



National Park Service  
U.S. Department of the Interior

Natural Resource Stewardship and Science

---

# **GRSM Standard Operating Procedure: Data Dissemination**

Suggested Citation: National Park Service. 2016. GRSM Standard Operating Procedure: Data Dissemination. Version 2018-07-17. National Park Service, Great Smoky Mountains National Park. Gatlinburg, Tennessee.

## Contents

|                                          |           |
|------------------------------------------|-----------|
| <b>Purpose.....</b>                      | <b>3</b>  |
| <b>Scope .....</b>                       | <b>3</b>  |
| <b>Introduction .....</b>                | <b>3</b>  |
| <b>Data Distribution Mechanism .....</b> | <b>3</b>  |
| <b>Roles and Responsibilities .....</b>  | <b>7</b>  |
| <b>Contact Information .....</b>         | <b>8</b>  |
| <b>Attachments .....</b>                 | <b>8</b>  |
| <b>References .....</b>                  | <b>8</b>  |
| <b>Appendix 1 .....</b>                  | <b>9</b>  |
| <b>Appendix 2 .....</b>                  | <b>11</b> |

| <b>Version History</b> |             |                                                                                                  |
|------------------------|-------------|--------------------------------------------------------------------------------------------------|
| Version                | Update Date | Changes                                                                                          |
| 20160719               | 20160719    | Revised draft to appropriate format                                                              |
| 20180717               | 20180717    | Added information about how to note the location of files on the server in Data Store References |
|                        |             |                                                                                                  |
|                        |             |                                                                                                  |

## Purpose

The purpose of this guidance document is to establish standards of data ownership and to describe the resources that Great Smoky Mountains National Park (GRSM) utilizes to disseminate data, both internally and to the broader end-user group. This document is intended to guide users to the appropriate web portal for GRSM data and information—but does not provide user-guides and/or cheat sheets for the use of these online resources. User-guides and cheat sheets will be provided in other SOP's and appendices (as needed) or are already available online as part of the National Information Management system.

## Scope

This document applies to all internally-collected data or GRSM funded data collection and provides for the distribution of the data and any subsequent information materials. Internally-collected refers to data collected by GRSM staff (permanent, temporary, term, interns, and/or volunteers).

## Introduction

One of the most important goals of RMS is to integrate resource inventory, and monitoring information into NPS planning, management, and decision making. To accomplish this goal, procedures should be developed to ensure that relevant resource data are made available for management decision-making, public research, and education. Providing well-documented data in a timely manner to park managers is especially important to the success of this program. The Freedom of Information Act, 5 U.S.C § 552 (FOIA) requires making information available to the public with narrow exceptions. See GRSM's sensitive data handling SOP for more guidance of FOIA exemptions. The 2013, Open Data Executive Order makes open and machine readable data the new default for government agencies.

The GRSM data dissemination strategy aims to ensure that:

- Data and information are easily discoverable and obtainable.
- Only certified data (see data certification SOP) are released unless necessary to respond to limited/specific data requests (e.g. internal requests)
- If provisional (not subjected to quality control) data are to be shared; they will be accompanied by a disclaimer clearing stating the quality status.
- Distributed data and information are accompanied by appropriate documentation.
- Sensitive data and information are identified and protected from unauthorized access and inappropriate use.

To accomplish this, GRSM RMS uses a number of distribution methods that will allow information collected and developed as part of the program to become widely available both internally and publicly.

## Data Distribution Mechanism

The primary mechanism for distributing data products will be the internet. This will allow the data and information to reach a broad community of users. Web-based applications and repositories have been developed to store a variety of park natural resource information. We will use the following applications and repositories to distribute our data products:

**ArcGIS Online** – The National Park Service maintains an account with ArcGIS Online (AGOL) (<https://www.arcgis.com/home/>) which is a high-performance cloud GIS storage and data delivery platform. Given the performance of this system all public park GIS data is hosted on AGOL with its exact location (URL) annotated as holding location in the NPS Data Store. Creating a references for each AGOL data set in Data Store allows GRSM to track these data sets and also allows users familiar with Data Store to discover the vast array of public GIS data GRSM offers. In addition, some in-progress projects require operational data to be hosted on AGOL in order to accommodate some workflow requirements (e.g. access by mobile devices) and corresponding data quality constraints are included with such AGOL data.

