**29**		**0.69**	**3.3**	**mg/Kg-dry**	1	10/20/2016 20:43
Manganese	**240**		**0.20**	**3.3**	**mg/Kg-dry**	1	10/20/2016 20:43
Potassium	**370**		**24**	**130**	**mg/Kg-dry**	1	10/25/2016 12:26
Selenium	U		1.8	6.5	mg/Kg-dry	1	10/25/2016 12:26
Silver	U		0.40	3.3	mg/Kg-dry	1	10/20/2016 20:43
Zinc	**88**		**0.52**	**6.5**	**mg/Kg-dry**	1	10/20/2016 20:43
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.13	8.1	mg/Kg-dry	1	10/23/2016 21:36
Sulfate	**350**		**1.4**	**81**	**mg/Kg-dry**	1	10/23/2016 21:36
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**88**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 13:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-11
Collection Date: 10/12/2016 09:30 AM

Work Order: 1610913
Lab ID: 1610913-02
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.16**		**0.012**	**0.073**	**mg/Kg-dry**	1	10/24/2016 16:34
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**2,500**		**0.59**	**3.8**	**mg/Kg-dry**	1	10/20/2016 16:45
Arsenic	**13**		**0.49**	**1.9**	**mg/Kg-dry**	1	10/20/2016 16:45
Barium	**23**		**0.76**	**1.9**	**mg/Kg-dry**	1	10/20/2016 16:45
Cadmium	**1.0**	J	**0.18**	**3.8**	**mg/Kg-dry**	1	10/20/2016 16:45
Chromium	**6.1**		**0.11**	**1.9**	**mg/Kg-dry**	1	10/20/2016 16:45
Copper	**6.3**		**0.84**	**3.8**	**mg/Kg-dry**	1	10/20/2016 16:45
Iron	**5,900**		**2.3**	**30**	**mg/Kg-dry**	1	10/20/2016 16:45
Lead	**18**		**0.40**	**1.9**	**mg/Kg-dry**	1	10/20/2016 16:45
Manganese	**46**		**0.11**	**1.9**	**mg/Kg-dry**	1	10/20/2016 16:45
Potassium	**300**		**14**	**76**	**mg/Kg-dry**	1	10/25/2016 12:31
Selenium	U		1.1	3.8	mg/Kg-dry	1	10/20/2016 16:45
Silver	U		0.24	1.9	mg/Kg-dry	1	10/20/2016 16:45
Zinc	**150**		**0.30**	**3.8**	**mg/Kg-dry**	1	10/20/2016 16:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.080	5.0	mg/Kg-dry	1	10/23/2016 21:57
Sulfate	**560**		**0.89**	**50**	**mg/Kg-dry**	1	10/23/2016 21:57
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**81**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 13:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-12
Collection Date: 10/12/2016 09:50 AM

Work Order: 1610913
Lab ID: 1610913-03
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.12**		**0.017**	**0.10**	**mg/Kg-dry**	1	10/24/2016 16:36
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**4,400**		**1.0**	**6.4**	**mg/Kg-dry**	1	10/25/2016 12:10
Arsenic	**53**		**0.83**	**3.2**	**mg/Kg-dry**	1	10/25/2016 12:10
Barium	**69**		**1.3**	**3.2**	**mg/Kg-dry**	1	10/25/2016 12:10
Cadmium	**4.4**	J	**0.31**	**6.4**	**mg/Kg-dry**	1	10/25/2016 12:10
Chromium	**14**		**0.18**	**3.2**	**mg/Kg-dry**	1	10/25/2016 12:10
Copper	**41**		**1.4**	**6.4**	**mg/Kg-dry**	1	10/25/2016 12:10
Iron	**38,000**		**3.8**	**51**	**mg/Kg-dry**	1	10/25/2016 12:10
Lead	**110**		**0.68**	**3.2**	**mg/Kg-dry**	1	10/25/2016 12:10
Manganese	**640**		**0.19**	**3.2**	**mg/Kg-dry**	1	10/25/2016 12:10
Potassium	**450**		**23**	**130**	**mg/Kg-dry**	1	10/25/2016 12:10
Selenium	**4.3**	J	**1.8**	**6.4**	**mg/Kg-dry**	1	10/25/2016 12:10
Silver	U		0.40	3.2	mg/Kg-dry	1	10/25/2016 12:10
Zinc	**300**		**0.51**	**6.4**	**mg/Kg-dry**	1	10/25/2016 12:10
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.12	7.7	mg/Kg-dry	1	10/23/2016 22:17
Sulfate	**1,400**		**1.4**	**77**	**mg/Kg-dry**	1	10/23/2016 22:17
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**87**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 13:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-15
Collection Date: 10/12/2016 10:10 AM

Work Order: 1610913
Lab ID: 1610913-04
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.081**	J	**0.020**	**0.12**	**mg/Kg-dry**	1	10/24/2016 16:51
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**2,300**		**0.97**	**6.2**	**mg/Kg-dry**	1	10/20/2016 17:07
Arsenic	**24**		**0.80**	**3.1**	**mg/Kg-dry**	1	10/20/2016 17:07
Barium	**50**		**1.2**	**3.1**	**mg/Kg-dry**	1	10/20/2016 17:07
Cadmium	**0.62**	J	**0.30**	**6.2**	**mg/Kg-dry**	1	10/20/2016 17:07
Chromium	**6.4**		**0.17**	**3.1**	**mg/Kg-dry**	1	10/20/2016 17:07
Copper	**13**		**1.4**	**6.2**	**mg/Kg-dry**	1	10/20/2016 17:07
Iron	**13,000**		**3.7**	**49**	**mg/Kg-dry**	1	10/20/2016 17:07
Lead	**22**		**0.66**	**3.1**	**mg/Kg-dry**	1	10/20/2016 17:07
Manganese	**160**		**0.19**	**3.1**	**mg/Kg-dry**	1	10/20/2016 17:07
Potassium	**240**		**23**	**120**	**mg/Kg-dry**	1	10/25/2016 12:36
Selenium	U		1.7	6.2	mg/Kg-dry	1	10/20/2016 17:07
Silver	U		0.38	3.1	mg/Kg-dry	1	10/20/2016 17:07
Zinc	**63**		**0.49**	**6.2**	**mg/Kg-dry**	1	10/20/2016 17:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	**7.0**	J	**0.14**	**8.4**	**mg/Kg-dry**	1	10/24/2016 11:28
Sulfate	**360**		**1.5**	**84**	**mg/Kg-dry**	1	10/24/2016 11:28
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**89**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-16
Collection Date: 10/12/2016 12:35 AM

Work Order: 1610913
Lab ID: 1610913-05
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.046**	J	**0.014**	**0.083**	**mg/Kg-dry**	1	10/24/2016 16:54
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**3,800**		**0.62**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Arsenic	**74**		**0.52**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Barium	**52**		**0.80**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Cadmium	**2.4**	J	**0.19**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Chromium	**17**		**0.11**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Copper	**30**		**0.88**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Iron	**60,000**		**2.4**	**32**	**mg/Kg-dry**	1	10/20/2016 17:13
Lead	**140**		**0.42**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Manganese	**590**		**0.12**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Potassium	**330**		**14**	**80**	**mg/Kg-dry**	1	10/25/2016 12:42
Selenium	**1.9**	J	**1.1**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:13
Silver	U		0.25	2.0	mg/Kg-dry	1	10/20/2016 17:13
Zinc	**420**		**0.32**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:13
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.094	5.9	mg/Kg-dry	1	10/24/2016 11:48
Sulfate	**1,000**		**1.0**	**59**	**mg/Kg-dry**	1	10/24/2016 11:48
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**84**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-14
Collection Date: 10/12/2016 10:50 AM

Work Order: 1610913
Lab ID: 1610913-06
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.0030**	J	**0.0026**	**0.016**	**mg/Kg-dry**	1	10/24/2016 16:57
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**480**		**0.16**	**1.0**	**mg/Kg-dry**	1	10/20/2016 17:18
Arsenic	**2.5**		**0.13**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:18
Barium	**4.0**		**0.20**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:18
Cadmium	U		0.048	1.0	mg/Kg-dry	1	10/20/2016 17:18
Chromium	**1.0**		**0.028**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:18
Copper	**0.34**	J	**0.22**	**1.0**	**mg/Kg-dry**	1	10/20/2016 17:18
Iron	**3,400**		**0.61**	**8.1**	**mg/Kg-dry**	1	10/20/2016 17:18
Lead	**3.3**		**0.11**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:18
Manganese	**37**		**0.030**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:18
Potassium	**80**		**3.7**	**20**	**mg/Kg-dry**	1	10/25/2016 12:47
Selenium	U		0.28	1.0	mg/Kg-dry	1	10/20/2016 17:18
Silver	U		0.063	0.50	mg/Kg-dry	1	10/20/2016 17:18
Zinc	**6.6**		**0.081**	**1.0**	**mg/Kg-dry**	1	10/20/2016 17:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.020	1.3	mg/Kg-dry	1	10/24/2016 12:08
Sulfate	**100**		**0.22**	**13**	**mg/Kg-dry**	1	10/24/2016 12:08
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**22**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-13
Collection Date: 10/12/2016 11:05 AM

Work Order: 1610913
Lab ID: 1610913-07
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.13**		**0.011**	**0.067**	**mg/Kg-dry**	1	10/24/2016 16:59
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**4,500**		**0.61**	**3.9**	**mg/Kg-dry**	1	10/20/2016 17:24
Arsenic	**78**		**0.51**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:24
Barium	**75**		**0.78**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:24
Cadmium	**1.9**	J	**0.19**	**3.9**	**mg/Kg-dry**	1	10/20/2016 17:24
Chromium	**12**		**0.11**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:24
Copper	**20**		**0.86**	**3.9**	**mg/Kg-dry**	1	10/20/2016 17:24
Iron	**54,000**		**2.3**	**31**	**mg/Kg-dry**	1	10/20/2016 17:24
Lead	**95**		**0.41**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:24
Manganese	**210**		**0.12**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:24
Potassium	**300**		**14**	**78**	**mg/Kg-dry**	1	10/25/2016 16:02
Selenium	**3.2**	J	**1.1**	**3.9**	**mg/Kg-dry**	1	10/20/2016 17:24
Silver	U		0.24	2.0	mg/Kg-dry	1	10/20/2016 17:24
Zinc	**150**		**0.31**	**3.9**	**mg/Kg-dry**	1	10/20/2016 17:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.076	4.7	mg/Kg-dry	1	10/24/2016 12:29
Sulfate	**1,100**		**1.7**	**94**	**mg/Kg-dry**	2	10/24/2016 16:11
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**80**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-10
Collection Date: 10/12/2016 11:30 AM

Work Order: 1610913
Lab ID: 1610913-08
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.0052**	J	**0.0032**	**0.019**	**mg/Kg-dry**	1	10/24/2016 17:02
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**730**		**0.16**	**1.0**	**mg/Kg-dry**	1	10/20/2016 17:29
Arsenic	**5.4**		**0.13**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:29
Barium	**8.7**		**0.20**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:29
Cadmium	**0.14**	J	**0.048**	**1.0**	**mg/Kg-dry**	1	10/20/2016 17:29
Chromium	**2.4**		**0.028**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:29
Copper	**1.5**		**0.22**	**1.0**	**mg/Kg-dry**	1	10/20/2016 17:29
Iron	**3,700**		**0.60**	**8.1**	**mg/Kg-dry**	1	10/20/2016 17:29
Lead	**12**		**0.11**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:29
Manganese	**23**		**0.030**	**0.50**	**mg/Kg-dry**	1	10/20/2016 17:29
Potassium	**90**		**3.7**	**20**	**mg/Kg-dry**	1	10/25/2016 16:07
Selenium	U		0.28	1.0	mg/Kg-dry	1	10/20/2016 17:29
Silver	U		0.062	0.50	mg/Kg-dry	1	10/20/2016 17:29
Zinc	**14**		**0.081**	**1.0**	**mg/Kg-dry**	1	10/20/2016 17:29
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.022	1.3	mg/Kg-dry	1	10/24/2016 12:49
Sulfate	**140**		**0.24**	**13**	**mg/Kg-dry**	1	10/24/2016 12:49
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**30**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-8
Collection Date: 10/12/2016 12:05 PM

Work Order: 1610913
Lab ID: 1610913-09
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.12**		**0.013**	**0.078**	**mg/Kg-dry**	1	10/24/2016 17:04
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**4,400**		**0.62**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Arsenic	**50**		**0.52**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Barium	**62**		**0.80**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Cadmium	**2.0**	J	**0.19**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Chromium	**18**		**0.11**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Copper	**37**		**0.88**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Iron	**26,000**		**2.4**	**32**	**mg/Kg-dry**	1	10/20/2016 17:34
Lead	**160**		**0.42**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Manganese	**160**		**0.12**	**2.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Potassium	**430**		**14**	**80**	**mg/Kg-dry**	1	10/25/2016 16:13
Selenium	**2.7**	J	**1.1**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:34
Silver	U		0.25	2.0	mg/Kg-dry	1	10/20/2016 17:34
Zinc	**200**		**0.32**	**4.0**	**mg/Kg-dry**	1	10/20/2016 17:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	**3.9**	J	**0.083**	**5.2**	**mg/Kg-dry**	1	10/24/2016 13:09
Sulfate	**860**		**0.92**	**52**	**mg/Kg-dry**	1	10/24/2016 13:09
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**81**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-5
Collection Date: 10/12/2016 12:20 PM

Work Order: 1610913
Lab ID: 1610913-10
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.058**	J	**0.014**	**0.083**	**mg/Kg-dry**	1	10/24/2016 17:07
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**3,000**		**0.77**	**5.0**	**mg/Kg-dry**	1	10/20/2016 17:40
Arsenic	**40**		**0.64**	**2.5**	**mg/Kg-dry**	1	10/20/2016 17:40
Barium	**37**		**0.99**	**2.5**	**mg/Kg-dry**	1	10/20/2016 17:40
Cadmium	**1.9**	J	**0.24**	**5.0**	**mg/Kg-dry**	1	10/20/2016 17:40
Chromium	**11**		**0.14**	**2.5**	**mg/Kg-dry**	1	10/20/2016 17:40
Copper	**21**		**1.1**	**5.0**	**mg/Kg-dry**	1	10/20/2016 17:40
Iron	**10,000**		**3.0**	**40**	**mg/Kg-dry**	1	10/20/2016 17:40
Lead	**100**		**0.52**	**2.5**	**mg/Kg-dry**	1	10/20/2016 17:40
Manganese	**58**		**0.15**	**2.5**	**mg/Kg-dry**	1	10/20/2016 17:40
Potassium	**270**		**18**	**99**	**mg/Kg-dry**	1	10/25/2016 16:18
Selenium	**2.1**	J	**1.4**	**5.0**	**mg/Kg-dry**	1	10/20/2016 17:40
Silver	U		0.31	2.5	mg/Kg-dry	1	10/20/2016 17:40
Zinc	**130**		**0.40**	**5.0**	**mg/Kg-dry**	1	10/20/2016 17:40
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	**47**		**0.10**	**6.4**	**mg/Kg-dry**	1	10/24/2016 13:29
Sulfate	**740**		**1.1**	**64**	**mg/Kg-dry**	1	10/24/2016 13:29
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**84**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-Sed-LL
Collection Date: 10/12/2016

Work Order: 1610913
Lab ID: 1610913-11
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.085**		**0.014**	**0.085**	**mg/Kg-dry**	1	10/24/2016 17:14
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**2,800**		**0.81**	**5.2**	**mg/Kg-dry**	1	10/20/2016 17:45
Arsenic	**32**		**0.67**	**2.6**	**mg/Kg-dry**	1	10/20/2016 17:45
Barium	**38**		**1.0**	**2.6**	**mg/Kg-dry**	1	10/20/2016 17:45
Cadmium	**1.5**	J	**0.25**	**5.2**	**mg/Kg-dry**	1	10/20/2016 17:45
Chromium	**13**		**0.15**	**2.6**	**mg/Kg-dry**	1	10/20/2016 17:45
Copper	**17**		**1.1**	**5.2**	**mg/Kg-dry**	1	10/20/2016 17:45
Iron	**12,000**		**3.1**	**41**	**mg/Kg-dry**	1	10/20/2016 17:45
Lead	**67**		**0.55**	**2.6**	**mg/Kg-dry**	1	10/20/2016 17:45
Manganese	**65**		**0.16**	**2.6**	**mg/Kg-dry**	1	10/20/2016 17:45
Potassium	**290**		**19**	**100**	**mg/Kg-dry**	1	10/25/2016 16:23
Selenium	**1.6**	J	**1.5**	**5.2**	**mg/Kg-dry**	1	10/20/2016 17:45
Silver	U		0.32	2.6	mg/Kg-dry	1	10/20/2016 17:45
Zinc	**160**		**0.41**	**5.2**	**mg/Kg-dry**	1	10/20/2016 17:45
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.11	6.6	mg/Kg-dry	1	10/24/2016 13:50
Sulfate	**640**		**1.2**	**66**	**mg/Kg-dry**	1	10/24/2016 13:50
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**86**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-3
Collection Date: 10/12/2016 12:40 PM

Work Order: 1610913
Lab ID: 1610913-12
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.043**	J	**0.0078**	**0.047**	**mg/Kg-dry**	1	10/24/2016 17:25
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**2,600**		**0.34**	**2.2**	**mg/Kg-dry**	1	10/20/2016 17:51
Arsenic	**25**		**0.29**	**1.1**	**mg/Kg-dry**	1	10/20/2016 17:51
Barium	**30**		**0.44**	**1.1**	**mg/Kg-dry**	1	10/20/2016 17:51
Cadmium	**0.82**	J	**0.11**	**2.2**	**mg/Kg-dry**	1	10/20/2016 17:51
Chromium	**8.0**		**0.062**	**1.1**	**mg/Kg-dry**	1	10/20/2016 17:51
Copper	**8.9**		**0.48**	**2.2**	**mg/Kg-dry**	1	10/20/2016 17:51
Iron	**11,000**		**1.3**	**18**	**mg/Kg-dry**	1	10/20/2016 17:51
Lead	**38**		**0.23**	**1.1**	**mg/Kg-dry**	1	10/20/2016 17:51
Manganese	**38**		**0.066**	**1.1**	**mg/Kg-dry**	1	10/20/2016 17:51
Potassium	**180**		**8.0**	**44**	**mg/Kg-dry**	1	10/25/2016 16:29
Selenium	**1.6**	J	**0.62**	**2.2**	**mg/Kg-dry**	1	10/20/2016 17:51
Silver	U		0.14	1.1	mg/Kg-dry	1	10/20/2016 17:51
Zinc	**130**		**0.18**	**2.2**	**mg/Kg-dry**	1	10/20/2016 17:51
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.053	3.3	mg/Kg-dry	1	10/24/2016 14:50
Sulfate	**1,100**		**3.0**	**170**	**mg/Kg-dry**	5	10/24/2016 16:31
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**70**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-7
Collection Date: 10/12/2016 12:55 PM

Work Order: 1610913
Lab ID: 1610913-13
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.029**	J	**0.014**	**0.083**	**mg/Kg-dry**	1	10/24/2016 17:27
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**2,000**		**0.54**	**3.5**	**mg/Kg-dry**	1	10/20/2016 17:56
Arsenic	**20**		**0.45**	**1.7**	**mg/Kg-dry**	1	10/20/2016 17:56
Barium	**35**		**0.70**	**1.7**	**mg/Kg-dry**	1	10/20/2016 17:56
Cadmium	**0.28**	J	**0.17**	**3.5**	**mg/Kg-dry**	1	10/20/2016 17:56
Chromium	**6.0**		**0.098**	**1.7**	**mg/Kg-dry**	1	10/20/2016 17:56
Copper	**4.5**		**0.77**	**3.5**	**mg/Kg-dry**	1	10/20/2016 17:56
Iron	**30,000**		**2.1**	**28**	**mg/Kg-dry**	1	10/20/2016 17:56
Lead	**4.3**		**0.37**	**1.7**	**mg/Kg-dry**	1	10/20/2016 17:56
Manganese	**700**		**0.10**	**1.7**	**mg/Kg-dry**	1	10/20/2016 17:56
Potassium	**240**		**13**	**70**	**mg/Kg-dry**	1	10/25/2016 16:34
Selenium	U		0.98	3.5	mg/Kg-dry	1	10/20/2016 17:56
Silver	U		0.22	1.7	mg/Kg-dry	1	10/20/2016 17:56
Zinc	**45**		**0.28**	**3.5**	**mg/Kg-dry**	1	10/20/2016 17:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	**5.0**	J	**0.085**	**5.3**	**mg/Kg-dry**	1	10/24/2016 15:10
Sulfate	**240**		**0.95**	**53**	**mg/Kg-dry**	1	10/24/2016 15:10
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**81**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-6
Collection Date: 10/12/2016 01:05 PM

Work Order: 1610913
Lab ID: 1610913-14
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.027**	J	**0.0054**	**0.033**	**mg/Kg-dry**	1	10/24/2016 17:30
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**1,400**		**0.24**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:18
Arsenic	**6.0**		**0.20**	**0.76**	**mg/Kg-dry**	1	10/20/2016 18:18
Barium	**13**		**0.30**	**0.76**	**mg/Kg-dry**	1	10/20/2016 18:18
Cadmium	**0.42**	J	**0.073**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:18
Chromium	**4.8**		**0.043**	**0.76**	**mg/Kg-dry**	1	10/20/2016 18:18
Copper	**6.9**		**0.33**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:18
Iron	**3,600**		**0.91**	**12**	**mg/Kg-dry**	1	10/20/2016 18:18
Lead	**26**		**0.16**	**0.76**	**mg/Kg-dry**	1	10/20/2016 18:18
Manganese	**38**		**0.046**	**0.76**	**mg/Kg-dry**	1	10/20/2016 18:18
Potassium	**140**		**5.5**	**30**	**mg/Kg-dry**	1	10/25/2016 16:39
Selenium	U		0.43	1.5	mg/Kg-dry	1	10/20/2016 18:18
Silver	U		0.094	0.76	mg/Kg-dry	1	10/20/2016 18:18
Zinc	**45**		**0.12**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.033	2.1	mg/Kg-dry	1	10/24/2016 15:31
Sulfate	**310**		**0.37**	**21**	**mg/Kg-dry**	1	10/24/2016 15:31
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**54**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-4
Collection Date: 10/12/2016 01:15 PM

Work Order: 1610913
Lab ID: 1610913-15
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.042**	J	**0.012**	**0.070**	**mg/Kg-dry**	1	10/24/2016 17:32
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**2,000**		**0.58**	**3.7**	**mg/Kg-dry**	1	10/20/2016 18:23
Arsenic	**17**		**0.48**	**1.8**	**mg/Kg-dry**	1	10/20/2016 18:23
Barium	**24**		**0.74**	**1.8**	**mg/Kg-dry**	1	10/20/2016 18:23
Cadmium	**0.34**	J	**0.18**	**3.7**	**mg/Kg-dry**	1	10/20/2016 18:23
Chromium	**7.0**		**0.10**	**1.8**	**mg/Kg-dry**	1	10/20/2016 18:23
Copper	**3.8**		**0.81**	**3.7**	**mg/Kg-dry**	1	10/20/2016 18:23
Iron	**13,000**		**2.2**	**30**	**mg/Kg-dry**	1	10/20/2016 18:23
Lead	**4.4**		**0.39**	**1.8**	**mg/Kg-dry**	1	10/20/2016 18:23
Manganese	**200**		**0.11**	**1.8**	**mg/Kg-dry**	1	10/20/2016 18:23
Potassium	**250**		**13**	**74**	**mg/Kg-dry**	1	10/25/2016 16:45
Selenium	**1.2**	J	**1.0**	**3.7**	**mg/Kg-dry**	1	10/20/2016 18:23
Silver	U		0.23	1.8	mg/Kg-dry	1	10/20/2016 18:23
Zinc	**74**		**0.30**	**3.7**	**mg/Kg-dry**	1	10/20/2016 18:23
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.079	4.9	mg/Kg-dry	1	10/24/2016 15:51
Sulfate	**520**		**0.88**	**49**	**mg/Kg-dry**	1	10/24/2016 15:51
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**81**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-2
Collection Date: 10/12/2016 01:30 PM

Work Order: 1610913
Lab ID: 1610913-16
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.029**	J	**0.0094**	**0.057**	**mg/Kg-dry**	1	10/24/2016 17:35
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**1,400**		**0.47**	**3.0**	**mg/Kg-dry**	1	10/20/2016 18:29
Arsenic	**18**		**0.39**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:29
Barium	**22**		**0.60**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:29
Cadmium	**0.39**	J	**0.14**	**3.0**	**mg/Kg-dry**	1	10/20/2016 18:29
Chromium	**4.7**		**0.084**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:29
Copper	**3.5**		**0.66**	**3.0**	**mg/Kg-dry**	1	10/20/2016 18:29
Iron	**6,600**		**1.8**	**24**	**mg/Kg-dry**	1	10/20/2016 18:29
Lead	**5.9**		**0.32**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:29
Manganese	**62**		**0.090**	**1.5**	**mg/Kg-dry**	1	10/20/2016 18:29
Potassium	**170**		**11**	**60**	**mg/Kg-dry**	1	10/25/2016 16:50
Selenium	**1.0**	J	**0.84**	**3.0**	**mg/Kg-dry**	1	10/20/2016 18:29
Silver	U		0.19	1.5	mg/Kg-dry	1	10/20/2016 18:29
Zinc	**34**		**0.24**	**3.0**	**mg/Kg-dry**	1	10/20/2016 18:29
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.071	4.4	mg/Kg-dry	1	10/24/2016 04:01
Sulfate	**360**		**0.79**	**44**	**mg/Kg-dry**	1	10/24/2016 04:01
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**77**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-LL-1
Collection Date: 10/12/2016 01:35 PM

Work Order: 1610913
Lab ID: 1610913-17
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.011**	J	**0.0029**	**0.018**	**mg/Kg-dry**	1	10/24/2016 17:37
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**670**		**0.16**	**1.0**	**mg/Kg-dry**	1	10/20/2016 18:34
Arsenic	**2.4**		**0.13**	**0.51**	**mg/Kg-dry**	1	10/20/2016 18:34
Barium	**6.3**		**0.20**	**0.51**	**mg/Kg-dry**	1	10/20/2016 18:34
Cadmium	**0.12**	J	**0.049**	**1.0**	**mg/Kg-dry**	1	10/20/2016 18:34
Chromium	**2.7**		**0.028**	**0.51**	**mg/Kg-dry**	1	10/20/2016 18:34
Copper	**2.5**		**0.22**	**1.0**	**mg/Kg-dry**	1	10/20/2016 18:34
Iron	**2,000**		**0.61**	**8.1**	**mg/Kg-dry**	1	10/20/2016 18:34
Lead	**10**		**0.11**	**0.51**	**mg/Kg-dry**	1	10/20/2016 18:34
Manganese	**13**		**0.030**	**0.51**	**mg/Kg-dry**	1	10/20/2016 18:34
Potassium	**99**		**3.7**	**20**	**mg/Kg-dry**	1	10/25/2016 17:12
Selenium	U		0.28	1.0	mg/Kg-dry	1	10/20/2016 18:34
Silver	U		0.063	0.51	mg/Kg-dry	1	10/20/2016 18:34
Zinc	**20**		**0.081**	**1.0**	**mg/Kg-dry**	1	10/20/2016 18:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.021	1.3	mg/Kg-dry	1	10/24/2016 05:02
Sulfate	**220**		**0.23**	**13**	**mg/Kg-dry**	1	10/24/2016 05:02
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**27**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-20
Collection Date: 10/13/2016 09:35 AM

Work Order: 1610913
Lab ID: 1610913-18
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.066**		**0.010**	**0.062**	**mg/Kg-dry**	1	10/24/2016 17:40
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/19/16		Analyst: **RH**
Aluminum	**2,600**		**0.61**	**3.9**	**mg/Kg-dry**	1	10/20/2016 18:40
Arsenic	**26**		**0.51**	**2.0**	**mg/Kg-dry**	1	10/20/2016 18:40
Barium	**31**		**0.79**	**2.0**	**mg/Kg-dry**	1	10/20/2016 18:40
Cadmium	**0.93**	J	**0.19**	**3.9**	**mg/Kg-dry**	1	10/20/2016 18:40
Chromium	**6.8**		**0.11**	**2.0**	**mg/Kg-dry**	1	10/20/2016 18:40
Copper	**12**		**0.87**	**3.9**	**mg/Kg-dry**	1	10/20/2016 18:40
Iron	**7,100**		**2.4**	**32**	**mg/Kg-dry**	1	10/20/2016 18:40
Lead	**29**		**0.42**	**2.0**	**mg/Kg-dry**	1	10/20/2016 18:40
Manganese	**130**		**0.12**	**2.0**	**mg/Kg-dry**	1	10/20/2016 18:40
Potassium	**250**		**14**	**79**	**mg/Kg-dry**	1	10/25/2016 17:17
Selenium	**1.3**	J	**1.1**	**3.9**	**mg/Kg-dry**	1	10/20/2016 18:40
Silver	U		0.24	2.0	mg/Kg-dry	1	10/20/2016 18:40
Zinc	**72**		**0.32**	**3.9**	**mg/Kg-dry**	1	10/20/2016 18:40
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.079	4.9	mg/Kg-dry	1	10/24/2016 05:22
Sulfate	**450**		**0.88**	**49**	**mg/Kg-dry**	1	10/24/2016 05:22
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**80**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-16
Collection Date: 10/13/2016 09:50 AM

Work Order: 1610913
Lab ID: 1610913-19
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.014**	J	**0.0028**	**0.017**	**mg/Kg-dry**	1	10/24/2016 17:42
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**1,600**		**0.17**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:22
Arsenic	**3.0**		**0.14**	**0.55**	**mg/Kg-dry**	1	10/25/2016 17:22
Barium	**7.9**		**0.22**	**0.55**	**mg/Kg-dry**	1	10/25/2016 17:22
Cadmium	U		0.053	1.1	mg/Kg-dry	1	10/25/2016 17:22
Chromium	**3.1**		**0.031**	**0.55**	**mg/Kg-dry**	1	10/25/2016 17:22
Copper	**2.4**		**0.24**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:22
Iron	**3,000**		**0.66**	**8.8**	**mg/Kg-dry**	1	10/25/2016 17:22
Lead	**12**		**0.12**	**0.55**	**mg/Kg-dry**	1	10/25/2016 17:22
Manganese	**42**		**0.033**	**0.55**	**mg/Kg-dry**	1	10/25/2016 17:22
Potassium	**100**		**4.0**	**22**	**mg/Kg-dry**	1	10/25/2016 17:22
Selenium	**0.60**	J	**0.31**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:22
Silver	U		0.068	0.55	mg/Kg-dry	1	10/25/2016 17:22
Zinc	**35**		**0.088**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:22
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.021	1.3	mg/Kg-dry	1	10/24/2016 05:42
Sulfate	**130**		**0.24**	**13**	**mg/Kg-dry**	1	10/24/2016 05:42
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**28**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-11
Collection Date: 10/13/2016 10:10 AM

Work Order: 1610913
Lab ID: 1610913-20
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.034**		**0.0028**	**0.017**	**mg/Kg-dry**	1	10/24/2016 17:45
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**1,400**		**0.14**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:28
Arsenic	**1.7**		**0.12**	**0.45**	**mg/Kg-dry**	1	10/25/2016 17:28
Barium	**8.6**		**0.18**	**0.45**	**mg/Kg-dry**	1	10/25/2016 17:28
Cadmium	U		0.043	0.90	mg/Kg-dry	1	10/25/2016 17:28
Chromium	**1.8**		**0.025**	**0.45**	**mg/Kg-dry**	1	10/25/2016 17:28
Copper	**1.1**		**0.20**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:28
Iron	**1,600**		**0.54**	**7.2**	**mg/Kg-dry**	1	10/25/2016 17:28
Lead	**2.9**		**0.096**	**0.45**	**mg/Kg-dry**	1	10/25/2016 17:28
Manganese	**27**		**0.027**	**0.45**	**mg/Kg-dry**	1	10/25/2016 17:28
Potassium	**93**		**3.3**	**18**	**mg/Kg-dry**	1	10/25/2016 17:28
Selenium	**0.39**	J	**0.25**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:28
Silver	U		0.056	0.45	mg/Kg-dry	1	10/25/2016 17:28
Zinc	**21**		**0.072**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.023	1.4	mg/Kg-dry	1	10/24/2016 23:44
Sulfate	**57**		**0.25**	**14**	**mg/Kg-dry**	1	10/24/2016 23:44
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**29**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-6
Collection Date: 10/13/2016 10:20 AM

Work Order: 1610913
Lab ID: 1610913-21
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.040**		**0.0048**	**0.029**	**mg/Kg-dry**	1	10/24/2016 17:48
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**2,800**		**0.28**	**1.8**	**mg/Kg-dry**	1	10/25/2016 17:33
Arsenic	**11**		**0.23**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:33
Barium	**21**		**0.36**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:33
Cadmium	**0.46**	J	**0.086**	**1.8**	**mg/Kg-dry**	1	10/25/2016 17:33
Chromium	**6.5**		**0.050**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:33
Copper	**9.2**		**0.40**	**1.8**	**mg/Kg-dry**	1	10/25/2016 17:33
Iron	**9,100**		**1.1**	**14**	**mg/Kg-dry**	1	10/25/2016 17:33
Lead	**34**		**0.19**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:33
Manganese	**150**		**0.054**	**0.90**	**mg/Kg-dry**	1	10/25/2016 17:33
Potassium	**160**		**6.5**	**36**	**mg/Kg-dry**	1	10/25/2016 17:33
Selenium	**0.65**	J	**0.50**	**1.8**	**mg/Kg-dry**	1	10/25/2016 17:33
Silver	U		0.11	0.90	mg/Kg-dry	1	10/25/2016 17:33
Zinc	**110**		**0.14**	**1.8**	**mg/Kg-dry**	1	10/25/2016 17:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.037	2.3	mg/Kg-dry	1	10/25/2016 00:04
Sulfate	**150**		**0.41**	**23**	**mg/Kg-dry**	1	10/25/2016 00:04
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**58**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-2
Collection Date: 10/13/2016 10:50 AM

Work Order: 1610913
Lab ID: 1610913-22
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.035**		**0.0040**	**0.025**	**mg/Kg-dry**	1	10/24/2016 17:58
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**1,500**		**0.22**	**1.4**	**mg/Kg-dry**	1	10/21/2016 15:29
Arsenic	**4.5**		**0.18**	**0.69**	**mg/Kg-dry**	1	10/21/2016 12:34
Barium	**7.9**		**0.28**	**0.69**	**mg/Kg-dry**	1	10/21/2016 12:34
Cadmium	**0.067**	J	**0.066**	**1.4**	**mg/Kg-dry**	1	10/21/2016 12:34
Chromium	**2.7**		**0.039**	**0.69**	**mg/Kg-dry**	1	10/21/2016 12:34
Copper	**3.5**		**0.30**	**1.4**	**mg/Kg-dry**	1	10/21/2016 12:34
Iron	**11,000**		**0.83**	**11**	**mg/Kg-dry**	1	10/21/2016 12:34
Lead	**5.7**		**0.15**	**0.69**	**mg/Kg-dry**	1	10/21/2016 12:34
Manganese	**230**		**0.041**	**0.69**	**mg/Kg-dry**	1	10/21/2016 12:34
Potassium	**99**		**5.0**	**28**	**mg/Kg-dry**	1	10/21/2016 12:34
Selenium	U		0.39	1.4	mg/Kg-dry	1	10/21/2016 15:29
Silver	U		0.086	0.69	mg/Kg-dry	1	10/21/2016 12:34
Zinc	**67**		**0.11**	**1.4**	**mg/Kg-dry**	1	10/21/2016 12:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.029	1.8	mg/Kg-dry	1	10/25/2016 00:24
Sulfate	**42**		**0.32**	**18**	**mg/Kg-dry**	1	10/25/2016 00:24
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**46**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-1
Collection Date: 10/13/2016 10:55 AM

Work Order: 1610913
Lab ID: 1610913-23
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.031**	J	**0.0057**	**0.034**	**mg/Kg-dry**	1	10/24/2016 18:06
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**2,100**		**0.35**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:38
Arsenic	**14**		**0.29**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:38
Barium	**25**		**0.45**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:38
Cadmium	**0.31**	J	**0.11**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:38
Chromium	**6.2**		**0.062**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:38
Copper	**10**		**0.49**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:38
Iron	**27,000**		**1.3**	**18**	**mg/Kg-dry**	1	10/25/2016 17:38
Lead	**20**		**0.24**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:38
Manganese	**870**		**0.067**	**1.1**	**mg/Kg-dry**	1	10/25/2016 17:38
Potassium	**190**		**8.1**	**45**	**mg/Kg-dry**	1	10/25/2016 17:38
Selenium	**1.3**	J	**0.62**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:38
Silver	U		0.14	1.1	mg/Kg-dry	1	10/25/2016 17:38
Zinc	**73**		**0.18**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:38
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.042	2.6	mg/Kg-dry	1	10/25/2016 01:25
Sulfate	**100**		**0.47**	**26**	**mg/Kg-dry**	1	10/25/2016 01:25
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**64**		**0.025**	**0.050**	**% of sample**	1	10/16/2016 15:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-5
Collection Date: 10/13/2016 11:05 AM

Work Order: 1610913
Lab ID: 1610913-24
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.11**	J	**0.018**	**0.11**	**mg/Kg-dry**	1	10/24/2016 18:08
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**13,000**		**0.85**	**5.4**	**mg/Kg-dry**	1	10/25/2016 17:44
Arsenic	**37**		**0.71**	**2.7**	**mg/Kg-dry**	1	10/25/2016 17:44
Barium	**61**		**1.1**	**2.7**	**mg/Kg-dry**	1	10/25/2016 17:44
Cadmium	**2.5**	J	**0.26**	**5.4**	**mg/Kg-dry**	1	10/25/2016 17:44
Chromium	**21**		**0.15**	**2.7**	**mg/Kg-dry**	1	10/25/2016 17:44
Copper	**43**		**1.2**	**5.4**	**mg/Kg-dry**	1	10/25/2016 17:44
Iron	**20,000**		**3.3**	**44**	**mg/Kg-dry**	1	10/25/2016 17:44
Lead	**78**		**0.58**	**2.7**	**mg/Kg-dry**	1	10/25/2016 17:44
Manganese	**330**		**0.16**	**2.7**	**mg/Kg-dry**	1	10/25/2016 17:44
Potassium	**670**		**20**	**110**	**mg/Kg-dry**	1	10/25/2016 17:44
Selenium	**3.3**	J	**1.5**	**5.4**	**mg/Kg-dry**	1	10/25/2016 17:44
Silver	U		0.34	2.7	mg/Kg-dry	1	10/25/2016 17:44
Zinc	**620**		**0.44**	**5.4**	**mg/Kg-dry**	1	10/25/2016 17:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.12	7.8	mg/Kg-dry	1	10/25/2016 01:45
Sulfate	**350**		**1.4**	**78**	**mg/Kg-dry**	1	10/25/2016 01:45
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**88**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-9
Collection Date: 10/13/2016 11:15 AM

Work Order: 1610913
Lab ID: 1610913-25
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.11**		**0.012**	**0.072**	**mg/Kg-dry**	1	10/24/2016 18:11
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**6,500**		**0.68**	**4.4**	**mg/Kg-dry**	1	10/25/2016 17:49
Arsenic	**25**		**0.57**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:49
Barium	**57**		**0.88**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:49
Cadmium	**1.6**	J	**0.21**	**4.4**	**mg/Kg-dry**	1	10/25/2016 17:49
Chromium	**14**		**0.12**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:49
Copper	**33**		**0.96**	**4.4**	**mg/Kg-dry**	1	10/25/2016 17:49
Iron	**8,200**		**2.6**	**35**	**mg/Kg-dry**	1	10/25/2016 17:49
Lead	**150**		**0.46**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:49
Manganese	**150**		**0.13**	**2.2**	**mg/Kg-dry**	1	10/25/2016 17:49
Potassium	**470**		**16**	**88**	**mg/Kg-dry**	1	10/25/2016 17:49
Selenium	**3.5**	J	**1.2**	**4.4**	**mg/Kg-dry**	1	10/25/2016 17:49
Silver	U		0.27	2.2	mg/Kg-dry	1	10/25/2016 17:49
Zinc	**170**		**0.35**	**4.4**	**mg/Kg-dry**	1	10/25/2016 17:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.086	5.4	mg/Kg-dry	1	10/25/2016 02:05
Sulfate	**610**		**0.96**	**54**	**mg/Kg-dry**	1	10/25/2016 02:05
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**82**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-3
Collection Date: 10/13/2016 11:40 AM

Work Order: 1610913
Lab ID: 1610913-26
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.32**		**0.0054**	**0.033**	**mg/Kg-dry**	1	10/24/2016 18:13
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**12,000**		**0.31**	**2.0**	**mg/Kg-dry**	1	10/25/2016 17:55
Arsenic	**11**		**0.25**	**0.98**	**mg/Kg-dry**	1	10/25/2016 17:55
Barium	**31**		**0.39**	**0.98**	**mg/Kg-dry**	1	10/25/2016 17:55
Cadmium	**0.35**	J	**0.094**	**2.0**	**mg/Kg-dry**	1	10/25/2016 17:55
Chromium	**14**		**0.055**	**0.98**	**mg/Kg-dry**	1	10/25/2016 17:55
Copper	**27**		**0.43**	**2.0**	**mg/Kg-dry**	1	10/25/2016 17:55
Iron	**12,000**		**1.2**	**16**	**mg/Kg-dry**	1	10/25/2016 17:55
Lead	**20**		**0.21**	**0.98**	**mg/Kg-dry**	1	10/25/2016 17:55
Manganese	**110**		**0.059**	**0.98**	**mg/Kg-dry**	1	10/25/2016 17:55
Potassium	**520**		**7.1**	**39**	**mg/Kg-dry**	1	10/25/2016 17:55
Selenium	**1.1**	J	**0.55**	**2.0**	**mg/Kg-dry**	1	10/25/2016 17:55
Silver	U		0.12	0.98	mg/Kg-dry	1	10/25/2016 17:55
Zinc	**340**		**0.16**	**2.0**	**mg/Kg-dry**	1	10/25/2016 17:55
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	**2.0**	J	**0.037**	**2.3**	**mg/Kg-dry**	1	10/25/2016 03:06
Sulfate	**320**		**0.41**	**23**	**mg/Kg-dry**	1	10/25/2016 03:06
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**59**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-12
Collection Date: 10/13/2016 10:05 AM

Work Order: 1610913
Lab ID: 1610913-27
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.0058**	J	**0.0027**	**0.016**	**mg/Kg-dry**	1	10/24/2016 18:16
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**900**		**0.14**	**0.91**	**mg/Kg-dry**	1	10/25/2016 18:00
Arsenic	**1.3**		**0.12**	**0.46**	**mg/Kg-dry**	1	10/25/2016 18:00
Barium	**5.2**		**0.18**	**0.46**	**mg/Kg-dry**	1	10/25/2016 18:00
Cadmium	U		0.044	0.91	mg/Kg-dry	1	10/25/2016 18:00
Chromium	**1.8**		**0.026**	**0.46**	**mg/Kg-dry**	1	10/25/2016 18:00
Copper	**1.2**		**0.20**	**0.91**	**mg/Kg-dry**	1	10/25/2016 18:00
Iron	**1,500**		**0.55**	**7.3**	**mg/Kg-dry**	1	10/25/2016 18:00
Lead	**2.0**		**0.097**	**0.46**	**mg/Kg-dry**	1	10/25/2016 18:00
Manganese	**16**		**0.027**	**0.46**	**mg/Kg-dry**	1	10/25/2016 18:00
Potassium	**67**		**3.3**	**18**	**mg/Kg-dry**	1	10/25/2016 18:00
Selenium	U		0.26	0.91	mg/Kg-dry	1	10/25/2016 18:00
Silver	U		0.057	0.46	mg/Kg-dry	1	10/25/2016 18:00
Zinc	**18**		**0.073**	**0.91**	**mg/Kg-dry**	1	10/25/2016 18:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.020	1.2	mg/Kg-dry	1	10/25/2016 03:26
Sulfate	**69**		**0.22**	**12**	**mg/Kg-dry**	1	10/25/2016 03:26
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**21**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-Sed-RP
Collection Date: 10/13/2016

Work Order: 1610913
Lab ID: 1610913-28
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.0049**	J	**0.0026**	**0.016**	**mg/Kg-dry**	1	10/24/2016 18:18
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**850**		**0.13**	**0.83**	**mg/Kg-dry**	1	10/25/2016 18:27
Arsenic	**1.5**		**0.11**	**0.42**	**mg/Kg-dry**	1	10/25/2016 18:27
Barium	**6.3**		**0.17**	**0.42**	**mg/Kg-dry**	1	10/25/2016 18:27
Cadmium	**0.27**	J	**0.040**	**0.83**	**mg/Kg-dry**	1	10/25/2016 18:27
Chromium	**2.1**		**0.023**	**0.42**	**mg/Kg-dry**	1	10/25/2016 18:27
Copper	**2.5**		**0.18**	**0.83**	**mg/Kg-dry**	1	10/25/2016 18:27
Iron	**1,400**		**0.50**	**6.7**	**mg/Kg-dry**	1	10/25/2016 18:27
Lead	**2.1**		**0.088**	**0.42**	**mg/Kg-dry**	1	10/25/2016 18:27
Manganese	**15**		**0.025**	**0.42**	**mg/Kg-dry**	1	10/25/2016 18:27
Potassium	**93**		**3.0**	**17**	**mg/Kg-dry**	1	10/25/2016 18:27
Selenium	U		0.23	0.83	mg/Kg-dry	1	10/26/2016 11:19
Silver	**0.20**	J	**0.052**	**0.42**	**mg/Kg-dry**	1	10/25/2016 18:27
Zinc	**16**		**0.067**	**0.83**	**mg/Kg-dry**	1	10/25/2016 18:27
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.019	1.2	mg/Kg-dry	1	10/25/2016 03:47
Sulfate	**69**		**0.21**	**12**	**mg/Kg-dry**	1	10/25/2016 03:47
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**21**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-4
Collection Date: 10/13/2016 11:50 AM

Work Order: 1610913
Lab ID: 1610913-29
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.24**		**0.0038**	**0.023**	**mg/Kg-dry**	1	10/24/2016 18:21
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**7,800**		**0.20**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:33
Arsenic	**3.9**		**0.16**	**0.63**	**mg/Kg-dry**	1	10/25/2016 18:33
Barium	**11**		**0.25**	**0.63**	**mg/Kg-dry**	1	10/25/2016 18:33
Cadmium	**0.095**	J	**0.061**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:33
Chromium	**5.7**		**0.035**	**0.63**	**mg/Kg-dry**	1	10/25/2016 18:33
Copper	**34**		**0.28**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:33
Iron	**5,300**		**0.76**	**10**	**mg/Kg-dry**	1	10/25/2016 18:33
Lead	**8.7**		**0.13**	**0.63**	**mg/Kg-dry**	1	10/25/2016 18:33
Manganese	**50**		**0.038**	**0.63**	**mg/Kg-dry**	1	10/25/2016 18:33
Potassium	**210**		**4.6**	**25**	**mg/Kg-dry**	1	10/25/2016 18:33
Selenium	**0.60**	J	**0.35**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:33
Silver	U		0.078	0.63	mg/Kg-dry	1	10/25/2016 18:33
Zinc	**110**		**0.10**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.029	1.8	mg/Kg-dry	1	10/25/2016 04:07
Sulfate	**70**		**0.32**	**18**	**mg/Kg-dry**	1	10/25/2016 04:07
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**46**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-7
Collection Date: 10/13/2016 12:00 PM

