



WATER-RIGHT DOCKET

Isle Royale National Park

Docket No: 1

HEADQUARTERS WELL

Supporting Hydro Data

10-26-1967: letter to nps from department of interior, geological survey regarding laboratory analysis of water



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

700 Capitol Savings & Loan Building
Lansing, Michigan 48933

October 26, 1967

Water Rights

*afu
10/30*

Mr. Richard L. Stanton, Chief
Office of Land and Water Rights
National Park Service
Washington Planning and Service Center
1730 North Lynn Street
Arlington, Virginia 22209

Dear Mr. Stanton:

Enclosed is a copy of the laboratory analysis of water from the Headquarters well of Isle Royale National Park at Houghton, Michigan.

You will note that the results of this laboratory analysis agree very closely with those of the field analysis which we sent to you on June 14.

Sincerely yours,

Arlington D. Ash
Arlington D. Ash
District Chief

GEH:vcn

Enclosure

*Rec'd w/ Chief, Office Land & Water Rights, WSC memo to
Supt dated Nov 1, 1967.*

PROVISIONAL RECORDS, SUBJECT TO REVISION

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

2GW

WATER ANALYSIS

Location Houghton, Michigan (NW $\frac{1}{4}$ Sec. 28, T56N R34W) County Houghton
 Source Drilled well Depth (ft) 124 Diam (in.) 5
 Cased to (ft) 120 Date drilled June 7, 1967 Point of coll. _____
 Owner National Park Service Houghton, Michigan
 Treatment _____ Use Public supply
 WBF Glacial drift from 120-124 ft. WL 22 ft. below LSD Yield 30 GPM pump measured
 Temp (°F) 46 Appear. when coll. Clear
 Collected July 18, 1967 By L. B. Hough and R. R. Eagle
 Remarks Sample taken at valve at bottom of storage tank.

	ppm	epm		ppm	epm
Silica (SiO ₂)	11	--	Bicarbonate (HCO ₃)	140	2.29
Aluminum (Al)			Carbonate (CO ₃)	0	.00
Iron (Fe)	.10	--			
Manganese (Mn)	.00	--	Sulfate (SO ₄)	11	.23
			Chloride (Cl)	3.5	.10
			Fluoride (F)	.0	.00
Calcium (Ca)	36	1.80			
Magnesium (Mg)	9.4	.77	Nitrate (NO ₃)	6.6	.11
Sodium (Na)	2.1	.09			
Potassium (K)	1.0	.02			
Total		2.68	Total		2.73

	ppm		
		Specific conductance (micromhos at 25° C)	247
Dissolved solids:		pH	8.2
Calculated	150	Color	0
Residue on evaporation at 180°C	141		
Hardness as CaCO ₃	129		
Noncarbonate	14		

Lab. No. Col 42182 Field No. 471335N-0883748 Project MICH WRD GW



JUN 16 1967

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
700 Capitol Savings & Loan Bldg.
Lansing, Michigan 48933

June 14, 1967

Chief	
Asst. Chief	
Realty	
Appraisal	
Water Rights	
Cartography	
File	Robertson

Mr. Richard L. Stanton
U. S. Department of the Interior
National Park Service
Washington Planning and Service Center
1730 North Lynn Street
Arlington, Virginia 22209

station at the former Coast Guard
building, about ten miles north
of

Dear Mr. Stanton:

Enclosed are well logs, record of pump test, and results of a field analysis of chemical character of water from the new well completed June 7, 1967, at the Isle Royale National Park Service Headquarters at Houghton, Michigan.

Two logs are included - a field log prepared by C. J. Doonan at the site while the well was being drilled, and a sample log prepared by J. H. Kent from samples collected at various depths from 35 to 123 feet.

Drilling was started on May 31 and the well was completed June 7, by Virgil Johnson and an assistant of Johnson Brothers, Baraga, Michigan. Mr. Johnson is licensed to drill water wells in Michigan.

Total depth of the finished well is 124 feet below land surface, with a 4-foot section of 10 slot silicon red brass screen set between the 120 and 124 foot depths. The water-bearing formation at this depth is sand and gravel with a slight trace of clay. Above and below this 4-foot section the sand was much finer and mixed with clay. Initial pumping indicated water was available in sufficient quantities to justify developing a well at this depth. After fifteen minutes of surging, the well was bailed at about 30 gpm for twenty minutes, resulting in a drawdown of about twelve feet. We surged again for about thirty minutes and bailed until the water was clear. After the water had returned to static level, we again bailed at the 30 gpm rate, which produced a maximum drawdown of eight feet.