The following standard use constraint should be added to all data sets hosted on AGOL:

*The National Park Service shall not be held liable for improper or incorrect use of the data described and/or contained herein. These data and related graphics (i.e. GIF or JPG format files) are not legal documents and are not intended to be used as such. The information contained in these data is dynamic and may change over time. The data are not better than the original sources from which they were derived. It is the responsibility of the data user to use the data appropriately and consistent within the limitations of geospatial data in general and these data in particular. The related graphics are intended to aid the data user in acquiring relevant data; it is not appropriate to use the related graphics as data. The National Park Service gives no warranty, expressed or implied, as to the accuracy, reliability, or completeness of these data. It is strongly recommended that these data are directly acquired from an NPS server and not indirectly through other sources which may have changed the data in some way. Although these data have been processed successfully on computer systems at the National Park Service, no warranty expressed or implied is made regarding the utility of the data on other systems for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data.*

**Aquarius** – Aquatic Informatics' Aquarius system for continuous time-series data have been acquired to support service wide water quality and quantity management. Aquarius allows users to enter continuous data from telemetry, sondes, or files; correct the data as appropriate for drift, fouling, or bias; grade, flag, and/or approve the data for publishing/dissemination; analyze, report, and export the data; and archive the data in the Aquarius Web Portal. WRD maintains licenses to support up to five concurrent NPS users employing Aquarius Springboard and Workstation. All data entered in Aquarius are stored in WRD's centralized Aquarius database and made available to the NPS' publicly accessible Aquarius Web Portal. GRSM utilizes Aquarius to store all continuous monitoring data, not just water quality, and organizes the data by project. The project ideally references the study identification number from RPRS (Research Permit and Reporting System). If a location in Aquarius is noted as 'Public' the data will automatically be available via the Aquarius web portal which is accessible from IRMA.

**EQulS**- EarthSoft's Environmental Quality Information System (EQulS) is a database management system geared for many different types of environmental data including water and geotechnical data. Used primarily to document, manage, and describe discrete data, EQulS is used by many states, EPA regions, industrial and mining concerns, and laboratories. EQulS is being deployed by WRD to replace its distributed STORET database software which EPA no longer supports. The existing data in WRD's distributed STORET are being migrated into EQulS and an automatic data flow established between it and the STORET Data Warehouse. WRD has created an EQulS Electronic Data Deliverable (EDD) specification that will be used by parks and networks to upload their data into EQulS. Once park data are uploaded into EQulS they will automatically be archived in the EPA STORET Data Warehouse. WRD has acquired two concurrent user licenses for EQulS Professional and unlimited usage licenses for EQulS Data Processor.

**Flickr**- Flickr is an online, global photo sharing and management site owned by Yahoo!. NPS has a service wide agreement with Flickr, and therefore GRSM is allowed to utilize the technology to support park goals. Because Flickr is designed to facilitate sharing and management of photo and video content, it is most useful to projects with missions that involve the creation or consumption of photo or video content. The content the park shares on Flickr can be created internally (such as photographs a park or events), or comprised of content it already owns or collects (such as historical photos). Each piece of content uploaded to Flickr has a corresponding URL, this allows Flickr content to be used in other platforms. Flickr may be used to achieve any of these objectives:

- Raise awareness of the park's current activities using photos or video
- Engage an audience in discussion about the park's content
- Enhance information about existing collections of visual content, such as historic photos
- Allow the park's audience to easily browse, view, and download your content

**NPS Data Store** – The NPS Data Store is a key component of the data dissemination strategy employed by the National Park Service. The NPS Data Store is a graphical search interface that links dataset metadata to a searchable data server on which datasets are organized by NPS units, offices and programs. The interface allows customized public or protected searches of resource datasets, inventory products, reports, publications and GIS data produced by the Park Service. Each park or network is able

to post and curate its data on the server. The Data Store has allowed the Park Service to make strides to comply with the Open Data Executive Order. Datasets that meet certain criteria are harvested from NPS Data Store to data.doi.gov. Data.doi.gov is a data catalog that includes data sets from across the Department of the Interior. Datasets are also harvested from data.doi.gov to data.gov which is the 'home of the U.S. Government's open data.' Through this process of data harvesting, our data sets and metadata become available to the widest audience possible.