Work Order: 1610913
Lab ID: 1610913-30
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.0094**	J	**0.0032**	**0.019**	**mg/Kg-dry**	1	10/24/2016 18:31
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**1,100**		**0.15**	**0.95**	**mg/Kg-dry**	1	10/25/2016 18:38
Arsenic	**2.3**		**0.12**	**0.47**	**mg/Kg-dry**	1	10/25/2016 18:38
Barium	**6.9**		**0.19**	**0.47**	**mg/Kg-dry**	1	10/25/2016 18:38
Cadmium	**0.11**	J	**0.045**	**0.95**	**mg/Kg-dry**	1	10/25/2016 18:38
Chromium	**2.7**		**0.027**	**0.47**	**mg/Kg-dry**	1	10/25/2016 18:38
Copper	**2.7**		**0.21**	**0.95**	**mg/Kg-dry**	1	10/25/2016 18:38
Iron	**2,600**		**0.57**	**7.6**	**mg/Kg-dry**	1	10/25/2016 18:38
Lead	**8.4**		**0.10**	**0.47**	**mg/Kg-dry**	1	10/25/2016 18:38
Manganese	**23**		**0.028**	**0.47**	**mg/Kg-dry**	1	10/25/2016 18:38
Potassium	**84**		**3.4**	**19**	**mg/Kg-dry**	1	10/25/2016 18:38
Selenium	**0.58**	J	**0.27**	**0.95**	**mg/Kg-dry**	1	10/25/2016 18:38
Silver	U		0.059	0.47	mg/Kg-dry	1	10/25/2016 18:38
Zinc	**21**		**0.076**	**0.95**	**mg/Kg-dry**	1	10/25/2016 18:38
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.023	1.4	mg/Kg-dry	1	10/25/2016 04:27
Sulfate	**88**		**0.26**	**14**	**mg/Kg-dry**	1	10/25/2016 04:27
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**33**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-8
Collection Date: 10/13/2016 12:10 PM

Work Order: 1610913
Lab ID: 1610913-31
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.017**	J	**0.013**	**0.076**	**mg/Kg-dry**	1	10/24/2016 20:49
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**2,300**		**0.58**	**3.7**	**mg/Kg-dry**	1	10/25/2016 18:43
Arsenic	**20**		**0.49**	**1.9**	**mg/Kg-dry**	1	10/25/2016 18:43
Barium	**22**		**0.75**	**1.9**	**mg/Kg-dry**	1	10/25/2016 18:43
Cadmium	**0.52**	J	**0.18**	**3.7**	**mg/Kg-dry**	1	10/25/2016 18:43
Chromium	**6.2**		**0.10**	**1.9**	**mg/Kg-dry**	1	10/25/2016 18:43
Copper	**4.6**		**0.82**	**3.7**	**mg/Kg-dry**	1	10/25/2016 18:43
Iron	**7,500**		**2.2**	**30**	**mg/Kg-dry**	1	10/25/2016 18:43
Lead	**3.5**		**0.40**	**1.9**	**mg/Kg-dry**	1	10/25/2016 18:43
Manganese	**230**		**0.11**	**1.9**	**mg/Kg-dry**	1	10/25/2016 18:43
Potassium	**230**		**14**	**75**	**mg/Kg-dry**	1	10/25/2016 18:43
Selenium	**1.3**	J	**1.0**	**3.7**	**mg/Kg-dry**	1	10/25/2016 18:43
Silver	U		0.23	1.9	mg/Kg-dry	1	10/25/2016 18:43
Zinc	**81**		**0.30**	**3.7**	**mg/Kg-dry**	1	10/25/2016 18:43
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.078	4.9	mg/Kg-dry	1	10/25/2016 04:47
Sulfate	**160**		**0.87**	**49**	**mg/Kg-dry**	1	10/25/2016 04:47
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**80**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-10
Collection Date: 10/13/2016 12:20 PM

Work Order: 1610913
Lab ID: 1610913-32
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.033**	J	**0.0083**	**0.050**	**mg/Kg-dry**	1	10/24/2016 20:51
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**8,700**		**0.40**	**2.6**	**mg/Kg-dry**	1	10/25/2016 18:49
Arsenic	**61**		**0.33**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:49
Barium	**140**		**0.51**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:49
Cadmium	**0.20**	J	**0.12**	**2.6**	**mg/Kg-dry**	1	10/25/2016 18:49
Chromium	**79**		**0.072**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:49
Copper	**63**		**0.57**	**2.6**	**mg/Kg-dry**	1	10/25/2016 18:49
Iron	**140,000**		**15**	**210**	**mg/Kg-dry**	10	10/26/2016 11:24
Lead	**46**		**0.27**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:49
Manganese	**1,100**		**0.077**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:49
Potassium	**1,600**		**9.4**	**51**	**mg/Kg-dry**	1	10/25/2016 18:49
Selenium	**1.8**	J	**0.72**	**2.6**	**mg/Kg-dry**	1	10/26/2016 11:29
Silver	**2.7**		**0.16**	**1.3**	**mg/Kg-dry**	1	10/25/2016 18:49
Zinc	**170**		**0.21**	**2.6**	**mg/Kg-dry**	1	10/25/2016 18:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.060	3.7	mg/Kg-dry	1	10/25/2016 05:08
Sulfate	**23**	J	**0.66**	**37**	**mg/Kg-dry**	1	10/25/2016 05:08
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**73**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-13
Collection Date: 10/13/2016 12:30 PM

Work Order: 1610913
Lab ID: 1610913-33
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.099**		**0.0066**	**0.040**	**mg/Kg-dry**	1	10/24/2016 21:02
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**2,800**		**0.37**	**2.3**	**mg/Kg-dry**	1	10/25/2016 18:54
Arsenic	**24**		**0.31**	**1.2**	**mg/Kg-dry**	1	10/25/2016 18:54
Barium	**88**		**0.47**	**1.2**	**mg/Kg-dry**	1	10/25/2016 18:54
Cadmium	**0.12**	J	**0.11**	**2.3**	**mg/Kg-dry**	1	10/25/2016 18:54
Chromium	**4.0**		**0.066**	**1.2**	**mg/Kg-dry**	1	10/25/2016 18:54
Copper	**4.6**		**0.52**	**2.3**	**mg/Kg-dry**	1	10/25/2016 18:54
Iron	**16,000**		**1.4**	**19**	**mg/Kg-dry**	1	10/25/2016 18:54
Lead	**2.4**		**0.25**	**1.2**	**mg/Kg-dry**	1	10/25/2016 18:54
Manganese	**940**		**0.070**	**1.2**	**mg/Kg-dry**	1	10/25/2016 18:54
Potassium	**170**		**8.5**	**47**	**mg/Kg-dry**	1	10/25/2016 18:54
Selenium	**1.7**	J	**0.66**	**2.3**	**mg/Kg-dry**	1	10/25/2016 18:54
Silver	U		0.15	1.2	mg/Kg-dry	1	10/25/2016 18:54
Zinc	**39**		**0.19**	**2.3**	**mg/Kg-dry**	1	10/25/2016 18:54
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.046	2.9	mg/Kg-dry	1	10/25/2016 05:28
Sulfate	**150**		**0.52**	**29**	**mg/Kg-dry**	1	10/25/2016 05:28
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**67**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-14
Collection Date: 10/13/2016 12:35 PM

Work Order: 1610913
Lab ID: 1610913-34
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**7.2**		**0.091**	**0.55**	**mg/Kg-dry**	10	10/25/2016 13:00
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**51,000**		**0.52**	**3.3**	**mg/Kg-dry**	1	10/25/2016 19:00
Arsenic	**29**		**0.43**	**1.7**	**mg/Kg-dry**	1	10/25/2016 19:00
Barium	**68**		**0.66**	**1.7**	**mg/Kg-dry**	1	10/25/2016 19:00
Cadmium	**0.78**	J	**0.16**	**3.3**	**mg/Kg-dry**	1	10/25/2016 19:00
Chromium	**71**		**0.093**	**1.7**	**mg/Kg-dry**	1	10/25/2016 19:00
Copper	**40**		**0.73**	**3.3**	**mg/Kg-dry**	1	10/25/2016 19:00
Iron	**10,000**		**2.0**	**27**	**mg/Kg-dry**	1	10/25/2016 19:00
Lead	**53**		**0.35**	**1.7**	**mg/Kg-dry**	1	10/25/2016 19:00
Manganese	**1,700**		**0.10**	**1.7**	**mg/Kg-dry**	1	10/25/2016 19:00
Potassium	**660**		**12**	**66**	**mg/Kg-dry**	1	10/25/2016 19:00
Selenium	U		0.93	3.3	mg/Kg-dry	1	10/25/2016 19:00
Silver	U		0.21	1.7	mg/Kg-dry	1	10/25/2016 19:00
Zinc	**270**		**0.27**	**3.3**	**mg/Kg-dry**	1	10/25/2016 19:00
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.067	4.2	mg/Kg-dry	1	10/25/2016 05:48
Sulfate	**42**		**0.74**	**42**	**mg/Kg-dry**	1	10/25/2016 05:48
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**76**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-15
Collection Date: 10/13/2016 12:40 PM

Work Order: 1610913
Lab ID: 1610913-35
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.020**		**0.0033**	**0.020**	**mg/Kg-dry**	1	10/24/2016 21:10
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**2,200**		**0.17**	**1.1**	**mg/Kg-dry**	1	10/25/2016 19:06
Arsenic	**2.4**		**0.14**	**0.53**	**mg/Kg-dry**	1	10/25/2016 19:06
Barium	**4.9**		**0.21**	**0.53**	**mg/Kg-dry**	1	10/25/2016 19:06
Cadmium	U		0.051	1.1	mg/Kg-dry	1	10/25/2016 19:06
Chromium	**3.0**		**0.030**	**0.53**	**mg/Kg-dry**	1	10/25/2016 19:06
Copper	**2.5**		**0.23**	**1.1**	**mg/Kg-dry**	1	10/25/2016 19:06
Iron	**3,200**		**0.64**	**8.5**	**mg/Kg-dry**	1	10/25/2016 19:06
Lead	**2.3**		**0.11**	**0.53**	**mg/Kg-dry**	1	10/25/2016 19:06
Manganese	**50**		**0.032**	**0.53**	**mg/Kg-dry**	1	10/25/2016 19:06
Potassium	**120**		**3.9**	**21**	**mg/Kg-dry**	1	10/25/2016 19:06
Selenium	U		0.30	1.1	mg/Kg-dry	1	10/25/2016 19:06
Silver	U		0.066	0.53	mg/Kg-dry	1	10/25/2016 19:06
Zinc	**19**		**0.085**	**1.1**	**mg/Kg-dry**	1	10/25/2016 19:06
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.021	1.3	mg/Kg-dry	1	10/25/2016 06:08
Sulfate	**57**		**0.24**	**13**	**mg/Kg-dry**	1	10/25/2016 06:08
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**29**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-19
Collection Date: 10/13/2016 12:50 PM

Work Order: 1610913
Lab ID: 1610913-36
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.22**		**0.0075**	**0.045**	**mg/Kg-dry**	1	10/24/2016 21:12
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**8,600**		**0.42**	**2.7**	**mg/Kg-dry**	1	10/25/2016 19:11
Arsenic	**30**		**0.35**	**1.3**	**mg/Kg-dry**	1	10/25/2016 19:11
Barium	**50**		**0.54**	**1.3**	**mg/Kg-dry**	1	10/25/2016 19:11
Cadmium	**0.73**	J	**0.13**	**2.7**	**mg/Kg-dry**	1	10/25/2016 19:11
Chromium	**15**		**0.075**	**1.3**	**mg/Kg-dry**	1	10/25/2016 19:11
Copper	**19**		**0.59**	**2.7**	**mg/Kg-dry**	1	10/25/2016 19:11
Iron	**44,000**		**1.6**	**21**	**mg/Kg-dry**	1	10/25/2016 19:11
Lead	**40**		**0.28**	**1.3**	**mg/Kg-dry**	1	10/25/2016 19:11
Manganese	**1,300**		**0.080**	**1.3**	**mg/Kg-dry**	1	10/25/2016 19:11
Potassium	**260**		**9.8**	**54**	**mg/Kg-dry**	1	10/25/2016 19:11
Selenium	**1.4**	J	**0.75**	**2.7**	**mg/Kg-dry**	1	10/25/2016 19:11
Silver	U		0.17	1.3	mg/Kg-dry	1	10/25/2016 19:11
Zinc	**450**		**0.21**	**2.7**	**mg/Kg-dry**	1	10/25/2016 19:11
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.052	3.3	mg/Kg-dry	1	10/25/2016 07:09
Sulfate	**810**		**1.2**	**65**	**mg/Kg-dry**	2	10/25/2016 08:10
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**70**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-18
Collection Date: 10/13/2016 01:05 PM

Work Order: 1610913
Lab ID: 1610913-37
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	U		0.0061	0.037	mg/Kg-dry	1	10/24/2016 21:15
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**1,900**		**0.30**	**1.9**	**mg/Kg-dry**	1	10/25/2016 19:44
Arsenic	**20**		**0.25**	**0.96**	**mg/Kg-dry**	1	10/25/2016 19:44
Barium	**44**		**0.38**	**0.96**	**mg/Kg-dry**	1	10/25/2016 19:44
Cadmium	U		0.092	1.9	mg/Kg-dry	1	10/25/2016 19:44
Chromium	**4.5**		**0.054**	**0.96**	**mg/Kg-dry**	1	10/25/2016 19:44
Copper	**3.9**		**0.42**	**1.9**	**mg/Kg-dry**	1	10/25/2016 19:44
Iron	**41,000**		**1.2**	**15**	**mg/Kg-dry**	1	10/25/2016 19:44
Lead	**2.8**		**0.20**	**0.96**	**mg/Kg-dry**	1	10/25/2016 19:44
Manganese	**990**		**0.058**	**0.96**	**mg/Kg-dry**	1	10/25/2016 19:44
Potassium	**150**		**7.0**	**38**	**mg/Kg-dry**	1	10/25/2016 19:44
Selenium	U		0.54	1.9	mg/Kg-dry	1	10/25/2016 19:44
Silver	U		0.12	0.96	mg/Kg-dry	1	10/25/2016 19:44
Zinc	**21**		**0.15**	**1.9**	**mg/Kg-dry**	1	10/25/2016 19:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.042	2.6	mg/Kg-dry	1	10/25/2016 07:29
Sulfate	**26**	J	**0.47**	**26**	**mg/Kg-dry**	1	10/25/2016 07:29
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**64**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 17:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Oct-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Sed-RP-17
Collection Date: 10/13/2016 01:10 PM

Work Order: 1610913
Lab ID: 1610913-38
Matrix: SEDIMENT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 10/24/16		Analyst: **LR**
Mercury	**0.099**		**0.0030**	**0.018**	**mg/Kg-dry**	1	10/24/2016 21:17
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 10/20/16		Analyst: **RH**
Aluminum	**2,500**		**0.14**	**0.91**	**mg/Kg-dry**	1	10/25/2016 19:49
Arsenic	**3.2**		**0.12**	**0.45**	**mg/Kg-dry**	1	10/25/2016 19:49
Barium	**6.6**		**0.18**	**0.45**	**mg/Kg-dry**	1	10/25/2016 19:49
Cadmium	U		0.044	0.91	mg/Kg-dry	1	10/25/2016 19:49
Chromium	**3.7**		**0.025**	**0.45**	**mg/Kg-dry**	1	10/25/2016 19:49
Copper	**3.7**		**0.20**	**0.91**	**mg/Kg-dry**	1	10/25/2016 19:49
Iron	**4,400**		**0.55**	**7.3**	**mg/Kg-dry**	1	10/25/2016 19:49
Lead	**2.8**		**0.096**	**0.45**	**mg/Kg-dry**	1	10/25/2016 19:49
Manganese	**100**		**0.027**	**0.45**	**mg/Kg-dry**	1	10/25/2016 19:49
Potassium	**130**		**3.3**	**18**	**mg/Kg-dry**	1	10/25/2016 19:49
Selenium	**0.27**	J	**0.25**	**0.91**	**mg/Kg-dry**	1	10/25/2016 19:49
Silver	U		0.056	0.45	mg/Kg-dry	1	10/25/2016 19:49
Zinc	**29**		**0.073**	**0.91**	**mg/Kg-dry**	1	10/25/2016 19:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**			Prep: EXTRACT / 10/20/16		Analyst: **EE**
Nitrogen, Nitrate	U		0.020	1.2	mg/Kg-dry	1	10/25/2016 07:49
Sulfate	**68**		**0.22**	**12**	**mg/Kg-dry**	1	10/25/2016 07:49
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**24**		**0.025**	**0.050**	**% of sample**	1	10/17/2016 17:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 27-Oct-16

Client: ERM, Inc

Work Order: 1610913

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93358** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-93358-93358** Units: **mg/Kg** Analysis Date: **10/24/2016 03:53 PM**

Client ID: Run ID: **HG1_161024A** SeqNo: **4106851** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-93358-93358** Units: **mg/Kg** Analysis Date: **10/24/2016 03:55 PM**

Client ID: Run ID: **HG1_161024A** SeqNo: **4106852** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1775	0.020	0.1665	0	107	80-120	0			

MS Sample ID: **1610913-03AMS** Units: **mg/Kg** Analysis Date: **10/24/2016 04:39 PM**

Client ID: **Sed-LL-12** Run ID: **HG1_161024A** SeqNo: **4106869** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1246	0.014	0.1126	0.01552	96.8	75-125	0			

MSD Sample ID: **1610913-03AMSD** Units: **mg/Kg** Analysis Date: **10/24/2016 04:41 PM**

Client ID: **Sed-LL-12** Run ID: **HG1_161024A** SeqNo: **4106870** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1233	0.013	0.112	0.01552	96.2	75-125	0.1246	1.02	35	

The following samples were analyzed in this batch:

1610913-01A	1610913-02A	1610913-03A
1610913-04A	1610913-05A	1610913-06A
1610913-07A	1610913-08A	1610913-09A
1610913-10A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93359** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-93359-93359** Units: **mg/Kg** Analysis Date: **10/24/2016 05:09 PM**
Client ID: Run ID: **HG1_161024A** SeqNo: **4106881** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-93359-93359** Units: **mg/Kg** Analysis Date: **10/24/2016 05:12 PM**
Client ID: Run ID: **HG1_161024A** SeqNo: **4106882** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1775	0.020	0.1665	0	107	80-120	0			

MS Sample ID: **1610913-22AMS** Units: **mg/Kg** Analysis Date: **10/24/2016 06:00 PM**
Client ID: **Sed-RP-2** Run ID: **HG1_161024A** SeqNo: **4106924** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1113	0.013	0.1064	0.01849	87.2	75-125	0			

MSD Sample ID: **1610913-22AMSD** Units: **mg/Kg** Analysis Date: **10/24/2016 06:03 PM**
Client ID: **Sed-RP-2** Run ID: **HG1_161024A** SeqNo: **4106925** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1053	0.013	0.1052	0.01849	82.5	75-125	0.1113	5.56	35	

The following samples were analyzed in this batch:

1610913-11A	1610913-12A	1610913-13A
1610913-14A	1610913-15A	1610913-16A
1610913-17A	1610913-18A	1610913-19A
1610913-20A	1610913-21A	1610913-22A
1610913-23A	1610913-24A	1610913-25A
1610913-26A	1610913-27A	1610913-28A
1610913-29A	1610913-30A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93360** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-93360-93360** Units: **mg/Kg** Analysis Date: **10/24/2016 07:49 PM**
Client ID: Run ID: **HG1_161024A** SeqNo: **4107166** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-93360-93360** Units: **mg/Kg** Analysis Date: **10/24/2016 07:52 PM**
Client ID: Run ID: **HG1_161024A** SeqNo: **4107167** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1642	0.020	0.1665	0	98.6	80-120	0			

MS Sample ID: **16101098-05BMS** Units: **mg/Kg** Analysis Date: **10/24/2016 08:11 PM**
Client ID: Run ID: **HG1_161024A** SeqNo: **4107173** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1219	0.013	0.1117	0.01235	98.1	75-125	0			

MSD Sample ID: **16101098-05BMSD** Units: **mg/Kg** Analysis Date: **10/24/2016 08:24 PM**
Client ID: Run ID: **HG1_161024A** SeqNo: **4107178** Prep Date: **10/24/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1164	0.014	0.114	0.01235	91.3	75-125	0.1219	4.6	35	

The following samples were analyzed in this batch:

1610913-31A	1610913-32A	1610913-33A
1610913-34A	1610913-35A	1610913-36A
1610913-37A	1610913-38A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93108** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-93108-93108** Units: **mg/Kg** Analysis Date: **10/19/2016 12:52 PM**
Client ID: Run ID: **ICP2_161019B** SeqNo: **4097228** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.025	0.25								J
Copper	U	0.50								
Lead	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	0.125	0.50								J

LCS Sample ID: **LCS-93108-93108** Units: **mg/Kg** Analysis Date: **10/19/2016 12:57 PM**
Client ID: Run ID: **ICP2_161019B** SeqNo: **4097229** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.28	0.25	5	0	106	80-120	0			
Barium	5.505	0.25	5	0	110	80-120	0			
Cadmium	5.365	0.50	5	0	107	80-120	0			
Chromium	5.335	0.25	5	0	107	80-120	0			
Copper	5.34	0.50	5	0	107	80-120	0			
Lead	5.39	0.25	5	0	108	80-120	0			
Selenium	5.07	0.50	5	0	101	80-120	0			
Silver	5.07	0.25	5	0	101	80-120	0			
Zinc	5.4	0.50	5	0	108	80-120	0			

MS Sample ID: **1610636-08AMS** Units: **mg/Kg** Analysis Date: **10/19/2016 01:31 PM**
Client ID: Run ID: **ICP2_161019B** SeqNo: **4097233** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	17.14	0.35	7.072	8.64	120	75-125	0			
Barium	122.4	0.35	7.072	108.8	193	75-125	0			SO
Cadmium	8.536	0.71	7.072	0.1781	118	75-125	0			
Chromium	20.82	0.35	7.072	11.32	134	75-125	0			S
Copper	21.73	0.71	7.072	14.28	105	75-125	0			
Lead	24.49	0.35	7.072	16.97	106	75-125	0			
Selenium	9.399	0.71	7.072	1.567	111	75-125	0			
Silver	7.496	0.35	7.072	-0.02849	106	75-125	0			
Zinc	93.87	0.71	7.072	84.74	129	75-125	0			SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93108** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1610636-08AMSD** Units: **mg/Kg** Analysis Date: **10/19/2016 01:37 PM**
Client ID: Run ID: **ICP2_161019B** SeqNo: **4097234** Prep Date: **10/18/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	17.88	0.36	7.153	8.64	129	75-125	17.14	4.18	20	S
Barium	118.7	0.36	7.153	108.8	140	75-125	122.4	3.02	20	SO
Cadmium	9.013	0.72	7.153	0.1781	124	75-125	8.536	5.43	20	
Chromium	20.69	0.36	7.153	11.32	131	75-125	20.82	0.61	20	S
Copper	21.17	0.72	7.153	14.28	96.3	75-125	21.73	2.64	20	
Lead	25.48	0.36	7.153	16.97	119	75-125	24.49	3.96	20	
Selenium	9.628	0.72	7.153	1.567	113	75-125	9.399	2.41	20	
Silver	7.439	0.36	7.153	-0.02849	104	75-125	7.496	0.767	20	
Zinc	98.03	0.72	7.153	84.74	186	75-125	93.87	4.34	20	SO

The following samples were analyzed in this batch: 1610913-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93173** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-93173-93173** Units: **mg/Kg** Analysis Date: **10/20/2016 01:38 PM**
Client ID: Run ID: **ICP2_161020A** SeqNo: **4100010** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	U	0.50								
Lead	U	0.25								

MBLK Sample ID: **MBLK-93173-93173** Units: **mg/Kg** Analysis Date: **10/25/2016 11:59 A**
Client ID: Run ID: **ICP2_161025A** SeqNo: **4109061** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.50								
Arsenic	U	0.25								
Barium	U	0.25								
Chromium	0.01614	0.25								J
Copper	0.1414	0.50								J
Iron	1.971	4.0								J
Manganese	0.02128	0.25								J
Potassium	U	10								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	0.1834	0.50								J

LCS Sample ID: **LCS-93173-93173** Units: **mg/Kg** Analysis Date: **10/20/2016 01:44 PM**
Client ID: Run ID: **ICP2_161020A** SeqNo: **4100011** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	5.059	0.50	5	0	101	80-120	0			
Lead	5.006	0.25	5	0	100	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93173** Instrument ID **ICP2** Method: **SW846 6010C**

LCS Sample ID: **LCS-93173-93173** Units: **mg/Kg** Analysis Date: **10/25/2016 12:04 PM**
Client ID: Run ID: **ICP2_161025A** SeqNo: **4109062** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	4.579	0.50	5	0	91.6	80-120	0			
Arsenic	5.055	0.25	5	0	101	80-120	0			
Barium	5.2	0.25	5	0	104	80-120	0			
Chromium	5.272	0.25	5	0	105	80-120	0			
Copper	5.072	0.50	5	0	101	80-120	0			
Iron	440	4.0	500	0	88	80-120	0			
Manganese	4.689	0.25	5	0	93.8	80-120	0			
Potassium	473.4	10	500	0	94.7	80-120	0			
Selenium	4.745	0.50	5	0	94.9	80-120	0			
Silver	4.833	0.25	5	0	96.7	80-120	0			
Zinc	4.791	0.50	5	0	95.8	80-120	0			

MS Sample ID: **1610913-03AMS** Units: **mg/Kg** Analysis Date: **10/20/2016 02:00 PM**
Client ID: **Sed-LL-12** Run ID: **ICP2_161020A** SeqNo: **4100014** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	8.611	0.82	8.197	0.47	99.3	75-125	0			
Lead	18.24	0.41	8.197	13.7	55.3	75-125	0			S

MS Sample ID: **1610913-03AMS** Units: **mg/Kg** Analysis Date: **10/25/2016 12:15 PM**
Client ID: **Sed-LL-12** Run ID: **ICP2_161025A** SeqNo: **4109064** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	789.8	0.82	8.197	559.9	2810	75-125	0			SO
Arsenic	14.09	0.41	8.197	6.862	88.2	75-125	0			
Barium	16.82	0.41	8.197	8.937	96.2	75-125	0			
Chromium	10.67	0.41	8.197	1.749	109	75-125	0			
Copper	13.21	0.82	8.197	5.335	96.1	75-125	0			
Iron	4473	6.6	819.7	4869	-48.4	75-125	0			SO
Manganese	67.02	0.41	8.197	82.22	-186	75-125	0			SO
Potassium	894.1	16	819.7	57.47	102	75-125	0			
Selenium	8.286	0.82	8.197	0.553	94.3	75-125	0			
Silver	8.065	0.41	8.197	-0.00528	98.5	75-125	0			
Zinc	37.49	0.82	8.197	38.33	-10.2	75-125	0			SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93173** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1610913-03AMSD** Units: **mg/Kg** Analysis Date: **10/20/2016 02:05 PM**
Client ID: **Sed-LL-12** Run ID: **ICP2_161020A** SeqNo: **4100015** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	8.965	0.83	8.251	0.47	103	75-125	8.611	4.03	20	
Lead	19.9	0.41	8.251	13.7	75.1	75-125	18.24	8.71	20	

MSD Sample ID: **1610913-03AMSD** Units: **mg/Kg** Analysis Date: **10/25/2016 12:20 PM**
Client ID: **Sed-LL-12** Run ID: **ICP2_161025A** SeqNo: **4109065** Prep Date: **10/19/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	820.3	0.83	8.251	559.9	3160	75-125	789.8	3.78	20	SO
Arsenic	14.76	0.41	8.251	6.862	95.8	75-125	14.09	4.67	20	
Barium	16.93	0.41	8.251	8.937	96.8	75-125	16.82	0.618	20	
Chromium	11.07	0.41	8.251	1.749	113	75-125	10.67	3.68	20	
Copper	13.48	0.83	8.251	5.335	98.7	75-125	13.21	2.01	20	
Iron	4596	6.6	825.1	4869	-33.1	75-125	4473	2.71	20	SO
Manganese	69.99	0.41	8.251	82.22	-148	75-125	67.02	4.35	20	SO
Potassium	889	17	825.1	57.47	101	75-125	894.1	0.572	20	
Selenium	8.187	0.83	8.251	0.553	92.5	75-125	8.286	1.21	20	
Silver	8.253	0.41	8.251	-0.00528	100	75-125	8.065	2.31	20	
Zinc	45.46	0.83	8.251	38.33	86.4	75-125	37.49	19.2	20	O

The following samples were analyzed in this batch:

1610913-02A	1610913-03A	1610913-04A
1610913-05A	1610913-06A	1610913-07A
1610913-08A	1610913-09A	1610913-10A
1610913-11A	1610913-12A	1610913-13A
1610913-14A	1610913-15A	1610913-16A
1610913-17A	1610913-18A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93242** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-93242-93242** Units: **mg/Kg** Analysis Date: **10/21/2016 12:12 PM**
Client ID: Run ID: **ICP2_161021A** SeqNo: **4102062** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	0.03399	0.50								J
Chromium	0.02633	0.25								J
Copper	U	0.50								
Iron	0.4488	4.0								J
Lead	U	0.25								
Manganese	U	0.25								
Potassium	U	10								
Silver	U	0.25								
Zinc	0.06383	0.50								J

MBLK Sample ID: **MBLK-93242-93242** Units: **mg/Kg** Analysis Date: **10/21/2016 03:18 PM**
Client ID: Run ID: **ICP2_161021B** SeqNo: **4102944** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3579	0.50								J
Selenium	U	0.50								

LCS Sample ID: **LCS-93242-93242** Units: **mg/Kg** Analysis Date: **10/21/2016 12:18 PM**
Client ID: Run ID: **ICP2_161021A** SeqNo: **4102063** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.956	0.25	5	0	99.1	80-120	0			
Barium	4.618	0.25	5	0	92.4	80-120	0			
Cadmium	4.848	0.50	5	0	97	80-120	0			
Chromium	4.868	0.25	5	0	97.4	80-120	0			
Copper	4.845	0.50	5	0	96.9	80-120	0			
Iron	466.2	4.0	500	0	93.2	80-120	0			
Lead	4.849	0.25	5	0	97	80-120	0			
Manganese	4.657	0.25	5	0	93.1	80-120	0			
Potassium	468.4	10	500	0	93.7	80-120	0			
Selenium	4.601	0.50	5	0	92	80-120	0			
Silver	4.71	0.25	5	0	94.2	80-120	0			
Zinc	4.818	0.50	5	0	96.4	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93242** Instrument ID **ICP2** Method: **SW846 6010C**

LCS Sample ID: **LCS-93242-93242** Units: **mg/Kg** Analysis Date: **10/21/2016 03:24 PM**
Client ID: Run ID: **ICP2_161021B** SeqNo: **4102945** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5.174	0.50	5	0	103	80-120	0			
Selenium	4.688	0.50	5	0	93.8	80-120	0			

MS Sample ID: **1610913-22AMS** Units: **mg/Kg** Analysis Date: **10/21/2016 12:39 PM**
Client ID: **Sed-RP-2** Run ID: **ICP2_161021A** SeqNo: **4102067** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.46	0.37	7.375	2.422	81.9	75-125	0			
Barium	9.975	0.37	7.375	4.254	77.6	75-125	0			
Cadmium	6.25	0.74	7.375	0.03573	84.3	75-125	0			
Chromium	7.546	0.37	7.375	1.432	82.9	75-125	0			
Copper	8.121	0.74	7.375	1.864	84.8	75-125	0			
Iron	5344	5.9	737.5	5801	-62	75-125	0			SO
Lead	9.261	0.37	7.375	3.031	84.5	75-125	0			
Manganese	108.3	0.37	7.375	124.1	-213	75-125	0			SO
Potassium	662.1	15	737.5	52.77	82.6	75-125	0			
Silver	6.258	0.37	7.375	-0.06063	85.7	75-125	0			
Zinc	42.98	0.74	7.375	35.73	98.3	75-125	0			O

MS Sample ID: **1610913-22AMS** Units: **mg/Kg** Analysis Date: **10/21/2016 03:34 PM**
Client ID: **Sed-RP-2** Run ID: **ICP2_161021B** SeqNo: **4102947** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	892.7	0.74	7.375	801.8	1230	75-125	0			SO
Selenium	6.135	0.74	7.375	0.1855	80.7	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93242** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1610913-22AMSD** Units: **mg/Kg** Analysis Date: **10/21/2016 12:44 PM**
Client ID: **Sed-RP-2** Run ID: **ICP2_161021A** SeqNo: **4102068** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.376	0.37	7.429	2.422	80.1	75-125	8.46	1	20	
Barium	9.343	0.37	7.429	4.254	68.5	75-125	9.975	6.54	20	S
Cadmium	6.122	0.74	7.429	0.03573	81.9	75-125	6.25	2.08	20	
Chromium	7.444	0.37	7.429	1.432	80.9	75-125	7.546	1.36	20	
Copper	7.43	0.74	7.429	1.864	74.9	75-125	8.121	8.89	20	S
Iron	5827	5.9	742.9	5801	3.54	75-125	5344	8.65	20	SO
Lead	8.441	0.37	7.429	3.031	72.8	75-125	9.261	9.27	20	S
Manganese	116.2	0.37	7.429	124.1	-106	75-125	108.3	7.02	20	SO
Potassium	633.3	15	742.9	52.77	78.1	75-125	662.1	4.45	20	
Silver	5.946	0.37	7.429	-0.06063	80.9	75-125	6.258	5.11	20	
Zinc	35.78	0.74	7.429	35.73	0.692	75-125	42.98	18.3	20	SO

MSD Sample ID: **1610913-22AMSD** Units: **mg/Kg** Analysis Date: **10/21/2016 03:40 PM**
Client ID: **Sed-RP-2** Run ID: **ICP2_161021B** SeqNo: **4102948** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	801.6	0.74	7.429	801.8	-2.78	75-125	892.7	10.7	20	SO
Selenium	5.973	0.74	7.429	0.1855	77.9	75-125	6.135	2.68	20	

The following samples were analyzed in this batch:

1610913-19A	1610913-20A	1610913-21A
1610913-22A	1610913-23A	1610913-24A
1610913-25A	1610913-26A	1610913-27A
1610913-28A	1610913-29A	1610913-30A
1610913-31A	1610913-32A	1610913-33A
1610913-34A	1610913-35A	1610913-36A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93248** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-93248-93248** Units: **mg/Kg** Analysis Date: **10/25/2016 07:33 PM**
Client ID: Run ID: **ICP2_161025B** SeqNo: **4109797** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3698	0.50								J
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.02958	0.25								J
Copper	U	0.50								
Iron	2.211	4.0								J
Lead	U	0.25								
Manganese	0.03128	0.25								J
Potassium	U	10								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	0.1354	0.50								J

LCS Sample ID: **LCS-93248-93248** Units: **mg/Kg** Analysis Date: **10/25/2016 07:38 PM**
Client ID: Run ID: **ICP2_161025B** SeqNo: **4109798** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.612	0.25	5	0	112	80-120	0			
Barium	5.467	0.25	5	0	109	80-120	0			
Cadmium	5.731	0.50	5	0	115	80-120	0			
Chromium	5.714	0.25	5	0	114	80-120	0			
Copper	5.718	0.50	5	0	114	80-120	0			
Iron	562.7	4.0	500	0	113	80-120	0			
Lead	5.578	0.25	5	0	112	80-120	0			
Manganese	5.502	0.25	5	0	110	80-120	0			
Potassium	560.1	10	500	0	112	80-120	0			
Selenium	5.388	0.50	5	0	108	80-120	0			
Silver	5.195	0.25	5	0	104	80-120	0			
Zinc	5.639	0.50	5	0	113	80-120	0			

LCS Sample ID: **LCS-93248-93248** Units: **mg/Kg** Analysis Date: **10/26/2016 11:13 A**
Client ID: Run ID: **ICP2_161026A** SeqNo: **4112051** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	4.999	0.50	5	0	100	80-120	0			
Zinc	5.278	0.50	5	0	106	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93248** Instrument ID **ICP2** Method: **SW846 6010C**

MS Sample ID: **16101098-03BMS** Units: **mg/Kg** Analysis Date: **10/25/2016 08:11 PM**
Client ID: Run ID: **ICP2_161025B** SeqNo: **4109804** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	6585	0.76	7.634	4455	27900	75-125	0			SO
Arsenic	19.91	0.38	7.634	9.586	135	75-125	0			S
Barium	69.92	0.38	7.634	63.37	85.8	75-125	0			O
Cadmium	9.324	0.76	7.634	0.4278	117	75-125	0			
Chromium	21.69	0.38	7.634	9.477	160	75-125	0			S
Copper	39.01	0.76	7.634	26.04	170	75-125	0			S
Iron	12110	6.1	763.4	10070	268	75-125	0			SO
Lead	115.9	0.38	7.634	102.9	170	75-125	0			SO
Manganese	265.4	0.38	7.634	261.1	55.4	75-125	0			SO
Potassium	1293	15	763.4	358.7	122	75-125	0			
Selenium	8.225	0.76	7.634	0.3864	103	75-125	0			
Silver	8.39	0.38	7.634	0.0413	109	75-125	0			
Zinc	98.77	0.76	7.634	73.48	331	75-125	0			SO

MSD Sample ID: **16101098-03BMSD** Units: **mg/Kg** Analysis Date: **10/25/2016 08:17 PM**
Client ID: Run ID: **ICP2_161025B** SeqNo: **4109805** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	5689	0.76	7.599	4455	16200	75-125	6585	14.6	20	SO
Arsenic	20.31	0.38	7.599	9.586	141	75-125	19.91	1.99	20	S
Barium	63.84	0.38	7.599	63.37	6.08	75-125	69.92	9.1	20	SO
Cadmium	9.804	0.76	7.599	0.4278	123	75-125	9.324	5.02	20	
Chromium	20.33	0.38	7.599	9.477	143	75-125	21.69	6.5	20	S
Copper	38.54	0.76	7.599	26.04	165	75-125	39.01	1.2	20	S
Iron	22020	6.1	759.9	10070	1570	75-125	12110	58.1	20	SREO
Lead	110.3	0.38	7.599	102.9	97.1	75-125	115.9	4.96	20	O
Manganese	327.2	0.38	7.599	261.1	870	75-125	265.4	20.9	20	SRO
Potassium	1300	15	759.9	358.7	124	75-125	1293	0.545	20	
Selenium	9.162	0.76	7.599	0.3864	115	75-125	8.225	10.8	20	
Silver	8.008	0.38	7.599	0.0413	105	75-125	8.39	4.66	20	
Zinc	92.58	0.76	7.599	73.48	251	75-125	98.77	6.47	20	SO

The following samples were analyzed in this batch: 1610913-37A 1610913-38A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93367** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **MBLK-93367-93367** Units: **mg/Kg** Analysis Date: **10/23/2016 08:56 PM**
Client ID: Run ID: **IC3_161023A** SeqNo: **4107440** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	U	10								

LCS Sample ID: **LCS-93367-93367** Units: **mg/Kg** Analysis Date: **10/23/2016 09:16 PM**
Client ID: Run ID: **IC3_161023A** SeqNo: **4107441** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	21.49	1.0	20	0	107	80-120	0			
Sulfate	102.1	10	100	0	102	80-120	0			

MS Sample ID: **1610913-03A MS** Units: **mg/Kg** Analysis Date: **10/24/2016 10:47 A**
Client ID: **Sed-LL-12** Run ID: **IC3_161023A** SeqNo: **4107486** Prep Date: **10/20/2016** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.86	2.0	19.8	0	54.9	75-125	0			S
Sulfate	286.1	20	99.01	174.9	112	75-125	0			

MSD Sample ID: **1610913-03A MSD** Units: **mg/Kg** Analysis Date: **10/24/2016 11:08 A**
Client ID: **Sed-LL-12** Run ID: **IC3_161023A** SeqNo: **4107487** Prep Date: **10/20/2016** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	12.39	2.0	19.61	0	63.2	75-125	10.86	13.1	20	S
Sulfate	283.4	20	98.04	174.9	111	75-125	286.1	0.919	20	

The following samples were analyzed in this batch:

1610913-01A	1610913-02A	1610913-03A
1610913-04A	1610913-05A	1610913-06A
1610913-07A	1610913-08A	1610913-09A
1610913-10A	1610913-11A	1610913-12A
1610913-13A	1610913-14A	1610913-15A
1610913-16A	1610913-17A	1610913-18A
1610913-19A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **93368** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **MBLK-93368-93368** Units: **mg/Kg** Analysis Date: **10/24/2016 11:03 PM**
Client ID: Run ID: **IC3_161024B** SeqNo: **4108782** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	1.0								
Sulfate	1.545	10								J

LCS Sample ID: **LCS-93368-93368** Units: **mg/Kg** Analysis Date: **10/24/2016 11:24 PM**
Client ID: Run ID: **IC3_161024B** SeqNo: **4108783** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	21.01	1.0	20	0	105	80-120	0			
Sulfate	105.6	10	100	0	106	80-120	0			

MS Sample ID: **1610913-22A MS** Units: **mg/Kg** Analysis Date: **10/25/2016 12:44 A**
Client ID: **Sed-RP-2** Run ID: **IC3_161024B** SeqNo: **4108787** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	16.72	0.98	19.65	0	85.1	75-125	0			
Sulfate	117.7	9.8	98.23	22.72	96.6	75-125	0			

MSD Sample ID: **1610913-22A MSD** Units: **mg/Kg** Analysis Date: **10/25/2016 01:05 A**
Client ID: **Sed-RP-2** Run ID: **IC3_161024B** SeqNo: **4108788** Prep Date: **10/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	17.46	0.98	19.69	0	88.7	75-125	16.72	4.32	20	
Sulfate	118.1	9.8	98.43	22.72	96.9	75-125	117.7	0.363	20	

The following samples were analyzed in this batch:

1610913-20A	1610913-21A	1610913-22A
1610913-23A	1610913-24A	1610913-25A
1610913-26A	1610913-27A	1610913-28A
1610913-29A	1610913-30A	1610913-31A
1610913-32A	1610913-33A	1610913-34A
1610913-35A	1610913-36A	1610913-37A
1610913-38A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198296** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R198296** Units: **% of sample** Analysis Date: **10/16/2016 01:47 PM**
Client ID: Run ID: **MOIST_161016D** SeqNo: **4091224** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R198296** Units: **% of sample** Analysis Date: **10/16/2016 01:47 PM**
Client ID: Run ID: **MOIST_161016D** SeqNo: **4091223** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1610913-03A DUP** Units: **% of sample** Analysis Date: **10/16/2016 01:47 PM**
Client ID: **Sed-LL-12** Run ID: **MOIST_161016D** SeqNo: **4091220** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	87.94	0.050	0	0	0		87.14	0.914	20	

DUP Sample ID: **1610986-01B DUP** Units: **% of sample** Analysis Date: **10/16/2016 01:47 PM**
Client ID: Run ID: **MOIST_161016D** SeqNo: **4091222** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.09	0.050	0	0	0		15.08	0.0663	20	

The following samples were analyzed in this batch: 1610913-01A 1610913-02A 1610913-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198303** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R198303** Units: **% of sample** Analysis Date: **10/16/2016 03:04 PM**
Client ID: Run ID: **MOIST_161016E** SeqNo: **4091371** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.050								J

LCS Sample ID: **LCS-R198303** Units: **% of sample** Analysis Date: **10/16/2016 03:04 PM**
Client ID: Run ID: **MOIST_161016E** SeqNo: **4091370** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1610913-06A DUP** Units: **% of sample** Analysis Date: **10/16/2016 03:04 PM**
Client ID: **Sed-LL-14** Run ID: **MOIST_161016E** SeqNo: **4091344** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	22.18	0.050	0	0	0		22.18	0	20	

DUP Sample ID: **1610913-22A DUP** Units: **% of sample** Analysis Date: **10/16/2016 03:04 PM**
Client ID: **Sed-RP-2** Run ID: **MOIST_161016E** SeqNo: **4091368** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	45.98	0.050	0	0	0		46.45	1.02	20	

The following samples were analyzed in this batch:

1610913-04A	1610913-05A	1610913-06A
1610913-07A	1610913-08A	1610913-09A
1610913-10A	1610913-11A	1610913-12A
1610913-13A	1610913-14A	1610913-15A
1610913-16A	1610913-17A	1610913-18A
1610913-19A	1610913-20A	1610913-21A
1610913-22A	1610913-23A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198390** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R198390** Units: **% of sample** Analysis Date: **10/17/2016 04:33 PM**
Client ID: Run ID: **MOIST_161017C** SeqNo: **4093435** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R198390** Units: **% of sample** Analysis Date: **10/17/2016 04:33 PM**
Client ID: Run ID: **MOIST_161017C** SeqNo: **4093434** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **16101044-04A DUP** Units: **% of sample** Analysis Date: **10/17/2016 04:33 PM**
Client ID: Run ID: **MOIST_161017C** SeqNo: **4093413** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	22.07	0.050	0	0	0		21.89	0.819	20	

DUP Sample ID: **16101044-10A DUP** Units: **% of sample** Analysis Date: **10/17/2016 04:33 PM**
Client ID: Run ID: **MOIST_161017C** SeqNo: **4093420** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	20.54	0.050	0	0	0		19.95	2.91	20	

The following samples were analyzed in this batch:

1610913-24A	1610913-25A	1610913-26A
1610913-27A	1610913-28A	1610913-29A
1610913-30A	1610913-31A	1610913-32A
1610913-33A	1610913-34A	1610913-35A
1610913-36A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1610913
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R198394** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R198394** Units: **% of sample** Analysis Date: **10/17/2016 05:35 PM**
Client ID: Run ID: **MOIST_161017D** SeqNo: **4093555** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R198394** Units: **% of sample** Analysis Date: **10/17/2016 05:35 PM**
Client ID: Run ID: **MOIST_161017D** SeqNo: **4093554** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1610951-01B DUP** Units: **% of sample** Analysis Date: **10/17/2016 05:35 PM**
Client ID: Run ID: **MOIST_161017D** SeqNo: **4093537** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	19.3	0.050	0	0	0		19.02	1.46	20	

DUP Sample ID: **1610951-02B DUP** Units: **% of sample** Analysis Date: **10/17/2016 05:35 PM**
Client ID: Run ID: **MOIST_161017D** SeqNo: **4093539** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	26.39	0.050	0	0	0		25.05	5.21	20	

The following samples were analyzed in this batch: 1610913-37A 1610913-38A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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ALS Environmental

Chain of Custody Form

Page 1 of ____

COC ID: 34675

ALS Project Manager: | ALS Work Order #: 1610913

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW-Ogden Dunes	A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	MS/MSD
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Sed-LL-9	10-12-16	0910	Sed.	—	1	X	X	X	X							
2	Sed-LL-11		0930				X	X	X	X							
3	Sed-LL-12		0950			2	X	X	X	X	X						
4	Sed-LL-15		1010			1	X	X	X								
5	Sed-LL-16		1035			1	X	X	X								
6	Sed-LL-14		1050			1	X	X	X								
7	Sed-LL-13		1105			1	X	X	X								
8	Sed-LL-10		1130			1	X	X	X								
9	Sed-LL-8		1205			1	X	X	X								
10	Sed-LL-5		1220			1	X	X	X								

Sampler(s) Please Print & Sign: Aaron Nerad

Shipment Method: Drop-off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other ____

Results Due Date:

	Date:	Time:		
Relinquished by:	10-13-16	1430	Received by:	
Relinquished by:	10-14-16	0900	Received by (Laboratory):	
Logged by (Laboratory): Kev	10/14/16	1015	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
3.0°C	2.4°C
3.0°C	1.8°C
2.8°C	3.0°C
	1.8°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other ____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