It was intended to grout with cement to a depth of 10 feet; this was not possible because the upper formation is a very loose sand and gravel which caves as a hole is dug. The well is in a pit connected to the main basement and has a concrete floor. A hole was dug as



JUN 16 1967

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
700 Capitol Savings & Loan Bldg.
Lansing, Michigan 48933

June 14, 1967

Chief	
Asst. Chief	
Realty	
Appraisal	
Water Rights	<i>Box</i>
Cartographic	
File	<i>Moore</i> <i>Robertson</i>

Mr. Richard L. Stanton
U. S. Department of the Interior
National Park Service
Washington Planning and Service Center
1730 North Lynn Street
Arlington, Virginia 22209

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deep as possible without tearing out or undermining too much of the pit floor and concrete was forced down around the pipe and into the void under the floor making a tight seal between floor and pipe.

Water quality is good. A field test at the conclusion of bailing showed conductance 230; pH 7.9; hardness 136 ppm; iron less than 0.1 ppm; chloride less than 5 ppm; and temperature 44° F.

This letter and our earlier letter, dated May 3, contain all pertinent information obtained in the study. No other report will be prepared.

Sincerely yours,



Arlington D. Ash
District Chief

ADA/lms
Enclosure

cc: Superintendent, Isle Royale National Park (with enclosures)
Area Hydrologist, MCR (with enclosures)

WATER WELL PUMP RECORD				MICHIGAN DEPARTMENT OF PUBLIC HEALTH			
ACT 294 PA 1965							
1 LOCATION OF WELL							
County	Township Name	Fraction of Section	Section Number	Township Number	Range Number		
Houghton	Stanton	SE ¼ NE ¼ NW ¼	28	56 N ¼	34 E ¼		
Distance And Direction from Road Intersections			6 OWNER OF WELL: Isle Royale National Park National Park Service Address: 87 N. Ripley St. Houghton, Mich. 49931				
Former Coast Guard Station							
2 Date of Pump Installation			7 WELL HEAD COMPLETION: ☒ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade				
6-13-67							
3 STATIC WATER LEVEL			8 Disinfected upon completion ☒ Yes				
20 ft. below land surface			9 PUMP:				
4 PUMPING LEVEL below land surface			Manufacturer's Name MYERS				
50 ft. after 3 hrs. pumping 900 g.p.m.			Model Number SES-21 HP 1/2				
			Length of Drop Pipe 78 ft. capacity 900 G.P.M.				
			Type: ☒ Submersible ☐ Jet ☐ Reciprocating				
5 Remarks			10 PUMP INSTALLERS CERTIFICATION:				
			This pump was installed under my jurisdiction and this report is true to the best of my knowledge and belief.				
			P.H. Exley, Co. 0321				
			REGISTERED BUSINESS NAME				
			Address Hancock Mich				
			Signed J. Monticello Date				
			AUTHORIZED REPRESENTATIVE				
068d 40M 2-67			IMPORTANT: File with deed.				
			PUMP OWNER COPY				

GEOLOGICAL SURVEY SAMPLE No.
WATER WELL RECORD
 ACT 294 PA 1965

 MICHIGAN DEPARTMENT
 OF
 PUBLIC HEALTH

1 LOCATION OF WELL			3 OWNER OF WELL:		
County HOUGHTON	Twp. STANTON	Fraction SE 1/4 NE 1/4 NW 1/4	Section No. 28	Town 56 N.W. 34 E.W.	
Distance And Direction from Road Intersections FORMER COAST GUARD STATION			Address ISLE ROYLE NATIONAL PARK		
Street address & City of Well Location			87 N. RIPLEY ST. HOUGHTON, MICH.		
2 FORMATION		THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	4 WELL DEPTH: (completed) Date of Completion	
Coarse gravel and sand		30	30	124 ft. 6-7-67	
Fine sand		13	43	5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug	
Fine sand and clay		5	48	☐ Hollow rod ☐ Jetted ☐ Bored ☐	
Black clay		1	49	6 USE: ☐ Domestic ☒ Public Supply ☐ Industry	
Clay with fine sand + gravel		6	55	☐ Irrigation ☐ Air Conditioning ☐ Commercial	
Clay with fine sand		5	60	☐ Test Well ☐	
Clay with coarse sand		9	69	7 CASING: Threaded ☐ Welded ☐ Height: Above/Below surface 3 ft.	
Clay with gravel		17	86	5 in. to 120 ft. Depth Weight 15 lbs./ft.	
Clay with fine sand		6	92	in. to ft. Depth Drive Shoe? Yes ☒ No ☐	
Sand with some clay		27	119	8 SCREEN: Type: Red Brass Dia.: 5"	
Sand and gravel - water bearing		5	124	Slot/Gauze 10 Length 4'	
				Set between 120 ft. and 124 ft.	
				Fittings: Screwed fittings	
				9 STATIC WATER LEVEL 23 ft. below land surface	
				10 PUMPING LEVEL below land surface 33 ft. after 4 hrs. pumping 30 g.p.m.	
				ft. after hrs. pumping g.p.m.	
				11 WATER QUALITY in Parts Per Million: Iron (Fe) 0 Chlorides (Cl) 0	
				Hardness 136	
				12 WELL HEAD COMPLETION: ☒ In Approved Pit ☐ Pitless Adapter ☐ 12" Above Grade	
				13 GROUTING: Well Grouted? ☐ Yes ☒ No	
				Material: ☐ Neat Cement ☐	
				Depth: From ft. to ft.	
				14 SANITARY: Nearest Source of possible contamination 75 feet SE Direction Septic Tank type	
				Well disinfected upon completion ☒ Yes ☐ No	
				15 PUMP: Not Installed	
				Manufacturer's Name _____	
				Model Number _____ HP _____	
				Length of Drop Pipe _____ ft. capacity _____ G.P.M.	
				Type: ☐ Submersible ☐	
				☐ Jet ☐ Reciprocating	
Remarks, elevation, source of data, etc.				17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Johnson Bros. REGISTERED BUSINESS NAME Address Box 35, Baraga, Mich. Date 6-16-67	