#### **Data Store Guidelines:**

1. The Date of Issue is the date the data set was finalized
2. The Content Begin Date and Content End Date fields should match the field data collection dates for the data set
3. Once a data set has been published (i.e., the reference has been activated), neither the data set nor the metadata file may be altered or removed. A new reference version is the only way data changes can be published. The Data Store reference record, however, may be altered
4. Include, in the Description field of the reference, links to relevant versions of the protocol narrative and SOPs used for data collection, processing and/or transformation.
5. Documentation should be in a metadata file (text or pdf format only) that accompanies the associated data set. Enough information must be provided to the end user so that he or she can independently determine data that are suitable for use.
6. The following standard *Use Constraints* should be added to all data set references:  
*The National Park Service shall not be held liable for improper or incorrect use of the data described and/or contained herein. These data and related graphics (i.e. GIF or JPG format files) are not legal documents and are not intended to be used as such. The information contained in these data is dynamic and may change over time. The data are not better than the original sources from which they were derived. It is the responsibility of the data user to use the data appropriately and consistent within the limitations of geospatial data in general and these data in particular. The related graphics are intended to aid the data user in acquiring relevant data; it is not appropriate to use the related graphics as data. The National Park Service gives no warranty, expressed or implied, as to the accuracy, reliability, or completeness of these data. It is strongly recommended that these data are directly acquired from an NPS server and not indirectly through other sources which may have changed the data in some way. Although these data have been processed successfully on computer systems at the National Park Service, no warranty expressed or implied is made regarding the utility of the data on other systems for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data.*
7. One or more *subject categories* should always be added to a reference. Allowable values are listed in Appendix 1.
8. Some of the references should also be assigned to one or more collections. Collections are groups of references that best represent a certain subject area, for example water quality. The references in a collection should be a list curated by the subject matter expert so that researchers and members of the public interested in a topic can easily gather the most relevant and seminal information quickly and easily. See Appendix 2 for a list of the most prominent collections in the park, collections can be edited, created and deleted by the collection owners therefore this list will change over time.
9. The following general keywords are added to GRSM references:  
*GRSM, Great Smoky Mountains National Park, SER, Southeast Region, APHN, Appalachian Highlands Network*

10. The following structured keywords are used to ease searching and to enhance the connection between Data Store and RPRS. The inclusions of the study ID for products originating from a permitted study help track the products and connect the products to the valuable metadata within RPRS. Note: these keywords must be used carefully as misspellings and inconsistent usage will render them useless:  
*Branch:[BRANCH], Status:[Active/Inactive], Origin:[Internal/External], StudyID:GRSM-[#####]*
11. The following points outline some basic guidance as to how to construct helpful keywords for Data Store references:
  - a. In addition to relevant acronyms, spell out the entirety of the phrase, e.g., 'IPM' and 'Integrated Pest Management'
  - b. Include singular and plural versions of terms if applicable as Data Store's searching capabilities are limited. For example, if you searched 'salamander' and 'salamanders' you will receive different results
  - c. Entering a species into the taxonomy section of a reference enables searching by that species
  - d. Include geographic areas of special importance to the study
12. The following should be added to the Notes field in the 'Core Info' section of the Data Store reference so that the location of the information on the file server can be communicated. This is especially helpful for permitted studies as the folder structure is based on the Study ID, not the topic and is therefore difficult to browse and explore
  - a. Physical Copy Location: GRSM | [file path of location on the file server]  
 e.g., Physical Copy Location: GRSM |  
 V:\Research\_Studies\GRSM02000\GRSM02014\_Clark

**NPS Focus** - The NPS Focus Digital Library is the National Park Service digital image/resource management solution. Structurally the system is a composite of many image collections separately maintained by parks/programs but offers one-stop searching and browsing across all of them. Parks/programs are able to create their own collections on the system independently by creating metadata/cataloging records and then uploading images. All images and records are permanently archived in open standards formats (TIF, JPG, XML) on separate professional archiving systems. Once an image is stored in NPS Focus, it can be accessed via a URL which allows the images to be utilized in other systems.