Page 2 of ____

COC ID: 34674

ALS Project Manager: | ALS Work Order #: 16/0913

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW - Ogden Dunes	A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg
Send Report To	Martin Ryan	Invoice Attn	Debra Mosa/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martinryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	Dup-Sed-LL	10-12-16	—	Sed	—	1	X	X	X								
12	Sed-LL-3	"	1240	"	—	1	X	X	X								
13	Sed-LL-7	"	1255	"	—	1	X	X	X								
14	Sed-LL-6	"	1305	"	—	1	X	X	X								
15	Sed-LL-4	"	1315	"	—	1	X	X	X								
16	Sed-LL-2	"	1330	"	—	1	X	X	X								
17	Sed-LL-1	"	1335	"	—	1	X	X	X								
18	Sed-RP-20	10-13-16	0935	"	—	1	X	X	X								
19	Sed-RP-16	"	0950	"	—	1	X	X	X								
20	Sed-RP-11	"	1010	"	—	1	X	X	X								

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: DHL-GA

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other ____

Results Due Date:

	Date:	Time:		
Relinquished by:	10-13-16	1430	Received by:	
Relinquished by:	10-14-16	0900	Received by (Laboratory):	
Logged by (Laboratory): KW	10/14/16	1015	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other ____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

COC ID: 34673

ALS Project Manager: | ALS Work Order #: 1610913

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW - Ogden Dunes	A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	MS/MSD
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
21	Sed-RP-6	10-13-16	1020	Sed	-	1	X	X	X								
22	Sed-RP-2		1050		-	2	X	X	X	X							
23	Sed-RP-1		1055		-	1	X	X	X								
24	Sed-RP-5		1105		-	1	X	X	X								
25	Sed-RP-9		1115		-	1	X	X	X								
26	Sed-RP-3		1140		-	1	X	X	X								
27	Sed-RP-12		1005		-	1	X	X	X								
28	Dup-Sed-RP		-		-	1	X	X	X								
29	Sed-RP-4		1150		-	1	X	X	X								
30	Sed-RP-7		1200		-	1	X	X	X								

Sampler(s) Please Print & Sign: Aaron Alexander

Shipment Method: Drop-off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

	Date:	Time:		
Relinquished by:	10-13-16	1430	Received by:	
Relinquished by:	10-14-16	0900	Received by (Laboratory):	
Logged by (Laboratory): Kel	10/14/16	1015	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

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COC ID: 34672

ALS Project Manager: | ALS Work Order #: 1610913

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW-Ogden Dunes	A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
31	Sed-RP-8	10-13-16	1210	Sed	—	1	X	X	X								
32	Sed-RP-10		1220		—	1	X	X	X								
33	Sed-RP-13		1230		—	1	X	X	X								
34	Sed-RP-14		1235		—	1	X	X	X								
35	Sed-RP-15		1240		—	1	X	X	X								
36	Sed-RP-19		1250		—	1	X	X	X								
37	Sed-RP-18		1305		—	1	X	X	X								
38	Sed-RP-17	↓	1310	↓	—	1	X	X	X								
9																	
10																	

Sampler(s) Please Print & Sign: Ann Alexander

Shipment Method: Drop-Off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

	Date:	Time:		
Relinquished by:	10-13-16	1450	Received by:	
Relinquished by:	10-14-16	0900	Received by (Laboratory):	
Logged by (Laboratory): KS	10/14/16	1015	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **14-Oct-16 09:00**

Work Order: **1610913** Received by: **KRW**

Checklist completed by Keith Wierenga eSignature 14-Oct-16 Date Reviewed by: Bill Carey eSignature 14-Oct-16 Date

Matrices: Soil
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.8-3.0 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	10/14/2016 11:13:09 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes: Seven Cooler temperatures listed on the COC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

28-Dec-2016

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1612867**

Dear Marty,

ALS Environmental received 19 samples on 15-Dec-2016 11:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 36.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group, USA

Date: 28-Dec-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1612867**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1612867-01	BG-1S	Water		12/14/2016 08:40	12/15/2016 11:30	☐
1612867-02	BG-1D	Water		12/14/2016 08:35	12/15/2016 11:30	☐
1612867-03	MW-1S	Water		12/14/2016 12:10	12/15/2016 11:30	☐
1612867-04	MW-1D	Water		12/14/2016 12:15	12/15/2016 11:30	☐
1612867-05	MW-2S	Water		12/14/2016 11:20	12/15/2016 11:30	☐
1612867-06	MW-2D	Water		12/14/2016 11:10	12/15/2016 11:30	☐
1612867-07	MW-3S	Water		12/13/2016 15:15	12/15/2016 11:30	☐
1612867-08	MW-3D	Water		12/13/2016 15:20	12/15/2016 11:30	☐
1612867-09	MW-4S	Water		12/13/2016 16:10	12/15/2016 11:30	☐
1612867-10	MW-4D	Water		12/13/2016 16:05	12/15/2016 11:30	☐
1612867-11	MW-5S	Water		12/13/2016 13:10	12/15/2016 11:30	☐
1612867-12	MW-5D	Water		12/13/2016 14:10	12/15/2016 11:30	☐
1612867-13	MW-6S	Water		12/14/2016 13:45	12/15/2016 11:30	☐
1612867-14	MW-6D	Water		12/14/2016 13:50	12/15/2016 11:30	☐
1612867-15	MW-7S	Water		12/14/2016 12:55	12/15/2016 11:30	☐
1612867-16	MW-7D	Water		12/14/2016 12:50	12/15/2016 11:30	☐
1612867-17	MW-8S	Water		12/14/2016 09:20	12/15/2016 11:30	☐
1612867-18	MW-8D	Water		12/14/2016 09:30	12/15/2016 11:30	☐
1612867-19	Dup-1	Water		12/14/2016	12/15/2016 11:30	☐

ALS Group, USA

Date: 28-Dec-16

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1612867**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1612867

Case Narrative

Samples for the above noted Work Order were received on 12/15/2016. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
Batch R202642, Method IC_9056_W, Sample MLCCV/LCS: The LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for this analyte. Sulfate

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 12/14/2016 08:40 AM

Work Order: 1612867
Lab ID: 1612867-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.036**		**0.00020**	**0.00050**	**µg/L**	1	12/20/2016 18:27
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**170**		**4.2**	**10**	**µg/L**	1	12/19/2016 16:41
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 16:41
Barium	**6.0**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 16:41
Cadmium	**0.10**	J	**0.050**	**2.0**	**µg/L**	1	12/19/2016 16:41
Chromium	**1.3**	J	**0.65**	**5.0**	**µg/L**	1	12/19/2016 16:41
Copper	**6.7**		**0.28**	**5.0**	**µg/L**	1	12/19/2016 16:41
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 16:41
Iron	**650**		**4.6**	**80**	**µg/L**	1	12/19/2016 16:41
Lead	**0.40**	J	**0.33**	**5.0**	**µg/L**	1	12/19/2016 16:41
Manganese	**12**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 16:41
Potassium	**390**		**17**	**200**	**µg/L**	1	12/19/2016 16:41
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 16:41
Silver	U		0.050	5.0	µg/L	1	12/19/2016 16:41
Zinc	**8.1**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 16:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 19:41
Sulfate	**21,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 17:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 12/14/2016 08:35 AM

Work Order: 1612867
Lab ID: 1612867-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/20/2016 18:35
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**15**		**4.2**	**10**	**µg/L**	1	12/19/2016 16:46
Arsenic	**6.0**		**0.87**	**5.0**	**µg/L**	1	12/19/2016 16:46
Barium	**15**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 16:46
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 16:46
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 16:46
Copper	U		0.28	5.0	µg/L	1	12/19/2016 16:46
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 16:46
Iron	**8,300**		**4.6**	**80**	**µg/L**	1	12/19/2016 16:46
Lead	U		0.33	5.0	µg/L	1	12/19/2016 16:46
Manganese	**180**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 16:46
Potassium	**780**		**17**	**200**	**µg/L**	1	12/19/2016 16:46
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 16:46
Silver	U		0.050	5.0	µg/L	1	12/19/2016 16:46
Zinc	**4.1**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 16:46
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 20:22
Sulfate	**12,000**		**410**	**1,000**	**µg/L**	1	12/21/2016 17:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1S
Collection Date: 12/14/2016 12:10 PM

Work Order: 1612867
Lab ID: 1612867-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.00042**	J	**0.00020**	**0.00050**	**µg/L**	1	12/20/2016 18:43
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**7.2**	J	**4.2**	**10**	**µg/L**	1	12/19/2016 16:51
Arsenic	**2.9**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 16:51
Barium	**38**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 16:51
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 16:51
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 16:51
Copper	**0.44**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 16:51
Hardness (Calculation)	**220,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 16:51
Iron	**2,100**		**4.6**	**80**	**µg/L**	1	12/19/2016 16:51
Lead	U		0.33	5.0	µg/L	1	12/19/2016 16:51
Manganese	**1,000**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 16:51
Potassium	**1,500**		**17**	**200**	**µg/L**	1	12/19/2016 16:51
Selenium	**1.4**	J	**0.90**	**5.0**	**µg/L**	1	12/19/2016 16:51
Silver	U		0.050	5.0	µg/L	1	12/19/2016 16:51
Zinc	**3.9**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 16:51
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	**1,400**		**48**	**100**	**µg/L**	1	12/15/2016 20:42
Sulfate	**30,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 18:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 12/14/2016 12:15 PM

Work Order: 1612867
Lab ID: 1612867-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/20/2016 18:51
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**22**		**4.2**	**10**	**µg/L**	1	12/19/2016 16:57
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 16:57
Barium	**33**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 16:57
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 16:57
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 16:57
Copper	U		0.28	5.0	µg/L	1	12/19/2016 16:57
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 16:57
Iron	**6,000**		**4.6**	**80**	**µg/L**	1	12/19/2016 16:57
Lead	U		0.33	5.0	µg/L	1	12/19/2016 16:57
Manganese	**340**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 16:57
Potassium	**1,500**		**17**	**200**	**µg/L**	1	12/19/2016 16:57
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 16:57
Silver	U		0.050	5.0	µg/L	1	12/19/2016 16:57
Zinc	U		1.4	10	µg/L	1	12/19/2016 16:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 21:22
Sulfate	**15,000**		**410**	**1,000**	**µg/L**	1	12/27/2016 12:28

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 12/14/2016 11:20 AM

Work Order: 1612867
Lab ID: 1612867-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.00065**		**0.00020**	**0.00050**	**µg/L**	1	12/20/2016 18:59
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**20**		**4.2**	**10**	**µg/L**	1	12/19/2016 17:02
Arsenic	**3.1**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:02
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:02
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:02
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 17:02
Copper	**0.79**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 17:02
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:02
Iron	**2,500**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:02
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:02
Manganese	**62**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:02
Potassium	**700**		**17**	**200**	**µg/L**	1	12/19/2016 17:02
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:02
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:02
Zinc	U		1.4	10	µg/L	1	12/19/2016 17:02
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**2,900**		**48**	**100**	**µg/L**	1	12/15/2016 22:43
Sulfate	**33,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 18:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 12/14/2016 11:10 AM

Work Order: 1612867
Lab ID: 1612867-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/20/2016 19:06
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**26**		**4.2**	**10**	**µg/L**	1	12/19/2016 17:23
Arsenic	**1.7**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:23
Barium	**90**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:23
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:23
Chromium	**0.68**	J	**0.65**	**5.0**	**µg/L**	1	12/19/2016 17:23
Copper	**0.43**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 17:23
Hardness (Calculation)	**250,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:23
Iron	**3,000**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:23
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:23
Manganese	**2,000**		**5.1**	**50**	**µg/L**	10	12/20/2016 11:31
Potassium	**3,300**		**17**	**200**	**µg/L**	1	12/19/2016 17:23
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:23
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:23
Zinc	**3.5**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 17:23
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**57**	J	**48**	**100**	**µg/L**	1	12/15/2016 23:24
Sulfate	**450**	J	**410**	**1,000**	**µg/L**	1	12/15/2016 23:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 12/13/2016 03:15 PM

Work Order: 1612867
Lab ID: 1612867-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 10:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	12/19/2016 17:28
Arsenic	**2.8**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:28
Barium	**55**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:28
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:28
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 17:28
Copper	U		0.28	5.0	µg/L	1	12/19/2016 17:28
Hardness (Calculation)	**210,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:28
Iron	**7,200**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:28
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:28
Manganese	**820**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:28
Potassium	**2,200**		**17**	**200**	**µg/L**	1	12/19/2016 17:28
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:28
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:28
Zinc	**5.8**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 17:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 14:58
Sulfate	**1,900**		**410**	**1,000**	**µg/L**	1	12/21/2016 15:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 12/13/2016 03:20 PM

Work Order: 1612867
Lab ID: 1612867-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 10:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	12/19/2016 17:33
Arsenic	**7.7**		**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:33
Barium	**130**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:33
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:33
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 17:33
Copper	U		0.28	5.0	µg/L	1	12/19/2016 17:33
Hardness (Calculation)	**330,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:33
Iron	**9,000**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:33
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:33
Manganese	**440**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:33
Potassium	**3,900**		**17**	**200**	**µg/L**	1	12/19/2016 17:33
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:33
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:33
Zinc	U		1.4	10	µg/L	1	12/19/2016 17:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 15:18
Sulfate	U		410	1,000	µg/L	1	12/15/2016 15:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 12/13/2016 04:10 PM

Work Order: 1612867
Lab ID: 1612867-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.0018**		**0.00020**	**0.00050**	**µg/L**	1	12/21/2016 10:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**140**		**4.2**	**10**	**µg/L**	1	12/19/2016 17:38
Arsenic	**4.2**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:38
Barium	**64**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:38
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:38
Chromium	**1.3**	J	**0.65**	**5.0**	**µg/L**	1	12/19/2016 17:38
Copper	**0.40**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 17:38
Hardness (Calculation)	**180,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:38
Iron	**12,000**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:38
Lead	**0.52**	J	**0.33**	**5.0**	**µg/L**	1	12/19/2016 17:38
Manganese	**450**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:38
Potassium	**2,600**		**17**	**200**	**µg/L**	1	12/19/2016 17:38
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:38
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:38
Zinc	**22**		**1.4**	**10**	**µg/L**	1	12/19/2016 17:38
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**260**		**48**	**100**	**µg/L**	1	12/15/2016 15:38
Sulfate	**1,300**		**410**	**1,000**	**µg/L**	1	12/21/2016 15:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 12/13/2016 04:05 PM

Work Order: 1612867
Lab ID: 1612867-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 10:33
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**5.4**	J	**4.2**	**10**	**µg/L**	1	12/19/2016 17:44
Arsenic	**2.3**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:44
Barium	**180**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:44
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:44
Chromium	**0.88**	J	**0.65**	**5.0**	**µg/L**	1	12/19/2016 17:44
Copper	**0.63**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 17:44
Hardness (Calculation)	**500,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:44
Iron	**22,000**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:44
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:44
Manganese	**650**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:44
Potassium	**3,600**		**17**	**200**	**µg/L**	1	12/19/2016 17:44
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:44
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:44
Zinc	**2.1**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 17:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		96	200	µg/L	2	12/15/2016 15:58
Sulfate	**160,000**		**10,000**	**25,000**	**µg/L**	25	12/21/2016 15:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5S
Collection Date: 12/13/2016 01:10 PM

Work Order: 1612867
Lab ID: 1612867-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.0015**		**0.00020**	**0.00050**	**µg/L**	1	12/21/2016 10:49
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**24**		**4.2**	**10**	**µg/L**	1	12/19/2016 17:49
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:49
Barium	**32**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:49
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:49
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 17:49
Copper	**1.7**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 17:49
Hardness (Calculation)	**280,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:49
Iron	**670**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:49
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:49
Manganese	**320**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:49
Potassium	**3,900**		**17**	**200**	**µg/L**	1	12/19/2016 17:49
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:49
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:49
Zinc	**5.6**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 17:49
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 16:39
Sulfate	**76,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 16:13

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 12/13/2016 02:10 PM

Work Order: 1612867
Lab ID: 1612867-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 10:57
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	12/19/2016 17:54
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:54
Barium	**98**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:54
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:54
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 17:54
Copper	**1.0**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 17:54
Hardness (Calculation)	**270,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:54
Iron	**5,600**		**4.6**	**80**	**µg/L**	1	12/19/2016 17:54
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:54
Manganese	**210**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:54
Potassium	**4,000**		**17**	**200**	**µg/L**	1	12/19/2016 17:54
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 17:54
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:54
Zinc	U		1.4	10	µg/L	1	12/19/2016 17:54
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 18:20
Sulfate	**48,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 12/14/2016 01:45 PM

Work Order: 1612867
Lab ID: 1612867-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.00077**		**0.00020**	**0.00050**	**µg/L**	1	12/21/2016 11:05
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**14**		**4.2**	**10**	**µg/L**	1	12/19/2016 17:59
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 17:59
Barium	**10**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 17:59
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 17:59
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 17:59
Copper	**2.9**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 17:59
Hardness (Calculation)	**370,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 17:59
Iron	**18**	J	**4.6**	**80**	**µg/L**	1	12/19/2016 17:59
Lead	U		0.33	5.0	µg/L	1	12/19/2016 17:59
Manganese	**520**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 17:59
Potassium	**1,400**		**17**	**200**	**µg/L**	1	12/19/2016 17:59
Selenium	**2.2**	J	**0.90**	**5.0**	**µg/L**	1	12/19/2016 17:59
Silver	U		0.050	5.0	µg/L	1	12/19/2016 17:59
Zinc	U		1.4	10	µg/L	1	12/19/2016 17:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**4,200**		**240**	**500**	**µg/L**	5	12/15/2016 14:38
Sulfate	**46,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 14:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 12/14/2016 01:50 PM

Work Order: 1612867
Lab ID: 1612867-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 11:12
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	12/19/2016 18:04
Arsenic	**5.0**		**0.87**	**5.0**	**µg/L**	1	12/19/2016 18:04
Barium	**120**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 18:04
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 18:04
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 18:04
Copper	**0.65**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 18:04
Hardness (Calculation)	**390,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 18:04
Iron	**8,400**		**4.6**	**80**	**µg/L**	1	12/19/2016 18:04
Lead	U		0.33	5.0	µg/L	1	12/19/2016 18:04
Manganese	**290**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 18:04
Potassium	**1,900**		**17**	**200**	**µg/L**	1	12/19/2016 18:04
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 18:04
Silver	U		0.050	5.0	µg/L	1	12/19/2016 18:04
Zinc	**2.1**	J	**1.4**	**10**	**µg/L**	1	12/19/2016 18:04
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		96	200	µg/L	2	12/15/2016 23:44
Sulfate	**210,000**		**10,000**	**25,000**	**µg/L**	25	12/21/2016 18:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 12/14/2016 12:55 PM

Work Order: 1612867
Lab ID: 1612867-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 11:20
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**7.4**	J	**4.2**	**10**	**µg/L**	1	12/19/2016 18:10
Arsenic	**3.3**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 18:10
Barium	**74**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 18:10
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 18:10
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 18:10
Copper	**0.36**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 18:10
Hardness (Calculation)	**310,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 18:10
Iron	**5,600**		**4.6**	**80**	**µg/L**	1	12/19/2016 18:10
Lead	U		0.33	5.0	µg/L	1	12/19/2016 18:10
Manganese	**700**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 18:10
Potassium	**3,100**		**17**	**200**	**µg/L**	1	12/19/2016 18:10
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 18:10
Silver	U		0.050	5.0	µg/L	1	12/19/2016 18:10
Zinc	U		1.4	10	µg/L	1	12/19/2016 18:10
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/16/2016 00:24
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	12/21/2016 19:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 12/14/2016 12:50 PM

Work Order: 1612867
Lab ID: 1612867-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 11:28
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**5.2**	J	**4.2**	**10**	**µg/L**	1	12/20/2016 11:37
Arsenic	U		0.87	5.0	µg/L	1	12/19/2016 18:30
Barium	**35**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 18:30
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 18:30
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 18:30
Copper	U		0.28	5.0	µg/L	1	12/19/2016 18:30
Hardness (Calculation)	**180,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 18:30
Iron	**1,400**		**4.6**	**80**	**µg/L**	1	12/19/2016 18:30
Lead	U		0.33	5.0	µg/L	1	12/19/2016 18:30
Manganese	**200**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 18:30
Potassium	**2,700**		**17**	**200**	**µg/L**	1	12/19/2016 18:30
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 18:30
Silver	U		0.050	5.0	µg/L	1	12/19/2016 18:30
Zinc	U		1.4	10	µg/L	1	12/19/2016 18:30
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/15/2016 13:57
Sulfate	**610**	J	**410**	**1,000**	**µg/L**	1	12/15/2016 13:57

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 12/14/2016 09:20 AM

Work Order: 1612867
Lab ID: 1612867-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.00042**	J	**0.00020**	**0.00050**	**µg/L**	1	12/21/2016 11:51
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**10**		**4.2**	**10**	**µg/L**	1	12/19/2016 18:46
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 18:46
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 18:46
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 18:46
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 18:46
Copper	**0.53**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 18:46
Hardness (Calculation)	**210,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 18:46
Iron	**16**	J	**4.6**	**80**	**µg/L**	1	12/19/2016 18:46
Lead	U		0.33	5.0	µg/L	1	12/19/2016 18:46
Manganese	**2.8**	J	**0.51**	**5.0**	**µg/L**	1	12/19/2016 18:46
Potassium	**420**		**17**	**200**	**µg/L**	1	12/19/2016 18:46
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 18:46
Silver	U		0.050	5.0	µg/L	1	12/19/2016 18:46
Zinc	U		1.4	10	µg/L	1	12/19/2016 18:46
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**1,100**		**48**	**100**	**µg/L**	1	12/16/2016 00:45
Sulfate	**27,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 19:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 12/14/2016 09:30 AM

Work Order: 1612867
Lab ID: 1612867-18
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	U		0.00020	0.00050	µg/L	1	12/21/2016 11:59
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	12/19/2016 18:51
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 18:51
Barium	**37**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 18:51
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 18:51
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 18:51
Copper	U		0.28	5.0	µg/L	1	12/19/2016 18:51
Hardness (Calculation)	**210,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 18:51
Iron	**2,500**		**4.6**	**80**	**µg/L**	1	12/19/2016 18:51
Lead	U		0.33	5.0	µg/L	1	12/19/2016 18:51
Manganese	**350**		**0.51**	**5.0**	**µg/L**	1	12/19/2016 18:51
Potassium	**2,000**		**17**	**200**	**µg/L**	1	12/19/2016 18:51
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 18:51
Silver	U		0.050	5.0	µg/L	1	12/19/2016 18:51
Zinc	U		1.4	10	µg/L	1	12/19/2016 18:51
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	12/16/2016 01:25
Sulfate	**20,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 19:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *28-Dec-16*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup-1
Collection Date: 12/14/2016

Work Order: 1612867
Lab ID: 1612867-19
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 12/20/16		Analyst: **CC**
Mercury	**0.00039**	J	**0.00020**	**0.00050**	**µg/L**	1	12/21/2016 12:15
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 12/16/16		Analyst: **RH**
Aluminum	**11**		**4.2**	**10**	**µg/L**	1	12/19/2016 18:57
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	12/19/2016 18:57
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	12/19/2016 18:57
Cadmium	U		0.050	2.0	µg/L	1	12/19/2016 18:57
Chromium	U		0.65	5.0	µg/L	1	12/19/2016 18:57
Copper	**0.48**	J	**0.28**	**5.0**	**µg/L**	1	12/19/2016 18:57
Hardness (Calculation)	**210,000**		**240**	**2,000**	**µg/L**	1	12/19/2016 18:57
Iron	**16**	J	**4.6**	**80**	**µg/L**	1	12/19/2016 18:57
Lead	U		0.33	5.0	µg/L	1	12/19/2016 18:57
Manganese	**3.0**	J	**0.51**	**5.0**	**µg/L**	1	12/19/2016 18:57
Potassium	**440**		**17**	**200**	**µg/L**	1	12/19/2016 18:57
Selenium	U		0.90	5.0	µg/L	1	12/19/2016 18:57
Silver	U		0.050	5.0	µg/L	1	12/19/2016 18:57
Zinc	U		1.4	10	µg/L	1	12/19/2016 18:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**1,200**		**48**	**100**	**µg/L**	1	12/16/2016 03:06
Sulfate	**26,000**		**2,000**	**5,000**	**µg/L**	5	12/21/2016 20:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 28-Dec-16

Client: ERM, Inc

Work Order: 1612867

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **96033** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-96033-96033** Units: **ng/L** Analysis Date: **12/20/2016 05:25 PM**

Client ID: Run ID: **HG3_161220B** SeqNo: **4211355** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-96033-96033** Units: **ng/L** Analysis Date: **12/20/2016 08:01 PM**

Client ID: Run ID: **HG3_161220B** SeqNo: **4211380** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-96033-96033** Units: **ng/L** Analysis Date: **12/20/2016 08:48 PM**

Client ID: Run ID: **HG3_161220B** SeqNo: **4211386** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1612858-05CMS** Units: **ng/L** Analysis Date: **12/20/2016 06:04 PM**

Client ID: Run ID: **HG3_161220B** SeqNo: **4211365** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	45.9	0.50	4	43.5	60	71-125	0			SO

MS Sample ID: **1612889-02BMS** Units: **ng/L** Analysis Date: **12/20/2016 07:22 PM**

Client ID: Run ID: **HG3_161220B** SeqNo: **4211375** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.99	0.50	4	1.37	90.5	71-125	0			

MSD Sample ID: **1612858-05CMSD** Units: **ng/L** Analysis Date: **12/20/2016 06:12 PM**

Client ID: Run ID: **HG3_161220B** SeqNo: **4211366** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	49.3	0.50	4	43.5	145	71-125	45.9	7.14	24	SO

MSD Sample ID: **1612889-02BMSD** Units: **ng/L** Analysis Date: **12/20/2016 07:30 PM**

Client ID: Run ID: **HG3_161220B** SeqNo: **4211376** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.74	0.50	4	1.37	84.2	71-125	4.99	5.14	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **96033** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-96033-96033** Units: **ng/L** Analysis Date: **12/20/2016 05:17 PM**
Client ID: Run ID: **HG3_161220B** SeqNo: **4211354** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.19	0.50	4	0	105	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-96033-96033** Units: **ng/L** Analysis Date: **12/20/2016 08:56 PM**
Client ID: Run ID: **HG3_161220B** SeqNo: **4211388** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	3.62	0.50	4	0	90.5	77-123	0			

The following samples were analyzed in this batch:

1612867-01C	1612867-02C	1612867-03C
1612867-04C	1612867-05C	1612867-06C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **96050** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-96050-96050** Units: **ng/L** Analysis Date: **12/21/2016 09:23 A**
Client ID: Run ID: **HG3_161221A** SeqNo: **4213098** Prep Date: **12/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-96050-96050** Units: **ng/L** Analysis Date: **12/21/2016 10:41 A**
Client ID: Run ID: **HG3_161221A** SeqNo: **4213108** Prep Date: **12/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-96050-96050** Units: **ng/L** Analysis Date: **12/21/2016 12:07 PM**
Client ID: Run ID: **HG3_161221A** SeqNo: **4213119** Prep Date: **12/21/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.3	0.50	0	0	0		0			J

MS Sample ID: **1612867-16CMS** Units: **ng/L** Analysis Date: **12/21/2016 11:36 A**
Client ID: **MW-7D** Run ID: **HG3_161221A** SeqNo: **4213115** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.41	0.50	5	0.02	87.8	71-125	0			

MS Sample ID: **1612897-02AMS** Units: **ng/L** Analysis Date: **12/21/2016 12:38 PM**
Client ID: Run ID: **HG3_161221A** SeqNo: **4213123** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.19	0.50	4	0.47	118	71-125	0			

MSD Sample ID: **1612867-16CMSD** Units: **ng/L** Analysis Date: **12/21/2016 11:44 A**
Client ID: **MW-7D** Run ID: **HG3_161221A** SeqNo: **4213116** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.32	0.50	5	0.02	86	71-125	4.41	2.06	24	

MSD Sample ID: **1612897-02AMSD** Units: **ng/L** Analysis Date: **12/21/2016 12:46 PM**
Client ID: Run ID: **HG3_161221A** SeqNo: **4213124** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.91	0.50	4	0.47	111	71-125	5.19	5.54	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **96050** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-96050-96050** Units: **ng/L** Analysis Date: **12/21/2016 09:08 A**

Client ID: Run ID: **HG3_161221A** SeqNo: **4213096** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.15	0.50	4	0	104	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-96050-96050** Units: **ng/L** Analysis Date: **12/21/2016 01:01 PM**

Client ID: Run ID: **HG3_161221A** SeqNo: **4213126** Prep Date: **12/20/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	3.97	0.50	4	0	99.2	77-123	0			

The following samples were analyzed in this batch:

1612867-07C	1612867-08C	1612867-09C
1612867-10C	1612867-11C	1612867-12C
1612867-13C	1612867-14C	1612867-15C
1612867-16C	1612867-17C	1612867-18C
1612867-19C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **95927** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-95927-95927** Units: **mg/L** Analysis Date: **12/19/2016 04:31 PM**
Client ID: Run ID: **ICPMS2_161219A** SeqNo: **4209109** Prep Date: **12/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	0.002695	0.010								J

LCS Sample ID: **LCS-95927-95927** Units: **mg/L** Analysis Date: **12/19/2016 04:36 PM**
Client ID: Run ID: **ICPMS2_161219A** SeqNo: **4209110** Prep Date: **12/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.0865	0.010	0.1	0	86.5	80-120	0			
Arsenic	0.09728	0.0050	0.1	0	97.3	80-120	0			
Barium	0.09169	0.0050	0.1	0	91.7	80-120	0			
Cadmium	0.08975	0.0020	0.1	0	89.8	80-120	0			
Chromium	0.09132	0.0050	0.1	0	91.3	80-120	0			
Copper	0.09389	0.0050	0.1	0	93.9	80-120	0			
Hardness (Calculation)	60.37	2.0	66.15	0	91.3	80-120	0			
Iron	9.445	0.080	10	0	94.4	80-120	0			
Lead	0.09347	0.0050	0.1	0	93.5	80-120	0			
Manganese	0.0885	0.0050	0.1	0	88.5	80-120	0			
Potassium	9.065	0.20	10	0	90.6	80-120	0			
Selenium	0.0955	0.0050	0.1	0	95.5	80-120	0			
Silver	0.09172	0.0050	0.1	0	91.7	80-120	0			
Zinc	0.08999	0.010	0.1	0	90	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **95927** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1612867-16AMS** Units: **mg/L** Analysis Date: **12/19/2016 06:36 PM**
Client ID: **MW-7D** Run ID: **ICPMS2_161219A** SeqNo: **4209141** Prep Date: **12/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09491	0.0050	0.1	0.0007669	94.1	75-125	0			
Barium	0.1294	0.0050	0.1	0.03478	94.6	75-125	0			
Cadmium	0.0937	0.0020	0.1	-4.971E-06	93.7	75-125	0			
Chromium	0.08873	0.0050	0.1	0.00006931	88.7	75-125	0			
Copper	0.09115	0.0050	0.1	0.00007795	91.1	75-125	0			
Iron	10.37	0.080	10	1.37	90	75-125	0			
Lead	0.09296	0.0050	0.1	-2.378E-05	93	75-125	0			
Manganese	0.2785	0.0050	0.1	0.1978	80.7	75-125	0			
Potassium	11.39	0.20	10	2.733	86.6	75-125	0			
Selenium	0.09302	0.0050	0.1	-0.0000959	93.1	75-125	0			
Silver	0.089	0.0050	0.1	-2.578E-07	89	75-125	0			
Zinc	0.08869	0.010	0.1	-0.0002737	89	75-125	0			

MS Sample ID: **1612867-16AMS** Units: **mg/L** Analysis Date: **12/20/2016 11:42 A**
Client ID: **MW-7D** Run ID: **ICPMS2_161220A** SeqNo: **4211561** Prep Date: **12/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.0965	0.010	0.1	0.005221	91.3	75-125	0			
Manganese	0.2843	0.0050	0.1	0.1962	88.1	75-125	0			
Potassium	12.01	0.20	10	2.89	91.2	75-125	0			
Selenium	0.09027	0.0050	0.1	-8.883E-05	90.4	75-125	0			
Silver	0.08906	0.0050	0.1	1.49E-08	89.1	75-125	0			
Zinc	0.08978	0.010	0.1	-0.0004594	90.2	75-125	0			

MSD Sample ID: **1612867-16AMSD** Units: **mg/L** Analysis Date: **12/19/2016 06:41 PM**
Client ID: **MW-7D** Run ID: **ICPMS2_161219A** SeqNo: **4209142** Prep Date: **12/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09762	0.0050	0.1	0.0007669	96.9	75-125	0.09491	2.82	20	
Barium	0.135	0.0050	0.1	0.03478	100	75-125	0.1294	4.24	20	
Cadmium	0.0968	0.0020	0.1	-4.971E-06	96.8	75-125	0.0937	3.25	20	
Chromium	0.09125	0.0050	0.1	0.00006931	91.2	75-125	0.08873	2.8	20	
Copper	0.09321	0.0050	0.1	0.00007795	93.1	75-125	0.09115	2.23	20	
Iron	10.69	0.080	10	1.37	93.2	75-125	10.37	3.04	20	
Lead	0.0961	0.0050	0.1	-2.378E-05	96.1	75-125	0.09296	3.32	20	
Manganese	0.2826	0.0050	0.1	0.1978	84.8	75-125	0.2785	1.46	20	
Potassium	11.55	0.20	10	2.733	88.2	75-125	11.39	1.39	20	
Selenium	0.09653	0.0050	0.1	-0.0000959	96.6	75-125	0.09302	3.7	20	
Silver	0.0917	0.0050	0.1	-2.578E-07	91.7	75-125	0.089	2.99	20	
Zinc	0.09762	0.010	0.1	-0.0002737	97.9	75-125	0.08869	9.59	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **95927** Instrument ID **ICPMS2** Method: **SW6020A**

MSD Sample ID: **1612867-16AMSD** Units: **mg/L** Analysis Date: **12/20/2016 11:47 A**

Client ID: **MW-7D** Run ID: **ICPMS2_161220A** SeqNo: **4211562** Prep Date: **12/16/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1006	0.010	0.1	0.005221	95.4	75-125	0.0965	4.16	20	
Manganese	0.2914	0.0050	0.1	0.1962	95.2	75-125	0.2843	2.47	20	
Potassium	12.53	0.20	10	2.89	96.4	75-125	12.01	4.24	20	
Selenium	0.09696	0.0050	0.1	-8.883E-05	97	75-125	0.09027	7.15	20	
Silver	0.09224	0.0050	0.1	1.49E-08	92.2	75-125	0.08906	3.51	20	
Zinc	0.09912	0.010	0.1	-0.0004594	99.6	75-125	0.08978	9.89	20	

The following samples were analyzed in this batch:

1612867-01A	1612867-02A	1612867-03A
1612867-04A	1612867-05A	1612867-06A
1612867-07A	1612867-08A	1612867-09A
1612867-10A	1612867-11A	1612867-12A
1612867-13A	1612867-14A	1612867-15A
1612867-16A	1612867-17A	1612867-18A
1612867-19A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R202642** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R202642** Units: **mg/L** Analysis Date: **12/15/2016 01:01 PM**
Client ID: Run ID: **IC4_161215A** SeqNo: **4206059** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **MLCCV/LCS-R202642** Units: **mg/L** Analysis Date: **12/15/2016 05:19 PM**
Client ID: Run ID: **IC4_161215A** SeqNo: **4206075** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.974	0.10	2	0	98.7	81-116	0			
Sulfate	11.18	1.0	10	0	112	85-110	0			S

MS Sample ID: **1612867-16B MS** Units: **mg/L** Analysis Date: **12/15/2016 07:01 PM**
Client ID: **MW-7D** Run ID: **IC4_161215A** SeqNo: **4206085** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.969	0.10	2	0	98.4	75-125	0			
Sulfate	11.04	1.0	10	0.6086	104	75-125	0			

MSD Sample ID: **1612867-16B MSD** Units: **mg/L** Analysis Date: **12/15/2016 07:21 PM**
Client ID: **MW-7D** Run ID: **IC4_161215A** SeqNo: **4206087** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.97	0.10	2	0	98.5	75-125	1.969	0.0406	20	
Sulfate	11.04	1.0	10	0.6086	104	75-125	11.04	0	20	

The following samples were analyzed in this batch:

1612867-01B	1612867-02B	1612867-03B
1612867-04B	1612867-05B	1612867-06B
1612867-07B	1612867-08B	1612867-09B
1612867-10B	1612867-11B	1612867-12B
1612867-13B	1612867-14B	1612867-15B
1612867-16B	1612867-17B	1612867-18B
1612867-19B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R203002** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R203002** Units: **mg/L** Analysis Date: **12/21/2016 12:34 PM**
Client ID: Run ID: **IC4_161221A** SeqNo: **4215253** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	1.0								

LCS Sample ID: **LCS-R203002** Units: **mg/L** Analysis Date: **12/21/2016 12:54 PM**
Client ID: Run ID: **IC4_161221A** SeqNo: **4215254** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.232	1.0	10	0	92.3	85-110	0			

MS Sample ID: **1612886-02A MS** Units: **mg/L** Analysis Date: **12/21/2016 02:11 PM**
Client ID: Run ID: **IC4_161221A** SeqNo: **4215257** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	891.4	50	250	627	106	75-125	0			

MSD Sample ID: **1612886-02A MSD** Units: **mg/L** Analysis Date: **12/21/2016 02:32 PM**
Client ID: Run ID: **IC4_161221A** SeqNo: **4215258** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	886.2	50	250	627	104	75-125	891.4	0.58	20	

The following samples were analyzed in this batch:

1612867-01B	1612867-02B	1612867-03B
1612867-05B	1612867-07B	1612867-09B
1612867-10B	1612867-11B	1612867-12B
1612867-13B	1612867-14B	1612867-15B
1612867-17B	1612867-18B	1612867-19B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1612867
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R203179** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R203179** Units: **mg/L** Analysis Date: **12/27/2016 11:48 A**
Client ID: Run ID: **IC3_161227A** SeqNo: **4219708** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	1.0								

LCS Sample ID: **LCS-R203179** Units: **mg/L** Analysis Date: **12/27/2016 12:08 PM**
Client ID: Run ID: **IC3_161227A** SeqNo: **4219710** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.74	1.0	10	0	97.4	85-110	0			

MS Sample ID: **1612867-04B MS** Units: **mg/L** Analysis Date: **12/27/2016 03:10 PM**
Client ID: **MW-1D** Run ID: **IC3_161227A** SeqNo: **4219725** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	67.88	5.0	50	14.73	106	75-125	0			

MSD Sample ID: **1612867-04B MSD** Units: **mg/L** Analysis Date: **12/27/2016 03:30 PM**
Client ID: **MW-1D** Run ID: **IC3_161227A** SeqNo: **4219726** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	67.73	5.0	50	14.73	106	75-125	67.88	0.218	20	

The following samples were analyzed in this batch: 1612867-04B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 2

COC ID: 42267

ALS Project Manager:

ALS Work Order #: 1612667

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW-Ogden Dunes	A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Low Level - Mercury
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	BG-1S	12-14-16	0840	Water	HNO_3	6	X	X	X								
2	BG-1D		0835				X	X	X								
3	MW-1S		1210				X	X	X								
4	MW-1D		1215				X	X	X								
5	MW-2S		1120				X	X	X								
6	MW-2D		1110				X	X	X								
7	MW-3S	12-13-16	1515				X	X	X								
8	MW-3D		1520				X	X	X								
9	MW-4S		1610				X	X	X								
10	MW-4D		1605				X	X	X								

Sampler(s) Please Print & Sign: Aaron Alexander, Jenna Snarkey

Shipment Method:

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 12-14-16	Time: 1615	Received by:	
Relinquished by:	Date: 12/14/16	Time: 1800	Received by (Laboratory):	Date: 12/15/16 Time: 1130
Logged by (Laboratory): MB	Date: 12/15/16	Time: 1300	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
	1.6
	2.0
	SK2 pH2

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

COC ID: 42264

ALS Project Manager: | ALS Work Order #: 16[illegible]567

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Low Level - Mercury
Send Report To		Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	MS/MSD
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	MW-5S	12-13-16	1316	Water	HNO_3	6	X	X	X								
12	MW-5D	12-13-16	1410			6	X	X	X								
13	MW-6S	12-14-16	1345			6	X	X	X								
14	MW-6D 12-14-16	12-13-16	1350			6	X	X	X								
15	MW-7S	12-13-16	1255			6	X	X	X								
16	MW-7D AA	12-13-16	1250			12	X	X	X	X	X						
17	MW-8S	12-13-16	0920			6	X	X	X								
18	MW-8D	12-13-16	0930			6	X	X	X								
19	Dup-1	12-14-16	=			6	X	X	X								
10																	

Sampler(s) Please Print & Sign: Aaron Nevada, Jenna Starkey | Shipment Method: Courier | Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other | Results Due Date:

	Date:	Time:		
Relinquished by:	12-14-16	1415	Received by:	
Relinquished by:	12/14/16	1800	Received by (Laboratory):	12/15/16 1130
Logged by (Laboratory): MB	12/15/16	1300	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
	1.6
	2.0
	5122 pH2

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO$_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **15-Dec-16 11:30**

Work Order: **1612867** Received by: **MBB**

Checklist completed by Meghan Broadbent (eSignature) 15-Dec-16 (Date) Reviewed by: Bill Carey (eSignature) 15-Dec-16 (Date)

Matrices: water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6/1.6 2.0/2.0	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/15/2016 1:12:47 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

29-Mar-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **17031218**

Dear Marty,

ALS Environmental received 9 samples on 22-Mar-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 22.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group, USA

Date: 29-Mar-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **17031218**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17031218-01	SW-LL-10	Water		3/21/2017 11:15	3/22/2017 09:30	☐
17031218-02	SW-LL-13	Water		3/21/2017 11:30	3/22/2017 09:30	☐
17031218-03	SW-LL-14	Water		3/21/2017 11:38	3/22/2017 09:30	☐
17031218-04	SW-LL-16	Water		3/21/2017 11:55	3/22/2017 09:30	☐
17031218-05	SW-LL-15	Water		3/21/2017 12:05	3/22/2017 09:30	☐
17031218-06	SW-LL-12	Water		3/21/2017 12:20	3/22/2017 09:30	☐
17031218-07	SW-LL-11	Water		3/21/2017 12:32	3/22/2017 09:30	☐
17031218-08	SW-LL-9	Water		3/21/2017 12:45	3/22/2017 09:30	☐
17031218-09	Dup	Water		3/21/2017	3/22/2017 09:30	☐

ALS Group, USA

Date: 29-Mar-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **17031218**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 29-Mar-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 17031218

Case Narrative

Samples for the above noted Work Order were received on 3/22/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-10
Collection Date: 3/21/2017 11:15 AM

Work Order: 17031218
Lab ID: 17031218-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.00096**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 16:30
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 17:49
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	**4.3**	J	**4.2**	**10**	**µg/L**	1	3/24/2017 15:56
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 15:56
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 15:56
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 15:56
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 15:56
Copper	U		0.28	5.0	µg/L	1	3/24/2017 15:56
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 15:56
Iron	**130**		**4.6**	**80**	**µg/L**	1	3/24/2017 15:56
Lead	U		0.33	5.0	µg/L	1	3/24/2017 15:56
Manganese	**5.4**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 15:56
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/24/2017 15:56
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 15:56
Silver	U		0.050	5.0	µg/L	1	3/24/2017 15:56
Zinc	U		1.4	10	µg/L	1	3/24/2017 15:56
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 13:49
Sulfate	**4,600**		**410**	**1,000**	**µg/L**	1	3/22/2017 13:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-13
Collection Date: 3/21/2017 11:30 AM

Work Order: 17031218
Lab ID: 17031218-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.00095**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 16:38
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 17:55
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/24/2017 16:01
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 16:01
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 16:01
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 16:01
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 16:01
Copper	U		0.28	5.0	µg/L	1	3/24/2017 16:01
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 16:01
Iron	**120**		**4.6**	**80**	**µg/L**	1	3/24/2017 16:01
Lead	U		0.33	5.0	µg/L	1	3/24/2017 16:01
Manganese	**7.2**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 16:01
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/24/2017 16:01
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 16:01
Silver	U		0.050	5.0	µg/L	1	3/24/2017 16:01
Zinc	U		1.4	10	µg/L	1	3/24/2017 16:01
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 14:09
Sulfate	**4,600**		**410**	**1,000**	**µg/L**	1	3/22/2017 14:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-14
Collection Date: 3/21/2017 11:38 AM

Work Order: 17031218
Lab ID: 17031218-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.00097**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 16:46
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 18:01
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/24/2017 16:06
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 16:06
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 16:06
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 16:06
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 16:06
Copper	U		0.28	5.0	µg/L	1	3/24/2017 16:06
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 16:06
Iron	**98**		**4.6**	**80**	**µg/L**	1	3/24/2017 16:06
Lead	U		0.33	5.0	µg/L	1	3/24/2017 16:06
Manganese	**5.6**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 16:06
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/24/2017 16:06
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 16:06
Silver	U		0.050	5.0	µg/L	1	3/24/2017 16:06
Zinc	**2.9**	J	**1.4**	**10**	**µg/L**	1	3/24/2017 16:06
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 14:30
Sulfate	**4,700**		**410**	**1,000**	**µg/L**	1	3/22/2017 14:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-16
Collection Date: 3/21/2017 11:55 AM

Work Order: 17031218
Lab ID: 17031218-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 16:54
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 18:08
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/24/2017 16:12
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 16:12
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 16:12
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 16:12
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 16:12
Copper	U		0.28	5.0	µg/L	1	3/24/2017 16:12
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 16:12
Iron	**200**		**4.6**	**80**	**µg/L**	1	3/24/2017 16:12
Lead	U		0.33	5.0	µg/L	1	3/24/2017 16:12
Manganese	**6.3**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 16:12
Potassium	**2,200**		**17**	**200**	**µg/L**	1	3/24/2017 16:12
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 16:12
Silver	U		0.050	5.0	µg/L	1	3/24/2017 16:12
Zinc	U		1.4	10	µg/L	1	3/24/2017 16:12
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 14:50
Sulfate	**5,000**		**410**	**1,000**	**µg/L**	1	3/22/2017 14:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-15
Collection Date: 3/21/2017 12:05 PM

Work Order: 17031218
Lab ID: 17031218-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 17:01
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 18:14
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/24/2017 16:17
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 16:17
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 16:17
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 16:17
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 16:17
Copper	U		0.28	5.0	µg/L	1	3/24/2017 16:17
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 16:17
Iron	**150**		**4.6**	**80**	**µg/L**	1	3/24/2017 16:17
Lead	U		0.33	5.0	µg/L	1	3/24/2017 16:17
Manganese	**8.6**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 16:17
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/24/2017 16:17
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 16:17
Silver	U		0.050	5.0	µg/L	1	3/24/2017 16:17
Zinc	U		1.4	10	µg/L	1	3/24/2017 16:17
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 15:10
Sulfate	**4,400**		**410**	**1,000**	**µg/L**	1	3/22/2017 15:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-12
Collection Date: 3/21/2017 12:20 PM

Work Order: 17031218
Lab ID: 17031218-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.00099**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 17:09
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 18:20
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/24/2017 16:22
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 16:22
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 16:22
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 16:22
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 16:22
Copper	U		0.28	5.0	µg/L	1	3/24/2017 16:22
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 16:22
Iron	**120**		**4.6**	**80**	**µg/L**	1	3/24/2017 16:22
Lead	U		0.33	5.0	µg/L	1	3/24/2017 16:22
Manganese	**9.6**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 16:22
Potassium	**2,200**		**17**	**200**	**µg/L**	1	3/24/2017 16:22
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 16:22
Silver	U		0.050	5.0	µg/L	1	3/24/2017 16:22
Zinc	U		1.4	10	µg/L	1	3/24/2017 16:22
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 15:30
Sulfate	**4,600**		**410**	**1,000**	**µg/L**	1	3/22/2017 15:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-11
Collection Date: 3/21/2017 12:32 PM