7401 Rev. 12/53		MICH. DEPT. OF CONSERVATION GEOLOGICAL SURVEY DIVISION		Permit No.	
Sample No.		WATER WELL RECORD		Owner No.	
County	Twp.	Sec.	Range	Town	
Doughton	Stanton	SE NE & NW	38	56	341
Distance from Roads, Section Lines, etc. In well pit attached to basement of former U.S. Coast Guard Quarters on West side of upper portage Entry.					
FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Owner: National Park Service		
Previously constructed well pit	6	6	Address: Doughton Mich.		
Gravel to golf ball size and larger some med sand	24	30	Driller and Address: Johnson Bros, Farmington		
Fine sand	13	43	Well Depth: 124 ft. Date of Completion 6/7/67		
Fine sand & Clay	5	48	☒ Cable tool ☐ Rotary ☐ Aug ☐ R.C. ☐ Driven ☐ Jetted ☐ Bored		
Black clay	1	49	Use: ☐ Domestic ☒ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Dewatering ☐ Test Well ☐		
Tan clay few fine gravel stones	6	55	Casing: Diam. 5 in. to 121 ft. Depth Height: Above/Below surface 17 ft. Type-Weight 15 lb/ft		
Tan sandy clay	5	60	Screen: Type: Silicon Red Bros Dia: 5		
Tan clay little sand	9	69	Slot: 10 Length: 4		
Clay some sand & med gravel, clay chunks	17	86	Set between 120 ft. and 124 ft.		
Clay with fine sand a few pebbles	4	90	Accessories: Screen attachment		
Clay, fine sand, small gravel	2	92	Water level: 22.3 ft. above/below MP		
Fine to med sand, clayey	27	119	Meas. by: C.J. Doonan Date: 6/7/67		
Fine to med sand, some coarse sand, med gravel, trace of clay	5	124	Drawdown: 8 ft. after 4 hrs. pumping 30		
Fine to med sand, some coarse sand, med gravel, trace of clay	1	125	ft. after hrs. pumping		
			Meas. by: Date:		
			Flow: g.p.m./g.p.h. 44 or		
			Water Quality in Parts Per Million:		
			Iron (Fe) 0 Chlorides 0		
			Hardness 136 ppm PH 7.9 Cond. 230 micromhos		
			Elevation: 635 ft. above MP		
			Source of data: Field obs.		
			Record by: C.J. Doonan Date: 6/7/67		

cut block wall of well pit about 6

.7401 Rev. 12/63		MICHIGAN DEPARTMENT OF CONSERVATION GEOLOGICAL SURVEY DIVISION		Permit No.	
Sample No. W2329		WATER WELL RECORD		Owner No.	
County Houghton	Twp. Stanton	SE 1/4 NE 1/4 NW 1/4	Sec. 28	Town 56N W.5.	Range 34N E/W.
Distance from Roads, Section Lines, etc. In well pit attached to basement of former U. S. Coast Guard quarters on west side of upper portage entry.					
FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Owner: National Park Service		
Sample log:			Address: Houghton, Michigan		
Sand, tan, very fine to medium	at	35	Driller and Address: Box 35 Johnson Bros. Baraga		
Sand, tan, very fine to medium. A little silt	at	43	Well Depth: 124 ft. Date of Completion 6/7/67		
Clay, brown, very silty. Some sand	at	48	☐ Cable tool ☐ Rotary ☐ Dug ☐ R.C. ☐ Driven ☐ Jetted ☐ Bored		
Sand and silt, pink. A little clay. Some particles to gravel size	at	49	Use: ☐ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Dewatering ☐ Test Well ☐		
Sand, tan, fine, silty. Gravel to coarse	at	90	Casing: Diam. _____ in. to _____ ft. Depth _____ ft. Height: Above/Below surface _____ ft. Type-Weight _____ in. to _____ ft. Depth _____ ft.		
Sand, fine to medium, and gravel to coarse. Silty	at	91	Screen: Type: _____ Dia: _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft.		
Sand, tan, fine to medium, clean	at	96	Accessories:		
Sand, tan, fine to coarse, silty, show of gravel to coarse	at	119	Water level: _____ ft. above/below _____ _____ ft. above/below _____ Meas. by _____ Date _____		
Gravel, coarse, with fine to medium sand	at	123	Drawdown: _____ ft. after _____ hrs. pumping _____ g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m. Meas. by _____ Date _____		
			Flow: _____ g.p.m./g.p.h. Temp: _____ °F		
			Water Quality in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____		
			Elevation: _____ ft. above		
			Source of data: Samples		
			Record by: J. H. Kent Date: 6/9/67		