**NPSpecies** – NPSpecies is the National Park Service database to store, manage and disseminate scientific information on the biodiversity of organisms in NPS. The database lists the species that occur within each park along with the accompanying physical or written evidence documenting the occurrence of the species (e.g., references and vouchers). Taxonomy and nomenclature are based on the ITIS (Integrated Taxonomic Information System) taxonomy database. NPSpecies is linked to the Data Store to document biological inventory products (e.g. reports, data sets, maps, etc.) which can act as evidence to substantiate the species occurrence. It is required that information in NPSpecies be certified before any data are made available to the public. NPSpecies certification is the quality assurance process in which species lists, evidence, and park checklist fields (park status, abundance, residency, nativity, and cultivation) are reviewed for completeness and accuracy. NPSpecies acts as the primary repository for all GRSM species observation data.

**STORET** – STORET is an interagency water quality database developed and supported by the Environmental Protection Agency (EPA) to house local, state, and federal water quality data collected in support of managing the nation's water resources under the Clean Water Act. STORET is used by NPS as a repository of physical, chemical, biological, and other monitoring data collected in and around national park units by park staff, contractors, and cooperators. NPS Director's Order 77 (<http://www.nps.gov/applications/npspolicy/DOrders.cfm>) indicates that the NPS should archive water quality data in STORET, and the NPS Water Resources Division (WRD) requires that any data collected

as part of a funded WRD project get archived in STORET. Additional details regarding NPSTORET can be found at: <http://www.nature.nps.gov/water/infodata.htm> Additional information on STORET can be found at: <http://www.epa.gov/storet>

**NPS Technical Information Center (TIC)**- The Technical Information Center, available through the Denver Service Center, provides a digital repository for all types of documents, data, GIS maps, and architectural blueprints for NPS. TIC also provides a tracking system and can generate copies of requested documents upon request. References in Data Store marked as 'created by and/or for the NPS' will automatically be archived in the TIC.

**Table 1. A list of the types of information that can be distributed through the data dissemination systems described above.**

| Product Name   | Information Types                                       |
|----------------|---------------------------------------------------------|
| ArcGIS Online  | Public GIS data                                         |
| Aquarius       | Continuous water quality data and other continuous data |
| EQulS          | Discrete water quality data                             |
| Flickr         | Images and video content                                |
| NPS Data Store | Data products as well as reports, publications etc      |
| NPS Focus      | Images                                                  |
| NPSpecies      | Species occurrence data                                 |
| STORET         | Discrete water quality data                             |
| NPS TIC        | Data products as well as reports, publication etc       |

Because park data will reside in the repositories listed above, they will be searchable via the Integrated Resource Management Applications (IRMA) Portal.

### Data Requests

Every effort will be made to make all data collected by GRSM that are not sensitive (see Sensitive Data Handling SOP) available at the designated repositories. If data stewards receive requests for data sets that are non-sensitive but not posted to an approved data dissemination system, the request must be forwarded to the Data Manager and GIS Specialist. The data set will be required to be certified (see Data Certification SOP and Data Certification Form) and subsequently posted to the appropriate repository, which is often the Data Store. The requesting party will then be directed to the relevant reference. This procedure ensures that only certified data are utilized by requestors. Under no circumstances should an RMS staff member send data outside of the approved dissemination systems without consultation with the Data Manager or GIS Specialist.