Work Order: 17031218
Lab ID: 17031218-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.00098**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 17:25
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 18:26
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/24/2017 16:43
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 16:43
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 16:43
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 16:43
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 16:43
Copper	U		0.28	5.0	µg/L	1	3/24/2017 16:43
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 16:43
Iron	**100**		**4.6**	**80**	**µg/L**	1	3/24/2017 16:43
Lead	U		0.33	5.0	µg/L	1	3/24/2017 16:43
Manganese	**8.3**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 16:43
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/24/2017 16:43
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 16:43
Silver	U		0.050	5.0	µg/L	1	3/24/2017 16:43
Zinc	U		1.4	10	µg/L	1	3/24/2017 16:43
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 15:51
Sulfate	**4,500**		**410**	**1,000**	**µg/L**	1	3/22/2017 15:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-9
Collection Date: 3/21/2017 12:45 PM

Work Order: 17031218
Lab ID: 17031218-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 17:33
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/27/2017 18:32
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	**7.2**	J	**4.2**	**10**	**µg/L**	1	3/24/2017 15:41
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 15:41
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 15:41
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 15:41
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 15:41
Copper	U		0.28	5.0	µg/L	1	3/24/2017 15:41
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 15:41
Iron	**100**		**4.6**	**80**	**µg/L**	1	3/24/2017 15:41
Lead	U		0.33	5.0	µg/L	1	3/24/2017 15:41
Manganese	**7.4**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 15:41
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/24/2017 15:41
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 15:41
Silver	U		0.050	5.0	µg/L	1	3/24/2017 15:41
Zinc	**2.8**	J	**1.4**	**10**	**µg/L**	1	3/24/2017 15:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 13:29
Sulfate	**4,600**		**410**	**1,000**	**µg/L**	1	3/22/2017 13:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: Dup
Collection Date: 3/21/2017

Work Order: 17031218
Lab ID: 17031218-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 17:56
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 20:34
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/24/2017 16:48
Arsenic	U		0.87	5.0	µg/L	1	3/24/2017 16:48
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/24/2017 16:48
Cadmium	U		0.050	2.0	µg/L	1	3/24/2017 16:48
Chromium	U		0.65	5.0	µg/L	1	3/24/2017 16:48
Copper	U		0.28	5.0	µg/L	1	3/24/2017 16:48
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 16:48
Iron	**110**		**4.6**	**80**	**µg/L**	1	3/24/2017 16:48
Lead	U		0.33	5.0	µg/L	1	3/24/2017 16:48
Manganese	**8.4**		**0.51**	**5.0**	**µg/L**	1	3/24/2017 16:48
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/24/2017 16:48
Selenium	U		0.90	5.0	µg/L	1	3/24/2017 16:48
Silver	U		0.050	5.0	µg/L	1	3/24/2017 16:48
Zinc	U		1.4	10	µg/L	1	3/24/2017 16:48
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/22/2017 17:32
Sulfate	**4,300**		**410**	**1,000**	**µg/L**	1	3/22/2017 17:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 29-Mar-17

Client: ERM, Inc

Work Order: 17031218

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99699** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-99699-99699** Units: **ng/L** Analysis Date: **3/24/2017 04:22 PM**

Client ID: Run ID: **HG3_170324A** SeqNo: **4342115** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-99699-99699** Units: **ng/L** Analysis Date: **3/24/2017 05:17 PM**

Client ID: Run ID: **HG3_170324A** SeqNo: **4342122** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-99699-99699** Units: **ng/L** Analysis Date: **3/24/2017 06:35 PM**

Client ID: Run ID: **HG3_170324A** SeqNo: **4342132** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **17031218-08CMS** Units: **ng/L** Analysis Date: **3/24/2017 05:40 PM**

Client ID: **SW-LL-9** Run ID: **HG3_170324A** SeqNo: **4342125** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.66	0.50	5	1.06	112	71-125	0			

MS Sample ID: **17031245-05CMS** Units: **ng/L** Analysis Date: **3/24/2017 06:51 PM**

Client ID: Run ID: **HG3_170324A** SeqNo: **4342134** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.47	0.50	5	0.99	110	71-125	0			

MSD Sample ID: **17031218-08CMSD** Units: **ng/L** Analysis Date: **3/24/2017 05:48 PM**

Client ID: **SW-LL-9** Run ID: **HG3_170324A** SeqNo: **4342126** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.37	0.50	5	1.06	106	71-125	6.66	4.45	24	

MSD Sample ID: **17031245-05CMSD** Units: **ng/L** Analysis Date: **3/24/2017 06:58 PM**

Client ID: Run ID: **HG3_170324A** SeqNo: **4342135** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.46	0.50	5	0.99	109	71-125	6.47	0.155	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031218
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99699** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-99699-99699** Units: **ng/L** Analysis Date: **3/24/2017 04:15 PM**
Client ID: Run ID: **HG3_170324A** SeqNo: **4342114** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.36	0.50	5	0	107	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-99699-99699** Units: **ng/L** Analysis Date: **3/24/2017 08:01 PM**
Client ID: Run ID: **HG3_170324A** SeqNo: **4342143** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.54	0.50	5	0	111	77-123	0			

The following samples were analyzed in this batch:

17031218-01C	17031218-02C	17031218-03C
17031218-04C	17031218-05C	17031218-06C
17031218-07C	17031218-08C	17031218-09C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **99701** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-99700-99701** Units: **mg/L** Analysis Date: **3/24/2017 03:00 PM**
Client ID: Run ID: **ICPMS2_170324A** SeqNo: **4341826** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-99701-99701** Units: **mg/L** Analysis Date: **3/24/2017 03:10 PM**
Client ID: Run ID: **ICPMS2_170324A** SeqNo: **4341828** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	0.007652	0.080								J
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	0.00007565	0.0050								J
Zinc	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031218
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99701** Instrument ID **ICPMS2** Method: **SW6020A**

LCS Sample ID: **LCS-99700-99701** Units: **mg/L** Analysis Date: **3/24/2017 03:05 PM**
Client ID: Run ID: **ICPMS2_170324A** SeqNo: **4341827** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09855	0.010	0.1	0	98.6	80-120	0			
Arsenic	0.09447	0.0050	0.1	0	94.5	80-120	0			
Barium	0.09651	0.0050	0.1	0	96.5	80-120	0			
Cadmium	0.0946	0.0020	0.1	0	94.6	80-120	0			
Chromium	0.09068	0.0050	0.1	0	90.7	80-120	0			
Copper	0.09079	0.0050	0.1	0	90.8	80-120	0			
Iron	9.231	0.080	10	0	92.3	80-120	0			
Lead	0.09326	0.0050	0.1	0	93.3	80-120	0			
Manganese	0.09719	0.0050	0.1	0	97.2	80-120	0			
Potassium	9.529	0.20	10	0	95.3	80-120	0			
Selenium	0.09093	0.0050	0.1	0	90.9	80-120	0			
Silver	0.09491	0.0050	0.1	0	94.9	80-120	0			
Zinc	0.0927	0.010	0.1	0	92.7	80-120	0			

LCS Sample ID: **LCS-99701-99701** Units: **mg/L** Analysis Date: **3/24/2017 03:15 PM**
Client ID: Run ID: **ICPMS2_170324A** SeqNo: **4341829** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.099	0.010	0.1	0	99	80-120	0			
Arsenic	0.09388	0.0050	0.1	0	93.9	80-120	0			
Barium	0.09712	0.0050	0.1	0	97.1	80-120	0			
Cadmium	0.09444	0.0020	0.1	0	94.4	80-120	0			
Chromium	0.09057	0.0050	0.1	0	90.6	80-120	0			
Copper	0.09025	0.0050	0.1	0	90.2	80-120	0			
Iron	9.162	0.080	10	0	91.6	80-120	0			
Lead	0.09274	0.0050	0.1	0	92.7	80-120	0			
Manganese	0.09663	0.0050	0.1	0	96.6	80-120	0			
Potassium	9.462	0.20	10	0	94.6	80-120	0			
Selenium	0.08856	0.0050	0.1	0	88.6	80-120	0			
Silver	0.09416	0.0050	0.1	0	94.2	80-120	0			
Zinc	0.09232	0.010	0.1	0	92.3	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031218
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99701** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **17031218-08BMS** Units: **mg/L** Analysis Date: **3/24/2017 03:46 PM**
Client ID: **SW-LL-9** Run ID: **ICPMS2_170324A** SeqNo: **4341835** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.111	0.010	0.1	0.007187	104	75-125	0			
Arsenic	0.09526	0.0050	0.1	0.0007774	94.5	75-125	0			
Barium	0.1099	0.0050	0.1	0.01175	98.2	75-125	0			
Cadmium	0.09458	0.0020	0.1	-1.068E-05	94.6	75-125	0			
Chromium	0.08903	0.0050	0.1	0.00005481	89	75-125	0			
Copper	0.09011	0.0050	0.1	0.0001545	90	75-125	0			
Iron	9.28	0.080	10	0.105	91.8	75-125	0			
Lead	0.09441	0.0050	0.1	-0.000556	95	75-125	0			
Manganese	0.1055	0.0050	0.1	0.007388	98.1	75-125	0			
Potassium	11.46	0.20	10	2.11	93.5	75-125	0			
Selenium	0.09132	0.0050	0.1	0.00007974	91.2	75-125	0			
Silver	0.09115	0.0050	0.1	-1.026E-05	91.2	75-125	0			
Zinc	0.09506	0.010	0.1	0.002814	92.2	75-125	0			

MSD Sample ID: **17031218-08BMSD** Units: **mg/L** Analysis Date: **3/24/2017 03:51 PM**
Client ID: **SW-LL-9** Run ID: **ICPMS2_170324A** SeqNo: **4341836** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1028	0.010	0.1	0.007187	95.6	75-125	0.111	7.67	20	
Arsenic	0.09526	0.0050	0.1	0.0007774	94.5	75-125	0.09526	0	20	
Barium	0.1087	0.0050	0.1	0.01175	97	75-125	0.1099	1.1	20	
Cadmium	0.09425	0.0020	0.1	-1.068E-05	94.3	75-125	0.09458	0.35	20	
Chromium	0.08998	0.0050	0.1	0.00005481	89.9	75-125	0.08903	1.06	20	
Copper	0.09028	0.0050	0.1	0.0001545	90.1	75-125	0.09011	0.188	20	
Iron	9.327	0.080	10	0.105	92.2	75-125	9.28	0.505	20	
Lead	0.09317	0.0050	0.1	-0.000556	93.7	75-125	0.09441	1.32	20	
Manganese	0.103	0.0050	0.1	0.007388	95.6	75-125	0.1055	2.4	20	
Potassium	11.4	0.20	10	2.11	92.9	75-125	11.46	0.525	20	
Selenium	0.09203	0.0050	0.1	0.00007974	92	75-125	0.09132	0.774	20	
Silver	0.09073	0.0050	0.1	-1.026E-05	90.7	75-125	0.09115	0.462	20	
Zinc	0.09214	0.010	0.1	0.002814	89.3	75-125	0.09506	3.12	20	

The following samples were analyzed in this batch:

17031218-01B	17031218-02B	17031218-03B
17031218-04B	17031218-05B	17031218-06B
17031218-07B	17031218-08B	17031218-09B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031218
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99702** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-99702-99702** Units: **mg/L** Analysis Date: **3/24/2017 06:44 PM**
Client ID: Run ID: **ICPMS1_170324A** SeqNo: **4342661** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	0.2807	2.0								J

LCS Sample ID: **LCS-99702-99702** Units: **mg/L** Analysis Date: **3/27/2017 05:43 PM**
Client ID: Run ID: **ICPMS1_170327A** SeqNo: **4344558** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	70.07	2.0	66.15	0	106	80-120	0			

The following samples were analyzed in this batch:

17031218-01A	17031218-02A	17031218-03A
17031218-04A	17031218-05A	17031218-06A
17031218-07A	17031218-08A	17031218-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031218
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R208259** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R208259** Units: **mg/L** Analysis Date: **3/22/2017 07:45 AM**
Client ID: Run ID: **IC4_170322A** SeqNo: **4338094** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R208259** Units: **mg/L** Analysis Date: **3/22/2017 08:05 AM**
Client ID: Run ID: **IC4_170322A** SeqNo: **4338096** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.88	0.10	2	0	94	81-116	0			
Sulfate	9.157	1.0	10	0	91.6	85-110	0			

MS Sample ID: **17031218-08D MS** Units: **mg/L** Analysis Date: **3/22/2017 04:11 PM**
Client ID: **SW-LL-9** Run ID: **IC4_170322A** SeqNo: **4338113** Prep Date: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	4.025	0.20	4	0	101	75-125	0			
Sulfate	26.17	2.0	20	4.569	108	75-125	0			

MSD Sample ID: **17031218-08D MSD** Units: **mg/L** Analysis Date: **3/22/2017 04:31 PM**
Client ID: **SW-LL-9** Run ID: **IC4_170322A** SeqNo: **4338115** Prep Date: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	3.975	0.20	4	0	99.4	75-125	4.025	1.26	20	
Sulfate	26.05	2.0	20	4.569	107	75-125	26.17	0.481	20	

The following samples were analyzed in this batch:

17031218-01D	17031218-02D	17031218-03D
17031218-04D	17031218-05D	17031218-06D
17031218-07D	17031218-08D	17031218-09D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 36585

ALS Project Manager:

ALS Work Order #: 1703128

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Be, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss lab filter)
Work Order		Project Number		B	Hardness
Company Name	ERM	Bill To Company	ERM	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss / Accounts Payable	D	SO_4, NO_3
Address	8425 Woodfield Crossing Blvd. Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	MS/MSD
City/State/Zip	Indianapolis, IN 46202	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	317-706-2000	Phone		H	
Fax	317-706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-LL-10	3/21/17	1115	W	None; HNO_3	7	X	X	X	X							
2	SW-LL-13		1130														
3	SW-LL-14		1138														
4	SW-LL-16		1155														
5	SW-LL-15		1205														
6	SW-LL-12		1220														
7	SW-LL-11		1232														
8	SW-LL-9		1245			14						X					
9	DUP					7											
10																	

Sampler(s) Please Print & Sign: Jenna Sharkey

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☑ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 3/21/17	Time: 1304	Received by:	Notes:
Relinquished by:	Date: 3/21/17	Time: 1630	Received by (Laboratory): 3/22/17 930	
Logged by (Laboratory): MB	Date: 3/22/17	Time: 1148	Checked by (Laboratory):	

Cooler ID	Cooler Temp
	2.6
	SR2
	pH5

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **22-Mar-17 09:30**

Work Order: **17031218** Received by: **MBB**

Checklist completed by Meghan Broadbent (eSignature) 22-Mar-17 (Date) Reviewed by: Bill Carey (eSignature) 22-Mar-17 (Date)

Matrices: water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.6/2.6	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/22/2017 12:06:15 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

30-Mar-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **17031245**

Dear Marty,

ALS Environmental received 30 samples on 23-Mar-2017 08:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 56.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group, USA

Date: 30-Mar-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **17031245**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17031245-01	SW-RP-8	Water		3/21/2017 15:51	3/23/2017 08:30	☐
17031245-02	SW-RP-4	Water		3/21/2017 15:30	3/23/2017 08:30	☐
17031245-03	SW-RP-6	Water		3/21/2017 16:00	3/23/2017 08:30	☐
17031245-04	SW-RP-2	Water		3/21/2017 15:45	3/23/2017 08:30	☐
17031245-05	SW-LL-5	Water		3/21/2017 14:09	3/23/2017 08:30	☐
17031245-06	SW-LL-8	Water		3/21/2017 14:00	3/23/2017 08:30	☐
17031245-07	SW-LL-7	Water		3/21/2017 13:48	3/23/2017 08:30	☐
17031245-08	SW-LL-4	Water		3/21/2017 14:20	3/23/2017 08:30	☐
17031245-09	SW-LL-6	Water		3/21/2017 13:39	3/23/2017 08:30	☐
17031245-10	SW-LL-1	Water		3/21/2017 13:55	3/23/2017 08:30	☐
17031245-11	SW-LL-2	Water		3/21/2017 14:45	3/23/2017 08:30	☐
17031245-12	SW-LL-3	Water		3/21/2017 14:35	3/23/2017 08:30	☐
17031245-13	SW-RP-18	Water		3/22/2017 08:32	3/23/2017 08:30	☐
17031245-14	SW-RP-20	Water		3/22/2017 08:45	3/23/2017 08:30	☐
17031245-15	SW-RP-16	Water		3/22/2017 08:55	3/23/2017 08:30	☐
17031245-16	SW-RP-10	Water		3/22/2017 09:05	3/23/2017 08:30	☐
17031245-17	SW-RP-13	Water		3/22/2017 09:15	3/23/2017 08:30	☐
17031245-18	SW-BG-2	Water		3/22/2017 10:30	3/23/2017 08:30	☐
17031245-19	SW-BG-4	Water		3/22/2017 10:42	3/23/2017 08:30	☐
17031245-20	SW-BG-5	Water		3/22/2017 11:00	3/23/2017 08:30	☐
17031245-21	SW-BG-3	Water		3/22/2017 11:12	3/23/2017 08:30	☐
17031245-22	SW-BG-1	Water		3/22/2017 11:24	3/23/2017 08:30	☐
17031245-23	SW-BG-6	Water		3/22/2017 13:05	3/23/2017 08:30	☐
17031245-24	SW-BG-7	Water		3/22/2017 13:15	3/23/2017 08:30	☐
17031245-25	SW-BG-8	Water		3/22/2017 13:30	3/23/2017 08:30	☐
17031245-26	SW-BG-9	Water		3/22/2017 14:00	3/23/2017 08:30	☐
17031245-27	SW-BG-10	Water		3/22/2017 13:44	3/23/2017 08:30	☐
17031245-28	SW-RP-12	Water		3/22/2017 15:00	3/23/2017 08:30	☐
17031245-29	DUP-02	Water		3/22/2017	3/23/2017 08:30	☐
17031245-30	DUP-03	Water		3/22/2017	3/23/2017 08:30	☐

ALS Group, USA

Date: 30-Mar-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **17031245**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 30-Mar-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 17031245

Case Narrative

Samples for the above noted Work Order were received on 3/23/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 99744, Method HG_1631E_W, Sample 17031245-24CMSD: The MSD recovery was outside of the control limit. However, the MS recovery and the RPD between the MS and MSD was in control. No qualification is required for this analyte: Hg

Wet Chemistry:
Batch R208396, Method IC_9056_W, Sample 17031245-15D MSD: The MSD recovery was outside of the control limit. However, the MS recovery and the RPD between the MS and MSD was in control. No qualification is required for this analyte: Sulfate

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-8
Collection Date: 3/21/2017 03:51 PM

Work Order: 17031245
Lab ID: 17031245-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 18:04
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 20:40
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**27**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:53
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:53
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:53
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:53
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:53
Copper	**1.7**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:53
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:53
Iron	**59**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 19:53
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:53
Manganese	**2.4**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:53
Potassium	**2,400**		**17**	**200**	**µg/L**	1	3/28/2017 19:53
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:53
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:53
Zinc	**2.1**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**65**	J	**48**	**100**	**µg/L**	1	3/23/2017 11:07
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 11:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-4
Collection Date: 3/21/2017 03:30 PM

Work Order: 17031245
Lab ID: 17031245-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 18:12
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 20:46
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**23**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:58
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:58
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:58
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:58
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:58
Copper	**1.8**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:58
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:58
Iron	**39**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 19:58
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:58
Manganese	**1.1**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:58
Potassium	**2,400**		**17**	**200**	**µg/L**	1	3/28/2017 19:58
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:58
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:58
Zinc	U		1.4	10	µg/L	1	3/28/2017 19:58
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**66**	J	**48**	**100**	**µg/L**	1	3/23/2017 11:27
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 11:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-6
Collection Date: 3/21/2017 04:00 PM

Work Order: 17031245
Lab ID: 17031245-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 18:19
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 20:53
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**24**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:03
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:03
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:03
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:03
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:03
Copper	**1.6**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:03
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:03
Iron	**35**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 20:03
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:03
Manganese	**0.94**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:03
Potassium	**2,400**		**17**	**200**	**µg/L**	1	3/28/2017 20:03
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:03
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:03
Zinc	**11**		**1.4**	**10**	**µg/L**	1	3/28/2017 20:03
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 11:48
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 11:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-2
Collection Date: 3/21/2017 03:45 PM

Work Order: 17031245
Lab ID: 17031245-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 18:27
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 20:59
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**29**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:09
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:09
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:09
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:09
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:09
Copper	**1.7**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:09
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:09
Iron	**140**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:09
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:09
Manganese	**1.8**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:09
Potassium	**2,400**		**17**	**200**	**µg/L**	1	3/28/2017 20:09
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:09
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:09
Zinc	**6.4**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:09
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 12:08
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 12:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-5
Collection Date: 3/21/2017 02:09 PM

Work Order: 17031245
Lab ID: 17031245-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.00099**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 18:43
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 21:05
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**6.0**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 20:14
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:14
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:14
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:14
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:14
Copper	U		0.28	5.0	µg/L	1	3/28/2017 20:14
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:14
Iron	**150**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:14
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:14
Manganese	**6.1**		**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:14
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/28/2017 20:14
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:14
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:14
Zinc	**2.4**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 12:28
Sulfate	**4,400**		**410**	**1,000**	**µg/L**	1	3/23/2017 12:28

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-8
Collection Date: 3/21/2017 02:00 PM

Work Order: 17031245
Lab ID: 17031245-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 19:06
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 21:11
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**4.5**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 20:19
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:19
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:19
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:19
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:19
Copper	U		0.28	5.0	µg/L	1	3/28/2017 20:19
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:19
Iron	**130**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:19
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:19
Manganese	**5.4**		**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:19
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/28/2017 20:19
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:19
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:19
Zinc	**1.8**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 12:48
Sulfate	**4,500**		**410**	**1,000**	**µg/L**	1	3/23/2017 12:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-7
Collection Date: 3/21/2017 01:48 PM

Work Order: 17031245
Lab ID: 17031245-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 19:14
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 21:17
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**5.7**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 20:25
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:25
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:25
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:25
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:25
Copper	**0.32**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:25
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:25
Iron	**100**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:25
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:25
Manganese	**4.4**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:25
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/28/2017 20:25
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:25
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:25
Zinc	**1.8**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:25
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**63**	J	**48**	**100**	**µg/L**	1	3/23/2017 13:09
Sulfate	**4,500**		**410**	**1,000**	**µg/L**	1	3/23/2017 13:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-4
Collection Date: 3/21/2017 02:20 PM

Work Order: 17031245
Lab ID: 17031245-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 19:30
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 21:24
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**4.4**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 20:30
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:30
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:30
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:30
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:30
Copper	U		0.28	5.0	µg/L	1	3/28/2017 20:30
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:30
Iron	**88**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:30
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:30
Manganese	**1.9**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:30
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/28/2017 20:30
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:30
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:30
Zinc	U		1.4	10	µg/L	1	3/28/2017 20:30
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 11:04
Sulfate	**2,800**		**410**	**1,000**	**µg/L**	1	3/23/2017 11:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-6
Collection Date: 3/21/2017 01:39 PM

Work Order: 17031245
Lab ID: 17031245-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 19:37
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 21:48
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	U		4.2	10	µg/L	1	3/28/2017 20:35
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:35
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:35
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:35
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:35
Copper	U		0.28	5.0	µg/L	1	3/28/2017 20:35
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:35
Iron	**84**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:35
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:35
Manganese	**3.2**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:35
Potassium	**2,000**		**17**	**200**	**µg/L**	1	3/28/2017 20:35
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:35
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:35
Zinc	U		1.4	10	µg/L	1	3/28/2017 20:35
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 11:24
Sulfate	**1,100**		**410**	**1,000**	**µg/L**	1	3/23/2017 11:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-1
Collection Date: 3/21/2017 01:55 PM

Work Order: 17031245
Lab ID: 17031245-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 19:45
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 21:54
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**8.3**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 20:41
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:41
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:41
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:41
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:41
Copper	**0.32**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:41
Hardness (Calculation)	**100,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:41
Iron	**140**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:41
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:41
Manganese	**4.6**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:41
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/28/2017 20:41
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:41
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:41
Zinc	U		1.4	10	µg/L	1	3/28/2017 20:41
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 11:44
Sulfate	**960**	J	**410**	**1,000**	**µg/L**	1	3/23/2017 11:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-2
Collection Date: 3/21/2017 02:45 PM

Work Order: 17031245
Lab ID: 17031245-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/24/17		Analyst: **LR**
Mercury	**0.00096**		**0.00020**	**0.00050**	**µg/L**	1	3/24/2017 19:53
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/24/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/24/2017 22:01
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**4.8**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 22:11
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 22:11
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 22:11
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 22:11
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 22:11
Copper	**0.31**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 22:11
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 22:11
Iron	**99**		**4.6**	**80**	**µg/L**	1	3/28/2017 22:11
Lead	U		0.33	5.0	µg/L	1	3/28/2017 22:11
Manganese	**4.8**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 22:11
Potassium	**2,200**		**17**	**200**	**µg/L**	1	3/28/2017 22:11
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 22:11
Silver	U		0.050	5.0	µg/L	1	3/28/2017 22:11
Zinc	U		1.4	10	µg/L	1	3/28/2017 22:11
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 12:05
Sulfate	**2,800**		**410**	**1,000**	**µg/L**	1	3/23/2017 12:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-LL-3
Collection Date: 3/21/2017 02:35 PM

Work Order: 17031245
Lab ID: 17031245-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 11:58
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 13:35
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**6.2**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 22:17
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 22:17
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 22:17
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 22:17
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 22:17
Copper	U		0.28	5.0	µg/L	1	3/28/2017 22:17
Hardness (Calculation)	**110,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 22:17
Iron	**140**		**4.6**	**80**	**µg/L**	1	3/28/2017 22:17
Lead	U		0.33	5.0	µg/L	1	3/28/2017 22:17
Manganese	**4.2**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 22:17
Potassium	**2,200**		**17**	**200**	**µg/L**	1	3/28/2017 22:17
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 22:17
Silver	U		0.050	5.0	µg/L	1	3/28/2017 22:17
Zinc	**1.4**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 22:17
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 12:25
Sulfate	U		410	1,000	µg/L	1	3/23/2017 12:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-18
Collection Date: 3/22/2017 08:32 AM

Work Order: 17031245
Lab ID: 17031245-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 12:06
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 13:42
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**30**		**4.2**	**10**	**µg/L**	1	3/28/2017 22:22
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 22:22
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 22:22
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 22:22
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 22:22
Copper	**1.6**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 22:22
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 22:22
Iron	**54**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 22:22
Lead	U		0.33	5.0	µg/L	1	3/28/2017 22:22
Manganese	**1.4**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 22:22
Potassium	**2,500**		**17**	**200**	**µg/L**	1	3/28/2017 22:22
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 22:22
Silver	U		0.050	5.0	µg/L	1	3/28/2017 22:22
Zinc	**2.2**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 22:22
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 12:45
Sulfate	**490**	J	**410**	**1,000**	**µg/L**	1	3/23/2017 12:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-20
Collection Date: 3/22/2017 08:45 AM

Work Order: 17031245
Lab ID: 17031245-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 12:13
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 13:48
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**30**		**4.2**	**10**	**µg/L**	1	3/28/2017 22:28
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 22:28
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 22:28
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 22:28
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 22:28
Copper	**1.7**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 22:28
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 22:28
Iron	**46**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 22:28
Lead	U		0.33	5.0	µg/L	1	3/28/2017 22:28
Manganese	**1.4**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 22:28
Potassium	**2,500**		**17**	**200**	**µg/L**	1	3/28/2017 22:28
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 22:28
Silver	U		0.050	5.0	µg/L	1	3/28/2017 22:28
Zinc	U		1.4	10	µg/L	1	3/28/2017 22:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 16:09
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 16:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-16
Collection Date: 3/22/2017 08:55 AM

Work Order: 17031245
Lab ID: 17031245-15
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 12:21
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 13:54
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/27/17		Analyst: **RH**
Aluminum	**26**		**4.2**	**10**	**µg/L**	1	3/28/2017 22:33
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 22:33
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 22:33
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 22:33
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 22:33
Copper	**1.6**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 22:33
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 22:33
Iron	**39**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 22:33
Lead	U		0.33	5.0	µg/L	1	3/28/2017 22:33
Manganese	**0.88**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 22:33
Potassium	**2,500**		**17**	**200**	**µg/L**	1	3/28/2017 22:33
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 22:33
Silver	U		0.050	5.0	µg/L	1	3/28/2017 22:33
Zinc	U		1.4	10	µg/L	1	3/28/2017 22:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 16:29
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 16:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-10
Collection Date: 3/22/2017 09:05 AM

Work Order: 17031245
Lab ID: 17031245-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0010**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 12:29
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 14:00
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**31**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:02
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:02
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:02
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:02
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:02
Copper	**1.6**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:02
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:02
Iron	**62**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 19:02
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:02
Manganese	**1.7**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:02
Potassium	**2,600**		**17**	**200**	**µg/L**	1	3/28/2017 19:02
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:02
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:02
Zinc	**1.9**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:02
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 18:10
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 18:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-13
Collection Date: 3/22/2017 09:15 AM

Work Order: 17031245
Lab ID: 17031245-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 12:37
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 14:06
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**26**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:08
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:08
Barium	**28**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:08
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:08
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:08
Copper	**1.4**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:08
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:08
Iron	**40**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 19:08
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:08
Manganese	**1.1**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:08
Potassium	**2,600**		**17**	**200**	**µg/L**	1	3/28/2017 19:08
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:08
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:08
Zinc	**2.1**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:08
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 18:30
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 18:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-2
Collection Date: 3/22/2017 10:30 AM

Work Order: 17031245
Lab ID: 17031245-18
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.011**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 12:52
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**92,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 14:12
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**15**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:14
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:14
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:14
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:14
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:14
Copper	**0.51**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:14
Hardness (Calculation)	**86,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:14
Iron	**440**		**4.6**	**80**	**µg/L**	1	3/28/2017 19:14
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:14
Manganese	**4.5**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:14
Potassium	**560**		**17**	**200**	**µg/L**	1	3/28/2017 19:14
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:14
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:14
Zinc	**3.4**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 18:51
Sulfate	**3,500**		**410**	**1,000**	**µg/L**	1	3/23/2017 18:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-4
Collection Date: 3/22/2017 10:42 AM

Work Order: 17031245
Lab ID: 17031245-19
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 3/27/17			Analyst: **LR**
Mercury	**0.0023**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 13:00
METALS BY ICP-MS		Method: **SW6020A**		Prep: SW3005A / 3/28/17			Analyst: **JF**
Hardness (Calculation)	**98,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 14:18
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 3/28/17			Analyst: **JF**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:20
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:20
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:20
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:20
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:20
Copper	**0.48**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:20
Hardness (Calculation)	**86,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:20
Iron	**370**		**4.6**	**80**	**µg/L**	1	3/28/2017 19:20
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:20
Manganese	**2.9**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:20
Potassium	**560**		**17**	**200**	**µg/L**	1	3/28/2017 19:20
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:20
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:20
Zinc	**3.0**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:20
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 19:11
Sulfate	**3,300**		**410**	**1,000**	**µg/L**	1	3/23/2017 19:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-5
Collection Date: 3/22/2017 11:00 AM

Work Order: 17031245
Lab ID: 17031245-20
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0033**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 13:08
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**85,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 14:46
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**11**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:26
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:26
Barium	**10**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:26
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:26
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:26
Copper	**0.52**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:26
Hardness (Calculation)	**85,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:26
Iron	**430**		**4.6**	**80**	**µg/L**	1	3/28/2017 19:26
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:26
Manganese	**2.1**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:26
Potassium	**540**		**17**	**200**	**µg/L**	1	3/28/2017 19:26
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:26
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:26
Zinc	**2.2**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:26
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 19:31
Sulfate	**3,300**		**410**	**1,000**	**µg/L**	1	3/23/2017 19:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-3
Collection Date: 3/22/2017 11:12 AM

Work Order: 17031245
Lab ID: 17031245-21
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0040**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 13:16
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**83,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 14:52
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**11**		**4.2**	**10**	**µg/L**	1	3/28/2017 19:33
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:33
Barium	**12**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:33
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:33
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:33
Copper	**0.53**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:33
Hardness (Calculation)	**83,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:33
Iron	**230**		**4.6**	**80**	**µg/L**	1	3/28/2017 19:33
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:33
Manganese	**4.9**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:33
Potassium	**540**		**17**	**200**	**µg/L**	1	3/28/2017 19:33
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:33
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:33
Zinc	**2.5**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 19:51
Sulfate	**3,500**		**410**	**1,000**	**µg/L**	1	3/23/2017 19:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-1
Collection Date: 3/22/2017 11:24 AM

Work Order: 17031245
Lab ID: 17031245-22
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0033**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 13:24
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**82,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 14:58
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**9.2**	J	**4.2**	**10**	**µg/L**	1	3/28/2017 19:39
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 19:39
Barium	**13**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 19:39
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 19:39
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 19:39
Copper	**2.6**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 19:39
Hardness (Calculation)	**84,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 19:39
Iron	**160**		**4.6**	**80**	**µg/L**	1	3/28/2017 19:39
Lead	U		0.33	5.0	µg/L	1	3/28/2017 19:39
Manganese	**4.1**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 19:39
Potassium	**550**		**17**	**200**	**µg/L**	1	3/28/2017 19:39
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 19:39
Silver	U		0.050	5.0	µg/L	1	3/28/2017 19:39
Zinc	**3.5**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 19:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 20:11
Sulfate	**3,500**		**410**	**1,000**	**µg/L**	1	3/23/2017 20:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-6
Collection Date: 3/22/2017 01:05 PM

Work Order: 17031245
Lab ID: 17031245-23
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0031**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 13:31
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**38,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 15:04
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**21**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:03
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:03
Barium	**9.3**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:03
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:03
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:03
Copper	**0.61**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:03
Hardness (Calculation)	**37,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:03
Iron	**700**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:03
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:03
Manganese	**4.7**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:03
Potassium	**700**		**17**	**200**	**µg/L**	1	3/28/2017 20:03
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:03
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:03
Zinc	**4.7**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:03
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 20:32
Sulfate	**1,900**		**410**	**1,000**	**µg/L**	1	3/23/2017 20:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-7
Collection Date: 3/22/2017 01:15 PM

Work Order: 17031245
Lab ID: 17031245-24
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0058**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 13:39
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**32,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 15:10
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**16**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:09
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:09
Barium	**8.9**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:09
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:09
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:09
Copper	**0.60**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:09
Hardness (Calculation)	**30,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:09
Iron	**210**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:09
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:09
Manganese	**4.4**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:09
Potassium	**740**		**17**	**200**	**µg/L**	1	3/28/2017 20:09
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:09
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:09
Zinc	**4.2**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:09
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 10:47
Sulfate	**2,100**		**410**	**1,000**	**µg/L**	1	3/23/2017 10:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-8
Collection Date: 3/22/2017 01:30 PM

Work Order: 17031245
Lab ID: 17031245-25
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0032**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 14:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**28,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 03:01
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**17**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:27
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:27
Barium	**8.6**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:27
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:27
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:27
Copper	**0.71**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:27
Hardness (Calculation)	**29,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:27
Iron	**220**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:27
Lead	**0.47**	J	**0.33**	**5.0**	**µg/L**	1	3/28/2017 20:27
Manganese	**4.2**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:27
Potassium	**820**		**17**	**200**	**µg/L**	1	3/28/2017 20:27
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:27
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:27
Zinc	**2.7**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:27
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 15:10
Sulfate	**2,200**		**410**	**1,000**	**µg/L**	1	3/23/2017 15:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-9
Collection Date: 3/22/2017 02:00 PM

Work Order: 17031245
Lab ID: 17031245-26
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0022**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 14:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**30,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 03:07
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**20**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:34
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:34
Barium	**7.7**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:34
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:34
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:34
Copper	**0.61**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:34
Hardness (Calculation)	**32,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:34
Iron	**270**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:34
Lead	**0.37**	J	**0.33**	**5.0**	**µg/L**	1	3/28/2017 20:34
Manganese	**3.4**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:34
Potassium	**760**		**17**	**200**	**µg/L**	1	3/28/2017 20:34
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:34
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:34
Zinc	**4.3**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 15:30
Sulfate	**2,200**		**410**	**1,000**	**µg/L**	1	3/23/2017 15:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-BG-10
Collection Date: 3/22/2017 01:44 PM

Work Order: 17031245
Lab ID: 17031245-27
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0053**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 14:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**29,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 03:13
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**18**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:40
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:40
Barium	**7.8**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:40
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:40
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:40
Copper	**0.64**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:40
Hardness (Calculation)	**29,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:40
Iron	**230**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:40
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:40
Manganese	**4.0**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:40
Potassium	**790**		**17**	**200**	**µg/L**	1	3/28/2017 20:40
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:40
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:40
Zinc	**3.2**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:40
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 15:50
Sulfate	**2,100**		**410**	**1,000**	**µg/L**	1	3/23/2017 15:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: SW-RP-12
Collection Date: 3/22/2017 03:00 PM

Work Order: 17031245
Lab ID: 17031245-28
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0015**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 14:34
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 03:20
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**35**		**4.2**	**10**	**µg/L**	1	3/28/2017 21:59
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 21:59
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 21:59
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 21:59
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 21:59
Copper	**1.8**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 21:59
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 21:59
Iron	**68**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 21:59
Lead	U		0.33	5.0	µg/L	1	3/28/2017 21:59
Manganese	**2.0**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 21:59
Potassium	**2,700**		**17**	**200**	**µg/L**	1	3/28/2017 21:59
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 21:59
Silver	U		0.050	5.0	µg/L	1	3/28/2017 21:59
Zinc	**6.5**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 21:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**64**	J	**48**	**100**	**µg/L**	1	3/23/2017 14:50
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 14:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-02
Collection Date: 3/22/2017

Work Order: 17031245
Lab ID: 17031245-29
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0033**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 15:05
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**36,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 03:38
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**22**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:46
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:46
Barium	**9.3**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:46
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:46
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:46
Copper	**0.75**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:46
Hardness (Calculation)	**37,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:46
Iron	**770**		**4.6**	**80**	**µg/L**	1	3/28/2017 20:46
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:46
Manganese	**5.4**		**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:46
Potassium	**700**		**17**	**200**	**µg/L**	1	3/28/2017 20:46
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:46
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:46
Zinc	**6.4**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:46
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 16:11
Sulfate	**1,900**		**410**	**1,000**	**µg/L**	1	3/23/2017 16:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *30-Mar-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-03
Collection Date: 3/22/2017

Work Order: 17031245
Lab ID: 17031245-30
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/27/17		Analyst: **LR**
Mercury	**0.0013**		**0.00020**	**0.00050**	**µg/L**	1	3/27/2017 15:13
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/29/2017 03:44
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/28/17		Analyst: **JF**
Aluminum	**30**		**4.2**	**10**	**µg/L**	1	3/28/2017 20:52
Arsenic	U		0.87	5.0	µg/L	1	3/28/2017 20:52
Barium	**28**		**2.2**	**5.0**	**µg/L**	1	3/28/2017 20:52
Cadmium	U		0.050	2.0	µg/L	1	3/28/2017 20:52
Chromium	U		0.65	5.0	µg/L	1	3/28/2017 20:52
Copper	**1.9**	J	**0.28**	**5.0**	**µg/L**	1	3/28/2017 20:52
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/28/2017 20:52
Iron	**57**	J	**4.6**	**80**	**µg/L**	1	3/28/2017 20:52
Lead	U		0.33	5.0	µg/L	1	3/28/2017 20:52
Manganese	**1.4**	J	**0.51**	**5.0**	**µg/L**	1	3/28/2017 20:52
Potassium	**2,700**		**17**	**200**	**µg/L**	1	3/28/2017 20:52
Selenium	U		0.90	5.0	µg/L	1	3/28/2017 20:52
Silver	U		0.050	5.0	µg/L	1	3/28/2017 20:52
Zinc	**2.8**	J	**1.4**	**10**	**µg/L**	1	3/28/2017 20:52
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/23/2017 16:31
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	3/23/2017 16:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 30-Mar-17

Client: ERM, Inc

Work Order: 17031245

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99699** Instrument ID **HG3** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-99699-99699**				Units: **ng/L**			Analysis Date: **3/24/2017 04:22 PM**			
Client ID:	Run ID: **HG3_170324A**				SeqNo: **4342115**			Prep Date: **3/24/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK2	Sample ID: **MBLK2-99699-99699**				Units: **ng/L**			Analysis Date: **3/24/2017 05:17 PM**			
Client ID:	Run ID: **HG3_170324A**				SeqNo: **4342122**			Prep Date: **3/24/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK3	Sample ID: **MBLK3-99699-99699**				Units: **ng/L**			Analysis Date: **3/24/2017 06:35 PM**			
Client ID:	Run ID: **HG3_170324A**				SeqNo: **4342132**			Prep Date: **3/24/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MS	Sample ID: **17031218-08CMS**				Units: **ng/L**			Analysis Date: **3/24/2017 05:40 PM**			
Client ID:	Run ID: **HG3_170324A**				SeqNo: **4342125**			Prep Date: **3/24/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	6.66	0.50	5	1.06	112	71-125	0				

MS	Sample ID: **17031245-05CMS**				Units: **ng/L**			Analysis Date: **3/24/2017 06:51 PM**			
Client ID: **SW-LL-5**	Run ID: **HG3_170324A**				SeqNo: **4342134**			Prep Date: **3/24/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	6.47	0.50	5	0.99	110	71-125	0				

MSD	Sample ID: **17031218-08CMSD**				Units: **ng/L**			Analysis Date: **3/24/2017 05:48 PM**			
Client ID:	Run ID: **HG3_170324A**				SeqNo: **4342126**			Prep Date: **3/24/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	6.37	0.50	5	1.06	106	71-125	6.66	4.45	24		

MSD	Sample ID: **17031245-05CMSD**				Units: **ng/L**			Analysis Date: **3/24/2017 06:58 PM**			
Client ID: **SW-LL-5**	Run ID: **HG3_170324A**				SeqNo: **4342135**			Prep Date: **3/24/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	6.46	0.50	5	0.99	109	71-125	6.47	0.155	24		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99699** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-99699-99699** Units: **ng/L** Analysis Date: **3/24/2017 04:15 PM**
Client ID: Run ID: **HG3_170324A** SeqNo: **4342114** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.36	0.50	5	0	107	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-99699-99699** Units: **ng/L** Analysis Date: **3/24/2017 08:01 PM**
Client ID: Run ID: **HG3_170324A** SeqNo: **4342143** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.54	0.50	5	0	111	77-123	0			

The following samples were analyzed in this batch:

17031245-01C	17031245-02C	17031245-03C
17031245-04C	17031245-05C	17031245-06C
17031245-07C	17031245-08C	17031245-09C
17031245-10C	17031245-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99744** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-99744-99744** Units: **ng/L** Analysis Date: **3/27/2017 11:50 AM**
Client ID: Run ID: **HG3_170327A** SeqNo: **4343563** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-99744-99744** Units: **ng/L** Analysis Date: **3/27/2017 12:45 PM**
Client ID: Run ID: **HG3_170327A** SeqNo: **4343570** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-99744-99744** Units: **ng/L** Analysis Date: **3/27/2017 01:47 PM**
Client ID: Run ID: **HG3_170327A** SeqNo: **4343578** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **17031245-24CMS** Units: **ng/L** Analysis Date: **3/27/2017 01:55 PM**
Client ID: **SW-BG-7** Run ID: **HG3_170327A** SeqNo: **4343579** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	11.2	0.50	5	5.76	109	71-125	0			

MS Sample ID: **17031245-28CMS** Units: **ng/L** Analysis Date: **3/27/2017 02:42 PM**
Client ID: **SW-RP-12** Run ID: **HG3_170327A** SeqNo: **4343585** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.17	0.50	5	1.51	113	71-125	0			

MSD Sample ID: **17031245-24CMSD** Units: **ng/L** Analysis Date: **3/27/2017 02:03 PM**
Client ID: **SW-BG-7** Run ID: **HG3_170327A** SeqNo: **4343580** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	9.3	0.50	5	5.76	70.8	71-125	11.2	18.5	24	S

MSD Sample ID: **17031245-28CMSD** Units: **ng/L** Analysis Date: **3/27/2017 02:57 PM**
Client ID: **SW-RP-12** Run ID: **HG3_170327A** SeqNo: **4343587** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	7.09	0.50	5	1.51	112	71-125	7.17	1.12	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99744** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START	Sample ID: **OPR-START-99744-99744**				Units: **ng/L**			Analysis Date: **3/27/2017 11:34 AM**		
Client ID:		Run ID: **HG3_170327A**			SeqNo: **4343561**		Prep Date: **3/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.52	0.50	5	0	110	77-123	0			

LCS-OPR-END	Sample ID: **OPR-END-99744-99744**				Units: **ng/L**			Analysis Date: **3/27/2017 03:28 PM**		
Client ID:		Run ID: **HG3_170327A**			SeqNo: **4343591**		Prep Date: **3/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.45	0.50	5	0	109	77-123	0			

The following samples were analyzed in this batch:

17031245-12C	17031245-13C	17031245-14C
17031245-15C	17031245-16C	17031245-17C
17031245-18C	17031245-19C	17031245-20C
17031245-21C	17031245-22C	17031245-23C
17031245-24C	17031245-25C	17031245-26C
17031245-27C	17031245-28C	17031245-29C
17031245-30C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99702** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-99702-99702** Units: **mg/L** Analysis Date: **3/24/2017 06:44 PM**
Client ID: Run ID: **ICPMS1_170324A** SeqNo: **4342661** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	0.2807	2.0								J

LCS Sample ID: **LCS-99702-99702** Units: **mg/L** Analysis Date: **3/27/2017 05:43 PM**
Client ID: Run ID: **ICPMS1_170327A** SeqNo: **4344558** Prep Date: **3/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	70.07	2.0	66.15	0	106	80-120	0			

The following samples were analyzed in this batch:

17031245-01B	17031245-02B	17031245-03B
17031245-04B	17031245-05B	17031245-06B
17031245-07B	17031245-08B	17031245-09B
17031245-10B	17031245-11B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **99778** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-99778-99778** Units: **mg/L** Analysis Date: **3/28/2017 11:22 AM**
Client ID: Run ID: **ICPMS2_170328A** SeqNo: **4345582** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-99755-99778** Units: **mg/L** Analysis Date: **3/28/2017 07:26 PM**
Client ID: Run ID: **ICPMS2_170328A** SeqNo: **4346327** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.008354	0.010								J
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	0.5185	2.0								J
Iron	0.01018	0.080								J
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99778** Instrument ID **ICPMS2** Method: **SW6020A**

LCS Sample ID: **LCS-99778-99778** Units: **mg/L** Analysis Date: **3/28/2017 11:27 AM**
Client ID: Run ID: **ICPMS2_170328A** SeqNo: **4345583** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.08789	0.010	0.1	0	87.9	80-120	0			
Arsenic	0.08918	0.0050	0.1	0	89.2	80-120	0			
Barium	0.09265	0.0050	0.1	0	92.6	80-120	0			
Cadmium	0.09145	0.0020	0.1	0	91.4	80-120	0			
Chromium	0.08803	0.0050	0.1	0	88	80-120	0			
Copper	0.09581	0.0050	0.1	0	95.8	80-120	0			
Hardness (Calculation)	64.17	2.0	66.15	0	97	80-120	0			
Iron	9.062	0.080	10	0	90.6	80-120	0			
Lead	0.09146	0.0050	0.1	0	91.5	80-120	0			
Manganese	0.08806	0.0050	0.1	0	88.1	80-120	0			
Potassium	9.386	0.20	10	0	93.9	80-120	0			
Selenium	0.08772	0.0050	0.1	0	87.7	80-120	0			
Silver	0.09054	0.0050	0.1	0	90.5	80-120	0			
Zinc	0.09369	0.010	0.1	0	93.7	80-120	0			