Other Supporting Information

FORM 10-131
APRIL 1964

PURCHASE ORDER

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICEIsle Royale National Park
(ISSUING OFFICE)

REQUISITION NO.	THIS NUMBER MUST APPEAR ON ALL PACKAGES AND PAPERS RELATING TO THIS ORDER
DATE OF ORDER 5-10-67	ORDER NUMBER 139-296
ACCOUNTING CLASSIFICATION Work Order: WSC-WR-67B Ledger ACCT: 102.5 Fund Symbol: 14X1035 993-2127-82	

VENDOR'S NAME AND ADDRESS Mr. Virgil Johnson Johnson Bros. Well Drilling Co. Baraga, Michigan 49908		SHIP TO: (Consignee and Address) Supt., Isle Royale National Park 87 North Ripley Street Houghton, Michigan 49931	
CONTRACT NO.	DISCOUNT TERMS	SHIP VIA	
DELIVERY: F.O.B.		TIME FOR DELIVERY June 9, 1967	GOVT. B/L NO.
SHIPPING POINT			

ITEM NO.	ARTICLES OR SERVICES	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT
	Furnish all supplies, materials, equipment, and labor necessary to drill, case, and develop a water well, (for purpose of supplying not less than 15 gallon per minute of potable domestic water), in accordance with the attached specifications. Well site to be designated by the National Park Service. Payment to be in accordance with the following price quotations:				
		Estimated Quantity			
1.	Moving drilling equipment and construction material on and off site.	Lump Sum			100.00
2.	Drilling well hole and installing five inch (5") casing as specified, drill to approximate 100 lineal feet or to bedrock, whichever is lesser	124			744.00
		~~100~~	L.F.	6.00	~~600.00~~
3.	Extra drive Shoe	1	EA		16.50
4.	Furnishing ~~and installing~~ silicon red brass well screen, ~~30 1/4~~ long x 4" inside diameter	Lump Sum			120.00
5.	Setting screen	6	hrs.	10.00	60.00
6.	Developing well, by pumping and surging	4	HRS	10.00	40.00
7.	Capping of well	1	job		7.50
8.	~~Pump testing for yield of well~~	~~8~~	~~HRS~~	~~10.00~~	~~80.00~~
9.	~~Installing eight (8") cement grout seal~~	Lump Sum			100.00
					Estimate

THE ARTICLES OR SERVICES LISTED WERE RECEIVED ON <u>6-7-67</u> (DATE)	TOTAL <u>1186.50</u>
AND ACCEPTED ON <u>6-19-67</u> (DATE) RECEIVING REPORT NO. _____	SIGNATURE <u>C. E. Johnson</u>
SIGNATURE: <u>C. L. Burkholder</u> Adm. OFFICER 19106	NAME AND TITLE C. E. Johnson, Superintendent PURCHASING OFFICER

2. RECEIVING REPORT

STATEMENT

BARAGA, MICH., June 15 1967

Isle Royale National Park

87 North Ripley Street

Houghton, Michigan 49931

*Docket
n
report file*

P.O. 139-296

Johnson Brothers

WELL DRILLERS

PUMPING EQUIPMENT — PUMP REPAIRS

BARAGA MICHIGAN

Item			
1-Moving drilling equipment to and from site	100.00		
2-Drilling and installing 5" casing-124' @ \$6.00 per ft.	744.00		
3-Five (5") Drive shoe	16.50		
4-Silicon Red Brass #10 slot Johnson well screen with screwed attachments	120.00		
5-Setting screen-6 hrs. @ \$10.00 per hr.	60.00		
6-Developing well by surging and bailing-4 hrs. @ \$10.00 per hr.	40.00		
7-Capping of well with 5"x1"x3/4" submerga well seal with fittings	7.50		
			\$1088.00

Docket Information

Number of Documents in Docket 11

Documents Dated from 6/7/1967 to 10/26/1967

Docket Compiled: 4/19/2011