### Roles and Responsibilities

| Role           | Responsibility                                                                                        |
|----------------|-------------------------------------------------------------------------------------------------------|
| GIS Specialist | Posts GIS data to one or more hosting platforms and updates NPS Data Store with holding locations     |
|                | Manages updates of GIS data to hosting platform                                                       |
|                | Responds to public requests for GIS data                                                              |
| Data Manager   | Posts tabular data to one or more hosting platforms and updates NPS Data Store with holding locations |
|                | Manages updates of tabular data to repository/ national information management system                 |

|              |                                                                                  |
|--------------|----------------------------------------------------------------------------------|
|              | Responds to public requests for tabular data                                     |
| Data Steward | Certifies data prior to submitting to Data Manager or GIS Specialist for posting |
|              | Refers all data requestors to the approved data dissemination platform           |

### Contact Information

Great Smoky Mountains National Park  
National Park Service  
Gatlinburg, TN

Kendra Straub  
Data manager  
(865)436-1703  
Kendra\_Straub@nps.gov

Thomas Colson  
GIS Specialist  
(865)436-1701  
Thomas\_Colson@nps.gov

### Attachments

None

### References

Boetsch, J. R., B. Christoe, and R. E. Holmes. 2009. Data management plan for the North Coast and Cascades Network Inventory and Monitoring Program (2005). Natural Resource Report NPS/NCCN/NRR—2009/078. National Park Service, Fort Collins, Colorado.

Bradshaw, G. and R. R. Cook, 2006. A Synopsis of Laws and Policies Governing Public Dissemination of Natural Resources Data. Sierra Nevada Network, National Park Service, Three Rivers, CA.

Cook, R. R., 2006. National Repositories for Digital Data and Information. Sierra Nevada Network, U.S. National Park Service, Three Rivers, California.

Wright, C. J., J. C. DeVivo, K. Funk, S. McCort, B. Blankley, E. DAVIE, m. w. Byrne, T. Curtis, D. Lagana, and N. Russell, Editors. 2008. Southeast Coast Network Information Management and Archiving Plan Appendices. Natural Resource Report NPS/SECN/NRR—2008/062. National Park Service, Fort Collins, Colorado.

## Appendix 1

Data Store subject category allowable values.

- Air and Climate | Air Quality | Air Contaminants
- Air and Climate | Air Quality | Ozone
- Air and Climate | Air Quality | Visibility and Particulate Matter
- Air and Climate | Air Quality | Wet and Dry Deposition
- Air and Climate | Weather and Climate | Weather and Climate
- Biological Integrity | At-risk Biota | T&E Species and Communities
- Biological Integrity | Focal Species or Communities | Amphibians and Reptiles
- Biological Integrity | Focal Species or Communities | Birds
- Biological Integrity | Focal Species or Communities | Cave Communities
- Biological Integrity | Focal Species or Communities | Desert Communities
- Biological Integrity | Focal Species or Communities | Estuarine Communities
- Biological Integrity | Focal Species or Communities | Fishes
- Biological Integrity | Focal Species or Communities | Forest/Woodland Communities
- Biological Integrity | Focal Species or Communities | Freshwater Communities
- Biological Integrity | Focal Species or Communities | Freshwater Invertebrates
- Biological Integrity | Focal Species or Communities | Grassland/Herbaceous Communities
- Biological Integrity | Focal Species or Communities | Intertidal Communities
- Biological Integrity | Focal Species or Communities | Mammals
- Biological Integrity | Focal Species or Communities | Marine Communities
- Biological Integrity | Focal Species or Communities | Marine Invertebrates
- Biological Integrity | Focal Species or Communities | Riparian Communities
- Biological Integrity | Focal Species or Communities | Shrubland Communities
- Biological Integrity | Focal Species or Communities | Sparsely Vegetated Communities
- Biological Integrity | Focal Species or Communities | Terrestrial Complex
- Biological Integrity | Focal Species or Communities | Terrestrial Invertebrates
- Biological Integrity | Focal Species or Communities | Vegetation Complex
- Biological Integrity | Focal Species or Communities | Wetland Communities
- Biological Integrity | Infestations and Disease | Animal Diseases
- Biological Integrity | Infestations and Disease | Insect Pests
- Biological Integrity | Infestations and Disease | Plant Diseases
- Biological Integrity | Invasive Species | Invasive/Exotic animals
- Biological Integrity | Invasive Species | Invasive/Exotic plants
- Geology and Soils | Geomorphology | Coastal/Oceanographic Features and Processes
- Geology and Soils | Geomorphology | Glacial Features and Processes
- Geology and Soils | Geomorphology | Hillslope Features and Processes
- Geology and Soils | Geomorphology | Lake Features and Processes
- Geology and Soils | Geomorphology | Marine Features and Processes
- Geology and Soils | Geomorphology | Stream/River Channel Characteristics
- Geology and Soils | Geomorphology | Windblown Features and Processes
- Geology and Soils | Paleontology | Paleontology
- Geology and Soils | Soil Quality | Soil Function and Dynamics
- Geology and Soils | Subsurface Geologic Processes | Cave/Karst Features and Processes
- Geology and Soils | Subsurface Geologic Processes | Geothermal Features and Processes
- Geology and Soils | Subsurface Geologic Processes | Seismic Activity
- Geology and Soils | Subsurface Geologic Processes | Volcanic Features and Processes
- Human Use | Consumptive Use | Consumptive Use
- Human Use | Cultural Landscapes | Cultural Landscapes
- Human Use | Non-point Source Human Effects | Non-point Source Human Effects