LCS Sample ID: **LCS-99755-99778** Units: **mg/L** Analysis Date: **3/28/2017 07:31 PM**
Client ID: Run ID: **ICPMS2_170328A** SeqNo: **4346328** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.08599	0.010	0.1	0	86	80-120	0			
Arsenic	0.08964	0.0050	0.1	0	89.6	80-120	0			
Barium	0.09166	0.0050	0.1	0	91.7	80-120	0			
Cadmium	0.09216	0.0020	0.1	0	92.2	80-120	0			
Chromium	0.08826	0.0050	0.1	0	88.3	80-120	0			
Copper	0.09462	0.0050	0.1	0	94.6	80-120	0			
Hardness (Calculation)	62.47	2.0	66.15	0	94.4	80-120	0			
Iron	9.073	0.080	10	0	90.7	80-120	0			
Lead	0.09164	0.0050	0.1	0	91.6	80-120	0			
Potassium	9.19	0.20	10	0	91.9	80-120	0			
Selenium	0.08782	0.0050	0.1	0	87.8	80-120	0			
Silver	0.08879	0.0050	0.1	0	88.8	80-120	0			
Zinc	0.09277	0.010	0.1	0	92.8	80-120	0			

LCS Sample ID: **LCS-99755-99778** Units: **mg/L** Analysis Date: **3/29/2017 06:38 PM**
Client ID: Run ID: **ICPMS2_170329A** SeqNo: **4348455** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Manganese	0.103	0.0050	0.1	0	103	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99778** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **17031151-02AMS** Units: **mg/L** Analysis Date: **3/28/2017 11:37 AM**
Client ID: Run ID: **ICPMS2_170328A** SeqNo: **4345585** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.8755	0.10	1	0.01661	85.9	75-125	0			
Arsenic	0.9346	0.050	1	0.003891	93.1	75-125	0			
Barium	1.081	0.050	1	0.1457	93.5	75-125	0			
Cadmium	0.9168	0.020	1	0.0005053	91.6	75-125	0			
Chromium	0.8886	0.050	1	0.000576	88.8	75-125	0			
Copper	0.9204	0.050	1	0.005587	91.5	75-125	0			
Iron	90.33	0.80	100	0.069	90.3	75-125	0			
Lead	0.9405	0.050	1	0.01389	92.7	75-125	0			
Manganese	276.7	0.050	1	283.2	-650	75-125	0			SEO
Potassium	95.04	2.0	100	1.254	93.8	75-125	0			
Selenium	0.9229	0.050	1	0.006959	91.6	75-125	0			
Silver	0.8746	0.050	1	0.000094	87.5	75-125	0			
Zinc	1.602	0.10	1	0.714	88.8	75-125	0			

MSD Sample ID: **17031151-02AMSD** Units: **mg/L** Analysis Date: **3/28/2017 11:44 AM**
Client ID: Run ID: **ICPMS2_170328A** SeqNo: **4345586** Prep Date: **3/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.8765	0.10	1	0.01661	86	75-125	0.8755	0.114	20	
Arsenic	0.9375	0.050	1	0.003891	93.4	75-125	0.9346	0.31	20	
Barium	1.074	0.050	1	0.1457	92.8	75-125	1.081	0.65	20	
Cadmium	0.9178	0.020	1	0.0005053	91.7	75-125	0.9168	0.109	20	
Chromium	0.8965	0.050	1	0.000576	89.6	75-125	0.8886	0.885	20	
Copper	0.9217	0.050	1	0.005587	91.6	75-125	0.9204	0.141	20	
Iron	90.34	0.80	100	0.069	90.3	75-125	90.33	0.0111	20	
Lead	0.9453	0.050	1	0.01389	93.1	75-125	0.9405	0.509	20	
Manganese	276.3	0.050	1	283.2	-690	75-125	276.7	0.145	20	SEO
Potassium	95.39	2.0	100	1.254	94.1	75-125	95.04	0.368	20	
Selenium	0.9493	0.050	1	0.006959	94.2	75-125	0.9229	2.82	20	
Silver	0.8797	0.050	1	0.000094	88	75-125	0.8746	0.581	20	
Zinc	1.613	0.10	1	0.714	89.9	75-125	1.602	0.684	20	

The following samples were analyzed in this batch:

17031245-01A	17031245-02A	17031245-03A
17031245-04A	17031245-05A	17031245-06A
17031245-07A	17031245-08A	17031245-09A
17031245-10A	17031245-11A	17031245-12A
17031245-13A	17031245-14A	17031245-15A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99827** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK	Sample ID: **MBLK-99827-99827**			Units: **mg/L**			Analysis Date: **3/28/2017 01:23 PM**			
Client ID:	Run ID: **ICPMS1_170328A**			SeqNo: **4345995**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	U	2.0								

LCS	Sample ID: **LCS-99827-99827**			Units: **mg/L**			Analysis Date: **3/28/2017 01:29 PM**			
Client ID:	Run ID: **ICPMS1_170328A**			SeqNo: **4345996**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hardness (Calculation)	61.31	2.0	66.15	0	92.7	80-120	0			

The following samples were analyzed in this batch:

17031245-12B	17031245-13B	17031245-14B
17031245-15B	17031245-16B	17031245-17B
17031245-18B	17031245-19B	17031245-20B
17031245-21B	17031245-22B	17031245-23B
17031245-24B	17031245-25B	17031245-26B
17031245-27B	17031245-28B	17031245-29B
17031245-30B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99837** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-99823-99837** Units: **mg/L** Analysis Date: **3/28/2017 04:53 PM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347050** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Iron	0.00751	0.080								J
Lead	U	0.0050								
Manganese	U	0.0050								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-99837-99837** Units: **mg/L** Analysis Date: **3/28/2017 06:43 PM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347067** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	0.01433	0.080								J
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-99823-99837** Units: **mg/L** Analysis Date: **3/29/2017 03:50 AM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347153** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Hardness (Calculation)	U	2.0								
Potassium	U	0.20								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99837** Instrument ID **ICPMS1** Method: **SW6020A**

LCS Sample ID: **LCS-99823-99837** Units: **mg/L** Analysis Date: **3/28/2017 04:59 PM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347051** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09925	0.0050	0.1	0	99.2	80-120	0			
Barium	0.09517	0.0050	0.1	0	95.2	80-120	0			
Cadmium	0.09834	0.0020	0.1	0	98.3	80-120	0			
Chromium	0.09653	0.0050	0.1	0	96.5	80-120	0			
Copper	0.0961	0.0050	0.1	0	96.1	80-120	0			
Iron	9.92	0.080	10	0	99.2	80-120	0			
Lead	0.09603	0.0050	0.1	0	96	80-120	0			
Manganese	0.09834	0.0050	0.1	0	98.3	80-120	0			
Selenium	0.09566	0.0050	0.1	0	95.7	80-120	0			
Silver	0.09661	0.0050	0.1	0	96.6	80-120	0			
Zinc	0.09511	0.010	0.1	0	95.1	80-120	0			

LCS Sample ID: **LCS-99837-99837** Units: **mg/L** Analysis Date: **3/28/2017 06:50 PM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347068** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09955	0.010	0.1	0	99.6	80-120	0			
Arsenic	0.1003	0.0050	0.1	0	100	80-120	0			
Barium	0.09565	0.0050	0.1	0	95.6	80-120	0			
Cadmium	0.1005	0.0020	0.1	0	100	80-120	0			
Chromium	0.09941	0.0050	0.1	0	99.4	80-120	0			
Copper	0.09895	0.0050	0.1	0	99	80-120	0			
Iron	10.03	0.080	10	0	100	80-120	0			
Lead	0.09847	0.0050	0.1	0	98.5	80-120	0			
Manganese	0.09941	0.0050	0.1	0	99.4	80-120	0			
Potassium	9.998	0.20	10	0	100	80-120	0			
Selenium	0.09709	0.0050	0.1	0	97.1	80-120	0			
Silver	0.09894	0.0050	0.1	0	98.9	80-120	0			
Zinc	0.09974	0.010	0.1	0	99.7	80-120	0			

LCS Sample ID: **LCS-99823-99837** Units: **mg/L** Analysis Date: **3/29/2017 04:15 AM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347157** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1067	0.010	0.1	0	107	80-120	0			
Potassium	10.12	0.20	10	0	101	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99837** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **17031245-24AMS** Units: **mg/L** Analysis Date: **3/28/2017 08:15 PM**
Client ID: **SW-BG-7** Run ID: **ICPMS1_170328A** SeqNo: **4347082** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1123	0.010	0.1	0.01592	96.4	75-125	0			
Arsenic	0.1009	0.0050	0.1	0.0005399	100	75-125	0			
Barium	0.1027	0.0050	0.1	0.008861	93.8	75-125	0			
Cadmium	0.1028	0.0020	0.1	9.528E-06	103	75-125	0			
Chromium	0.1001	0.0050	0.1	0.0002874	99.8	75-125	0			
Copper	0.101	0.0050	0.1	0.000597	100	75-125	0			
Iron	10.4	0.080	10	0.2103	102	75-125	0			
Lead	0.09731	0.0050	0.1	0.0003179	97	75-125	0			
Manganese	0.1061	0.0050	0.1	0.004368	102	75-125	0			
Potassium	10.42	0.20	10	0.7394	96.8	75-125	0			
Selenium	0.1009	0.0050	0.1	-0.0007858	102	75-125	0			
Silver	0.09948	0.0050	0.1	-2.195E-05	99.5	75-125	0			
Zinc	0.1072	0.010	0.1	0.004211	103	75-125	0			

MSD Sample ID: **17031245-24AMSD** Units: **mg/L** Analysis Date: **3/28/2017 08:21 PM**
Client ID: **SW-BG-7** Run ID: **ICPMS1_170328A** SeqNo: **4347083** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1118	0.010	0.1	0.01592	95.9	75-125	0.1123	0.446	20	
Arsenic	0.1023	0.0050	0.1	0.0005399	102	75-125	0.1009	1.38	20	
Barium	0.1063	0.0050	0.1	0.008861	97.4	75-125	0.1027	3.44	20	
Cadmium	0.1022	0.0020	0.1	9.528E-06	102	75-125	0.1028	0.585	20	
Chromium	0.09963	0.0050	0.1	0.0002874	99.3	75-125	0.1001	0.471	20	
Copper	0.1006	0.0050	0.1	0.000597	100	75-125	0.101	0.397	20	
Iron	10.35	0.080	10	0.2103	101	75-125	10.4	0.482	20	
Lead	0.09998	0.0050	0.1	0.0003179	99.7	75-125	0.09731	2.71	20	
Manganese	0.106	0.0050	0.1	0.004368	102	75-125	0.1061	0.0943	20	
Potassium	10.65	0.20	10	0.7394	99.1	75-125	10.42	2.18	20	
Selenium	0.1003	0.0050	0.1	-0.0007858	101	75-125	0.1009	0.596	20	
Silver	0.09954	0.0050	0.1	-2.195E-05	99.6	75-125	0.09948	0.0603	20	
Zinc	0.1059	0.010	0.1	0.004211	102	75-125	0.1072	1.22	20	

The following samples were analyzed in this batch:

17031245-16A	17031245-17A	17031245-18A
17031245-19A	17031245-20A	17031245-21A
17031245-22A	17031245-23A	17031245-24A
17031245-25A	17031245-26A	17031245-27A
17031245-29A	17031245-30A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99838** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-99838-99838** Units: **mg/L** Analysis Date: **3/28/2017 09:47 PM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347097** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-99838-99838** Units: **mg/L** Analysis Date: **3/28/2017 09:53 PM**
Client ID: Run ID: **ICPMS1_170328A** SeqNo: **4347098** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1051	0.010	0.1	0	105	80-120	0			
Arsenic	0.1012	0.0050	0.1	0	101	80-120	0			
Barium	0.09961	0.0050	0.1	0	99.6	80-120	0			
Cadmium	0.09889	0.0020	0.1	0	98.9	80-120	0			
Chromium	0.09795	0.0050	0.1	0	98	80-120	0			
Copper	0.09736	0.0050	0.1	0	97.4	80-120	0			
Iron	10.05	0.080	10	0	100	80-120	0			
Lead	0.09914	0.0050	0.1	0	99.1	80-120	0			
Manganese	0.09879	0.0050	0.1	0	98.8	80-120	0			
Potassium	10.29	0.20	10	0	103	80-120	0			
Selenium	0.09535	0.0050	0.1	0	95.4	80-120	0			
Silver	0.09852	0.0050	0.1	0	98.5	80-120	0			
Zinc	0.09725	0.010	0.1	0	97.2	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99838** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **17031245-28AMS** Units: **mg/L** Analysis Date: **3/28/2017 10:06 PM**
Client ID: **SW-RP-12** Run ID: **ICPMS1_170328A** SeqNo: **4347100** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1354	0.010	0.1	0.03452	101	75-125	0			
Arsenic	0.1022	0.0050	0.1	0.0007472	101	75-125	0			
Barium	0.1261	0.0050	0.1	0.0274	98.7	75-125	0			
Cadmium	0.1003	0.0020	0.1	-2.414E-06	100	75-125	0			
Chromium	0.09882	0.0050	0.1	0.00007941	98.7	75-125	0			
Copper	0.09738	0.0050	0.1	0.001787	95.6	75-125	0			
Iron	10.07	0.080	10	0.06834	100	75-125	0			
Lead	0.1005	0.0050	0.1	0.0000755	100	75-125	0			
Manganese	0.09823	0.0050	0.1	0.002019	96.2	75-125	0			
Potassium	13.12	0.20	10	2.748	104	75-125	0			
Selenium	0.09466	0.0050	0.1	-0.000655	95.3	75-125	0			
Silver	0.09731	0.0050	0.1	-2.322E-06	97.3	75-125	0			
Zinc	0.1011	0.010	0.1	0.006487	94.6	75-125	0			

MSD Sample ID: **17031245-28AMSD** Units: **mg/L** Analysis Date: **3/28/2017 10:12 PM**
Client ID: **SW-RP-12** Run ID: **ICPMS1_170328A** SeqNo: **4347101** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1399	0.010	0.1	0.03452	105	75-125	0.1354	3.27	20	
Arsenic	0.1037	0.0050	0.1	0.0007472	103	75-125	0.1022	1.46	20	
Barium	0.1281	0.0050	0.1	0.0274	101	75-125	0.1261	1.57	20	
Cadmium	0.09953	0.0020	0.1	-2.414E-06	99.5	75-125	0.1003	0.771	20	
Chromium	0.09882	0.0050	0.1	0.00007941	98.7	75-125	0.09882	0	20	
Copper	0.09911	0.0050	0.1	0.001787	97.3	75-125	0.09738	1.76	20	
Iron	10.03	0.080	10	0.06834	99.6	75-125	10.07	0.398	20	
Lead	0.1003	0.0050	0.1	0.0000755	100	75-125	0.1005	0.199	20	
Manganese	0.09914	0.0050	0.1	0.002019	97.1	75-125	0.09823	0.922	20	
Potassium	13.21	0.20	10	2.748	105	75-125	13.12	0.684	20	
Selenium	0.1019	0.0050	0.1	-0.000655	103	75-125	0.09466	7.37	20	
Silver	0.09806	0.0050	0.1	-2.322E-06	98.1	75-125	0.09731	0.768	20	
Zinc	0.1002	0.010	0.1	0.006487	93.7	75-125	0.1011	0.894	20	

The following samples were analyzed in this batch: 17031245-28A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R208396** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R208396** Units: **mg/L** Analysis Date: **3/23/2017 07:45 AM**
Client ID: Run ID: **IC4_170323A** SeqNo: **4340182** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R208396** Units: **mg/L** Analysis Date: **3/23/2017 08:06 AM**
Client ID: Run ID: **IC4_170323A** SeqNo: **4340183** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.904	0.10	2	0	95.2	81-116	0			
Sulfate	10.03	1.0	10	0	100	85-110	0			

MS Sample ID: **17031245-15D MS** Units: **mg/L** Analysis Date: **3/23/2017 04:49 PM**
Client ID: **SW-RP-16** Run ID: **IC4_170323A** SeqNo: **4340192** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.67	0.50	10	0.0333	106	75-125	0			
Sulfate	76.12	5.0	50	13.89	124	75-125	0			

MSD Sample ID: **17031245-15D MSD** Units: **mg/L** Analysis Date: **3/23/2017 05:09 PM**
Client ID: **SW-RP-16** Run ID: **IC4_170323A** SeqNo: **4340193** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.8	0.50	10	0.0333	108	75-125	10.67	1.14	20	
Sulfate	76.97	5.0	50	13.89	126	75-125	76.12	1.11	20	S

The following samples were analyzed in this batch:

17031245-08D	17031245-09D	17031245-10D
17031245-11D	17031245-12D	17031245-13D
17031245-14D	17031245-15D	17031245-16D
17031245-17D	17031245-18D	17031245-19D
17031245-20D	17031245-21D	17031245-22D
17031245-23D		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R208400** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R208400** Units: **mg/L** Analysis Date: **3/23/2017 07:45 AM**
Client ID: Run ID: **IC3_170323A** SeqNo: **4340250** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R208400** Units: **mg/L** Analysis Date: **3/23/2017 08:05 AM**
Client ID: Run ID: **IC3_170323A** SeqNo: **4340251** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.885	0.10	2	0	94.3	81-116	0			
Sulfate	9.8	1.0	10	0	98	85-110	0			

MS Sample ID: **17031245-24D MS** Units: **mg/L** Analysis Date: **3/23/2017 01:29 PM**
Client ID: **SW-BG-7** Run ID: **IC3_170323A** SeqNo: **4340261** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.938	0.10	2	0	96.9	75-125	0			
Sulfate	12.56	1.0	10	2.076	105	75-125	0			

MS Sample ID: **17031245-28D MS** Units: **mg/L** Analysis Date: **3/23/2017 04:51 PM**
Client ID: **SW-RP-12** Run ID: **IC3_170323A** SeqNo: **4340272** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.414	0.50	10	0.0637	93.5	75-125	0			
Sulfate	63.03	5.0	50	13.34	99.4	75-125	0			

MSD Sample ID: **17031245-24D MSD** Units: **mg/L** Analysis Date: **3/23/2017 01:49 PM**
Client ID: **SW-BG-7** Run ID: **IC3_170323A** SeqNo: **4340262** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.942	0.10	2	0	97.1	75-125	1.938	0.186	20	
Sulfate	12.48	1.0	10	2.076	104	75-125	12.56	0.7	20	

MSD Sample ID: **17031245-28D MSD** Units: **mg/L** Analysis Date: **3/23/2017 05:11 PM**
Client ID: **SW-RP-12** Run ID: **IC3_170323A** SeqNo: **4340273** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.695	0.50	10	0.0637	96.3	75-125	9.414	2.94	20	
Sulfate	65.94	5.0	50	13.34	105	75-125	63.03	4.51	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031245
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R208400** Instrument ID **IC3** Method: **SW9056A**

The following samples were analyzed in this batch:

17031245-01D	17031245-02D	17031245-03D
17031245-04D	17031245-05D	17031245-06D
17031245-07D	17031245-24D	17031245-25D
17031245-26D	17031245-27D	17031245-28D
17031245-29D	17031245-30D	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Chain of Custody Form

Page 1 of 4

COC ID: 36584

ALS Environmental

ALS Project Manager: | ALS Work Order #: 1703124S

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Be, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - lab filtered)
Work Order		Project Number		B	Hardness
Company Name	ERM	Bill To Company	ERM	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accts Payable	D	SO_4, NO_3
Address	8425 Woodfield Crossing Blvd. suite 580W Indianapolis, IN	Address	One Continental Towers 1701 Golf Road, suite 1-1000	E	
City/State/Zip	317-706-2000	City/State/Zip	Rolling Meadows, IL 60008	F	
Phone	317-706-2010	Phone		G	
Fax		Fax		H	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-RP-8	3/21/17	1551	W	None, HNO_3	7	X	X	X	X							
2	SW-RP-4		1530														
3	SW-RP-6		1600														
4	SW-RP-2		1545														
5	SW-LL-5		1409														
6	SW-LL-8		1400														
7	SW-LL-7		1348														
8	SW-LL-4		1420														
9	SW-LL-6		1339														
10	SW-LL-1		1355														

Sampler(s) Please Print & Sign: Jenna Sharkey

Shipment Method:

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 3.23.17	Time: 0830	Received by:	
Relinquished by:	Date: 3/23/17	Time: 0830	Received by (Laboratory):	
Logged by (Laboratory): DES	Date: 3/23/17	Time: 0900	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
SR2	3.2°C
PHS	3.6°C
	4.0°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

Page 2 of 4

COC ID: 36586

ALS Project Manager: | ALS Work Order #: 1703245

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Be, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (dissolved)
Work Order		Project Number		B	Hardness
Company Name	ERM	Bill To Company	ERM	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Mosi / Accts Payable	D	SO_4, NO_3
Address	8425 Woodfield Crossing Blvd. Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
City/State/Zip	Indianapolis, IN 46202	City/State/Zip	Rolling Meadows, IL 60008	F	
Phone	317-706-2000	Phone		G	
Fax	317-706-2010	Fax		H	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	SW-LL-2	3/21/17	1445	W	None HNO_3	7	X	X	X	X							
12	SW-LL-3	3/21/17	1435														
13	SW-RP-18	3/22/17	0832														
14	SW-RP-20		0845														
15	SW-RP-16		0855														
16	SW-RP-10		0905														
17	SW-RP-13		0915														
8	~~SW-RP-12~~ DNS		0925														
9	SW-BG-2		1030														
10	SW-BG-4		1042														

Sampler(s) Please Print & Sign: Jenna Sharkey

Shipment Method:

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 3.23.17	Time: 0830	Received by:	Notes:	
Relinquished by:	Date: 3/23/17	Time: 0830	Received by (Laboratory):		
Logged by (Laboratory): DFS	Date: 3/23/17	Time: 0900	Checked by (Laboratory):		

Cooler ID	Cooler Temp
SR2	3.2 °C
PHS	3.6 °C
	4.0 °C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

COC ID: 36587

ALS Project Manager:

ALS Work Order #: 1703124S

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Be, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (dissolved, lab filtered)
Work Order		Project Number		B	Hardness
Company Name	ERM	Bill To Company	ERM	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
City/State/Zip	Indianapolis, IN 46202	City/State/Zip	Rolling Meadows, IL 60008	F	MS/MSD
Phone	317-706-2000	Phone		G	
Fax	317-706-2010	Fax		H	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SW-BG-5	3/22/17	1100	W	None, HNO_3	7	X	X	X	X							
2	SW-BG-3		1112														
3	SW-BG-1		1124														
4	SW-BG-6		1305			↓											
5	SW-BG-7		1315			14						X					
6	SW-BG-8		1330			7											
7	SW-BG-9		1400														
8	SW-BG-10		1344			↓											
9	SW-RP-12		1500			14						X					
10	DUP-02	↓	—	↓	↓	7	↓	↓	↓	↓							

Sampler(s) Please Print & Sign: Jenna Sharkey

Shipment Method: Drop-off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 3.23.17	Time: 0830	Received by:
Relinquished by:	Date: 3/23/17	Time: 0830	Received by (Laboratory):
Logged by (Laboratory):	Date: 3/23/17	Time: 0900	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp
SR2	3.2°C
PHS	3.6°C
	4.0°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

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COC ID: 36588

ALS Project Manager: | ALS Work Order #: 1703125

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Be, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - lab filtered)
Work Order		Project Number		B	Hardness
Company Name	ERM	Bill To Company	ERM	C	Hg (1631E)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	317-706-2000	Phone		H	
Fax	317-706-2010	Fax		I	
e-Mail Address	Martin.ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
30	DUP-03	3/22/17	—	W	None HNO3	7	X	X	X	X							
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Jenna Sharkey

Shipment Method: Drop-off

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date: 3.23.17	Time: 0830	Received by:	Notes:	
Relinquished by:	Date: 3/23/17	Time: 0830	Received by (Laboratory):	Cooler ID	Cooler Temp
Logged by (Laboratory): DES	Date: 3/23/17	Time: 0900	Checked by (Laboratory):	SR2	3.2 C
				PHS	3.6 C
					4.0 C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **23-Mar-17 08:30**

Work Order: **17031245** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 23-Mar-17 (Date) Reviewed by: Bill Carey (eSignature) 23-Mar-17 (Date)

Matrices: Water
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2/3.2, 3.6/3.6, 4.0/4.0 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/23/2017 10:25:35 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

03-Apr-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **17031397**

Dear Marty,

ALS Environmental received 13 samples on 24-Mar-2017 01:32 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 27.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **17031397**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17031397-01	MW-8S	Water		3/23/2017 08:52	3/24/2017 13:32	☐
17031397-02	MW-8D	Water		3/23/2017 08:56	3/24/2017 13:32	☐
17031397-03	MW-7S	Water		3/23/2017 10:07	3/24/2017 13:32	☐
17031397-04	MW-7D	Water		3/23/2017 10:02	3/24/2017 13:32	☐
17031397-05	MW-6S	Water		3/23/2017 11:17	3/24/2017 13:32	☐
17031397-06	MW-6D	Water		3/23/2017 11:30	3/24/2017 13:32	☐
17031397-07	MW-5S	Water		3/23/2017 13:35	3/24/2017 13:32	☐
17031397-08	MW-5D	Water		3/23/2017 13:45	3/24/2017 13:32	☐
17031397-09	DUP-04	Water		3/23/2017	3/24/2017 13:32	☐
17031397-10	MW-4S	Water		3/23/2017 14:58	3/24/2017 13:32	☐
17031397-11	MW-4D	Water		3/23/2017 15:00	3/24/2017 13:32	☐
17031397-12	BG-1S	Water		3/23/2017 17:20	3/24/2017 13:32	☐
17031397-13	BG-1D	Water		3/23/2017 17:11	3/24/2017 13:32	☐

ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **17031397**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 17031397

Case Narrative

Samples for the above noted Work Order were received on 3/24/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 3/23/2017 08:52 AM

Work Order: 17031397
Lab ID: 17031397-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00054**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 12:50
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**17**		**4.2**	**10**	**µg/L**	1	3/31/2017 14:20
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 16:28
Barium	**25**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 16:28
Cadmium	**0.21**	J	**0.050**	**2.0**	**µg/L**	1	3/30/2017 16:28
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 16:28
Copper	**2.1**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 16:28
Hardness (Calculation)	**310,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 16:28
Iron	**19**	J	**4.6**	**80**	**µg/L**	1	3/30/2017 16:28
Lead	U		0.33	5.0	µg/L	1	3/30/2017 16:28
Manganese	**5.8**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 16:28
Potassium	**850**		**17**	**200**	**µg/L**	1	3/30/2017 16:28
Selenium	**4.7**	J	**0.90**	**5.0**	**µg/L**	1	3/30/2017 16:28
Silver	U		0.050	5.0	µg/L	1	3/30/2017 16:28
Zinc	**6.5**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 16:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**14,000**		**240**	**500**	**µg/L**	5	3/24/2017 17:29
Sulfate	**50,000**		**2,000**	**5,000**	**µg/L**	5	3/24/2017 17:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 3/23/2017 08:56 AM

Work Order: 17031397
Lab ID: 17031397-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	3/28/2017 12:58
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**6.0**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 14:26
Arsenic	**0.94**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 16:34
Barium	**35**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 16:34
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 16:34
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 16:34
Copper	**0.37**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 16:34
Hardness (Calculation)	**230,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 16:34
Iron	**2,400**		**4.6**	**80**	**µg/L**	1	3/30/2017 16:34
Lead	U		0.33	5.0	µg/L	1	3/30/2017 16:34
Manganese	**400**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 16:34
Potassium	**2,300**		**17**	**200**	**µg/L**	1	3/30/2017 16:34
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 16:34
Silver	U		0.050	5.0	µg/L	1	3/30/2017 16:34
Zinc	**3.6**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 16:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/24/2017 17:49
Sulfate	**23,000**		**810**	**2,000**	**µg/L**	2	3/30/2017 16:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 3/23/2017 10:07 AM

Work Order: 17031397
Lab ID: 17031397-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	3/28/2017 13:05
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**27**		**4.2**	**10**	**µg/L**	1	3/31/2017 17:36
Arsenic	**3.3**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 16:59
Barium	**74**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 16:59
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 16:59
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 16:59
Copper	**0.77**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 16:59
Hardness (Calculation)	**320,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 16:59
Iron	**8,300**		**4.6**	**80**	**µg/L**	1	3/30/2017 16:59
Lead	**0.36**	J	**0.33**	**5.0**	**µg/L**	1	3/30/2017 16:59
Manganese	**610**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 16:59
Potassium	**3,300**		**17**	**200**	**µg/L**	1	3/30/2017 16:59
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 16:59
Silver	U		0.050	5.0	µg/L	1	3/30/2017 16:59
Zinc	**4.4**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 16:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/24/2017 18:09
Sulfate	**5,600**		**410**	**1,000**	**µg/L**	1	3/24/2017 18:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 3/23/2017 10:02 AM

Work Order: 17031397
Lab ID: 17031397-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00057**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 13:13
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**8.1**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 14:38
Arsenic	U		0.87	5.0	µg/L	1	3/30/2017 17:05
Barium	**36**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 17:05
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 17:05
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 17:05
Copper	**0.52**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 17:05
Hardness (Calculation)	**210,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 17:05
Iron	**1,100**		**4.6**	**80**	**µg/L**	1	3/30/2017 17:05
Lead	U		0.33	5.0	µg/L	1	3/30/2017 17:05
Manganese	**230**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 17:05
Potassium	**3,200**		**17**	**200**	**µg/L**	1	3/30/2017 17:05
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 17:05
Silver	U		0.050	5.0	µg/L	1	3/30/2017 17:05
Zinc	**5.4**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 17:05
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/24/2017 18:29
Sulfate	**410**	J	**410**	**1,000**	**µg/L**	1	3/24/2017 18:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 3/23/2017 11:17 AM

Work Order: 17031397
Lab ID: 17031397-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00089**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 13:21
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**22**		**4.2**	**10**	**µg/L**	1	3/31/2017 17:42
Arsenic	**1.9**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 17:11
Barium	**13**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 17:11
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 17:11
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 17:11
Copper	**2.9**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 17:11
Hardness (Calculation)	**490,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 17:11
Iron	**31**	J	**4.6**	**80**	**µg/L**	1	3/30/2017 17:11
Lead	U		0.33	5.0	µg/L	1	3/30/2017 17:11
Manganese	**320**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 17:11
Potassium	**1,700**		**17**	**200**	**µg/L**	1	3/30/2017 17:11
Selenium	**1.9**	J	**0.90**	**5.0**	**µg/L**	1	3/30/2017 17:11
Silver	U		0.050	5.0	µg/L	1	3/30/2017 17:11
Zinc	**3.2**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 17:11
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**6,100**		**240**	**500**	**µg/L**	5	3/24/2017 19:10
Sulfate	**60,000**		**2,000**	**5,000**	**µg/L**	5	3/24/2017 19:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 3/23/2017 11:30 AM

Work Order: 17031397
Lab ID: 17031397-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	3/28/2017 13:29
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**7.4**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 14:51
Arsenic	**4.8**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 17:18
Barium	**130**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 17:18
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 17:18
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 17:18
Copper	**0.66**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 17:18
Hardness (Calculation)	**410,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 17:18
Iron	**8,000**		**4.6**	**80**	**µg/L**	1	3/30/2017 17:18
Lead	U		0.33	5.0	µg/L	1	3/30/2017 17:18
Manganese	**300**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 17:18
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/30/2017 17:18
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 17:18
Silver	U		0.050	5.0	µg/L	1	3/30/2017 17:18
Zinc	**6.7**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 17:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		96	200	µg/L	2	3/24/2017 19:30
Sulfate	**240,000**		**8,100**	**20,000**	**µg/L**	20	3/24/2017 19:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5S
Collection Date: 3/23/2017 01:35 PM

Work Order: 17031397
Lab ID: 17031397-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.0014**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 14:00
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**10**		**4.2**	**10**	**µg/L**	1	3/31/2017 16:36
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 17:36
Barium	**36**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 17:36
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 17:36
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 17:36
Copper	**1.5**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 17:36
Hardness (Calculation)	**310,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 17:36
Iron	**2,200**		**4.6**	**80**	**µg/L**	1	3/30/2017 17:36
Lead	U		0.33	5.0	µg/L	1	3/30/2017 17:36
Manganese	**400**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 17:36
Potassium	**4,000**		**17**	**200**	**µg/L**	1	3/30/2017 17:36
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 17:36
Silver	U		0.050	5.0	µg/L	1	3/30/2017 17:36
Zinc	**13**		**1.4**	**10**	**µg/L**	1	3/30/2017 17:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**130**		**48**	**100**	**µg/L**	1	3/24/2017 21:32
Sulfate	**91,000**		**2,000**	**5,000**	**µg/L**	5	3/24/2017 21:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 3/23/2017 01:45 PM

Work Order: 17031397
Lab ID: 17031397-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	3/28/2017 14:08
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**7.4**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 16:43
Arsenic	**1.3**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 17:42
Barium	**87**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 17:42
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 17:42
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 17:42
Copper	**0.68**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 17:42
Hardness (Calculation)	**280,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 17:42
Iron	**3,500**		**4.6**	**80**	**µg/L**	1	3/30/2017 17:42
Lead	U		0.33	5.0	µg/L	1	3/30/2017 17:42
Manganese	**220**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 17:42
Potassium	**4,000**		**17**	**200**	**µg/L**	1	3/30/2017 17:42
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 17:42
Silver	**0.070**	J	**0.050**	**5.0**	**µg/L**	1	3/30/2017 17:42
Zinc	**3.5**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 17:42
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**90**	J	**48**	**100**	**µg/L**	1	3/24/2017 22:12
Sulfate	**55,000**		**2,000**	**5,000**	**µg/L**	5	3/24/2017 22:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-04
Collection Date: 3/23/2017

Work Order: 17031397
Lab ID: 17031397-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00097**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 14:15
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**24**		**4.2**	**10**	**µg/L**	1	3/31/2017 16:49
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 17:48
Barium	**11**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 17:48
Cadmium	**0.051**	J	**0.050**	**2.0**	**µg/L**	1	3/30/2017 17:48
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 17:48
Copper	**3.9**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 17:48
Hardness (Calculation)	**390,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 17:48
Iron	**31**	J	**4.6**	**80**	**µg/L**	1	3/30/2017 17:48
Lead	U		0.33	5.0	µg/L	1	3/30/2017 17:48
Manganese	**290**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 17:48
Potassium	**1,300**		**17**	**200**	**µg/L**	1	3/30/2017 17:48
Selenium	**2.9**	J	**0.90**	**5.0**	**µg/L**	1	3/30/2017 17:48
Silver	U		0.050	5.0	µg/L	1	3/30/2017 17:48
Zinc	**6.6**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 17:48
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**6,100**		**240**	**500**	**µg/L**	5	3/24/2017 23:13
Sulfate	**58,000**		**2,000**	**5,000**	**µg/L**	5	3/24/2017 23:13

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 3/23/2017 02:58 PM

Work Order: 17031397
Lab ID: 17031397-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**		Prep: E1631E / 3/28/17			Analyst: **LR**
Mercury	**0.0020**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 14:23
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**		Prep: SW3005A / 3/30/17			Analyst: **RH**
Aluminum	**88**		**4.2**	**10**	**µg/L**	1	3/31/2017 17:05
Arsenic	**3.8**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 17:54
Barium	**58**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 17:54
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 17:54
Chromium	**0.74**	J	**0.65**	**5.0**	**µg/L**	1	3/30/2017 17:54
Copper	**4.0**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 17:54
Hardness (Calculation)	**270,000**		**240**	**2,000**	**µg/L**	1	3/30/2017 17:54
Iron	**5,100**		**4.6**	**80**	**µg/L**	1	3/30/2017 17:54
Lead	**0.62**	J	**0.33**	**5.0**	**µg/L**	1	3/30/2017 17:54
Manganese	**420**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 17:54
Potassium	**2,800**		**17**	**200**	**µg/L**	1	3/30/2017 17:54
Selenium	**0.95**	J	**0.90**	**5.0**	**µg/L**	1	3/30/2017 17:54
Silver	U		0.050	5.0	µg/L	1	3/30/2017 17:54
Zinc	**49**		**1.4**	**10**	**µg/L**	1	3/30/2017 17:54
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**210**		**48**	**100**	**µg/L**	1	3/24/2017 23:33
Sulfate	**29,000**		**2,000**	**5,000**	**µg/L**	5	3/24/2017 23:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 3/23/2017 03:00 PM

Work Order: 17031397
Lab ID: 17031397-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00029**	J	**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 14:39
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**9.6**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 17:11
Arsenic	**2.3**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 18:19
Barium	**160**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 18:19
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 18:19
Chromium	**0.72**	J	**0.65**	**5.0**	**µg/L**	1	3/30/2017 18:19
Copper	**0.47**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 18:19
Hardness (Calculation)	**520,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 17:11
Iron	**16,000**		**4.6**	**80**	**µg/L**	1	3/30/2017 18:19
Lead	U		0.33	5.0	µg/L	1	3/30/2017 18:19
Manganese	**610**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 18:19
Potassium	**3,800**		**17**	**200**	**µg/L**	1	3/30/2017 18:19
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 18:19
Silver	U		0.050	5.0	µg/L	1	3/30/2017 18:19
Zinc	**3.8**	J	**1.4**	**10**	**µg/L**	1	3/30/2017 18:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**82**	J	**48**	**100**	**µg/L**	1	3/25/2017 00:13
Sulfate	**40,000**		**4,100**	**10,000**	**µg/L**	10	3/25/2017 01:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 3/23/2017 05:20 PM

Work Order: 17031397
Lab ID: 17031397-12
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.0097**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 14:47
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**88**		**4.2**	**10**	**µg/L**	1	3/31/2017 17:17
Arsenic	**2.4**	J	**0.87**	**5.0**	**µg/L**	1	3/30/2017 18:25
Barium	**6.5**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 18:25
Cadmium	**0.059**	J	**0.050**	**2.0**	**µg/L**	1	3/30/2017 18:25
Chromium	**1.0**	J	**0.65**	**5.0**	**µg/L**	1	3/30/2017 18:25
Copper	**4.8**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 18:25
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 17:17
Iron	**2,900**		**4.6**	**80**	**µg/L**	1	3/30/2017 18:25
Lead	**0.50**	J	**0.33**	**5.0**	**µg/L**	1	3/30/2017 18:25
Manganese	**61**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 18:25
Potassium	**480**		**17**	**200**	**µg/L**	1	3/30/2017 18:25
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 18:25
Silver	U		0.050	5.0	µg/L	1	3/30/2017 18:25
Zinc	**17**		**1.4**	**10**	**µg/L**	1	3/30/2017 18:25
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/25/2017 01:34
Sulfate	**40,000**		**2,000**	**5,000**	**µg/L**	5	3/25/2017 01:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 3/23/2017 05:11 PM

Work Order: 17031397
Lab ID: 17031397-13
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	3/28/2017 14:54
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/30/17		Analyst: **RH**
Aluminum	**15**		**4.2**	**10**	**µg/L**	1	3/31/2017 17:23
Arsenic	**5.6**		**0.87**	**5.0**	**µg/L**	1	3/30/2017 18:31
Barium	**17**		**2.2**	**5.0**	**µg/L**	1	3/30/2017 18:31
Cadmium	U		0.050	2.0	µg/L	1	3/30/2017 18:31
Chromium	U		0.65	5.0	µg/L	1	3/30/2017 18:31
Copper	**0.87**	J	**0.28**	**5.0**	**µg/L**	1	3/30/2017 18:31
Hardness (Calculation)	**150,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 17:23
Iron	**5,400**		**4.6**	**80**	**µg/L**	1	3/30/2017 18:31
Lead	U		0.33	5.0	µg/L	1	3/30/2017 18:31
Manganese	**200**		**0.51**	**5.0**	**µg/L**	1	3/30/2017 18:31
Potassium	**1,000**		**17**	**200**	**µg/L**	1	3/30/2017 18:31
Selenium	U		0.90	5.0	µg/L	1	3/30/2017 18:31
Silver	U		0.050	5.0	µg/L	1	3/30/2017 18:31
Zinc	**21**		**1.4**	**10**	**µg/L**	1	3/30/2017 18:31
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/25/2017 02:15
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	3/25/2017 02:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc

Work Order: 17031397

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99825** Instrument ID **HG3** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 12:42 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346378**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK2	Sample ID: **MBLK2-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 01:36 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346385**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK3	Sample ID: **MBLK3-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 02:31 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346392**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MS	Sample ID: **17031397-06BMS**				Units: **ng/L**			Analysis Date: **3/28/2017 01:44 PM**			
Client ID: **MW-6D**	Run ID: **HG3_170328A**				SeqNo: **4346386**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.18	0.50	5	0.03	103	71-125	0				

MS	Sample ID: **17031435-05BMS**				Units: **ng/L**			Analysis Date: **3/28/2017 03:49 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346402**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.99	0.50	5	0.51	110	71-125	0				

MSD	Sample ID: **17031397-06BMSD**				Units: **ng/L**			Analysis Date: **3/28/2017 01:52 PM**			
Client ID: **MW-6D**	Run ID: **HG3_170328A**				SeqNo: **4346387**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.21	0.50	5	0.03	104	71-125	5.18	0.577	24		

MSD	Sample ID: **17031435-05BMSD**				Units: **ng/L**			Analysis Date: **3/28/2017 03:57 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346403**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.81	0.50	5	0.51	106	71-125	5.99	3.05	24		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031397
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99825** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-99825-99825** Units: **ng/L** Analysis Date: **3/28/2017 12:26 PM**
Client ID: Run ID: **HG3_170328A** SeqNo: **4346376** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.35	0.50	5	0	107	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-99825-99825** Units: **ng/L** Analysis Date: **3/28/2017 04:12 PM**
Client ID: Run ID: **HG3_170328A** SeqNo: **4346405** Prep Date: **3/28/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.2	0.50	5	0	104	77-123	0			

The following samples were analyzed in this batch:

17031397-01B	17031397-02B	17031397-03B
17031397-04B	17031397-05B	17031397-06B
17031397-07B	17031397-08B	17031397-09B
17031397-10B	17031397-11B	17031397-12B
17031397-13B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031397
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99955** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-99955-99955** Units: **mg/L** Analysis Date: **3/30/2017 03:39 PM**
Client ID: Run ID: **ICPMS1_170330A** SeqNo: **4351092** Prep Date: **3/30/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	0.001141	0.0050								J
Hardness (Calculation)	U	2.0								
Iron	0.04018	0.080								J
Lead	U	0.0050								
Manganese	0.0005639	0.0050								J
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	0.003525	0.010								J

MBLK Sample ID: **MBLK-99955-99955** Units: **mg/L** Analysis Date: **3/31/2017 02:07 PM**
Client ID: Run ID: **ICPMS1_170331A** SeqNo: **4352306** Prep Date: **3/30/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.005215	0.010								J

LCS Sample ID: **LCS-99955-99955** Units: **mg/L** Analysis Date: **3/31/2017 02:14 PM**
Client ID: Run ID: **ICPMS1_170331A** SeqNo: **4352307** Prep Date: **3/30/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1058	0.0050	0.1	0	106	80-120	0			
Barium	0.1013	0.0050	0.1	0	101	80-120	0			
Cadmium	0.1047	0.0020	0.1	0	105	80-120	0			
Chromium	0.1045	0.0050	0.1	0	104	80-120	0			
Copper	0.1077	0.0050	0.1	0	108	80-120	0			
Iron	10.64	0.080	10	0	106	80-120	0			
Lead	0.1016	0.0050	0.1	0	102	80-120	0			
Manganese	0.104	0.0050	0.1	0	104	80-120	0			
Potassium	10.16	0.20	10	0	102	80-120	0			
Selenium	0.1069	0.0050	0.1	0	107	80-120	0			
Silver	0.1011	0.0050	0.1	0	101	80-120	0			
Zinc	0.1114	0.010	0.1	0	111	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031397
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99955** Instrument ID **ICPMS1** Method: **SW6020A**

LCS Sample ID: **LCS-99955-99955** Units: **mg/L** Analysis Date: **3/31/2017 05:29 PM**
Client ID: Run ID: **ICPMS1_170331A** SeqNo: **4352750** Prep Date: **3/30/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1033	0.010	0.1	0	103	80-120	0			

MS Sample ID: **17031397-06AMS** Units: **mg/L** Analysis Date: **3/30/2017 05:24 PM**
Client ID: **MW-6D** Run ID: **ICPMS1_170330A** SeqNo: **4351115** Prep Date: **3/30/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1079	0.010	0.1	0.002796	105	75-125	0			
Arsenic	0.1044	0.0050	0.1	0.004796	99.6	75-125	0			
Barium	0.2246	0.0050	0.1	0.1258	98.8	75-125	0			
Cadmium	0.09222	0.0020	0.1	-2.651E-05	92.2	75-125	0			
Chromium	0.0983	0.0050	0.1	0.0002167	98.1	75-125	0			
Copper	0.09477	0.0050	0.1	0.0006566	94.1	75-125	0			
Iron	17.84	0.080	10	7.96	98.8	75-125	0			
Lead	0.09744	0.0050	0.1	0.0002314	97.2	75-125	0			
Manganese	0.4013	0.0050	0.1	0.2974	104	75-125	0			
Potassium	11.98	0.20	10	2.102	98.8	75-125	0			
Selenium	0.101	0.0050	0.1	0.0002917	101	75-125	0			
Silver	0.09249	0.0050	0.1	0.00001572	92.5	75-125	0			
Zinc	0.09629	0.010	0.1	0.006721	89.6	75-125	0			

MSD Sample ID: **17031397-06AMSD** Units: **mg/L** Analysis Date: **3/30/2017 05:30 PM**
Client ID: **MW-6D** Run ID: **ICPMS1_170330A** SeqNo: **4351116** Prep Date: **3/30/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1099	0.010	0.1	0.002796	107	75-125	0.1079	1.84	20	
Arsenic	0.1076	0.0050	0.1	0.004796	103	75-125	0.1044	3.02	20	
Barium	0.2341	0.0050	0.1	0.1258	108	75-125	0.2246	4.14	20	
Cadmium	0.0991	0.0020	0.1	-2.651E-05	99.1	75-125	0.09222	7.19	20	
Chromium	0.1035	0.0050	0.1	0.0002167	103	75-125	0.0983	5.15	20	
Copper	0.09859	0.0050	0.1	0.0006566	97.9	75-125	0.09477	3.95	20	
Iron	18.48	0.080	10	7.96	105	75-125	17.84	3.52	20	
Lead	0.1028	0.0050	0.1	0.0002314	103	75-125	0.09744	5.35	20	
Manganese	0.4118	0.0050	0.1	0.2974	114	75-125	0.4013	2.58	20	
Potassium	12.76	0.20	10	2.102	107	75-125	11.98	6.31	20	
Selenium	0.1024	0.0050	0.1	0.0002917	102	75-125	0.101	1.38	20	
Silver	0.09673	0.0050	0.1	0.00001572	96.7	75-125	0.09249	4.48	20	
Zinc	0.0997	0.010	0.1	0.006721	93	75-125	0.09629	3.48	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031397
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99955** Instrument ID **ICPMS1** Method: **SW6020A**

The following samples were analyzed in this batch:

17031397-01A	17031397-02A	17031397-03A
17031397-04A	17031397-05A	17031397-06A
17031397-07A	17031397-08A	17031397-09A
17031397-10A	17031397-11A	17031397-12A
17031397-13A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031397
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R208469** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R208469** Units: **mg/L** Analysis Date: **3/24/2017 04:28 PM**
Client ID: Run ID: **IC3_170324A** SeqNo: **4341958** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R208469** Units: **mg/L** Analysis Date: **3/24/2017 04:48 PM**
Client ID: Run ID: **IC3_170324A** SeqNo: **4341959** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.915	0.10	2	0	95.7	81-116	0			
Sulfate	10.03	1.0	10	0	100	85-110	0			

MS Sample ID: **17031397-06C MS** Units: **mg/L** Analysis Date: **3/24/2017 08:11 PM**
Client ID: **MW-6D** Run ID: **IC3_170324A** SeqNo: **4341969** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	98.24	5.0	100	0	98.2	75-125	0			
Sulfate	777	50	500	241.9	107	75-125	0			

MSD Sample ID: **17031397-06C MSD** Units: **mg/L** Analysis Date: **3/24/2017 09:11 PM**
Client ID: **MW-6D** Run ID: **IC3_170324A** SeqNo: **4341972** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	99.48	5.0	100	0	99.5	75-125	98.24	1.26	20	
Sulfate	768	50	500	241.9	105	75-125	777	1.16	20	

The following samples were analyzed in this batch:

17031397-01C	17031397-02C	17031397-03C
17031397-04C	17031397-05C	17031397-06C
17031397-07C	17031397-08C	17031397-09C
17031397-10C	17031397-11C	17031397-12C
17031397-13C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031397
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R208889** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R208889** Units: **mg/L** Analysis Date: **3/30/2017 07:45 AM**
Client ID: Run ID: **IC3_170330A** SeqNo: **4351478** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	1.0								

LCS Sample ID: **LCS-R208889** Units: **mg/L** Analysis Date: **3/30/2017 08:06 AM**
Client ID: Run ID: **IC3_170330A** SeqNo: **4351479** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	10.03	1.0	10	0	100	85-110	0			

MS Sample ID: **17031373-03C MS** Units: **mg/L** Analysis Date: **3/30/2017 02:56 PM**
Client ID: Run ID: **IC3_170330A** SeqNo: **4351488** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	152.7	10	100	50.6	102	75-125	0			

MSD Sample ID: **17031373-03C MSD** Units: **mg/L** Analysis Date: **3/30/2017 03:17 PM**
Client ID: Run ID: **IC3_170330A** SeqNo: **4351489** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	156	10	100	50.6	105	75-125	152.7	2.14	20	

The following samples were analyzed in this batch: 17031397-02C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 2

COC ID: 43327

ALS Project Manager:

ALS Work Order #: 1703197

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K
Work Order		Project Number		B	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (dissolved)
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To		Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	MS / MSD
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-8S	3/23/17	0852	W	None, HNO_3	6	X	X	X	X							
2	MW-8D		0856				X										
3	MW-7S		1007					X									
4	MW-7D		1002				X										
5	MW-6S		1117														
6	MW-6D + MS/MSD		1130			12						X					
7	MW-5S		1335			6											
8	MW-5D		1345			6											
9	DUP_04		=			6											
10	MW-4S		1458			6	X	X									

Sampler(s) Please Print & Sign: Jenna Sharkey, John Dinkgrave

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: Jenna Sharkey	Date: 3/23/17	Time: 18:30	Received by:	Notes:
Relinquished by:	Date: 3/24/17	Time: ~~1455~~ 1332	Received by (Laboratory):	
Logged by (Laboratory): KW	Date: 3/24/17	Time: 1425	Checked by (Laboratory):	

Cooler ID	Cooler Temp
SR2	3.6°C
PH5	2.8°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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South Charleston, WV +1 304 356 3168
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

Chain of Custody Form

Page 2 of 2

COC ID: 43328

ALS Project Manager:

ALS Work Order #: 1703139-7

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K
Work Order		Project Number		B	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - Field Filtered)
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To		Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	MW-4D	3/23/17	1500	W	None, HNO3	6	X	X	X	X							
12	BG-1S	↓	1720	↓	↓	↓	X	X	↓	↓							
13	BG-1D	↓	1711	↓	↓	↓	X	X	↓	↓							
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Jenna Sharkey, John Chmielewski

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: Jenna Sharkey	Date: 3/23/17	Time: 1530	Received by:	
Relinquished by:	Date: 3/24/17	Time: 1332	Received by (Laboratory):	
Logged by (Laboratory): KL	Date: 3/24/17	Time: 1425	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **24-Mar-17 13:32**

Work Order: **17031397** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 24-Mar-17 (Date) Reviewed by: Alex Csaszar (eSignature) 24-Mar-17 (Date)

Matrices: Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.6/3.6, 2.8/2.8 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/24/2017 2:40:09 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

03-Apr-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **17031435**

Dear Marty,

ALS Environmental received 6 samples on 25-Mar-2017 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 18.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: IN: C-MI-08

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **17031435**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17031435-01	MW-3S	Water		3/24/2017 09:15	3/25/2017 10:00	☐
17031435-02	MW-3D	Water		3/24/2017 09:10	3/25/2017 10:00	☐
17031435-03	MW-2S	Water		3/24/2017 10:54	3/25/2017 10:00	☐
17031435-04	MW-2D	Water		3/24/2017 10:53	3/25/2017 10:00	☐
17031435-05	MW-1S	Water		3/23/2017 16:30	3/25/2017 10:00	☐
17031435-06	MW-1D	Water		3/23/2017 16:31	3/25/2017 10:00	☐

ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **17031435**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 17031435

Case Narrative

Samples for the above noted Work Order were received on 3/25/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 3/24/2017 09:15 AM

Work Order: 17031435
Lab ID: 17031435-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00065**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 15:02
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/31/17		Analyst: **RH**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	3/31/2017 19:53
Arsenic	**3.3**	J	**0.87**	**5.0**	**µg/L**	1	3/31/2017 19:53
Barium	**25**		**2.2**	**5.0**	**µg/L**	1	3/31/2017 19:53
Cadmium	U		0.050	2.0	µg/L	1	3/31/2017 19:53
Chromium	U		0.65	5.0	µg/L	1	3/31/2017 19:53
Copper	**1.6**	J	**0.28**	**5.0**	**µg/L**	1	3/31/2017 19:53
Hardness (Calculation)	**240,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 19:53
Iron	**7,400**		**4.6**	**80**	**µg/L**	1	3/31/2017 19:53
Lead	U		0.33	5.0	µg/L	1	3/31/2017 19:53
Manganese	**870**		**0.51**	**5.0**	**µg/L**	1	3/31/2017 19:53
Potassium	**640**		**17**	**200**	**µg/L**	1	3/31/2017 19:53
Selenium	U		0.90	5.0	µg/L	1	3/31/2017 19:53
Silver	U		0.050	5.0	µg/L	1	3/31/2017 19:53
Zinc	**2.2**	J	**1.4**	**10**	**µg/L**	1	3/31/2017 19:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**62**	J	**48**	**100**	**µg/L**	1	3/25/2017 11:44
Sulfate	**12,000**		**410**	**1,000**	**µg/L**	1	3/25/2017 11:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 3/24/2017 09:10 AM

Work Order: 17031435
Lab ID: 17031435-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00022**	J	**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 15:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/31/17		Analyst: **RH**
Aluminum	**5.5**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 19:58
Arsenic	**8.0**		**0.87**	**5.0**	**µg/L**	1	3/31/2017 19:58
Barium	**140**		**2.2**	**5.0**	**µg/L**	1	3/31/2017 19:58
Cadmium	U		0.050	2.0	µg/L	1	3/31/2017 19:58
Chromium	U		0.65	5.0	µg/L	1	3/31/2017 19:58
Copper	U		0.28	5.0	µg/L	1	3/31/2017 19:58
Hardness (Calculation)	**390,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 19:58
Iron	**8,800**		**4.6**	**80**	**µg/L**	1	3/31/2017 19:58
Lead	U		0.33	5.0	µg/L	1	3/31/2017 19:58
Manganese	**520**		**0.51**	**5.0**	**µg/L**	1	3/31/2017 19:58
Potassium	**4,700**		**17**	**200**	**µg/L**	1	3/31/2017 19:58
Selenium	U		0.90	5.0	µg/L	1	3/31/2017 19:58
Silver	U		0.050	5.0	µg/L	1	3/31/2017 19:58
Zinc	**1.6**	J	**1.4**	**10**	**µg/L**	1	3/31/2017 19:58
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/25/2017 12:04
Sulfate	**440**	J	**410**	**1,000**	**µg/L**	1	3/25/2017 12:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 3/24/2017 10:54 AM

Work Order: 17031435
Lab ID: 17031435-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.0011**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 15:18
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/31/17		Analyst: **RH**
Aluminum	**49**		**4.2**	**10**	**µg/L**	1	3/31/2017 20:03
Arsenic	**5.8**		**0.87**	**5.0**	**µg/L**	1	3/31/2017 20:03
Barium	**35**		**2.2**	**5.0**	**µg/L**	1	3/31/2017 20:03
Cadmium	U		0.050	2.0	µg/L	1	3/31/2017 20:03
Chromium	U		0.65	5.0	µg/L	1	3/31/2017 20:03
Copper	**1.4**	J	**0.28**	**5.0**	**µg/L**	1	3/31/2017 20:03
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 20:03
Iron	**7,200**		**4.6**	**80**	**µg/L**	1	3/31/2017 20:03
Lead	**0.77**	J	**0.33**	**5.0**	**µg/L**	1	3/31/2017 20:03
Manganese	**120**		**0.51**	**5.0**	**µg/L**	1	3/31/2017 20:03
Potassium	**2,300**		**17**	**200**	**µg/L**	1	3/31/2017 20:03
Selenium	U		0.90	5.0	µg/L	1	3/31/2017 20:03
Silver	U		0.050	5.0	µg/L	1	3/31/2017 20:03
Zinc	**2.3**	J	**1.4**	**10**	**µg/L**	1	3/31/2017 20:03
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**430**		**48**	**100**	**µg/L**	1	3/25/2017 12:25
Sulfate	**16,000**		**410**	**1,000**	**µg/L**	1	3/25/2017 12:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 3/24/2017 10:53 AM

Work Order: 17031435
Lab ID: 17031435-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	3/28/2017 15:33
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: SW3005A / 3/31/17		Analyst: **RH**
Aluminum	**5.7**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 20:08
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	3/31/2017 20:08
Barium	**70**		**2.2**	**5.0**	**µg/L**	1	3/31/2017 20:08
Cadmium	U		0.050	2.0	µg/L	1	3/31/2017 20:08
Chromium	U		0.65	5.0	µg/L	1	3/31/2017 20:08
Copper	**0.47**	J	**0.28**	**5.0**	**µg/L**	1	3/31/2017 20:08
Hardness (Calculation)	**270,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 20:08
Iron	**2,800**		**4.6**	**80**	**µg/L**	1	3/31/2017 20:08
Lead	U		0.33	5.0	µg/L	1	3/31/2017 20:08
Manganese	**1,800**		**5.1**	**50**	**µg/L**	10	4/3/2017 13:20
Potassium	**2,800**		**17**	**200**	**µg/L**	1	3/31/2017 20:08
Selenium	U		0.90	5.0	µg/L	1	3/31/2017 20:08
Silver	U		0.050	5.0	µg/L	1	3/31/2017 20:08
Zinc	**2.0**	J	**1.4**	**10**	**µg/L**	1	3/31/2017 20:08
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	3/25/2017 12:45
Sulfate	U		410	1,000	µg/L	1	3/25/2017 12:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1S
Collection Date: 3/23/2017 04:30 PM

Work Order: 17031435
Lab ID: 17031435-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00051**		**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 15:41
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/31/17		Analyst: **RH**
Aluminum	**5.3**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 20:39
Arsenic	U		0.87	5.0	µg/L	1	3/31/2017 20:39
Barium	**20**		**2.2**	**5.0**	**µg/L**	1	3/31/2017 20:39
Cadmium	U		0.050	2.0	µg/L	1	3/31/2017 20:39
Chromium	U		0.65	5.0	µg/L	1	3/31/2017 20:39
Copper	**1.4**	J	**0.28**	**5.0**	**µg/L**	1	3/31/2017 20:39
Hardness (Calculation)	**280,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 20:39
Iron	**100**		**4.6**	**80**	**µg/L**	1	3/31/2017 20:39
Lead	U		0.33	5.0	µg/L	1	3/31/2017 20:39
Manganese	**59**		**0.51**	**5.0**	**µg/L**	1	3/31/2017 20:39
Potassium	**2,100**		**17**	**200**	**µg/L**	1	3/31/2017 20:39
Selenium	**2.0**	J	**0.90**	**5.0**	**µg/L**	1	3/31/2017 20:39
Silver	U		0.050	5.0	µg/L	1	3/31/2017 20:39
Zinc	**1.9**	J	**1.4**	**10**	**µg/L**	1	3/31/2017 20:39
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**1,400**		**48**	**100**	**µg/L**	1	3/25/2017 13:05
Sulfate	**41,000**		**2,000**	**5,000**	**µg/L**	5	3/25/2017 13:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Apr-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 3/23/2017 04:31 PM

Work Order: 17031435
Lab ID: 17031435-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 3/28/17		Analyst: **LR**
Mercury	**0.00024**	J	**0.00020**	**0.00050**	**µg/L**	1	3/28/2017 16:05
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 3/31/17		Analyst: **RH**
Aluminum	**4.6**	J	**4.2**	**10**	**µg/L**	1	3/31/2017 20:44
Arsenic	U		0.87	5.0	µg/L	1	3/31/2017 20:44
Barium	**73**		**2.2**	**5.0**	**µg/L**	1	3/31/2017 20:44
Cadmium	U		0.050	2.0	µg/L	1	3/31/2017 20:44
Chromium	U		0.65	5.0	µg/L	1	3/31/2017 20:44
Copper	**0.50**	J	**0.28**	**5.0**	**µg/L**	1	3/31/2017 20:44
Hardness (Calculation)	**320,000**		**240**	**2,000**	**µg/L**	1	3/31/2017 20:44
Iron	**5,700**		**4.6**	**80**	**µg/L**	1	3/31/2017 20:44
Lead	U		0.33	5.0	µg/L	1	3/31/2017 20:44
Manganese	**890**		**0.51**	**5.0**	**µg/L**	1	3/31/2017 20:44
Potassium	**2,400**		**17**	**200**	**µg/L**	1	3/31/2017 20:44
Selenium	U		0.90	5.0	µg/L	1	3/31/2017 20:44
Silver	U		0.050	5.0	µg/L	1	3/31/2017 20:44
Zinc	**2.3**	J	**1.4**	**10**	**µg/L**	1	3/31/2017 20:44
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**98**	J	**48**	**100**	**µg/L**	1	3/25/2017 13:46
Sulfate	**1,100**		**410**	**1,000**	**µg/L**	1	3/25/2017 13:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 03-Apr-17

Client: ERM, Inc

Work Order: 17031435

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99825** Instrument ID **HG3** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 12:42 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346378**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK2	Sample ID: **MBLK2-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 01:36 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346385**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MBLK3	Sample ID: **MBLK3-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 02:31 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346392**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	U	0.50	0	0	0		0				

MS	Sample ID: **17031397-06BMS**				Units: **ng/L**			Analysis Date: **3/28/2017 01:44 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346386**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.18	0.50	5	0.03	103	71-125	0				

MS	Sample ID: **17031435-05BMS**				Units: **ng/L**			Analysis Date: **3/28/2017 03:49 PM**			
Client ID: **MW-1S**	Run ID: **HG3_170328A**				SeqNo: **4346402**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.99	0.50	5	0.51	110	71-125	0				

MSD	Sample ID: **17031397-06BMSD**				Units: **ng/L**			Analysis Date: **3/28/2017 01:52 PM**			
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346387**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.21	0.50	5	0.03	104	71-125	5.18	0.577	24		

MSD	Sample ID: **17031435-05BMSD**				Units: **ng/L**			Analysis Date: **3/28/2017 03:57 PM**			
Client ID: **MW-1S**	Run ID: **HG3_170328A**				SeqNo: **4346403**			Prep Date: **3/28/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	5.81	0.50	5	0.51	106	71-125	5.99	3.05	24		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031435
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **99825** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START	Sample ID: **OPR-START-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 12:26 PM**		
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346376**			Prep Date: **3/28/2017**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.35	0.50	5	0	107	77-123	0			

LCS-OPR-END	Sample ID: **OPR-END-99825-99825**				Units: **ng/L**			Analysis Date: **3/28/2017 04:12 PM**		
Client ID:	Run ID: **HG3_170328A**				SeqNo: **4346405**			Prep Date: **3/28/2017**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.2	0.50	5	0	104	77-123	0			

The following samples were analyzed in this batch:

17031435-01B	17031435-02B	17031435-03B
17031435-04B	17031435-05B	17031435-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031435
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **100011** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-100011-100011** Units: **mg/L** Analysis Date: **3/31/2017 07:43 PM**
Client ID: Run ID: **ICPMS2_170331A** SeqNo: **4352660** Prep Date: **3/31/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	0.03434	0.20								J
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-100011-100011** Units: **mg/L** Analysis Date: **3/31/2017 07:48 PM**
Client ID: Run ID: **ICPMS2_170331A** SeqNo: **4352661** Prep Date: **3/31/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1199	0.010	0.1	0	120	80-120	0			
Arsenic	0.09276	0.0050	0.1	0	92.8	80-120	0			
Barium	0.09336	0.0050	0.1	0	93.4	80-120	0			
Cadmium	0.09239	0.0020	0.1	0	92.4	80-120	0			
Chromium	0.09073	0.0050	0.1	0	90.7	80-120	0			
Copper	0.09592	0.0050	0.1	0	95.9	80-120	0			
Hardness (Calculation)	66.03	2.0	66.15	0	99.8	80-120	0			
Iron	9.332	0.080	10	0	93.3	80-120	0			
Lead	0.09473	0.0050	0.1	0	94.7	80-120	0			
Manganese	0.09804	0.0050	0.1	0	98	80-120	0			
Potassium	9.901	0.20	10	0	99	80-120	0			
Selenium	0.08956	0.0050	0.1	0	89.6	80-120	0			
Silver	0.09009	0.0050	0.1	0	90.1	80-120	0			
Zinc	0.09556	0.010	0.1	0	95.6	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031435
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **100011** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **17031435-04AMS** Units: **mg/L** Analysis Date: **3/31/2017 08:14 PM**
Client ID: **MW-2D** Run ID: **ICPMS2_170331A** SeqNo: **4352666** Prep Date: **3/31/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1205	0.010	0.1	0.005723	115	75-125	0			
Arsenic	0.09799	0.0050	0.1	0.001094	96.9	75-125	0			
Barium	0.167	0.0050	0.1	0.07005	97	75-125	0			
Cadmium	0.09705	0.0020	0.1	-5.325E-06	97.1	75-125	0			
Chromium	0.09495	0.0050	0.1	0.0002299	94.7	75-125	0			
Copper	0.09708	0.0050	0.1	0.0004668	96.6	75-125	0			
Iron	12.36	0.080	10	2.772	95.9	75-125	0			
Lead	0.1004	0.0050	0.1	-2.969E-05	100	75-125	0			
Potassium	12.93	0.20	10	2.842	101	75-125	0			
Selenium	0.09299	0.0050	0.1	0.00003557	93	75-125	0			
Silver	0.0906	0.0050	0.1	-7.975E-06	90.6	75-125	0			
Zinc	0.09681	0.010	0.1	0.001951	94.9	75-125	0			

MS Sample ID: **17031435-04AMS** Units: **mg/L** Analysis Date: **4/3/2017 01:26 PM**
Client ID: **MW-2D** Run ID: **ICPMS2_170403A** SeqNo: **4353732** Prep Date: **3/31/2017** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Manganese	1.929	0.050	0.1	1.754	175	75-125	0			SO

MSD Sample ID: **17031435-04AMSD** Units: **mg/L** Analysis Date: **3/31/2017 08:34 PM**
Client ID: **MW-2D** Run ID: **ICPMS2_170331A** SeqNo: **4352670** Prep Date: **3/31/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1248	0.010	0.1	0.005723	119	75-125	0.1205	3.51	20	
Arsenic	0.1023	0.0050	0.1	0.001094	101	75-125	0.09799	4.3	20	
Barium	0.1703	0.0050	0.1	0.07005	100	75-125	0.167	1.96	20	
Cadmium	0.1005	0.0020	0.1	-5.325E-06	101	75-125	0.09705	3.49	20	
Chromium	0.09861	0.0050	0.1	0.0002299	98.4	75-125	0.09495	3.78	20	
Copper	0.1009	0.0050	0.1	0.0004668	100	75-125	0.09708	3.86	20	
Iron	12.6	0.080	10	2.772	98.3	75-125	12.36	1.92	20	
Lead	0.1042	0.0050	0.1	-2.969E-05	104	75-125	0.1004	3.71	20	
Potassium	13.2	0.20	10	2.842	104	75-125	12.93	2.07	20	
Selenium	0.09622	0.0050	0.1	0.00003557	96.2	75-125	0.09299	3.41	20	
Silver	0.09385	0.0050	0.1	-7.975E-06	93.9	75-125	0.0906	3.52	20	
Zinc	0.1003	0.010	0.1	0.001951	98.3	75-125	0.09681	3.54	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031435
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **100011** Instrument ID **ICPMS2** Method: **SW6020A**

MSD Sample ID: **17031435-04AMSD** Units: **mg/L** Analysis Date: **4/3/2017 01:31 PM**
Client ID: **MW-2D** Run ID: **ICPMS2_170403A** SeqNo: **4353733** Prep Date: **3/31/2017** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Manganese	1.942	0.050	0.1	1.754	188	75-125	1.929	0.672	20	SO

The following samples were analyzed in this batch:

17031435-01A	17031435-02A	17031435-03A
17031435-04A	17031435-05A	17031435-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17031435
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R208495** Instrument ID **IC3** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R208495** Units: **mg/L** Analysis Date: **3/25/2017 08:45 AM**
Client ID: Run ID: **IC3_170325A** SeqNo: **4342376** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R208495** Units: **mg/L** Analysis Date: **3/25/2017 09:06 AM**
Client ID: Run ID: **IC3_170325A** SeqNo: **4342377** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.97	0.10	2	0	98.5	81-116	0			
Sulfate	10.26	1.0	10	0	103	85-110	0			

MS Sample ID: **17031435-01C MS** Units: **mg/L** Analysis Date: **3/25/2017 02:06 PM**
Client ID: **MW-3S** Run ID: **IC3_170325A** SeqNo: **4342385** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.661	0.50	10	0.0617	96	75-125	0			
Sulfate	64.24	5.0	50	11.95	105	75-125	0			

MSD Sample ID: **17031435-01C MSD** Units: **mg/L** Analysis Date: **3/25/2017 02:26 PM**
Client ID: **MW-3S** Run ID: **IC3_170325A** SeqNo: **4342386** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.583	0.50	10	0.0617	95.2	75-125	9.661	0.811	20	
Sulfate	63.9	5.0	50	11.95	104	75-125	64.24	0.534	20	

The following samples were analyzed in this batch:

17031435-01C	17031435-02C	17031435-03C
17031435-04C	17031435-05C	17031435-06C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 43331

ALS Project Manager:

ALS Work Order #: 1703435

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K
Work Order		Project Number		B	Ag, Al, As, Ba, Cd, Cr, Cu, K, Fe, Pb, Se, Zn, K (diss - field filtered)
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Hg (1631E)
Send Report To		Invoice Attn	Debra Moss/Accounts Payable	D	SO4, NO3
Address	8425 Woodfield Crossing Blvd Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-3S	3/24/17	0915	W	None; HNO_3	7	X		X	X							
2	MW-3D		0910			7	X		X	X							
3	MW-~~11~~6 2S		1054			6	X		X	X							
4	MW-~~11~~20 2D		1053			7		X	X	X							
5	MW-1S	3/23/17	1630			7	X		X	X							
6	MW-1D	3/23/17	1631			7	X		X	X							
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Jenna Sharkey

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☒ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Jenna Sharkey	3/24/17	11:53	
	3/24/17	14:15	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
	3/25/17	1030	3/25/17 1000

Notes:

Cooler ID	Cooler Temp
SR2	1.8°C
P45	

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **25-Mar-17 10:00**

Work Order: **17031435** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 25-Mar-17 (Date) Reviewed by: Bill Carey (eSignature) 27-Mar-17 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.8/1.8 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/25/2017 10:39:56 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

22-Jun-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1706704**

Dear Marty,

ALS Environmental received 9 samples on 13-Jun-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 21.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 998501

ALS Group, USA

Date: 22-Jun-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1706704**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1706704-01	MW-8D	Water		6/12/2017 13:50	6/13/2017 09:30	☐
1706704-02	MW-8S	Water		6/12/2017 13:30	6/13/2017 09:30	☐
1706704-03	MW-7D	Water		6/12/2017 14:55	6/13/2017 09:30	☐
1706704-04	MW-7S	Water		6/12/2017 14:45	6/13/2017 09:30	☐
1706704-05	MW-6D	Water		6/12/2017 12:45	6/13/2017 09:30	☐
1706704-06	MW-6S	Water		6/12/2017 12:40	6/13/2017 09:30	☐
1706704-07	MW-5D	Water		6/12/2017 11:30	6/13/2017 09:30	☐
1706704-08	MW-5S	Water		6/12/2017 11:25	6/13/2017 09:30	☐
1706704-09	DUP-01	Water		6/12/2017	6/13/2017 09:30	☐

ALS Group, USA

Date: 22-Jun-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1706704**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 22-Jun-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1706704

Case Narrative

Samples for the above noted Work Order were received on 6/13/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 103270, Method ICP_6020_W, Sample 1706704-03AMS: The matrix spike recovery was outside of the control limit. However, the matrix spike duplicate recovery and the RPD between the MS and MSD were in control. No qualification is required for this analyte: Mn

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 6/12/2017 01:50 PM

Work Order: 1706704
Lab ID: 1706704-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 14:44
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**7.3**	J	**4.2**	**10**	**µg/L**	1	6/17/2017 22:42
Arsenic	**0.97**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 00:07
Barium	**34**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 00:07
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 00:07
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 00:07
Copper	**0.60**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 00:07
Hardness (Calculation)	**230,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 00:07
Iron	**2,100**		**4.6**	**80**	**µg/L**	1	6/17/2017 00:07
Lead	U		0.33	5.0	µg/L	1	6/17/2017 00:07
Manganese	**380**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 00:07
Potassium	**2,300**		**17**	**200**	**µg/L**	1	6/17/2017 00:07
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 00:07
Silver	U		0.050	5.0	µg/L	1	6/17/2017 00:07
Zinc	**2.1**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 00:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/13/2017 18:23
Sulfate	**23,000**		**2,000**	**5,000**	**µg/L**	5	6/13/2017 18:43

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 6/12/2017 01:30 PM

Work Order: 1706704
Lab ID: 1706704-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.00083**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 14:52
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**10**		**4.2**	**10**	**µg/L**	1	6/17/2017 22:47
Arsenic	**2.5**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 00:12
Barium	**19**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 00:12
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 00:12
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 00:12
Copper	**1.9**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 00:12
Hardness (Calculation)	**260,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 00:12
Iron	**14**	J	**4.6**	**80**	**µg/L**	1	6/17/2017 00:12
Lead	U		0.33	5.0	µg/L	1	6/17/2017 00:12
Manganese	U		0.51	5.0	µg/L	1	6/17/2017 00:12
Potassium	**570**		**17**	**200**	**µg/L**	1	6/17/2017 00:12
Selenium	**3.9**	J	**0.90**	**5.0**	**µg/L**	1	6/17/2017 00:12
Silver	U		0.050	5.0	µg/L	1	6/17/2017 00:12
Zinc	U		1.4	10	µg/L	1	6/17/2017 00:12
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**8,000**		**240**	**500**	**µg/L**	5	6/13/2017 19:23
Sulfate	**30,000**		**2,000**	**5,000**	**µg/L**	5	6/13/2017 19:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 6/12/2017 02:55 PM

Work Order: 1706704
Lab ID: 1706704-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 14:59
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**6.1**	J	**4.2**	**10**	**µg/L**	1	6/17/2017 22:52
Arsenic	U		0.87	5.0	µg/L	1	6/17/2017 00:32
Barium	**33**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 00:32
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 00:32
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 00:32
Copper	**0.55**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 00:32
Hardness (Calculation)	**180,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 22:52
Iron	**1,500**		**4.6**	**80**	**µg/L**	1	6/17/2017 00:32
Lead	U		0.33	5.0	µg/L	1	6/17/2017 00:32
Manganese	**220**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 00:32
Potassium	**3,000**		**17**	**200**	**µg/L**	1	6/17/2017 00:32
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 00:32
Silver	U		0.050	5.0	µg/L	1	6/17/2017 00:32
Zinc	**3.7**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 00:32
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/13/2017 19:44
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	6/13/2017 19:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 6/12/2017 02:45 PM

Work Order: 1706704
Lab ID: 1706704-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 15:23
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**13**		**4.2**	**10**	**µg/L**	1	6/17/2017 00:48
Arsenic	**3.2**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 00:48
Barium	**65**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 00:48
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 00:48
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 00:48
Copper	**0.56**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 00:48
Hardness (Calculation)	**320,000**		**2,400**	**20,000**	**µg/L**	10	6/17/2017 23:07
Iron	**8,400**		**4.6**	**80**	**µg/L**	1	6/17/2017 00:48
Lead	U		0.33	5.0	µg/L	1	6/17/2017 00:48
Manganese	**580**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 00:48
Potassium	**3,000**		**17**	**200**	**µg/L**	1	6/17/2017 00:48
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 00:48
Silver	U		0.050	5.0	µg/L	1	6/17/2017 00:48
Zinc	**2.3**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 00:48
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/13/2017 21:05
Sulfate	**13,000**		**410**	**1,000**	**µg/L**	1	6/13/2017 21:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 6/12/2017 12:45 PM

Work Order: 1706704
Lab ID: 1706704-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 15:38
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**5.8**	J	**4.2**	**10**	**µg/L**	1	6/17/2017 00:53
Arsenic	**5.1**		**0.87**	**5.0**	**µg/L**	1	6/17/2017 00:53
Barium	**63**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 00:53
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 00:53
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 00:53
Copper	**0.50**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 00:53
Hardness (Calculation)	**230,000**		**2,400**	**20,000**	**µg/L**	10	6/17/2017 23:12
Iron	**4,500**		**4.6**	**80**	**µg/L**	1	6/17/2017 00:53
Lead	U		0.33	5.0	µg/L	1	6/17/2017 00:53
Manganese	**180**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 00:53
Potassium	**1,600**		**17**	**200**	**µg/L**	1	6/17/2017 00:53
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 00:53
Silver	U		0.050	5.0	µg/L	1	6/17/2017 00:53
Zinc	**2.6**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 00:53
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/13/2017 22:46
Sulfate	**51,000**		**2,000**	**5,000**	**µg/L**	5	6/13/2017 23:06

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 6/12/2017 12:40 PM

Work Order: 1706704
Lab ID: 1706704-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.0032**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 15:46
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**26**		**4.2**	**10**	**µg/L**	1	6/17/2017 00:58
Arsenic	**1.6**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 00:58
Barium	**6.4**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 00:58
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 00:58
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 00:58
Copper	**3.9**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 00:58
Hardness (Calculation)	**290,000**		**2,400**	**20,000**	**µg/L**	10	6/17/2017 23:18
Iron	**39**	J	**4.6**	**80**	**µg/L**	1	6/17/2017 00:58
Lead	U		0.33	5.0	µg/L	1	6/17/2017 00:58
Manganese	**190**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 00:58
Potassium	**800**		**17**	**200**	**µg/L**	1	6/17/2017 00:58
Selenium	**1.9**	J	**0.90**	**5.0**	**µg/L**	1	6/17/2017 00:58
Silver	U		0.050	5.0	µg/L	1	6/17/2017 00:58
Zinc	**1.9**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 00:58
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**8,900**		**240**	**500**	**µg/L**	5	6/13/2017 23:46
Sulfate	**52,000**		**2,000**	**5,000**	**µg/L**	5	6/13/2017 23:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 6/12/2017 11:30 AM

Work Order: 1706704
Lab ID: 1706704-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 15:54
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**5.5**	J	**4.2**	**10**	**µg/L**	1	6/17/2017 01:03
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 01:03
Barium	**86**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 01:03
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 01:03
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 01:03
Copper	**0.95**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 01:03
Hardness (Calculation)	**300,000**		**2,400**	**20,000**	**µg/L**	10	6/17/2017 23:23
Iron	**3,700**		**4.6**	**80**	**µg/L**	1	6/17/2017 01:03
Lead	U		0.33	5.0	µg/L	1	6/17/2017 01:03
Manganese	**240**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 01:03
Potassium	**4,400**		**17**	**200**	**µg/L**	1	6/17/2017 01:03
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 01:03
Silver	U		0.050	5.0	µg/L	1	6/17/2017 01:03
Zinc	**4.0**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 01:03
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/14/2017 00:07
Sulfate	**58,000**		**2,000**	**5,000**	**µg/L**	5	6/14/2017 00:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5S
Collection Date: 6/12/2017 11:25 AM

Work Order: 1706704
Lab ID: 1706704-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.00061**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 16:02
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**8.3**	J	**4.2**	**10**	**µg/L**	1	6/17/2017 01:08
Arsenic	U		0.87	5.0	µg/L	1	6/17/2017 01:08
Barium	**29**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 01:08
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 01:08
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 01:08
Copper	**2.0**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 01:08
Hardness (Calculation)	**330,000**		**2,400**	**20,000**	**µg/L**	10	6/17/2017 23:28
Iron	**22**	J	**4.6**	**80**	**µg/L**	1	6/17/2017 01:08
Lead	U		0.33	5.0	µg/L	1	6/17/2017 01:08
Manganese	**79**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 01:08
Potassium	**4,600**		**17**	**200**	**µg/L**	1	6/17/2017 01:08
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 01:08
Silver	U		0.050	5.0	µg/L	1	6/17/2017 01:08
Zinc	**29**		**1.4**	**10**	**µg/L**	1	6/17/2017 01:08
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**990**		**48**	**100**	**µg/L**	1	6/14/2017 00:47
Sulfate	**89,000**		**2,000**	**5,000**	**µg/L**	5	6/14/2017 01:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *22-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP-01
Collection Date: 6/12/2017

Work Order: 1706704
Lab ID: 1706704-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.00068**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 16:10
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/17/2017 01:14
Arsenic	**2.6**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 01:14
Barium	**20**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 01:14
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 01:14
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 01:14
Copper	**2.4**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 01:14
Hardness (Calculation)	**270,000**		**2,400**	**20,000**	**µg/L**	10	6/17/2017 23:48
Iron	**21**	J	**4.6**	**80**	**µg/L**	1	6/17/2017 01:14
Lead	U		0.33	5.0	µg/L	1	6/17/2017 01:14
Manganese	U		0.51	5.0	µg/L	1	6/17/2017 01:14
Potassium	**650**		**17**	**200**	**µg/L**	1	6/17/2017 01:14
Selenium	**4.2**	J	**0.90**	**5.0**	**µg/L**	1	6/17/2017 01:14
Silver	U		0.050	5.0	µg/L	1	6/17/2017 01:14
Zinc	**2.0**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 01:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**17,000**		**480**	**1,000**	**µg/L**	10	6/14/2017 01:48
Sulfate	**62,000**		**4,100**	**10,000**	**µg/L**	10	6/14/2017 01:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **103367** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-103367-103367** Units: **ng/L** Analysis Date: **6/19/2017 02:36 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489051** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-103367-103367** Units: **ng/L** Analysis Date: **6/19/2017 03:31 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489058** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-103367-103367** Units: **ng/L** Analysis Date: **6/19/2017 04:25 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489065** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1706704-03BMS** Units: **ng/L** Analysis Date: **6/19/2017 03:07 PM**

Client ID: **MW-7D** Run ID: **HG3_170619A** SeqNo: **4489055** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.42	0.50	5	0.13	106	71-125	0			

MS Sample ID: **1706748-01AMS** Units: **ng/L** Analysis Date: **6/19/2017 04:33 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489066** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.35	0.50	5	0.78	91.4	71-125	0			

MSD Sample ID: **1706704-03BMSD** Units: **ng/L** Analysis Date: **6/19/2017 03:15 PM**

Client ID: **MW-7D** Run ID: **HG3_170619A** SeqNo: **4489056** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.65	0.50	5	0.13	110	71-125	5.42	4.16	24	

MSD Sample ID: **1706748-01AMSD** Units: **ng/L** Analysis Date: **6/19/2017 04:41 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489067** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.47	0.50	5	0.78	93.8	71-125	5.35	2.22	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706704
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103367** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-103367-103367** Units: **ng/L** Analysis Date: **6/19/2017 02:28 PM**
Client ID: Run ID: **HG3_170619A** SeqNo: **4489050** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.06	0.50	5	0	101	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-103367-103367** Units: **ng/L** Analysis Date: **6/19/2017 06:22 PM**
Client ID: Run ID: **HG3_170619A** SeqNo: **4489079** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.83	0.50	5	0	96.6	77-123	0			

The following samples were analyzed in this batch:

1706704-01B	1706704-02B	1706704-03B
1706704-04B	1706704-05B	1706704-06B
1706704-07B	1706704-08B	1706704-09B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706704
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103270** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-103270-103270** Units: **mg/L** Analysis Date: **6/16/2017 11:56 PM**
Client ID: Run ID: **ICPMS2_170616A** SeqNo: **4485425** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	0.003424	0.010								J

LCS Sample ID: **LCS-103270-103270** Units: **mg/L** Analysis Date: **6/17/2017 12:02 AM**
Client ID: Run ID: **ICPMS2_170616A** SeqNo: **4485426** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1102	0.0050	0.1	0	110	80-120	0			
Barium	0.1056	0.0050	0.1	0	106	80-120	0			
Cadmium	0.1071	0.0020	0.1	0	107	80-120	0			
Chromium	0.1067	0.0050	0.1	0	107	80-120	0			
Copper	0.1114	0.0050	0.1	0	111	80-120	0			
Iron	10.89	0.080	10	0	109	80-120	0			
Lead	0.1091	0.0050	0.1	0	109	80-120	0			
Manganese	0.111	0.0050	0.1	0	111	80-120	0			
Potassium	11.17	0.20	10	0	112	80-120	0			
Selenium	0.1107	0.0050	0.1	0	111	80-120	0			
Silver	0.1001	0.0050	0.1	0	100	80-120	0			
Zinc	0.1184	0.010	0.1	0	118	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706704
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103270** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1706704-03AMS** Units: **mg/L** Analysis Date: **6/17/2017 12:38 AM**
Client ID: **MW-7D** Run ID: **ICPMS2_170616A** SeqNo: **4485433** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1057	0.0050	0.1	0.0008312	105	75-125	0			
Barium	0.1257	0.0050	0.1	0.03301	92.7	75-125	0			
Cadmium	0.09677	0.0020	0.1	-1.112E-05	96.8	75-125	0			
Chromium	0.101	0.0050	0.1	0.0002665	101	75-125	0			
Copper	0.09723	0.0050	0.1	0.000549	96.7	75-125	0			
Iron	11.52	0.080	10	1.537	99.8	75-125	0			
Lead	0.1001	0.0050	0.1	0.00005259	100	75-125	0			
Manganese	0.2832	0.0050	0.1	0.2188	64.4	75-125	0			S
Potassium	12.82	0.20	10	3.042	97.8	75-125	0			
Selenium	0.1051	0.0050	0.1	0.00003332	105	75-125	0			
Silver	0.09314	0.0050	0.1	1.868E-06	93.1	75-125	0			
Zinc	0.1014	0.010	0.1	0.003691	97.7	75-125	0			

MS Sample ID: **1706704-03AMS** Units: **mg/L** Analysis Date: **6/17/2017 10:57 PM**
Client ID: **MW-7D** Run ID: **ICPMS2_170617A** SeqNo: **4487569** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1094	0.010	0.1	0.00611	103	75-125	0			

MSD Sample ID: **1706704-03AMSD** Units: **mg/L** Analysis Date: **6/17/2017 12:43 AM**
Client ID: **MW-7D** Run ID: **ICPMS2_170616A** SeqNo: **4485434** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1082	0.0050	0.1	0.0008312	107	75-125	0.1057	2.34	20	
Barium	0.1321	0.0050	0.1	0.03301	99.1	75-125	0.1257	4.97	20	
Cadmium	0.1022	0.0020	0.1	-1.112E-05	102	75-125	0.09677	5.46	20	
Chromium	0.1051	0.0050	0.1	0.0002665	105	75-125	0.101	3.98	20	
Copper	0.1034	0.0050	0.1	0.000549	103	75-125	0.09723	6.15	20	
Iron	11.99	0.080	10	1.537	105	75-125	11.52	4	20	
Lead	0.1051	0.0050	0.1	0.00005259	105	75-125	0.1001	4.87	20	
Manganese	0.3029	0.0050	0.1	0.2188	84.1	75-125	0.2832	6.72	20	
Potassium	13.54	0.20	10	3.042	105	75-125	12.82	5.46	20	
Selenium	0.1079	0.0050	0.1	0.00003332	108	75-125	0.1051	2.63	20	
Silver	0.09503	0.0050	0.1	1.868E-06	95	75-125	0.09314	2.01	20	
Zinc	0.109	0.010	0.1	0.003691	105	75-125	0.1014	7.22	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706704
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103270** Instrument ID **ICPMS2** Method: **SW6020A**

MSD	Sample ID: **1706704-03AMSD**			Units: **mg/L**		Analysis Date: **6/17/2017 11:02 PM**				
Client ID: **MW-7D**		Run ID: **ICPMS2_170617A**		SeqNo: **4487572**		Prep Date: **6/15/2017**		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1071	0.010	0.1	0.00611	101	75-125	0.1094	2.12	20	

The following samples were analyzed in this batch:

1706704-01A	1706704-02A	1706704-03A
1706704-04A	1706704-05A	1706704-06A
1706704-07A	1706704-08A	1706704-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706704
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R213812** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R213812** Units: **mg/L** Analysis Date: **6/13/2017 05:42 PM**
Client ID: Run ID: **IC4_170613B** SeqNo: **4478574** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	0.4871	1.0								J

LCS Sample ID: **LCS-R213812** Units: **mg/L** Analysis Date: **6/13/2017 06:02 PM**
Client ID: Run ID: **IC4_170613B** SeqNo: **4478575** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.956	0.10	2	0	97.8	81-116	0			
Sulfate	9.436	1.0	10	0	94.4	85-110	0			

MS Sample ID: **1706704-03C MS** Units: **mg/L** Analysis Date: **6/13/2017 08:24 PM**
Client ID: **MW-7D** Run ID: **IC4_170613B** SeqNo: **4478582** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.7	1.0	20	0	98.5	75-125	0			
Sulfate	121.3	10	100	15.19	106	75-125	0			

MSD Sample ID: **1706704-03C MSD** Units: **mg/L** Analysis Date: **6/13/2017 08:44 PM**
Client ID: **MW-7D** Run ID: **IC4_170613B** SeqNo: **4478583** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.76	1.0	20	0	98.8	75-125	19.7	0.304	20	
Sulfate	120.4	10	100	15.19	105	75-125	121.3	0.756	20	

The following samples were analyzed in this batch:

1706704-01C	1706704-02C	1706704-03C
1706704-04C	1706704-05C	1706704-06C
1706704-07C	1706704-08C	1706704-09C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 43794

ALS Project Manager: | ALS Work Order #: 1706704

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Low Level Mercury
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	martin.ryan@erm.com	e-Mail Address		J	MS/MSD

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-8D	6/12/17	1350	GW	None/HNO3	6	X	X	X								
2	MW-8S		1330			6											
3	MW-7D		1455			12										X	
4	MW-7S		1445			6											
5	MW-6D		1245			6											
6	MW-6S		1240			6											
7	MW-5D		1130			6											
8	MW-5S		1125			6											
9	DUP-01		-			6											
10	~~MS/MSD~~ Temp Blank					1											

Sampler(s) Please Print & Sign: Jenna Sharkey / John Ohmberger

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: Jenna Sharkey	Date: 6/12/17	Time: 1605	Received by:		
Relinquished by:	Date: 6/12/17	Time: 1600	Received by (Laboratory):		0430
Logged by (Laboratory): KL	Date: 6/13/17	Time: 1020	Checked by (Laboratory):		6/13/17 0830

Notes:

Cooler ID	Cooler Temp
SR2	3.0°C
P47	

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **13-Jun-17 09:30**

Work Order: **1706704** Received by: **KRW**

Checklist completed by Keith Wierenga eSignature 13-Jun-17 Date Reviewed by: Bill Carey eSignature 13-Jun-17 Date

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0/3.0 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/13/2017 10:28:47 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

26-Jun-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **1706828**

Dear Marty,

ALS Environmental received 10 samples on 14-Jun-2017 01:00 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 24.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ALS Group, USA

Date: 26-Jun-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **1706828**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1706828-01	BG-1S	Groundwater		6/13/2017 07:35	6/14/2017 13:00	☐
1706828-02	BG-1D	Groundwater		6/13/2017 08:00	6/14/2017 13:00	☐
1706828-03	MW-2S	Groundwater		6/13/2017 11:10	6/14/2017 13:00	☐
1706828-04	MW-2D	Groundwater		6/13/2017 11:00	6/14/2017 13:00	☐
1706828-05	MW-3S	Groundwater		6/13/2017 10:05	6/14/2017 13:00	☐
1706828-06	MW-3D	Groundwater		6/13/2017 09:50	6/14/2017 13:00	☐
1706828-07	MW-4S	Groundwater		6/13/2017 09:00	6/14/2017 13:00	☐
1706828-08	MW-4D	Groundwater		6/13/2017 09:05	6/14/2017 13:00	☐
1706828-09	MW-1D	Groundwater		6/12/2017 15:50	6/14/2017 13:00	☐
1706828-10	MW-15	Groundwater		6/12/2017 16:15	6/14/2017 13:00	☐

ALS Group, USA

Date: 26-Jun-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **1706828**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 26-Jun-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 1706828

Case Narrative

Samples for the above noted Work Order were received on 6/14/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 6/13/2017 07:35 AM

Work Order: 1706828
Lab ID: 1706828-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.016**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 19:17
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**130**		**42**	**100**	**µg/L**	10	6/17/2017 23:53
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 01:19
Barium	**6.7**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 01:19
Cadmium	**0.15**	J	**0.050**	**2.0**	**µg/L**	1	6/17/2017 01:19
Chromium	**1.1**	J	**0.65**	**5.0**	**µg/L**	1	6/17/2017 01:19
Copper	**7.6**		**0.28**	**5.0**	**µg/L**	1	6/17/2017 01:19
Hardness (Calculation)	**140,000**		**2,400**	**20,000**	**µg/L**	10	6/17/2017 23:53
Iron	**1,500**		**4.6**	**80**	**µg/L**	1	6/17/2017 01:19
Lead	U		0.33	5.0	µg/L	1	6/17/2017 01:19
Manganese	**63**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 01:19
Potassium	**730**		**17**	**200**	**µg/L**	1	6/17/2017 01:19
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 01:19
Silver	U		0.050	5.0	µg/L	1	6/17/2017 01:19
Zinc	**23**		**1.4**	**10**	**µg/L**	1	6/17/2017 01:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/14/2017 22:43
Sulfate	**38,000**		**2,000**	**5,000**	**µg/L**	5	6/14/2017 23:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 6/13/2017 08:00 AM