- Human Use | Point-Source Human Effects | Point-Source Human Effects
- Human Use | Visitor and Recreation Use | Visitor Use
- Landscapes | Energy Flow | Primary Production
- Landscapes | Extreme Disturbance Events | Extreme Disturbance Events
- Landscapes | Fire and Fuel Dynamics | Fire and Fuel Dynamics
- Landscapes | Landscape Dynamics | Land Cover and Use
- Landscapes | Nutrient Dynamics | Nutrient Dynamics
- Landscapes | Soundscape | Soundscape
- Landscapes | Viewscape | Viewscape/Dark Night Sky
- Water | Hydrology | Groundwater Dynamics
- Water | Hydrology | Marine Hydrology
- Water | Hydrology | Surface Water Dynamics
- Water | Water Quality | Aquatic Macroinvertebrates and Algae
- Water | Water Quality | Microorganisms
- Water | Water Quality | Nutrient Dynamics
- Water | Water Quality | Toxics
- Water | Water Quality | Water Chemistry

## Appendix 2

Data Store collections that are prominently used in GRSM.

- Air Contaminants
- Air Quality in Parks
- Air Quality Inventory
- Air Quality Related Values Inventory
- Amphibians and Reptiles
- Animal Diseases
- Aquatic Macroinvertebrates and Algae
- Aspect
- Biodiversity Discovery
- Birds
- Cave and Karst Features and Processes
- Cave Communities
- Consumptive Use
- Cultural
- Cultural Landscapes
- Digital Orthophoto
- Disturbance Monitoring
- Environmental Boundaries
- Extreme Disturbance Events
- Fire and Fuel Dynamics
- Fishes
- Forest or Woodland Communities
- Freshwater Communities
- Freshwater Invertebrates
- Geology
- Grassland or Herbaceous Communities
- Groundwater Dynamics
- GRSM Topo Map Series
- Hemlock
- Hillshade
- Hillslope Features and Processes
- Hydrography
- Insect Pests
- Interpretation
- Invasive and Exotic animals
- Invasive and Exotic plants
- Inventory and Monitoring
- Lake Features and Processes
- Land Cover and Use
- Land Use and Cover
- Landform
- Mammals
- Microorganisms
- Monitoring Plans
- Monitoring Protocols
- Non-point Source Human Effects
- Nutrient Dynamics
- Ozone
- Ozone-sensitive Plants
- Paleontology

- Plant Diseases
- Point-Source Human Effects
- Primary Production
- Recreation
- Riparian Communities
- Roads
- Seismic Activity
- Shrubland Communities
- Slope
- Soil Function and Dynamics
- Soils
- Soundscape
- Stream and River Channel Characteristics
- Surface Water Dynamics
- T&E Species and Communities
- Temperature
- Terrestrial Complex
- Terrestrial Invertebrates
- Topographic Indices and Elevation
- Toxics
- Trails
- Transportation
- Vegetation
- Vegetation Complex
- Vegetation Inventory
- Viewscape and Dark Night Sky
- Visibility and Particulate Matter
- Visitor Services
- Visitor Use
- Water Chemistry
- Weather and Climate
- Wet and Dry Deposition
- Wetland Communities
- Wetlands
- Wilderness