Work Order: 1706828
Lab ID: 1706828-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.00040**	J	**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 19:48
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**33**		**4.2**	**10**	**µg/L**	1	6/18/2017 00:04
Arsenic	**2.4**	J	**0.87**	**5.0**	**µg/L**	1	6/18/2017 00:04
Barium	**13**		**2.2**	**5.0**	**µg/L**	1	6/18/2017 00:04
Cadmium	U		0.050	2.0	µg/L	1	6/18/2017 00:04
Chromium	U		0.65	5.0	µg/L	1	6/18/2017 00:04
Copper	**1.1**	J	**0.28**	**5.0**	**µg/L**	1	6/18/2017 00:04
Hardness (Calculation)	**140,000**		**240**	**2,000**	**µg/L**	1	6/18/2017 00:04
Iron	**2,700**		**4.6**	**80**	**µg/L**	1	6/18/2017 00:04
Lead	U		0.33	5.0	µg/L	1	6/18/2017 00:04
Manganese	**170**		**0.51**	**5.0**	**µg/L**	1	6/18/2017 00:04
Potassium	**1,200**		**17**	**200**	**µg/L**	1	6/18/2017 00:04
Selenium	U		0.90	5.0	µg/L	1	6/18/2017 00:04
Silver	U		0.050	5.0	µg/L	1	6/18/2017 00:04
Zinc	**22**		**1.4**	**10**	**µg/L**	1	6/18/2017 00:04
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**170**		**48**	**100**	**µg/L**	1	6/15/2017 00:04
Sulfate	**14,000**		**410**	**1,000**	**µg/L**	1	6/15/2017 00:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 6/13/2017 11:10 AM

Work Order: 1706828
Lab ID: 1706828-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.0049**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 19:56
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**130**		**4.2**	**10**	**µg/L**	1	6/17/2017 02:52
Arsenic	**5.6**		**0.87**	**5.0**	**µg/L**	1	6/17/2017 02:52
Barium	**30**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 02:52
Cadmium	**0.072**	J	**0.050**	**2.0**	**µg/L**	1	6/17/2017 02:52
Chromium	**2.4**	J	**0.65**	**5.0**	**µg/L**	1	6/17/2017 02:52
Copper	**2.3**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 02:52
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 02:52
Iron	**3,900**		**4.6**	**80**	**µg/L**	1	6/17/2017 02:52
Lead	**0.77**	J	**0.33**	**5.0**	**µg/L**	1	6/17/2017 02:52
Manganese	**49**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 02:52
Potassium	**2,100**		**17**	**200**	**µg/L**	1	6/17/2017 02:52
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 02:52
Silver	U		0.050	5.0	µg/L	1	6/17/2017 02:52
Zinc	**5.6**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 02:52
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2017 00:45
Sulfate	**4,200**		**410**	**1,000**	**µg/L**	1	6/15/2017 00:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 6/13/2017 11:00 AM

Work Order: 1706828
Lab ID: 1706828-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 20:04
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**21**		**4.2**	**10**	**µg/L**	1	6/17/2017 02:57
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 02:57
Barium	**80**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 02:57
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 02:57
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 02:57
Copper	**0.60**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 02:57
Hardness (Calculation)	**270,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 02:57
Iron	**3,800**		**4.6**	**80**	**µg/L**	1	6/17/2017 02:57
Lead	U		0.33	5.0	µg/L	1	6/17/2017 02:57
Manganese	**1,500**		**5.1**	**50**	**µg/L**	10	6/20/2017 13:54
Potassium	**3,000**		**17**	**200**	**µg/L**	1	6/17/2017 02:57
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 02:57
Silver	U		0.050	5.0	µg/L	1	6/17/2017 02:57
Zinc	**3.0**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 02:57
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2017 01:25
Sulfate	**1,000**		**410**	**1,000**	**µg/L**	1	6/15/2017 01:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 6/13/2017 10:05 AM

Work Order: 1706828
Lab ID: 1706828-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.00055**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 20:12
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**27**		**4.2**	**10**	**µg/L**	1	6/17/2017 03:02
Arsenic	**6.3**		**0.87**	**5.0**	**µg/L**	1	6/17/2017 03:02
Barium	**37**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 03:02
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 03:02
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 03:02
Copper	**0.90**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 03:02
Hardness (Calculation)	**290,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 03:02
Iron	**12,000**		**4.6**	**80**	**µg/L**	1	6/17/2017 03:02
Lead	U		0.33	5.0	µg/L	1	6/17/2017 03:02
Manganese	**1,300**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 03:02
Potassium	**1,100**		**17**	**200**	**µg/L**	1	6/17/2017 03:02
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 03:02
Silver	U		0.050	5.0	µg/L	1	6/17/2017 03:02
Zinc	**6.9**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 03:02
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2017 02:06
Sulfate	**6,700**		**410**	**1,000**	**µg/L**	1	6/15/2017 02:06

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 6/13/2017 09:50 AM

Work Order: 1706828
Lab ID: 1706828-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 20:20
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/17/2017 03:07
Arsenic	**5.5**		**0.87**	**5.0**	**µg/L**	1	6/17/2017 03:07
Barium	**120**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 03:07
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 03:07
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 03:07
Copper	**0.57**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 03:07
Hardness (Calculation)	**340,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 03:07
Iron	**9,800**		**4.6**	**80**	**µg/L**	1	6/17/2017 03:07
Lead	U		0.33	5.0	µg/L	1	6/17/2017 03:07
Manganese	**450**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 03:07
Potassium	**4,400**		**17**	**200**	**µg/L**	1	6/17/2017 03:07
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 03:07
Silver	U		0.050	5.0	µg/L	1	6/17/2017 03:07
Zinc	**3.6**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 03:07
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2017 02:46
Sulfate	**1,200**		**410**	**1,000**	**µg/L**	1	6/15/2017 02:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 6/13/2017 09:00 AM

Work Order: 1706828
Lab ID: 1706828-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 20:27
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**52**		**4.2**	**10**	**µg/L**	1	6/17/2017 03:13
Arsenic	**5.4**		**0.87**	**5.0**	**µg/L**	1	6/17/2017 03:13
Barium	**54**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 03:13
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 03:13
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 03:13
Copper	**2.0**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 03:13
Hardness (Calculation)	**380,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 03:13
Iron	**3,600**		**4.6**	**80**	**µg/L**	1	6/17/2017 03:13
Lead	**0.36**	J	**0.33**	**5.0**	**µg/L**	1	6/17/2017 03:13
Manganese	**680**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 03:13
Potassium	**5,600**		**17**	**200**	**µg/L**	1	6/17/2017 03:13
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 03:13
Silver	U		0.050	5.0	µg/L	1	6/17/2017 03:13
Zinc	**45**		**1.4**	**10**	**µg/L**	1	6/17/2017 03:13
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2017 04:07
Sulfate	**28,000**		**2,000**	**5,000**	**µg/L**	5	6/15/2017 04:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 6/13/2017 09:05 AM

Work Order: 1706828
Lab ID: 1706828-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 20:43
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/17/2017 03:28
Arsenic	**2.3**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 03:28
Barium	**160**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 03:28
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 03:28
Chromium	**1.4**	J	**0.65**	**5.0**	**µg/L**	1	6/17/2017 03:28
Copper	**0.86**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 03:28
Hardness (Calculation)	**480,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 03:28
Iron	**19,000**		**4.6**	**80**	**µg/L**	1	6/17/2017 03:28
Lead	U		0.33	5.0	µg/L	1	6/17/2017 03:28
Manganese	**580**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 03:28
Potassium	**3,600**		**17**	**200**	**µg/L**	1	6/17/2017 03:28
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 03:28
Silver	U		0.050	5.0	µg/L	1	6/17/2017 03:28
Zinc	**2.2**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 03:28
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/15/2017 04:48
Sulfate	**110,000**		**4,100**	**10,000**	**µg/L**	10	6/24/2017 13:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 6/12/2017 03:50 PM

Work Order: 1706828
Lab ID: 1706828-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	U		0.00020	0.00050	µg/L	1	6/19/2017 20:51
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**12**		**4.2**	**10**	**µg/L**	1	6/17/2017 03:33
Arsenic	**1.1**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 03:33
Barium	**80**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 03:33
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 03:33
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 03:33
Copper	**0.68**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 03:33
Hardness (Calculation)	**320,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 03:33
Iron	**7,200**		**4.6**	**80**	**µg/L**	1	6/17/2017 03:33
Lead	U		0.33	5.0	µg/L	1	6/17/2017 03:33
Manganese	**850**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 03:33
Potassium	**2,600**		**17**	**200**	**µg/L**	1	6/17/2017 03:33
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 03:33
Silver	U		0.050	5.0	µg/L	1	6/17/2017 03:33
Zinc	**21**		**1.4**	**10**	**µg/L**	1	6/17/2017 03:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		48	100	µg/L	1	6/14/2017 21:22
Sulfate	**580**	J	**410**	**1,000**	**µg/L**	1	6/14/2017 21:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *26-Jun-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-15
Collection Date: 6/12/2017 04:15 PM

Work Order: 1706828
Lab ID: 1706828-10
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 6/19/17		Analyst: **LR**
Mercury	**0.0014**		**0.00020**	**0.00050**	**µg/L**	1	6/19/2017 20:59
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 6/15/17		Analyst: **LR**
Aluminum	**8.5**	J	**4.2**	**10**	**µg/L**	1	6/17/2017 03:54
Arsenic	**1.8**	J	**0.87**	**5.0**	**µg/L**	1	6/17/2017 03:54
Barium	**21**		**2.2**	**5.0**	**µg/L**	1	6/17/2017 03:54
Cadmium	U		0.050	2.0	µg/L	1	6/17/2017 03:54
Chromium	U		0.65	5.0	µg/L	1	6/17/2017 03:54
Copper	**3.9**	J	**0.28**	**5.0**	**µg/L**	1	6/17/2017 03:54
Hardness (Calculation)	**270,000**		**240**	**2,000**	**µg/L**	1	6/17/2017 03:54
Iron	**250**		**4.6**	**80**	**µg/L**	1	6/17/2017 03:54
Lead	U		0.33	5.0	µg/L	1	6/17/2017 03:54
Manganese	**290**		**0.51**	**5.0**	**µg/L**	1	6/17/2017 03:54
Potassium	**2,400**		**17**	**200**	**µg/L**	1	6/17/2017 03:54
Selenium	U		0.90	5.0	µg/L	1	6/17/2017 03:54
Silver	U		0.050	5.0	µg/L	1	6/17/2017 03:54
Zinc	**4.4**	J	**1.4**	**10**	**µg/L**	1	6/17/2017 03:54
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**110**		**48**	**100**	**µg/L**	1	6/14/2017 22:03
Sulfate	**11,000**		**410**	**1,000**	**µg/L**	1	6/14/2017 22:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 26-Jun-17

Client: ERM, Inc

Work Order: 1706828

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103368** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-103368-103368** Units: **ng/L** Analysis Date: **6/19/2017 06:38 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489081** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-103368-103368** Units: **ng/L** Analysis Date: **6/19/2017 07:25 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489087** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-103368-103368** Units: **ng/L** Analysis Date: **6/19/2017 08:35 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489096** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **1706798-01AMS** Units: **ng/L** Analysis Date: **6/19/2017 07:01 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489084** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	14.2	0.50	5	12.3	38	71-125	0			S

MS Sample ID: **1706828-01BMS** Units: **ng/L** Analysis Date: **6/19/2017 07:33 PM**

Client ID: **BG-1S** Run ID: **HG3_170619A** SeqNo: **4489088** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	20.3	0.50	5	16.3	80	71-125	0			

MSD Sample ID: **1706798-01AMSD** Units: **ng/L** Analysis Date: **6/19/2017 07:09 PM**

Client ID: Run ID: **HG3_170619A** SeqNo: **4489085** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	13.8	0.50	5	12.3	30	71-125	14.2	2.86	24	S

MSD Sample ID: **1706828-01BMSD** Units: **ng/L** Analysis Date: **6/19/2017 07:40 PM**

Client ID: **BG-1S** Run ID: **HG3_170619A** SeqNo: **4489089** Prep Date: **6/19/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	22.4	0.50	5	16.3	122	71-125	20.3	9.84	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706828
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103368** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START	Sample ID: **OPR-START-103368-103368**				Units: **ng/L**			Analysis Date: **6/19/2017 06:30 PM**		
Client ID:	Run ID: **HG3_170619A**				SeqNo: **4489080**			Prep Date: **6/19/2017**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.88	0.50	5	0	97.6	77-123	0			

LCS-OPR-END	Sample ID: **OPR-END-103368-103368**				Units: **ng/L**			Analysis Date: **6/19/2017 10:01 PM**		
Client ID:	Run ID: **HG3_170619A**				SeqNo: **4489107**			Prep Date: **6/19/2017**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.54	0.50	5	0	90.8	77-123	0			

The following samples were analyzed in this batch:

1706828-01B	1706828-02B	1706828-03B
1706828-04B	1706828-05B	1706828-06B
1706828-07B	1706828-08B	1706828-09B
1706828-10B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706828
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103270** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-103270-103270** Units: **mg/L** Analysis Date: **6/16/2017 11:56 PM**
Client ID: Run ID: **ICPMS2_170616A** SeqNo: **4485425** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	0.003424	0.010								J

LCS Sample ID: **LCS-103270-103270** Units: **mg/L** Analysis Date: **6/17/2017 12:02 AM**
Client ID: Run ID: **ICPMS2_170616A** SeqNo: **4485426** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1102	0.0050	0.1	0	110	80-120	0			
Barium	0.1056	0.0050	0.1	0	106	80-120	0			
Cadmium	0.1071	0.0020	0.1	0	107	80-120	0			
Chromium	0.1067	0.0050	0.1	0	107	80-120	0			
Copper	0.1114	0.0050	0.1	0	111	80-120	0			
Iron	10.89	0.080	10	0	109	80-120	0			
Lead	0.1091	0.0050	0.1	0	109	80-120	0			
Manganese	0.111	0.0050	0.1	0	111	80-120	0			
Potassium	11.17	0.20	10	0	112	80-120	0			
Selenium	0.1107	0.0050	0.1	0	111	80-120	0			
Silver	0.1001	0.0050	0.1	0	100	80-120	0			
Zinc	0.1184	0.010	0.1	0	118	80-120	0			

LCS Sample ID: **LCS-103270-103270** Units: **mg/L** Analysis Date: **6/22/2017 03:14 AM**
Client ID: Run ID: **ICPMS2_170621A** SeqNo: **4494024** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.11	0.010	0.1	0	110	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706828
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103270** Instrument ID **ICPMS2** Method: **SW6020A**

MS Sample ID: **1706704-03AMS** Units: **mg/L** Analysis Date: **6/17/2017 12:38 AM**
Client ID: Run ID: **ICPMS2_170616A** SeqNo: **4485433** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1057	0.0050	0.1	0.0008312	105	75-125	0			
Barium	0.1257	0.0050	0.1	0.03301	92.7	75-125	0			
Cadmium	0.09677	0.0020	0.1	-1.112E-05	96.8	75-125	0			
Chromium	0.101	0.0050	0.1	0.0002665	101	75-125	0			
Copper	0.09723	0.0050	0.1	0.000549	96.7	75-125	0			
Iron	11.52	0.080	10	1.537	99.8	75-125	0			
Lead	0.1001	0.0050	0.1	0.00005259	100	75-125	0			
Manganese	0.2832	0.0050	0.1	0.2188	64.4	75-125	0			S
Potassium	12.82	0.20	10	3.042	97.8	75-125	0			
Selenium	0.1051	0.0050	0.1	0.00003332	105	75-125	0			
Silver	0.09314	0.0050	0.1	1.868E-06	93.1	75-125	0			
Zinc	0.1014	0.010	0.1	0.003691	97.7	75-125	0			

MS Sample ID: **1706704-03AMS** Units: **mg/L** Analysis Date: **6/17/2017 10:57 PM**
Client ID: Run ID: **ICPMS2_170617A** SeqNo: **4487569** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1094	0.010	0.1	0.00611	103	75-125	0			

MSD Sample ID: **1706704-03AMSD** Units: **mg/L** Analysis Date: **6/17/2017 12:43 AM**
Client ID: Run ID: **ICPMS2_170616A** SeqNo: **4485434** Prep Date: **6/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1082	0.0050	0.1	0.0008312	107	75-125	0.1057	2.34	20	
Barium	0.1321	0.0050	0.1	0.03301	99.1	75-125	0.1257	4.97	20	
Cadmium	0.1022	0.0020	0.1	-1.112E-05	102	75-125	0.09677	5.46	20	
Chromium	0.1051	0.0050	0.1	0.0002665	105	75-125	0.101	3.98	20	
Copper	0.1034	0.0050	0.1	0.000549	103	75-125	0.09723	6.15	20	
Iron	11.99	0.080	10	1.537	105	75-125	11.52	4	20	
Lead	0.1051	0.0050	0.1	0.00005259	105	75-125	0.1001	4.87	20	
Manganese	0.3029	0.0050	0.1	0.2188	84.1	75-125	0.2832	6.72	20	
Potassium	13.54	0.20	10	3.042	105	75-125	12.82	5.46	20	
Selenium	0.1079	0.0050	0.1	0.00003332	108	75-125	0.1051	2.63	20	
Silver	0.09503	0.0050	0.1	1.868E-06	95	75-125	0.09314	2.01	20	
Zinc	0.109	0.010	0.1	0.003691	105	75-125	0.1014	7.22	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706828
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **103270** Instrument ID **ICPMS2** Method: **SW6020A**

MSD	Sample ID: **1706704-03AMSD**				Units: **mg/L**			Analysis Date: **6/17/2017 11:02 PM**		
Client ID:		Run ID: **ICPMS2_170617A**			SeqNo: **4487572**		Prep Date: **6/15/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1071	0.010	0.1	0.00611	101	75-125	0.1094	2.12	20	

The following samples were analyzed in this batch:

1706828-01A	1706828-02A	1706828-03A
1706828-04A	1706828-05A	1706828-06A
1706828-07A	1706828-08A	1706828-09A
1706828-10A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706828
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R213918** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R213918** Units: **mg/L** Analysis Date: **6/14/2017 02:58 PM**
Client ID: Run ID: **IC4_170614B** SeqNo: **4481133** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	0.4804	1.0								J

MBLK Sample ID: **MBLK-R213918** Units: **mg/L** Analysis Date: **6/14/2017 02:18 PM**
Client ID: Run ID: **IC4_170614B** SeqNo: **4481214** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	0.4804	1.0								J

LCS Sample ID: **LCS-R213918** Units: **mg/L** Analysis Date: **6/14/2017 03:18 PM**
Client ID: Run ID: **IC4_170614B** SeqNo: **4481134** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.979	0.10	2	0	99	81-116	0			
Sulfate	9.972	1.0	10	0	99.7	85-110	0			

LCS Sample ID: **LCS-R213918** Units: **mg/L** Analysis Date: **6/14/2017 02:18 PM**
Client ID: Run ID: **IC4_170614B** SeqNo: **4481217** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.979	0.10	2	0	99	81-116	0			
Sulfate	9.972	1.0	10	0	99.7	85-110	0			

LCSD Sample ID: **LCSD-R213918** Units: **mg/L** Analysis Date: **6/14/2017 03:39 PM**
Client ID: Run ID: **IC4_170614B** SeqNo: **4481135** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.976	1.0	10	0	99.8	85-110	9.972	0.0401	20	

MS Sample ID: **1706265-01E MS** Units: **mg/L** Analysis Date: **6/14/2017 05:20 PM**
Client ID: Run ID: **IC4_170614B** SeqNo: **4481140** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	543.9	50	500	31.03	103	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706828
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R213918** Instrument ID **IC4** Method: **SW9056A**

MSD	Sample ID: **1706265-01E MSD**				Units: **mg/L**			Analysis Date: **6/14/2017 05:40 PM**		
Client ID:		Run ID: **IC4_170614B**			SeqNo: **4481141**		Prep Date:		DF: **50**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	541.7	50	500	31.03	102	75-125	543.9	0.399	20	

The following samples were analyzed in this batch:

1706828-01C	1706828-02C	1706828-03C
1706828-04C	1706828-05C	1706828-06C
1706828-07C	1706828-08C	1706828-09C
1706828-10C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 1706828
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R214574** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R214574** Units: **mg/L** Analysis Date: **6/24/2017 08:45 AM**
Client ID: Run ID: **IC4_170624A** SeqNo: **4499479** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	1.0								

LCS Sample ID: **LCS-R214574** Units: **mg/L** Analysis Date: **6/24/2017 09:06 AM**
Client ID: Run ID: **IC4_170624A** SeqNo: **4499480** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.28	1.0	10	0	92.8	85-110	0			

MS Sample ID: **1706924-14D MS** Units: **mg/L** Analysis Date: **6/24/2017 12:49 PM**
Client ID: Run ID: **IC4_170624A** SeqNo: **4499482** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1117	100	1000	145.4	97.1	75-125	0			

MSD Sample ID: **1706924-14D MSD** Units: **mg/L** Analysis Date: **6/24/2017 01:09 PM**
Client ID: Run ID: **IC4_170624A** SeqNo: **4499483** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1139	100	1000	145.4	99.3	75-125	1117	1.93	20	

The following samples were analyzed in this batch: 1706828-08C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 43793

ALS Project Manager:

ALS Work Order #: 1706828

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	IAW Ogden Dunes	A	Metals
Work Order		Project Number		B	Anions
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Low Level Mercury
Send Report To	Marty Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 580W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.RyanERM.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	BG-1S	6/13/17	0735	GW	Non/HNO_3	6	X	X	X								
2	BG-1D		0800			6											
3	MW-2S		1110			6											
4	MW-2D		1100			6											
5	MW-3S		1005			6											
6	MW-3D		950			6											
7	MW-4S		0900			6											
8	MW-4D		0905			6											
9	MW-1D	6/12/17	1550	GW	Non/HNO_3												
10	MW-1S	6/12/17	1615														

Sampler(s) Please Print & Sign: Jenna Sharkey/Mary/John Ohmberger

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Jenna Sharkey	6/13/17	1145	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	6/13/17	1230	6/14/17 1300
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
KEW	6/14/17	1545	

Notes:

Cooler ID	Cooler Temp
SR7	4.8°C
P47	

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **14-Jun-17 13:00**

Work Order: **1706828** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 14-Jun-17 (Date) Reviewed by: Bill Carey (eSignature) 15-Jun-17 (Date)

Matrices: Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.8/4.8 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/14/2017 3:52:01 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

29-Sep-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **17091151**

Dear Marty,

ALS Environmental received 6 samples on 20-Sep-2017 12:50 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 19.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 998501

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group, USA

Date: 29-Sep-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **17091151**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17091151-01	MW-6S	Water		9/19/2017 13:50	9/20/2017 12:50	☐
17091151-02	MW-6D	Water		9/19/2017 14:20	9/20/2017 12:50	☐
17091151-03	MW-8S	Water		9/19/2017 15:15	9/20/2017 12:50	☐
17091151-04	MW-8D	Water		9/19/2017 15:20	9/20/2017 12:50	☐
17091151-05	MW-1S	Water		9/19/2017 16:10	9/20/2017 12:50	☐
17091151-06	MW-1D	Water		9/19/2017 16:15	9/20/2017 12:50	☐

ALS Group, USA

Date: 29-Sep-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **17091151**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 29-Sep-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 17091151

Case Narrative

Samples for the above noted Work Order were received on 9/20/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6S
Collection Date: 9/19/2017 01:50 PM

Work Order: 17091151
Lab ID: 17091151-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/17		Analyst: **ABL**
Mercury	**0.0016**		**0.00020**	**0.00050**	**µg/L**	1	9/26/2017 11:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**37**		**4.2**	**10**	**µg/L**	1	9/22/2017 13:14
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2017 13:14
Barium	**4.6**	J	**2.2**	**5.0**	**µg/L**	1	9/22/2017 13:14
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 13:14
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 13:14
Copper	**3.6**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2017 13:14
Hardness (Calculation)	**160,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 13:14
Iron	**63**	J	**4.6**	**80**	**µg/L**	1	9/22/2017 13:14
Lead	U		0.33	5.0	µg/L	1	9/22/2017 13:14
Manganese	**170**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 13:14
Potassium	**720**		**17**	**200**	**µg/L**	1	9/22/2017 13:14
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 13:14
Silver	U		0.050	5.0	µg/L	1	9/22/2017 13:14
Zinc	U		1.4	10	µg/L	1	9/22/2017 13:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/20/2017 16:54
Sulfate	**4,000**		**340**	**1,000**	**µg/L**	1	9/20/2017 16:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-6D
Collection Date: 9/19/2017 02:20 PM

Work Order: 17091151
Lab ID: 17091151-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/26/2017 12:34
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**9.1**	J	**4.2**	**10**	**µg/L**	1	9/22/2017 13:16
Arsenic	**5.1**		**0.87**	**5.0**	**µg/L**	1	9/22/2017 13:16
Barium	**80**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 13:16
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 13:16
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 13:16
Copper	**0.32**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2017 13:16
Hardness (Calculation)	**250,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 13:16
Iron	**6,300**		**4.6**	**80**	**µg/L**	1	9/22/2017 13:16
Lead	U		0.33	5.0	µg/L	1	9/22/2017 13:16
Manganese	**200**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 13:16
Potassium	**1,700**		**17**	**200**	**µg/L**	1	9/22/2017 13:16
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 13:16
Silver	U		0.050	5.0	µg/L	1	9/22/2017 13:16
Zinc	**1.8**	J	**1.4**	**10**	**µg/L**	1	9/22/2017 13:16
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/20/2017 17:13
Sulfate	**55,000**		**1,700**	**5,000**	**µg/L**	5	9/20/2017 17:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8S
Collection Date: 9/19/2017 03:15 PM

Work Order: 17091151
Lab ID: 17091151-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/17		Analyst: **ABL**
Mercury	**0.00048**	J	**0.00020**	**0.00050**	**µg/L**	1	9/26/2017 12:05
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**28**		**4.2**	**10**	**µg/L**	1	9/22/2017 13:18
Arsenic	**2.0**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2017 13:18
Barium	**22**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 13:18
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 13:18
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 13:18
Copper	**0.82**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2017 13:18
Hardness (Calculation)	**260,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 13:18
Iron	**52**	J	**4.6**	**80**	**µg/L**	1	9/22/2017 13:18
Lead	U		0.33	5.0	µg/L	1	9/22/2017 13:18
Manganese	**0.94**	J	**0.51**	**5.0**	**µg/L**	1	9/22/2017 13:18
Potassium	**790**		**17**	**200**	**µg/L**	1	9/22/2017 13:18
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 13:18
Silver	U		0.050	5.0	µg/L	1	9/22/2017 13:18
Zinc	U		1.4	10	µg/L	1	9/22/2017 13:18
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**150**		**46**	**100**	**µg/L**	1	9/20/2017 17:51
Sulfate	**35,000**		**1,700**	**5,000**	**µg/L**	5	9/20/2017 18:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-8D
Collection Date: 9/19/2017 03:20 PM

Work Order: 17091151
Lab ID: 17091151-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/26/2017 12:41
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**5.4**	J	**4.2**	**10**	**µg/L**	1	9/22/2017 13:19
Arsenic	**0.94**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2017 13:19
Barium	**33**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 13:19
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 13:19
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 13:19
Copper	**0.32**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2017 13:19
Hardness (Calculation)	**230,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 13:19
Iron	**2,100**		**4.6**	**80**	**µg/L**	1	9/22/2017 13:19
Lead	U		0.33	5.0	µg/L	1	9/22/2017 13:19
Manganese	**370**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 13:19
Potassium	**2,200**		**17**	**200**	**µg/L**	1	9/22/2017 13:19
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 13:19
Silver	U		0.050	5.0	µg/L	1	9/22/2017 13:19
Zinc	**1.6**	J	**1.4**	**10**	**µg/L**	1	9/22/2017 13:19
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/20/2017 18:29
Sulfate	**18,000**		**340**	**1,000**	**µg/L**	1	9/20/2017 18:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1S
Collection Date: 9/19/2017 04:10 PM

Work Order: 17091151
Lab ID: 17091151-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/17		Analyst: **ABL**
Mercury	**0.00074**		**0.00020**	**0.00050**	**µg/L**	1	9/26/2017 12:21
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**6.0**	J	**4.2**	**10**	**µg/L**	1	9/22/2017 13:21
Arsenic	**1.9**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2017 13:21
Barium	**27**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 13:21
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 13:21
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 13:21
Copper	**0.65**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2017 13:21
Hardness (Calculation)	**200,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 13:21
Iron	**730**		**4.6**	**80**	**µg/L**	1	9/22/2017 13:21
Lead	U		0.33	5.0	µg/L	1	9/22/2017 13:21
Manganese	**1,100**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 13:21
Potassium	**2,700**		**17**	**200**	**µg/L**	1	9/22/2017 13:21
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 13:21
Silver	U		0.050	5.0	µg/L	1	9/22/2017 13:21
Zinc	**1.9**	J	**1.4**	**10**	**µg/L**	1	9/22/2017 13:21
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**100**		**46**	**100**	**µg/L**	1	9/20/2017 19:08
Sulfate	**750**	J	**340**	**1,000**	**µg/L**	1	9/20/2017 19:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-1D
Collection Date: 9/19/2017 04:15 PM

Work Order: 17091151
Lab ID: 17091151-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/26/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/26/2017 12:49
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**5.7**	J	**4.2**	**10**	**µg/L**	1	9/22/2017 13:59
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2017 13:59
Barium	**85**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 13:59
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 13:59
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 13:59
Copper	U		0.28	5.0	µg/L	1	9/22/2017 13:59
Hardness (Calculation)	**310,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 13:59
Iron	**8,200**		**4.6**	**80**	**µg/L**	1	9/22/2017 13:59
Lead	U		0.33	5.0	µg/L	1	9/22/2017 13:59
Manganese	**980**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 13:59
Potassium	**2,800**		**17**	**200**	**µg/L**	1	9/22/2017 13:59
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 13:59
Silver	U		0.050	5.0	µg/L	1	9/22/2017 13:59
Zinc	**1.7**	J	**1.4**	**10**	**µg/L**	1	9/22/2017 13:59
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/20/2017 19:27
Sulfate	U		340	1,000	µg/L	1	9/20/2017 19:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 29-Sep-17

Client: ERM, Inc

Work Order: 17091151

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107973** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-107973-107973** Units: **ng/L** Analysis Date: **9/26/2017 10:47 AM**

Client ID: Run ID: **HG3_170926A** SeqNo: **4658609** Prep Date: **9/26/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-107973-107973** Units: **ng/L** Analysis Date: **9/26/2017 11:42 AM**

Client ID: Run ID: **HG3_170926A** SeqNo: **4658616** Prep Date: **9/26/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-107973-107973** Units: **ng/L** Analysis Date: **9/26/2017 12:57 PM**

Client ID: Run ID: **HG3_170926A** SeqNo: **4658625** Prep Date: **9/26/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **17091151-01CMS** Units: **ng/L** Analysis Date: **9/26/2017 11:34 AM**

Client ID: **MW-6S** Run ID: **HG3_170926A** SeqNo: **4658615** Prep Date: **9/26/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.42	0.50	5	1.57	97	71-125	0			

MS Sample ID: **17091216-05CMS** Units: **ng/L** Analysis Date: **9/26/2017 01:52 PM**

Client ID: Run ID: **HG3_170926A** SeqNo: **4658632** Prep Date: **9/26/2017** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	28.85	2.5	4	24.6	106	71-125	0			O

MSD Sample ID: **17091151-01CMSD** Units: **ng/L** Analysis Date: **9/26/2017 11:49 AM**

Client ID: **MW-6S** Run ID: **HG3_170926A** SeqNo: **4658617** Prep Date: **9/26/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.24	0.50	5	1.57	93.4	71-125	6.42	2.84	24	

MSD Sample ID: **17091216-05CMSD** Units: **ng/L** Analysis Date: **9/26/2017 01:59 PM**

Client ID: Run ID: **HG3_170926A** SeqNo: **4658633** Prep Date: **9/26/2017** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	28.3	2.5	4	24.6	92.5	71-125	28.85	1.92	24	O

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091151
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107973** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-107973-107973** Units: **ng/L** Analysis Date: **9/26/2017 10:31 AM**
Client ID: Run ID: **HG3_170926A** SeqNo: **4658607** Prep Date: **9/26/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.22	0.50	5	0	104	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-107973-107973** Units: **ng/L** Analysis Date: **9/26/2017 02:15 PM**
Client ID: Run ID: **HG3_170926A** SeqNo: **4658635** Prep Date: **9/26/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.07	0.50	5	0	101	77-123	0			

The following samples were analyzed in this batch:

17091151-01C	17091151-02C	17091151-03C
17091151-04C	17091151-05C	17091151-06C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091151
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107798** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK Sample ID: **MBLK-107798-107798** Units: **mg/L** Analysis Date: **9/22/2017 01:05 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653260** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	0.008747	0.080								J
Lead	U	0.0050								
Manganese	0.000855	0.0050								J
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-107798-107798** Units: **mg/L** Analysis Date: **9/22/2017 01:11 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653264** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1033	0.010	0.1	0	103	80-120	0			
Arsenic	0.09847	0.0050	0.1	0	98.5	80-120	0			
Barium	0.09922	0.0050	0.1	0	99.2	80-120	0			
Cadmium	0.09958	0.0020	0.1	0	99.6	80-120	0			
Chromium	0.09748	0.0050	0.1	0	97.5	80-120	0			
Copper	0.09796	0.0050	0.1	0	98	80-120	0			
Hardness (Calculation)	67.99	2.0	66.15	0	103	80-120	0			
Iron	10.01	0.080	10	0	100	80-120	0			
Lead	0.1005	0.0050	0.1	0	101	80-120	0			
Manganese	0.0989	0.0050	0.1	0	98.9	80-120	0			
Potassium	10.18	0.20	10	0	102	80-120	0			
Selenium	0.09727	0.0050	0.1	0	97.3	80-120	0			
Silver	0.1012	0.0050	0.1	0	101	80-120	0			
Zinc	0.1005	0.010	0.1	0	101	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091151
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107798** Instrument ID **ICPMS3** Method: **SW6020A**

MS Sample ID: **17091197-20AMS** Units: **mg/L** Analysis Date: **9/22/2017 01:33 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653278** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1424	0.010	0.1	0.03064	112	75-125	0			
Arsenic	0.09725	0.0050	0.1	0.000164	97.1	75-125	0			
Barium	0.1451	0.0050	0.1	0.04364	101	75-125	0			
Cadmium	0.09492	0.0020	0.1	0.000062	94.9	75-125	0			
Chromium	0.09375	0.0050	0.1	0.000208	93.5	75-125	0			
Copper	0.09052	0.0050	0.1	0.000528	90	75-125	0			
Iron	9.794	0.080	10	0.1375	96.6	75-125	0			
Lead	0.09945	0.0050	0.1	0.000106	99.3	75-125	0			
Manganese	0.37	0.0050	0.1	0.2823	87.7	75-125	0			
Potassium	21.64	0.20	10	11.88	97.6	75-125	0			
Selenium	0.2657	0.0050	0.1	0.1798	85.9	75-125	0			
Silver	0.09685	0.0050	0.1	0.000004	96.8	75-125	0			
Zinc	0.09634	0.010	0.1	0.001117	95.2	75-125	0			

MSD Sample ID: **17091197-20AMSD** Units: **mg/L** Analysis Date: **9/22/2017 01:35 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653279** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1395	0.010	0.1	0.03064	109	75-125	0.1424	2.09	20	
Arsenic	0.09862	0.0050	0.1	0.000164	98.5	75-125	0.09725	1.39	20	
Barium	0.1437	0.0050	0.1	0.04364	100	75-125	0.1451	1.02	20	
Cadmium	0.09686	0.0020	0.1	0.000062	96.8	75-125	0.09492	2.02	20	
Chromium	0.09394	0.0050	0.1	0.000208	93.7	75-125	0.09375	0.199	20	
Copper	0.09173	0.0050	0.1	0.000528	91.2	75-125	0.09052	1.33	20	
Iron	9.761	0.080	10	0.1375	96.2	75-125	9.794	0.333	20	
Lead	0.09948	0.0050	0.1	0.000106	99.4	75-125	0.09945	0.0342	20	
Manganese	0.3721	0.0050	0.1	0.2823	89.8	75-125	0.37	0.566	20	
Potassium	21.73	0.20	10	11.88	98.5	75-125	21.64	0.412	20	
Selenium	0.2684	0.0050	0.1	0.1798	88.6	75-125	0.2657	1.02	20	
Silver	0.09702	0.0050	0.1	0.000004	97	75-125	0.09685	0.183	20	
Zinc	0.09692	0.010	0.1	0.001117	95.8	75-125	0.09634	0.601	20	

The following samples were analyzed in this batch:

17091151-01A	17091151-02A	17091151-03A
17091151-04A	17091151-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091151
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107800** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK Sample ID: **MBLK-107800-107800** Units: **mg/L** Analysis Date: **9/22/2017 01:56 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653293** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-107800-107800** Units: **mg/L** Analysis Date: **9/22/2017 01:58 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653294** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1027	0.010	0.1	0	103	80-120	0			
Arsenic	0.09642	0.0050	0.1	0	96.4	80-120	0			
Barium	0.09865	0.0050	0.1	0	98.6	80-120	0			
Cadmium	0.09811	0.0020	0.1	0	98.1	80-120	0			
Chromium	0.09419	0.0050	0.1	0	94.2	80-120	0			
Copper	0.09459	0.0050	0.1	0	94.6	80-120	0			
Hardness (Calculation)	66.22	2.0	66.15	0	100	80-120	0			
Iron	9.765	0.080	10	0	97.7	80-120	0			
Lead	0.09831	0.0050	0.1	0	98.3	80-120	0			
Manganese	0.09711	0.0050	0.1	0	97.1	80-120	0			
Potassium	10.17	0.20	10	0	102	80-120	0			
Selenium	0.09266	0.0050	0.1	0	92.7	80-120	0			
Silver	0.1001	0.0050	0.1	0	100	80-120	0			
Zinc	0.09922	0.010	0.1	0	99.2	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091151
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107800** Instrument ID **ICPMS3** Method: **SW6020A**

MS Sample ID: **17091170-01AMS** Units: **mg/L** Analysis Date: **9/22/2017 02:02 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653297** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4133	0.010	0.1	0.2298	183	75-125	0			S
Arsenic	0.1012	0.0050	0.1	0.001207	100	75-125	0			
Barium	0.1243	0.0050	0.1	0.02198	102	75-125	0			
Cadmium	0.09825	0.0020	0.1	0.000035	98.2	75-125	0			
Chromium	0.09804	0.0050	0.1	0.00065	97.4	75-125	0			
Copper	0.1008	0.0050	0.1	0.006056	94.8	75-125	0			
Iron	10.41	0.080	10	0.4021	100	75-125	0			
Lead	0.1031	0.0050	0.1	0.001232	102	75-125	0			
Manganese	0.117	0.0050	0.1	0.0202	96.8	75-125	0			
Potassium	12.05	0.20	10	1.603	104	75-125	0			
Selenium	0.1006	0.0050	0.1	0.000026	101	75-125	0			
Silver	0.1024	0.0050	0.1	0.000011	102	75-125	0			
Zinc	0.1032	0.010	0.1	0.003787	99.4	75-125	0			

MSD Sample ID: **17091170-01AMSD** Units: **mg/L** Analysis Date: **9/22/2017 02:04 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653298** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4121	0.010	0.1	0.2298	182	75-125	0.4133	0.281	20	S
Arsenic	0.09704	0.0050	0.1	0.001207	95.8	75-125	0.1012	4.25	20	
Barium	0.1235	0.0050	0.1	0.02198	101	75-125	0.1243	0.643	20	
Cadmium	0.09588	0.0020	0.1	0.000035	95.8	75-125	0.09825	2.44	20	
Chromium	0.09381	0.0050	0.1	0.00065	93.2	75-125	0.09804	4.41	20	
Copper	0.09679	0.0050	0.1	0.006056	90.7	75-125	0.1008	4.1	20	
Iron	10	0.080	10	0.4021	96	75-125	10.41	3.98	20	
Lead	0.09994	0.0050	0.1	0.001232	98.7	75-125	0.1031	3.09	20	
Manganese	0.1147	0.0050	0.1	0.0202	94.5	75-125	0.117	2.01	20	
Potassium	11.52	0.20	10	1.603	99.2	75-125	12.05	4.48	20	
Selenium	0.09252	0.0050	0.1	0.000026	92.5	75-125	0.1006	8.41	20	
Silver	0.09706	0.0050	0.1	0.000011	97.1	75-125	0.1024	5.31	20	
Zinc	0.09836	0.010	0.1	0.003787	94.6	75-125	0.1032	4.8	20	

The following samples were analyzed in this batch: 17091151-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091151
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R220472** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R220472** Units: **mg/L** Analysis Date: **9/20/2017 04:15 PM**
Client ID: Run ID: **IC4_170920B** SeqNo: **4649707** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R220472** Units: **mg/L** Analysis Date: **9/20/2017 04:34 PM**
Client ID: Run ID: **IC4_170920B** SeqNo: **4649708** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.911	0.10	2	0	95.6	81-116	0			
Sulfate	9.599	1.0	10	0	96	85-110	0			

MS Sample ID: **17091151-01B MS** Units: **mg/L** Analysis Date: **9/20/2017 08:44 PM**
Client ID: **MW-6S** Run ID: **IC4_170920B** SeqNo: **4649721** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	10.03	0.50	10	0	100	75-125	0			
Sulfate	53.42	5.0	50	4.031	98.8	75-125	0			

MSD Sample ID: **17091151-01B MSD** Units: **mg/L** Analysis Date: **9/20/2017 09:03 PM**
Client ID: **MW-6S** Run ID: **IC4_170920B** SeqNo: **4649722** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	9.996	0.50	10	0	100	75-125	10.03	0.3	20	
Sulfate	53.59	5.0	50	4.031	99.1	75-125	53.42	0.314	20	

The following samples were analyzed in this batch:

17091151-01B	17091151-02B	17091151-03B
17091151-04B	17091151-05B	17091151-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 39135

ALS Project Manager: BILL CAREY | ALS Work Order #: 1709115

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Ogden Dunes	A	Total Metals by 6020W (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Pb, Se, Zn, K, Mn)
Work Order		Project Number		B	
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Mercury by 1631E
Send Report To	Martin.Ryan@ERM.com	Invoice Attn	Debra Moss/Accounts Payable	D	Anions (NO3, SO4)
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@ERM.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6S	9/19/17	1350	WT	None, 2	6	X		X	X							
2	MW-6D		1420														
3	MW-8S		1515														
4	MW-8D		1520														
5	MW-1S		1610														
6	MW-1D		1615														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Jenna Sharkey

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: Jenna Sharkey / ERM	Date: 9/20/17	Time: 0840	Received by:	Notes:	
Relinquished by:	Date: 9/20/17	Time: ~~0940~~ 1450	Received by (Laboratory):	Cooler ID	Cooler Temp: 2.8°C
Logged by (Laboratory):	Date: 9/20/17	Time: 1734	Checked by (Laboratory):		

QC Package: (Check One Box Below)
- ☒ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **20-Sep-17 12:50**

Work Order: **17091151** Received by: **PW**

Checklist completed by Pete Wesson (eSignature) 20-Sep-17 (Date) Reviewed by: Bill Carey (eSignature) 20-Sep-17 (Date)

Matrices: water

Carrier name: Courier

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.8°C	IR	
Cooler(s)/Kit(s):	1		
Date/Time sample(s) sent to storage:	9/20/2017 13:34		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

29-Sep-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **17091257**

Dear Marty,

ALS Environmental received 11 samples on 21-Sep-2017 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 28.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ALS Group, USA

Date: 29-Sep-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **17091257**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17091257-01	MW-7D	Water		9/20/2017 11:40	9/21/2017 10:00	☐
17091257-02	MW-7S	Water		9/20/2017 11:50	9/21/2017 10:00	☐
17091257-03	MW-5S	Water		9/20/2017 13:00	9/21/2017 10:00	☐
17091257-04	MW-5D	Water		9/20/2017 13:10	9/21/2017 10:00	☐
17091257-05	MW-4D	Water		9/20/2017 14:20	9/21/2017 10:00	☐
17091257-06	MW-4S	Water		9/20/2017 14:15	9/21/2017 10:00	☐
17091257-07	MW-3D	Water		9/20/2017 15:15	9/21/2017 10:00	☐
17091257-08	MW-3S	Water		9/20/2017 15:20	9/21/2017 10:00	☐
17091257-09	MW-2S	Water		9/20/2017 16:35	9/21/2017 10:00	☐
17091257-10	MW-2D	Water		9/20/2017 16:30	9/21/2017 10:00	☐
17091257-11	DUP01	Water		9/20/2017	9/21/2017 10:00	☐

ALS Group, USA

Date: 29-Sep-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **17091257**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 17091257

Case Narrative

Samples for the above noted Work Order were received on 9/21/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
Batch R220567, Method IC_9056_W, Sample 17091257-03B: The reporting limit is elevated due to dilution for high concentrations of non-target analytes and an effervescent matrix.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7D
Collection Date: 9/20/2017 11:40 AM

Work Order: 17091257
Lab ID: 17091257-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/28/2017 14:41
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**11**		**4.2**	**10**	**µg/L**	1	9/22/2017 14:24
Arsenic	U		0.87	5.0	µg/L	1	9/22/2017 14:24
Barium	**26**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 14:24
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 14:24
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 14:24
Copper	U		0.28	5.0	µg/L	1	9/22/2017 14:24
Hardness (Calculation)	**170,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 14:24
Iron	**1,100**		**4.6**	**80**	**µg/L**	1	9/22/2017 14:24
Lead	U		0.33	5.0	µg/L	1	9/22/2017 14:24
Manganese	**190**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 14:24
Potassium	**2,500**		**17**	**200**	**µg/L**	1	9/22/2017 14:24
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 14:24
Silver	U		0.050	5.0	µg/L	1	9/22/2017 14:24
Zinc	U		1.4	10	µg/L	1	9/22/2017 14:24
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/21/2017 18:30
Sulfate	**21,000**		**1,700**	**5,000**	**µg/L**	5	9/21/2017 18:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-7S
Collection Date: 9/20/2017 11:50 AM

Work Order: 17091257
Lab ID: 17091257-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/28/2017 15:12
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**13**		**4.2**	**10**	**µg/L**	1	9/22/2017 14:25
Arsenic	**4.2**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2017 14:25
Barium	**69**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 14:25
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 14:25
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 14:25
Copper	**0.32**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2017 14:25
Hardness (Calculation)	**290,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 14:25
Iron	**7,800**		**4.6**	**80**	**µg/L**	1	9/22/2017 14:25
Lead	U		0.33	5.0	µg/L	1	9/22/2017 14:25
Manganese	**570**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 14:25
Potassium	**3,100**		**17**	**200**	**µg/L**	1	9/22/2017 14:25
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 14:25
Silver	U		0.050	5.0	µg/L	1	9/22/2017 14:25
Zinc	U		1.4	10	µg/L	1	9/22/2017 14:25
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**50**	J	**46**	**100**	**µg/L**	1	9/21/2017 19:08
Sulfate	**2,600**		**340**	**1,000**	**µg/L**	1	9/21/2017 19:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5S
Collection Date: 9/20/2017 01:00 PM

Work Order: 17091257
Lab ID: 17091257-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	**0.00094**		**0.00020**	**0.00050**	**µg/L**	1	9/28/2017 15:20
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/22/17		Analyst: **JF**
Aluminum	**22**		**4.2**	**10**	**µg/L**	1	9/22/2017 14:27
Arsenic	**1.9**	J	**0.87**	**5.0**	**µg/L**	1	9/22/2017 14:27
Barium	**45**		**2.2**	**5.0**	**µg/L**	1	9/22/2017 14:27
Cadmium	U		0.050	2.0	µg/L	1	9/22/2017 14:27
Chromium	U		0.65	5.0	µg/L	1	9/22/2017 14:27
Copper	**1.9**	J	**0.28**	**5.0**	**µg/L**	1	9/22/2017 14:27
Hardness (Calculation)	**380,000**		**240**	**2,000**	**µg/L**	1	9/22/2017 14:27
Iron	**920**		**4.6**	**80**	**µg/L**	1	9/22/2017 14:27
Lead	U		0.33	5.0	µg/L	1	9/22/2017 14:27
Manganese	**420**		**0.51**	**5.0**	**µg/L**	1	9/22/2017 14:27
Potassium	**4,400**		**17**	**200**	**µg/L**	1	9/22/2017 14:27
Selenium	U		0.90	5.0	µg/L	1	9/22/2017 14:27
Silver	U		0.050	5.0	µg/L	1	9/22/2017 14:27
Zinc	**18**		**1.4**	**10**	**µg/L**	1	9/22/2017 14:27
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**150**	J	**92**	**200**	**µg/L**	2	9/21/2017 19:28
Sulfate	**150,000**		**6,900**	**20,000**	**µg/L**	20	9/21/2017 19:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-5D
Collection Date: 9/20/2017 01:10 PM

Work Order: 17091257
Lab ID: 17091257-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/28/2017 15:28
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**8.9**	J	**4.2**	**10**	**µg/L**	1	9/25/2017 15:26
Arsenic	**1.4**	J	**0.87**	**5.0**	**µg/L**	1	9/25/2017 15:26
Barium	**82**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 15:26
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 15:26
Chromium	U		0.65	5.0	µg/L	1	9/25/2017 15:26
Copper	**0.30**	J	**0.28**	**5.0**	**µg/L**	1	9/25/2017 15:26
Hardness (Calculation)	**270,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 15:26
Iron	**3,800**		**4.6**	**80**	**µg/L**	1	9/25/2017 15:26
Lead	**0.52**	J	**0.33**	**5.0**	**µg/L**	1	9/25/2017 15:26
Manganese	**200**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 15:26
Potassium	**4,100**		**17**	**200**	**µg/L**	1	9/25/2017 15:26
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 15:26
Silver	U		0.050	5.0	µg/L	1	9/25/2017 15:26
Zinc	U		1.4	10	µg/L	1	9/25/2017 15:26
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/21/2017 20:44
Sulfate	**58,000**		**3,400**	**10,000**	**µg/L**	10	9/21/2017 21:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4D
Collection Date: 9/20/2017 02:20 PM

Work Order: 17091257
Lab ID: 17091257-05
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/28/2017 15:36
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**7.8**	J	**4.2**	**10**	**µg/L**	1	9/25/2017 15:33
Arsenic	**2.4**	J	**0.87**	**5.0**	**µg/L**	1	9/25/2017 15:33
Barium	**150**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 15:33
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 15:33
Chromium	**0.92**	J	**0.65**	**5.0**	**µg/L**	1	9/25/2017 15:33
Copper	**1.3**	J	**0.28**	**5.0**	**µg/L**	1	9/25/2017 15:33
Hardness (Calculation)	**450,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 15:33
Iron	**18,000**		**4.6**	**80**	**µg/L**	1	9/25/2017 15:33
Lead	U		0.33	5.0	µg/L	1	9/25/2017 15:33
Manganese	**560**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 15:33
Potassium	**3,300**		**17**	**200**	**µg/L**	1	9/25/2017 15:33
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 15:33
Silver	U		0.050	5.0	µg/L	1	9/25/2017 15:33
Zinc	**1.6**	J	**1.4**	**10**	**µg/L**	1	9/25/2017 15:33
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/21/2017 21:23
Sulfate	**110,000**		**3,400**	**10,000**	**µg/L**	10	9/21/2017 22:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-4S
Collection Date: 9/20/2017 02:15 PM

Work Order: 17091257
Lab ID: 17091257-06
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	**0.00075**		**0.00020**	**0.00050**	**µg/L**	1	9/28/2017 15:51
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**36**		**4.2**	**10**	**µg/L**	1	9/25/2017 15:34
Arsenic	**6.5**		**0.87**	**5.0**	**µg/L**	1	9/25/2017 15:34
Barium	**46**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 15:34
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 15:34
Chromium	U		0.65	5.0	µg/L	1	9/25/2017 15:34
Copper	**0.62**	J	**0.28**	**5.0**	**µg/L**	1	9/25/2017 15:34
Hardness (Calculation)	**280,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 15:34
Iron	**4,300**		**4.6**	**80**	**µg/L**	1	9/25/2017 15:34
Lead	U		0.33	5.0	µg/L	1	9/25/2017 15:34
Manganese	**540**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 15:34
Potassium	**3,700**		**17**	**200**	**µg/L**	1	9/25/2017 15:34
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 15:34
Silver	U		0.050	5.0	µg/L	1	9/25/2017 15:34
Zinc	**16**		**1.4**	**10**	**µg/L**	1	9/25/2017 15:34
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/21/2017 22:39
Sulfate	**17,000**		**340**	**1,000**	**µg/L**	1	9/21/2017 22:39

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3D
Collection Date: 9/20/2017 03:15 PM

Work Order: 17091257
Lab ID: 17091257-07
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/28/2017 15:59
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**4.7**	J	**4.2**	**10**	**µg/L**	1	9/25/2017 15:36
Arsenic	**7.0**		**0.87**	**5.0**	**µg/L**	1	9/25/2017 15:36
Barium	**120**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 15:36
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 15:36
Chromium	U		0.65	5.0	µg/L	1	9/25/2017 15:36
Copper	**2.4**	J	**0.28**	**5.0**	**µg/L**	1	9/25/2017 15:36
Hardness (Calculation)	**330,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 15:36
Iron	**9,400**		**4.6**	**80**	**µg/L**	1	9/25/2017 15:36
Lead	U		0.33	5.0	µg/L	1	9/25/2017 15:36
Manganese	**460**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 15:36
Potassium	**4,200**		**17**	**200**	**µg/L**	1	9/25/2017 15:36
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 15:36
Silver	U		0.050	5.0	µg/L	1	9/25/2017 15:36
Zinc	U		1.4	10	µg/L	1	9/25/2017 15:36
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/21/2017 22:58
Sulfate	U		340	1,000	µg/L	1	9/21/2017 22:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-3S
Collection Date: 9/20/2017 03:20 PM

Work Order: 17091257
Lab ID: 17091257-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER			Method: **E1631E**		Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	**0.00031**	J	**0.00020**	**0.00050**	**µg/L**	1	9/28/2017 16:07
METALS BY ICP-MS			Method: **SW6020A**		Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**11**		**4.2**	**10**	**µg/L**	1	9/25/2017 14:05
Arsenic	**3.0**	J	**0.87**	**5.0**	**µg/L**	1	9/25/2017 14:05
Barium	**47**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 14:05
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 14:05
Chromium	U		0.65	5.0	µg/L	1	9/25/2017 14:05
Copper	**0.55**	J	**0.28**	**5.0**	**µg/L**	1	9/25/2017 14:05
Hardness (Calculation)	**230,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 14:05
Iron	**6,600**		**4.6**	**80**	**µg/L**	1	9/25/2017 14:05
Lead	U		0.33	5.0	µg/L	1	9/25/2017 14:05
Manganese	**840**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 14:05
Potassium	**1,700**		**17**	**200**	**µg/L**	1	9/25/2017 14:05
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 14:05
Silver	U		0.050	5.0	µg/L	1	9/25/2017 14:05
Zinc	**3.1**	J	**1.4**	**10**	**µg/L**	1	9/25/2017 14:05
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **EE**
Nitrogen, Nitrate	**52**	J	**46**	**100**	**µg/L**	1	9/21/2017 23:18
Sulfate	**570**	J	**340**	**1,000**	**µg/L**	1	9/21/2017 23:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2S
Collection Date: 9/20/2017 04:35 PM

Work Order: 17091257
Lab ID: 17091257-09
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	**0.0016**		**0.00020**	**0.00050**	**µg/L**	1	9/28/2017 16:15
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**280**		**4.2**	**10**	**µg/L**	1	9/25/2017 14:06
Arsenic	**6.7**		**0.87**	**5.0**	**µg/L**	1	9/25/2017 14:06
Barium	**24**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 14:06
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 14:06
Chromium	U		0.65	5.0	µg/L	1	9/25/2017 14:06
Copper	**0.63**	J	**0.28**	**5.0**	**µg/L**	1	9/25/2017 14:06
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 14:06
Iron	**3,600**		**4.6**	**80**	**µg/L**	1	9/25/2017 14:06
Lead	**0.98**	J	**0.33**	**5.0**	**µg/L**	1	9/25/2017 14:06
Manganese	**66**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 14:06
Potassium	**1,800**		**17**	**200**	**µg/L**	1	9/25/2017 14:06
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 14:06
Silver	U		0.050	5.0	µg/L	1	9/25/2017 14:06
Zinc	**26**		**1.4**	**10**	**µg/L**	1	9/25/2017 14:06
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**54**	J	**46**	**100**	**µg/L**	1	9/21/2017 23:37
Sulfate	**2,700**		**340**	**1,000**	**µg/L**	1	9/21/2017 23:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: MW-2D
Collection Date: 9/20/2017 04:30 PM

Work Order: 17091257
Lab ID: 17091257-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	U		0.00020	0.00050	µg/L	1	9/28/2017 16:46
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**6.3**	J	**4.2**	**10**	**µg/L**	1	9/25/2017 14:12
Arsenic	**1.2**	J	**0.87**	**5.0**	**µg/L**	1	9/25/2017 14:12
Barium	**83**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 14:12
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 14:12
Chromium	U		0.65	5.0	µg/L	1	9/25/2017 14:12
Copper	U		0.28	5.0	µg/L	1	9/25/2017 14:12
Hardness (Calculation)	**240,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 14:12
Iron	**3,800**		**4.6**	**80**	**µg/L**	1	9/25/2017 14:12
Lead	U		0.33	5.0	µg/L	1	9/25/2017 14:12
Manganese	**1,600**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 14:12
Potassium	**4,300**		**17**	**200**	**µg/L**	1	9/25/2017 14:12
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 14:12
Silver	U		0.050	5.0	µg/L	1	9/25/2017 14:12
Zinc	U		1.4	10	µg/L	1	9/25/2017 14:12
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/21/2017 23:56
Sulfate	U		340	1,000	µg/L	1	9/21/2017 23:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *29-Sep-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: DUP01
Collection Date: 9/20/2017

Work Order: 17091257
Lab ID: 17091257-11
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	**0.0012**		**0.00020**	**0.00050**	**µg/L**	1	9/28/2017 16:54
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/25/17		Analyst: **JF**
Aluminum	**180**		**4.2**	**10**	**µg/L**	1	9/25/2017 14:14
Arsenic	**5.6**		**0.87**	**5.0**	**µg/L**	1	9/25/2017 14:14
Barium	**23**		**2.2**	**5.0**	**µg/L**	1	9/25/2017 14:14
Cadmium	U		0.050	2.0	µg/L	1	9/25/2017 14:14
Chromium	U		0.65	5.0	µg/L	1	9/25/2017 14:14
Copper	**0.48**	J	**0.28**	**5.0**	**µg/L**	1	9/25/2017 14:14
Hardness (Calculation)	**120,000**		**240**	**2,000**	**µg/L**	1	9/25/2017 14:14
Iron	**2,900**		**4.6**	**80**	**µg/L**	1	9/25/2017 14:14
Lead	**0.51**	J	**0.33**	**5.0**	**µg/L**	1	9/25/2017 14:14
Manganese	**58**		**0.51**	**5.0**	**µg/L**	1	9/25/2017 14:14
Potassium	**1,700**		**17**	**200**	**µg/L**	1	9/25/2017 14:14
Selenium	U		0.90	5.0	µg/L	1	9/25/2017 14:14
Silver	U		0.050	5.0	µg/L	1	9/25/2017 14:14
Zinc	**8.1**	J	**1.4**	**10**	**µg/L**	1	9/25/2017 14:14
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**47**	J	**46**	**100**	**µg/L**	1	9/22/2017 00:15
Sulfate	**2,900**		**340**	**1,000**	**µg/L**	1	9/22/2017 00:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 29-Sep-17

Client: ERM, Inc

Work Order: 17091257

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **108094** Instrument ID **HG3** Method: **E1631E**

MBLK1	Sample ID: **MBLK1-108094-108094**				Units: **ng/L**			Analysis Date: **9/28/2017 01:46 PM**			
Client ID:	Run ID: **HG3_170928A**				SeqNo: **4665747**			Prep Date: **9/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2	Sample ID: **MBLK2-108094-108094**				Units: **ng/L**			Analysis Date: **9/28/2017 02:49 PM**			
Client ID:	Run ID: **HG3_170928A**				SeqNo: **4665762**			Prep Date: **9/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3	Sample ID: **MBLK3-108094-108094**				Units: **ng/L**			Analysis Date: **9/28/2017 03:43 PM**			
Client ID:	Run ID: **HG3_170928A**				SeqNo: **4665776**			Prep Date: **9/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS	Sample ID: **17091257-01CMS**				Units: **ng/L**			Analysis Date: **9/28/2017 02:57 PM**			
Client ID: **MW-7D**	Run ID: **HG3_170928A**				SeqNo: **4665764**			Prep Date: **9/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	4.95	0.50	5	0.02	98.6	71-125	0			

MS	Sample ID: **17091257-09CMS**				Units: **ng/L**			Analysis Date: **9/28/2017 04:22 PM**			
Client ID: **MW-2S**	Run ID: **HG3_170928A**				SeqNo: **4665786**			Prep Date: **9/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.8	0.50	5	1.58	104	71-125	0			

MSD	Sample ID: **17091257-01CMSD**				Units: **ng/L**			Analysis Date: **9/28/2017 03:04 PM**			
Client ID: **MW-7D**	Run ID: **HG3_170928A**				SeqNo: **4665766**			Prep Date: **9/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.02	0.50	5	0.02	100	71-125	4.95	1.4	24	

MSD	Sample ID: **17091257-09CMSD**				Units: **ng/L**			Analysis Date: **9/28/2017 04:38 PM**			
Client ID: **MW-2S**	Run ID: **HG3_170928A**				SeqNo: **4665789**			Prep Date: **9/27/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	6.39	0.50	5	1.58	96.2	71-125	6.8	6.22	24	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091257
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **108094** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-108094-108094** Units: **ng/L** Analysis Date: **9/28/2017 01:31 PM**
Client ID: Run ID: **HG3_170928A** SeqNo: **4665744** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.33	0.50	5	0	107	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-108094-108094** Units: **ng/L** Analysis Date: **9/28/2017 05:01 PM**
Client ID: Run ID: **HG3_170928A** SeqNo: **4665795** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.04	0.50	5	0	101	77-123	0			

The following samples were analyzed in this batch:

17091257-01C	17091257-02C	17091257-03C
17091257-04C	17091257-05C	17091257-06C
17091257-07C	17091257-08C	17091257-09C
17091257-10C	17091257-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091257
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107800** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK Sample ID: **MBLK-107800-107800** Units: **mg/L** Analysis Date: **9/22/2017 01:56 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653293** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-107800-107800** Units: **mg/L** Analysis Date: **9/22/2017 01:58 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653294** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1027	0.010	0.1	0	103	80-120	0			
Arsenic	0.09642	0.0050	0.1	0	96.4	80-120	0			
Barium	0.09865	0.0050	0.1	0	98.6	80-120	0			
Cadmium	0.09811	0.0020	0.1	0	98.1	80-120	0			
Chromium	0.09419	0.0050	0.1	0	94.2	80-120	0			
Copper	0.09459	0.0050	0.1	0	94.6	80-120	0			
Hardness (Calculation)	66.22	2.0	66.15	0	100	80-120	0			
Iron	9.765	0.080	10	0	97.7	80-120	0			
Lead	0.09831	0.0050	0.1	0	98.3	80-120	0			
Manganese	0.09711	0.0050	0.1	0	97.1	80-120	0			
Potassium	10.17	0.20	10	0	102	80-120	0			
Selenium	0.09266	0.0050	0.1	0	92.7	80-120	0			
Silver	0.1001	0.0050	0.1	0	100	80-120	0			
Zinc	0.09922	0.010	0.1	0	99.2	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091257
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107800** Instrument ID **ICPMS3** Method: **SW6020A**

MS Sample ID: **17091170-01AMS** Units: **mg/L** Analysis Date: **9/22/2017 02:02 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653297** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4133	0.010	0.1	0.2298	183	75-125	0			S
Arsenic	0.1012	0.0050	0.1	0.001207	100	75-125	0			
Barium	0.1243	0.0050	0.1	0.02198	102	75-125	0			
Cadmium	0.09825	0.0020	0.1	0.000035	98.2	75-125	0			
Chromium	0.09804	0.0050	0.1	0.00065	97.4	75-125	0			
Copper	0.1008	0.0050	0.1	0.006056	94.8	75-125	0			
Iron	10.41	0.080	10	0.4021	100	75-125	0			
Lead	0.1031	0.0050	0.1	0.001232	102	75-125	0			
Manganese	0.117	0.0050	0.1	0.0202	96.8	75-125	0			
Potassium	12.05	0.20	10	1.603	104	75-125	0			
Selenium	0.1006	0.0050	0.1	0.000026	101	75-125	0			
Silver	0.1024	0.0050	0.1	0.000011	102	75-125	0			
Zinc	0.1032	0.010	0.1	0.003787	99.4	75-125	0			

MSD Sample ID: **17091170-01AMSD** Units: **mg/L** Analysis Date: **9/22/2017 02:04 PM**
Client ID: Run ID: **ICPMS3_170922B** SeqNo: **4653298** Prep Date: **9/22/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4121	0.010	0.1	0.2298	182	75-125	0.4133	0.281	20	S
Arsenic	0.09704	0.0050	0.1	0.001207	95.8	75-125	0.1012	4.25	20	
Barium	0.1235	0.0050	0.1	0.02198	101	75-125	0.1243	0.643	20	
Cadmium	0.09588	0.0020	0.1	0.000035	95.8	75-125	0.09825	2.44	20	
Chromium	0.09381	0.0050	0.1	0.00065	93.2	75-125	0.09804	4.41	20	
Copper	0.09679	0.0050	0.1	0.006056	90.7	75-125	0.1008	4.1	20	
Iron	10	0.080	10	0.4021	96	75-125	10.41	3.98	20	
Lead	0.09994	0.0050	0.1	0.001232	98.7	75-125	0.1031	3.09	20	
Manganese	0.1147	0.0050	0.1	0.0202	94.5	75-125	0.117	2.01	20	
Potassium	11.52	0.20	10	1.603	99.2	75-125	12.05	4.48	20	
Selenium	0.09252	0.0050	0.1	0.000026	92.5	75-125	0.1006	8.41	20	
Silver	0.09706	0.0050	0.1	0.000011	97.1	75-125	0.1024	5.31	20	
Zinc	0.09836	0.010	0.1	0.003787	94.6	75-125	0.1032	4.8	20	

The following samples were analyzed in this batch:

17091257-01A	17091257-02A	17091257-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091257
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107884** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK Sample ID: **MBLK-107884-107884** Units: **mg/L** Analysis Date: **9/25/2017 02:53 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656144** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-107884-107884** Units: **mg/L** Analysis Date: **9/25/2017 02:55 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656145** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1025	0.010	0.1	0	103	80-120	0			
Arsenic	0.09536	0.0050	0.1	0	95.4	80-120	0			
Barium	0.09591	0.0050	0.1	0	95.9	80-120	0			
Cadmium	0.09197	0.0020	0.1	0	92	80-120	0			
Chromium	0.09279	0.0050	0.1	0	92.8	80-120	0			
Copper	0.09257	0.0050	0.1	0	92.6	80-120	0			
Hardness (Calculation)	66.73	2.0	66.15	0	101	80-120	0			
Iron	9.604	0.080	10	0	96	80-120	0			
Lead	0.09622	0.0050	0.1	0	96.2	80-120	0			
Manganese	0.09598	0.0050	0.1	0	96	80-120	0			
Potassium	9.901	0.20	10	0	99	80-120	0			
Selenium	0.09492	0.0050	0.1	0	94.9	80-120	0			
Silver	0.09436	0.0050	0.1	0	94.4	80-120	0			
Zinc	0.09606	0.010	0.1	0	96.1	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091257
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107884** Instrument ID **ICPMS3** Method: **SW6020A**

MS Sample ID: **17091240-01DMS** Units: **mg/L** Analysis Date: **9/25/2017 03:14 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656158** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.364	0.010	0.1	0.2186	145	75-125	0			S
Arsenic	0.09822	0.0050	0.1	0.001923	96.3	75-125	0			
Barium	0.1677	0.0050	0.1	0.06756	100	75-125	0			
Cadmium	0.08998	0.0020	0.1	-0.000058	90	75-125	0			
Chromium	0.09406	0.0050	0.1	0.000165	93.9	75-125	0			
Copper	0.09052	0.0050	0.1	0.000836	89.7	75-125	0			
Iron	9.88	0.080	10	0.317	95.6	75-125	0			
Lead	0.1012	0.0050	0.1	0.002323	98.9	75-125	0			
Manganese	0.2603	0.0050	0.1	0.169	91.3	75-125	0			
Potassium	17.64	0.20	10	8.067	95.7	75-125	0			
Selenium	0.09709	0.0050	0.1	0.000262	96.8	75-125	0			
Silver	0.08996	0.0050	0.1	-0.000045	90	75-125	0			
Zinc	0.0956	0.010	0.1	0.002599	93	75-125	0			

MSD Sample ID: **17091240-01DMSD** Units: **mg/L** Analysis Date: **9/25/2017 03:16 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656159** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3861	0.010	0.1	0.2186	168	75-125	0.364	5.89	20	S
Arsenic	0.09962	0.0050	0.1	0.001923	97.7	75-125	0.09822	1.42	20	
Barium	0.1706	0.0050	0.1	0.06756	103	75-125	0.1677	1.69	20	
Cadmium	0.09064	0.0020	0.1	-0.000058	90.7	75-125	0.08998	0.73	20	
Chromium	0.09384	0.0050	0.1	0.000165	93.7	75-125	0.09406	0.227	20	
Copper	0.09016	0.0050	0.1	0.000836	89.3	75-125	0.09052	0.4	20	
Iron	9.923	0.080	10	0.317	96.1	75-125	9.88	0.427	20	
Lead	0.09947	0.0050	0.1	0.002323	97.1	75-125	0.1012	1.71	20	
Manganese	0.2618	0.0050	0.1	0.169	92.8	75-125	0.2603	0.568	20	
Potassium	17.29	0.20	10	8.067	92.2	75-125	17.64	2.03	20	
Selenium	0.09897	0.0050	0.1	0.000262	98.7	75-125	0.09709	1.92	20	
Silver	0.09142	0.0050	0.1	-0.000045	91.5	75-125	0.08996	1.61	20	
Zinc	0.09452	0.010	0.1	0.002599	91.9	75-125	0.0956	1.13	20	

The following samples were analyzed in this batch:

17091257-04A	17091257-05A	17091257-06A
17091257-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **107892** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK Sample ID: **MBLK-107892-107892** Units: **mg/L** Analysis Date: **9/25/2017 01:59 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656108** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	0.001421	0.0050								J
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

MBLK Sample ID: **MBLK-107877-107892** Units: **mg/L** Analysis Date: **9/25/2017 02:00 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656109** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.010								
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	U	0.0050								
Hardness (Calculation)	U	2.0								
Iron	U	0.080								
Lead	U	0.0050								
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **107892** Instrument ID **ICPMS3** Method: **SW6020A**

LCS Sample ID: **LCS-107892-107892** Units: **mg/L** Analysis Date: **9/25/2017 02:02 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656110** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1021	0.010	0.1	0	102	80-120	0			
Arsenic	0.09365	0.0050	0.1	0	93.6	80-120	0			
Barium	0.09474	0.0050	0.1	0	94.7	80-120	0			
Cadmium	0.09126	0.0020	0.1	0	91.3	80-120	0			
Chromium	0.09306	0.0050	0.1	0	93.1	80-120	0			
Copper	0.09404	0.0050	0.1	0	94	80-120	0			
Hardness (Calculation)	63.38	2.0	66.15	0	95.8	80-120	0			
Iron	9.508	0.080	10	0	95.1	80-120	0			
Lead	0.09568	0.0050	0.1	0	95.7	80-120	0			
Manganese	0.09575	0.0050	0.1	0	95.8	80-120	0			
Potassium	9.701	0.20	10	0	97	80-120	0			
Selenium	0.09393	0.0050	0.1	0	93.9	80-120	0			
Silver	0.0941	0.0050	0.1	0	94.1	80-120	0			
Zinc	0.09353	0.010	0.1	0	93.5	80-120	0			

LCS Sample ID: **LCS-107877-107892** Units: **mg/L** Analysis Date: **9/25/2017 02:03 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656111** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1013	0.010	0.1	0	101	80-120	0			
Arsenic	0.09539	0.0050	0.1	0	95.4	80-120	0			
Barium	0.094	0.0050	0.1	0	94	80-120	0			
Cadmium	0.09223	0.0020	0.1	0	92.2	80-120	0			
Chromium	0.09447	0.0050	0.1	0	94.5	80-120	0			
Copper	0.09445	0.0050	0.1	0	94.5	80-120	0			
Hardness (Calculation)	64.51	2.0	66.15	0	97.5	80-120	0			
Iron	9.67	0.080	10	0	96.7	80-120	0			
Lead	0.09508	0.0050	0.1	0	95.1	80-120	0			
Manganese	0.09487	0.0050	0.1	0	94.9	80-120	0			
Potassium	9.907	0.20	10	0	99.1	80-120	0			
Selenium	0.09287	0.0050	0.1	0	92.9	80-120	0			
Silver	0.09473	0.0050	0.1	0	94.7	80-120	0			
Zinc	0.09587	0.010	0.1	0	95.9	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091257
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **107892** Instrument ID **ICPMS3** Method: **SW6020A**

MS Sample ID: **17091282-01DMS** Units: **mg/L** Analysis Date: **9/25/2017 02:19 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656121** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.6701	0.010	0.1	0.01159	659	75-125	0			S
Arsenic	0.09472	0.0050	0.1	0.000161	94.6	75-125	0			
Barium	0.2001	0.0050	0.1	0.1009	99.2	75-125	0			
Cadmium	0.08546	0.0020	0.1	0.000174	85.3	75-125	0			
Chromium	0.09099	0.0050	0.1	-0.000048	91	75-125	0			
Copper	0.08474	0.0050	0.1	0.000685	84.1	75-125	0			
Iron	9.637	0.080	10	0.01071	96.3	75-125	0			
Lead	0.09684	0.0050	0.1	-0.000036	96.9	75-125	0			
Manganese	0.6756	0.0050	0.1	0.5933	82.3	75-125	0			O
Potassium	11.6	0.20	10	1.693	99	75-125	0			
Selenium	0.09729	0.0050	0.1	0.000134	97.2	75-125	0			
Silver	0.08478	0.0050	0.1	-0.00005	84.8	75-125	0			
Zinc	0.1023	0.010	0.1	0.01462	87.6	75-125	0			

MSD Sample ID: **17091282-01DMSD** Units: **mg/L** Analysis Date: **9/25/2017 02:21 PM**
Client ID: Run ID: **ICPMS3_170925A** SeqNo: **4656122** Prep Date: **9/25/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.4758	0.010	0.1	0.01159	464	75-125	0.6701	33.9	20	SR
Arsenic	0.1068	0.0050	0.1	0.000161	107	75-125	0.09472	12	20	
Barium	0.1983	0.0050	0.1	0.1009	97.4	75-125	0.2001	0.926	20	
Cadmium	0.08616	0.0020	0.1	0.000174	86	75-125	0.08546	0.808	20	
Chromium	0.1029	0.0050	0.1	-0.000048	103	75-125	0.09099	12.3	20	
Copper	0.09613	0.0050	0.1	0.000685	95.4	75-125	0.08474	12.6	20	
Iron	10.93	0.080	10	0.01071	109	75-125	9.637	12.6	20	
Lead	0.09758	0.0050	0.1	-0.000036	97.6	75-125	0.09684	0.772	20	
Manganese	0.6771	0.0050	0.1	0.5933	83.8	75-125	0.6756	0.213	20	O
Potassium	12.96	0.20	10	1.693	113	75-125	11.6	11.1	20	
Selenium	0.1132	0.0050	0.1	0.000134	113	75-125	0.09729	15.1	20	
Silver	0.09158	0.0050	0.1	-0.00005	91.6	75-125	0.08478	7.71	20	
Zinc	0.1158	0.010	0.1	0.01462	101	75-125	0.1023	12.4	20	

The following samples were analyzed in this batch:

17091257-08A	17091257-09A	17091257-10A
17091257-11A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091257
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R220567** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R220567** Units: **mg/L** Analysis Date: **9/21/2017 05:52 PM**
Client ID: Run ID: **IC4_170921B** SeqNo: **4652120** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R220567** Units: **mg/L** Analysis Date: **9/21/2017 06:11 PM**
Client ID: Run ID: **IC4_170921B** SeqNo: **4652121** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.926	0.10	2	0	96.3	81-116	0			
Sulfate	9.766	1.0	10	0	97.7	85-110	0			

MS Sample ID: **17091257-03B MS** Units: **mg/L** Analysis Date: **9/21/2017 08:06 PM**
Client ID: **MW-5S** Run ID: **IC4_170921B** SeqNo: **4652127** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	100.9	5.0	100	0	101	75-125	0			
Sulfate	653.1	50	500	152.7	100	75-125	0			

MSD Sample ID: **17091257-03B MSD** Units: **mg/L** Analysis Date: **9/21/2017 08:25 PM**
Client ID: **MW-5S** Run ID: **IC4_170921B** SeqNo: **4652128** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	99.96	5.0	100	0	100	75-125	100.9	0.906	20	
Sulfate	650.4	50	500	152.7	99.5	75-125	653.1	0.42	20	

The following samples were analyzed in this batch:

17091257-01B	17091257-02B	17091257-03B
17091257-04B	17091257-05B	17091257-06B
17091257-07B	17091257-08B	17091257-09B
17091257-10B	17091257-11B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Chain of Custody Form

Page 1 of 2

COC ID: 39134

ALS Environmental

ALS Project Manager:

ALS Work Order #: 1709125

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Ogden Dunes	A	Metals by 6020W (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Pb, Se, Zn, K, Mn)
Work Order		Project Number		B	Mercury by 1631E
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions (NO3, SO4)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6 MW-7D	9/20/17	1140	WT	None	6	X	X	X								
2	MW-7S		1150														
3	MW-5S		1300														
4	MW-5D		1310														
5	MW-4D		1420														
6	MW-4S		1415														
7	MW-3D		1515														
8	MW-3S		1520														
9	MW-2S		1635														
10	MW-2D		1630														

Sampler(s) Please Print & Sign: Jenna Sharkey, John Ohmberger

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: Jenna Sharkey ERM	Date: 9/20/17	Time: 1700	Received by:	Notes:	
Relinquished by:	Date: 9/20/17	Time: 1800	Received by (laboratory): 9-21-17 0000	Cooler ID: SR9	Cooler Temp: 5.0
Logged by (Laboratory): NTF	Date: 9-21-17	Time: 1430	Checked by (Laboratory):		

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Middletown, PA +1 717 944 5541
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South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 2 of 2

COC ID: 39132

ALS Project Manager: | ALS Work Order #: 1709257

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Ogden Dunes	A	Metals by 6020W (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Pb, Se, Zn, K, Mn)
Work Order		Project Number		B	Mercury by 1631E
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions (NO3, SO4)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1- 1000	E	
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	DUP01	9/20/17	-	WT	None; 2	6	X	X	X								
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Jenna Sharkey, John Ohmberger

Shipment Method: Courier

Turnaround Time In Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: Jenna Sharkey / ERM	Date: 9/20/17	Time: 1700	Received by:	Notes:	
Relinquished by:	Date: 9/20/17	Time: 1800	Received by (Laboratory): 9-21-17 1000	Cooler ID	Cooler Temp
Logged by (Laboratory):	Date: 9-21-17	Time: 1430	Checked by (Laboratory):	SR2	8.6

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **21-Sep-17 10:00**

Work Order: **17091257** Received by: **NCF**

Checklist completed by Nicole Fredericks (eSignature) 21-Sep-17 (Date) Reviewed by: Bill Carey (eSignature) 21-Sep-17 (Date)

Matrices: Water

Carrier name: UPS

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	5.6/5.6	sr2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	9/21/2017 2:33:53 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

03-Oct-2017

Marty Ryan
ERM, Inc
8425 Woodfield Crossing Blvd
Suite 560W
Indianapolis, IN 46240

Re: **IAW - Ogden Dunes** Work Order: **17091357**

Dear Marty,

ALS Environmental received 2 samples on 22-Sep-2017 01:45 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 13.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Bill Carey

Bill Carey
Project Manager

Certificate No: MN 998501

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group, USA

Date: 03-Oct-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: **17091357**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17091357-01	BG-1S	Water		9/21/2017 08:10	9/22/2017 13:45	☐
17091357-02	BG-1D	Water		9/21/2017 08:30	9/22/2017 13:45	☐

ALS Group, USA

Date: 03-Oct-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
WorkOrder: **17091357**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: 03-Oct-17

Client: ERM, Inc
Project: IAW - Ogden Dunes
Work Order: 17091357

Case Narrative

Samples for the above noted Work Order were received on 9/22/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *03-Oct-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1S
Collection Date: 9/21/2017 08:10 AM

Work Order: 17091357
Lab ID: 17091357-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	**0.051**		**0.00020**	**0.00050**	**µg/L**	1	9/28/2017 18:58
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/27/17		Analyst: **JF**
Aluminum	**260**		**4.2**	**10**	**µg/L**	1	9/27/2017 21:43
Arsenic	**1.5**	J	**0.87**	**5.0**	**µg/L**	1	9/27/2017 21:43
Barium	**6.0**		**2.2**	**5.0**	**µg/L**	1	9/27/2017 21:43
Cadmium	**0.28**	J	**0.050**	**2.0**	**µg/L**	1	9/27/2017 21:43
Chromium	**2.0**	J	**0.65**	**5.0**	**µg/L**	1	9/27/2017 21:43
Copper	**17**		**0.28**	**5.0**	**µg/L**	1	9/27/2017 21:43
Hardness (Calculation)	**82,000**		**240**	**2,000**	**µg/L**	1	9/27/2017 21:43
Iron	**1,500**		**4.6**	**80**	**µg/L**	1	9/27/2017 21:43
Lead	**0.55**	J	**0.33**	**5.0**	**µg/L**	1	9/27/2017 21:43
Manganese	**91**		**0.51**	**5.0**	**µg/L**	1	9/27/2017 21:43
Potassium	**920**		**17**	**200**	**µg/L**	1	9/27/2017 21:43
Selenium	**1.3**	J	**0.90**	**5.0**	**µg/L**	1	9/27/2017 21:43
Silver	U		0.050	5.0	µg/L	1	9/27/2017 21:43
Zinc	**14**		**1.4**	**10**	**µg/L**	1	9/27/2017 21:43
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	U		46	100	µg/L	1	9/22/2017 18:10
Sulfate	**32,000**		**1,700**	**5,000**	**µg/L**	5	9/22/2017 18:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Oct-17*

Client: ERM, Inc
Project: IAW - Ogden Dunes
Sample ID: BG-1D
Collection Date: 9/21/2017 08:30 AM

Work Order: 17091357
Lab ID: 17091357-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY IN WATER		Method: **E1631E**			Prep: E1631E / 9/27/17		Analyst: **ABL**
Mercury	**0.00023**	J	**0.00020**	**0.00050**	**µg/L**	1	9/28/2017 19:30
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3005A / 9/27/17		Analyst: **JF**
Aluminum	**15**		**4.2**	**10**	**µg/L**	1	9/27/2017 21:52
Arsenic	**5.1**		**0.87**	**5.0**	**µg/L**	1	9/27/2017 21:52
Barium	**14**		**2.2**	**5.0**	**µg/L**	1	9/27/2017 21:52
Cadmium	U		0.050	2.0	µg/L	1	9/27/2017 21:52
Chromium	U		0.65	5.0	µg/L	1	9/27/2017 21:52
Copper	**0.31**	J	**0.28**	**5.0**	**µg/L**	1	9/27/2017 21:52
Hardness (Calculation)	**130,000**		**240**	**2,000**	**µg/L**	1	9/27/2017 21:52
Iron	**5,200**		**4.6**	**80**	**µg/L**	1	9/27/2017 21:52
Lead	U		0.33	5.0	µg/L	1	9/27/2017 21:52
Manganese	**180**		**0.51**	**5.0**	**µg/L**	1	9/27/2017 21:52
Potassium	**800**		**17**	**200**	**µg/L**	1	9/27/2017 21:52
Selenium	U		0.90	5.0	µg/L	1	9/27/2017 21:52
Silver	U		0.050	5.0	µg/L	1	9/27/2017 21:52
Zinc	**11**		**1.4**	**10**	**µg/L**	1	9/27/2017 21:52
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **EE**
Nitrogen, Nitrate	**58**	J	**46**	**100**	**µg/L**	1	9/22/2017 19:27
Sulfate	**13,000**		**340**	**1,000**	**µg/L**	1	9/22/2017 19:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 03-Oct-17

Client: ERM, Inc

Work Order: 17091357

Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **108095** Instrument ID **HG3** Method: **E1631E**

MBLK1 Sample ID: **MBLK1-108095-108095** Units: **ng/L** Analysis Date: **9/28/2017 05:17 PM**

Client ID: Run ID: **HG3_170928A** SeqNo: **4665799** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK2 Sample ID: **MBLK2-108095-108095** Units: **ng/L** Analysis Date: **9/28/2017 06:12 PM**

Client ID: Run ID: **HG3_170928A** SeqNo: **4665812** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MBLK3 Sample ID: **MBLK3-108095-108095** Units: **ng/L** Analysis Date: **9/28/2017 07:06 PM**

Client ID: Run ID: **HG3_170928A** SeqNo: **4665825** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.50	0	0	0		0			

MS Sample ID: **17091309-05CMS** Units: **ng/L** Analysis Date: **9/28/2017 06:04 PM**

Client ID: Run ID: **HG3_170928A** SeqNo: **4665810** Prep Date: **9/27/2017** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	15.8	2.5	4	12.05	93.8	71-125	0			

MS Sample ID: **17091357-01CMS** Units: **ng/L** Analysis Date: **9/28/2017 07:14 PM**

Client ID: **BG-1S** Run ID: **HG3_170928A** SeqNo: **4665827** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	50.8	0.50	5	51.1	-6	71-125	0			SO

MSD Sample ID: **17091309-05CMSD** Units: **ng/L** Analysis Date: **9/28/2017 06:19 PM**

Client ID: Run ID: **HG3_170928A** SeqNo: **4665814** Prep Date: **9/27/2017** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	15.75	2.5	4	12.05	92.5	71-125	15.8	0.317	24	

MSD Sample ID: **17091357-01CMSD** Units: **ng/L** Analysis Date: **9/28/2017 07:22 PM**

Client ID: **BG-1S** Run ID: **HG3_170928A** SeqNo: **4665829** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	51.1	0.50	5	51.1	0	71-125	50.8	0.589	24	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091357
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **108095** Instrument ID **HG3** Method: **E1631E**

LCS-OPR-START Sample ID: **OPR-START-108095-108095** Units: **ng/L** Analysis Date: **9/28/2017 05:09 PM**
Client ID: Run ID: **HG3_170928A** SeqNo: **4665797** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.02	0.50	5	0	100	77-123	0			

LCS-OPR-END Sample ID: **OPR-END-108095-108095** Units: **ng/L** Analysis Date: **9/28/2017 08:48 PM**
Client ID: Run ID: **HG3_170928A** SeqNo: **4665851** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.31	0.50	5	0	106	77-123	0			

The following samples were analyzed in this batch:

17091357-01C	17091357-02C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091357
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **108068** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK Sample ID: **MBLK-108068-108068** Units: **mg/L** Analysis Date: **9/27/2017 09:40 PM**
Client ID: Run ID: **ICPMS3_170927B** SeqNo: **4662866** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.006391	0.010								J
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Copper	0.0016	0.0050								J
Hardness (Calculation)	U	2.0								
Iron	0.009451	0.080								J
Lead	0.00041	0.0050								J
Manganese	U	0.0050								
Potassium	U	0.20								
Selenium	U	0.0050								
Silver	U	0.0050								
Zinc	U	0.010								

LCS Sample ID: **LCS-108068-108068** Units: **mg/L** Analysis Date: **9/27/2017 09:41 PM**
Client ID: Run ID: **ICPMS3_170927B** SeqNo: **4662867** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09757	0.010	0.1	0	97.6	80-120	0			
Arsenic	0.09569	0.0050	0.1	0	95.7	80-120	0			
Barium	0.09525	0.0050	0.1	0	95.3	80-120	0			
Cadmium	0.09134	0.0020	0.1	0	91.3	80-120	0			
Chromium	0.09515	0.0050	0.1	0	95.2	80-120	0			
Copper	0.1001	0.0050	0.1	0	100	80-120	0			
Hardness (Calculation)	62.26	2.0	66.15	0	94.1	80-120	0			
Iron	9.421	0.080	10	0	94.2	80-120	0			
Lead	0.09539	0.0050	0.1	0	95.4	80-120	0			
Manganese	0.09269	0.0050	0.1	0	92.7	80-120	0			
Potassium	9.37	0.20	10	0	93.7	80-120	0			
Selenium	0.09343	0.0050	0.1	0	93.4	80-120	0			
Silver	0.09637	0.0050	0.1	0	96.4	80-120	0			
Zinc	0.09752	0.010	0.1	0	97.5	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091357
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **108068** Instrument ID **ICPMS3** Method: **SW6020A**

MS Sample ID: **17091357-01AMS** Units: **mg/L** Analysis Date: **9/27/2017 09:49 PM**
Client ID: **BG-1S** Run ID: **ICPMS3_170927B** SeqNo: **4662872** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3457	0.010	0.1	0.2559	89.8	75-125	0			
Arsenic	0.09811	0.0050	0.1	0.001492	96.6	75-125	0			
Barium	0.105	0.0050	0.1	0.006037	98.9	75-125	0			
Cadmium	0.09375	0.0020	0.1	0.000275	93.5	75-125	0			
Chromium	0.09683	0.0050	0.1	0.001995	94.8	75-125	0			
Copper	0.1155	0.0050	0.1	0.01692	98.6	75-125	0			
Iron	10.92	0.080	10	1.461	94.6	75-125	0			
Lead	0.09906	0.0050	0.1	0.000553	98.5	75-125	0			
Manganese	0.1856	0.0050	0.1	0.09058	95	75-125	0			
Potassium	10.09	0.20	10	0.9242	91.7	75-125	0			
Selenium	0.09284	0.0050	0.1	0.001344	91.5	75-125	0			
Silver	0.09554	0.0050	0.1	0.000022	95.5	75-125	0			
Zinc	0.1116	0.010	0.1	0.01372	97.9	75-125	0			

MSD Sample ID: **17091357-01AMSD** Units: **mg/L** Analysis Date: **9/27/2017 09:50 PM**
Client ID: **BG-1S** Run ID: **ICPMS3_170927B** SeqNo: **4662873** Prep Date: **9/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3487	0.010	0.1	0.2559	92.8	75-125	0.3457	0.85	20	
Arsenic	0.1003	0.0050	0.1	0.001492	98.9	75-125	0.09811	2.26	20	
Barium	0.1072	0.0050	0.1	0.006037	101	75-125	0.105	2.12	20	
Cadmium	0.09489	0.0020	0.1	0.000275	94.6	75-125	0.09375	1.21	20	
Chromium	0.0995	0.0050	0.1	0.001995	97.5	75-125	0.09683	2.72	20	
Copper	0.1177	0.0050	0.1	0.01692	101	75-125	0.1155	1.83	20	
Iron	11.17	0.080	10	1.461	97.1	75-125	10.92	2.26	20	
Lead	0.09864	0.0050	0.1	0.000553	98.1	75-125	0.09906	0.425	20	
Manganese	0.1911	0.0050	0.1	0.09058	101	75-125	0.1856	2.94	20	
Potassium	10.37	0.20	10	0.9242	94.5	75-125	10.09	2.72	20	
Selenium	0.09852	0.0050	0.1	0.001344	97.2	75-125	0.09284	5.93	20	
Silver	0.09779	0.0050	0.1	0.000022	97.8	75-125	0.09554	2.33	20	
Zinc	0.1149	0.010	0.1	0.01372	101	75-125	0.1116	2.85	20	

The following samples were analyzed in this batch:

17091357-01A	17091357-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM, Inc
Work Order: 17091357
Project: IAW - Ogden Dunes

QC BATCH REPORT

Batch ID: **R220637** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R220637** Units: **mg/L** Analysis Date: **9/22/2017 05:32 PM**
Client ID: Run ID: **IC4_170922B** SeqNo: **4653591** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	U	0.10								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R220637** Units: **mg/L** Analysis Date: **9/22/2017 05:51 PM**
Client ID: Run ID: **IC4_170922B** SeqNo: **4653592** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	1.925	0.10	2	0	96.3	81-116	0			
Sulfate	9.631	1.0	10	0	96.3	85-110	0			

MS Sample ID: **17091357-01B MS** Units: **mg/L** Analysis Date: **9/22/2017 06:49 PM**
Client ID: **BG-1S** Run ID: **IC4_170922B** SeqNo: **4653595** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.67	1.0	20	0	98.4	75-125	0			
Sulfate	131.3	10	100	32.17	99.1	75-125	0			

MSD Sample ID: **17091357-01B MSD** Units: **mg/L** Analysis Date: **9/22/2017 07:08 PM**
Client ID: **BG-1S** Run ID: **IC4_170922B** SeqNo: **4653596** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate	19.62	1.0	20	0	98.1	75-125	19.67	0.255	20	
Sulfate	131.1	10	100	32.17	98.9	75-125	131.3	0.181	20	

The following samples were analyzed in this batch:

17091357-01B	17091357-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 39133

ALS Project Manager: | ALS Work Order #: L1709357

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Ogden Dunes	A	Metals by 6020W (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Pb, Se, Zn, K, Mn)
Work Order		Project Number		B	Mercury by 1631E
Company Name	ERM, Inc	Bill To Company	ERM, Inc	C	Anions (NO3, SO4)
Send Report To	Martin Ryan	Invoice Attn	Debra Moss/Accounts Payable	D	
Address	8425 Woodfield Crossing Blvd Suite 560W	Address	One Continental Towers 1701 Golf Road, Suite 1-1000	E	MS | MSD
				F	
City/State/Zip	Indianapolis, IN 46240	City/State/Zip	Rolling Meadows, IL 60008	G	
Phone	(317) 706-2000	Phone		H	
Fax	(317) 706-2010	Fax		I	
e-Mail Address	Martin.Ryan@erm.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	BG-15	9/21/17	0810	WT	None, 2	12	X	X	X		X						
2	BG-18	9/21/17	0830	WT	None, 2	6	X	X	X								
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Jenna Sharkey JohnOhmberger

Shipment Method: Courier

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by: Jenna Sharkey / ERM	Date: 9/21/17	Time: 0915	Received by:	
Relinquished by:	Date: 9/22/17	Time: 1345	Received by (Laboratory):	
Logged by (Laboratory): Kel	Date: 9/22/17	Time: 1430	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
SR2	3.0°C
PLS	

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☒ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group, USA

Sample Receipt Checklist

Client Name: **ERM-INDI** Date/Time Received: **22-Sep-17 13:45**

Work Order: **17091357** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 22-Sep-17 (Date) Reviewed by: Bill Carey (eSignature) 25-Sep-17 (Date)

Matrices: Water

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0/3.0 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	9/22/2017 2:36:58 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction: