

# EPA Geospatial/Non-Geospatial Metadata Style Guide

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*Version 1.1, May 4, 2015*

## Document Change Control

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The following is the document control for revisions to this document.

Version Number	Date of Issue	Author(s)	Brief Description of Change
V1.0	October 7, 2014	Steven Jett, Suzanne Pierson, Torrin Hultgren, Innovate!, Inc.	Initial Version.
V1.1	May 4, 2015	Steven Jett, Suzanne Pierson, Torrin Hultgren, Innovate!, Inc.	Updates for changes to Distribution Liability in order to comply with OMB Project Open Data requirements.

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## Introduction

This guide provides suggestions on metadata preparation for EPA geospatial and non-geospatial resources for internal and external sharing. Detailed guidance on metadata requirements, standard language, and naming conventions are provided with the goal of simplifying the documentation process and standardizing (to the extent possible) EPA dataset metadata and documentation. This guidance is rooted in the publishing guidelines set forth in the documents [Geospatial Metadata Technical Specification](#) and *EPA's Implementation of the Data.gov Standard: Creating Metadata for EPA Non-geospatial Datasets* (currently in revision due to recent OMB Open Data Policy standards). The goal of this guide is to help users create metadata that has a consistent appearance and, where applicable, conforms to all Project Open Data requirements that make the metadata record sharable in the Environmental Dataset Gateway (EDG) and in Data.gov.

This guide is divided into two main sections, one pertaining to metadata for geospatial resources, the other pertaining to metadata for non-geospatial resources. There are also two appendices: A keywords appendix which provides suggested keywords for fields requiring keywords or tags, and an organization names appendix which provides acceptable abbreviated EPA organization names that the creator of the metadata may use in fields requiring the name of the Office, Region, or Research Laboratory.

This guide does not detail the process to publish metadata records in the [Environmental Dataset Gateway \(EDG\)](#), nor does it provide instructions on creating web services. Please consult documents at the [EDG About page](#) for help on publishing metadata and the [EPA GeoPlatform Data Publishing Standard Operating Procedure \(SOP\)](#) for instructions on web service creation. For additional assistance, please contact the appropriate group or team:

- Metadata records: EDG Administrative Group ([edg@epa.gov](mailto:edg@epa.gov))
- Documenting and publishing web services: National Geospatial Support (NGS) Team ([geoservices@epa.gov](mailto:geoservices@epa.gov))
- EPA GeoPlatform Online: EPA GeoPlatform Team at [epageoplatform@epa.gov](mailto:epageoplatform@epa.gov).

## Metadata Preparation for Geospatial Resources

When developing metadata for geospatial resources, developers should consider the assortment of ways that users may discover or access the resource:

- Geospatial resource discovered by searching or browsing the Environmental Dataset Gateway (EDG)
- Geospatial resource accessed through the web service REST page
- Geospatial resource discovered or accessed in EPA GeoPlatform Online

Each of these discovery or access points should contain descriptive metadata so that users can determine whether the geospatial resource meets their needs. The methods for preparation and publication of metadata at each of these locations differ, as outlined in the chart below.

Dataset discovery or access point	<b>Resource metadata in EDG</b>	<b>Web service metadata on REST page</b>	<b>Content item metadata in EPA GeoPlatform Online</b>
Interface/software used for creating metadata	EPA Metadata Editor	Esri ArcMap	EPA GeoPlatform Online
Output	Metadata XML file	ArcMap MXD file with web service documentation in properties fields	EPA GeoPlatform Online content item with Item Properties fields completed
Metadata publication method	Publish valid metadata XML file in EDG via manual upload or synchronization	Publish MXD file as web service via ArcGIS Server software	Configure sharing on content item to share with desired groups
<b>Metadata Preparation Guidance</b>	<b>Prepare FGDC-compliant metadata for a geospatial dataset</b>	<b>Prepare ArcMap MXD documentation for web service metadata</b>	<b>Prepare metadata for an EPA GeoPlatform Online content item</b>

This section of the Style Guide is devoted to providing geospatial metadata preparation guidance for the three types of metadata being produced. Each subsection contains its own instructions and guide:

- Prepare FGDC-compliant metadata for a geospatial resource (for publication in the EDG)
- Prepare ArcMap MXD documentation for web service metadata
- Prepare metadata for an EPA GeoPlatform Online content item

This section pertaining to geospatial metadata assumes the use of ArcGIS 10.2.2, ArcGIS Server 10.2.2, and EPA Metadata Editor Version 3.2.1. The suggested metadata entries have been tested and

confirmed to function properly with these software versions. However, it is recognized that the recommendations in this section may not meet the needs of all users. For additional assistance, please contact the appropriate group or team:

- Metadata records: EDG Administrative Group ([edg@epa.gov](mailto:edg@epa.gov))
- Documenting and publishing web services: National Geospatial Support (NGS) Team ([geoservices@epa.gov](mailto:geoservices@epa.gov))
- EPA GeoPlatform Online: EPA GeoPlatform Team at [epageoplatform@epa.gov](mailto:epageoplatform@epa.gov).

## Prepare FGDC-Compliant Metadata for a Geospatial Resource

This subsection of the Style Guide provides detailed documentation on how to create metadata for each type of geospatial resource that is suitable for publishing in the EDG. The documentation is designed to be used with metadata templates that accompany the EPA Metadata Editor (EME).

### Types of geospatial resources

FGDC-compliant metadata for geospatial resources is published in the EDG to facilitate discovery of the resource. Geospatial resources include the following:

- Geospatial dataset – shapefile, feature class, imagery file, etc.
- Data download package – dataset or group of datasets made available as a download (often compressed into a zip file).
- Web service – geospatial data, accessible via a web URL, consumable in client applications such as web maps.

### Helpful metadata templates

Three downloadable templates are designed to be used with this Style Guide:

- [MetadataTemplateLayerLevel.xml](#) – designed to be used to create metadata for a geospatial dataset such as a shapefile, individual feature class, imagery file, etc.
- [MetadataTemplateDownloadPkg.xml](#) – designed to be used to create metadata for a data download package
- [MetadataTemplateWebService.xml](#) – designed to be used to create metadata for a web service

The templates contain required text for each metadata element along with text prompts for data-specific text. The text prompts are enclosed in brackets and asterisks {\*\*\*ENTER HERE\*\*\*} which the user must replace with text that describes the data layer.

## The EPA Metadata Editor (EME)

This guide was developed based on the structure of the EPA Metadata Editor (EME) v3.2.1 (for information on EME v3.2.1, please see the document [What's New in the EPA Metadata Editor Version 3.2.1](#)) As such, use of EME is assumed for developers of metadata. The advantage of using EME is that it specifically denotes which elements are mandatory and which are optional, and has dropdowns for several elements

that may be populated with standardized text. The user may also validate the metadata record directly within EME to ensure it complies with standards. Developers with considerable metadata editing experience may find a text editor more efficient than using EME, but need to be cognizant of elements requiring specific language in order for the metadata record to pass validation to be published in the EDG. Some developers might find that initial editing within the EME followed by final editing in a text editor will produce the desired results. Download the EME and review EME training materials at the [EPA Metadata Editor web page](#).

## Additional metadata preparation considerations

Review these considerations for preparing metadata based on the geospatial resource type.

### *Preparing FGDC metadata for a dataset (layer-level metadata):*

- *NOTE: in this document, “layer-level” metadata refers to metadata prepared for an individual geospatial dataset such as a shapefile, individual feature class within a geodatabase, raster dataset, imagery file, etc.*
- Metadata preparation should occur in the EME extension of ArcCatalog.
- If the dataset has accompanying original metadata, use this guide to edit the original metadata. If no accompanying metadata exists, use this guide to create new metadata. In both cases, list whether the dataset has been value-added in the Supplemental Information metadata element and details about improvements to the dataset in the Processing Steps metadata element.
- This guide assumes that metadata is linked to the geospatial dataset. In ArcCatalog, use the EME Import function to link a metadata XML file to the dataset. If metadata is being created for the first time, link a copy of the MetadataTemplateDataset.xml file to the dataset to begin the editing process. Linking metadata to the dataset takes advantage of EME’s metadata synchronization function, which automatically writes certain properties of the geospatial dataset (Bounding Box, Coordinate System, and Lineage) to the appropriate elements in the metadata, eliminating the need to update these manually.
- To ensure that the Bounding Box and Coordinate System fields are properly populated, make sure to set the EME Sync Settings as follows:
  - In ArcCatalog, click the **Manage Metadata Synchronization** button on the EME toolbar.
  - Click the **EPA Sync Settings** tab.
  - Check Remove ESRI tags, Coordinate System, and Spatial Extent.
  - Uncheck Attributes, Online Linkage, and Retain PublishedDocID.
  - Click **OK**.
  - Perform synchronization.

### *Preparing FGDC metadata for a data download package:*

- Metadata preparation should occur in the standalone version of EME.
- It is recommended that a data download package consist of a zip file containing the following:
  - A file geodatabase.
  - An Esri ArcMap map document (MXD).
  - An XML file of the FGDC-compliant metadata for the download package.



- Additionally, a duplicate copy of the XML metadata file should be placed alongside the zip file (external to the zip file) to provide an easily-accessible indication of the zip file contents. This arrangement allows data users to preview the metadata and ensure the package contains the desired contents before commencing a download session.
- As a best practice, layer-level metadata should exist in the file geodatabase for each feature class.

*Preparing FGDC metadata for a web service:*

- *NOTE: EPA web services require two types of metadata: A FGDC metadata record that is published in the EDG to facilitate discovery of the web service, and metadata at the web service REST endpoint page that results from publishing the web service in ArcGIS Server. This section pertains to creating the FGDC metadata record. Please refer to the following section, “Prepare ArcMap MXD documentation for web service metadata,” for REST endpoint metadata.*
- Metadata preparation should occur in the standalone version of EME.
- As a best practice, layer-level metadata should be published in the EDG for each layer in the web service. The link to the layer-level metadata should be made available at each layer’s REST endpoint.
- It is strongly recommended that data download packages be made available for geospatial datasets that are published as web services.

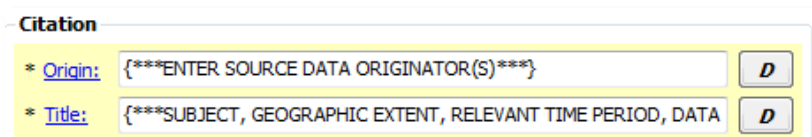
## **Instructions for using this section of the guide**

This guide has instructions and recommendations for creating FGDC metadata for all three geospatial resource types. Specific instructions are included for specific resource types where appropriate. For example, separate instructions for completing the Description elements in EME are included and denoted as “FOR LAYER-LEVEL METADATA,” “FOR DATA DOWNLOAD PACKAGE METADATA”, and “FOR WEB SERVICE METADATA.”

Open the metadata file in EME and follow along in the guide which steps through each EME tab, element by element, with instructions. While most elements are pre-populated with text prompts, other elements may be optionally edited as needed. Elements in this guide denoted with light gray text should not be edited. In addition, help with individual EME elements is available directly in the EME interface by clicking on the link for the element or selecting the Help menu item.

## EME Tab 1: Basic Dataset Information

### Citation



**Citation**

\* **Origin:** {\*\*\*ENTER SOURCE DATA ORIGINATOR(S)\*\*\*}

\* **Title:** {\*\*\*SUBJECT, GEOGRAPHIC EXTENT, RELEVANT TIME PERIOD, DATA OWNER/PROVIDER, OFFICE/REGION/RESEARCH LAB OF DATA OWNER\*\*\*}

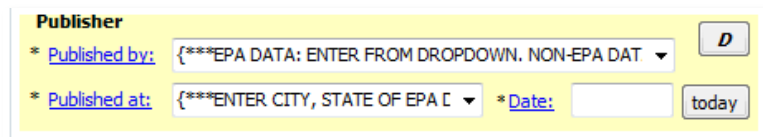
**Origin:** {\*\*\*ENTER SOURCE DATA ORIGINATOR(S)\*\*\*}

- *Example:* US Census Bureau
- *Example:* Virginia Institute of Marine Science and U.S. Fish and Wildlife Service

**Title:** {\*\*\*ENTER SUBJECT, GEOGRAPHIC EXTENT, RELEVANT TIME PERIOD, DATA OWNER/PROVIDER, OFFICE/REGION/RESEARCH LAB OF DATA OWNER\*\*\*}

- *Example:* Toxics Release Inventory (TRI) Locations, Oklahoma, 2012, EPA OIAA, EPA REG 06 WQPD
- *Example:* Tribal Lands, Idaho, 2000, Bureau of Indian Affairs, EPA REG 10
- *Example:* Potomac River Basin Boundary, Chesapeake Bay Program
- *NOTE: individual elements in this convention may be omitted if they are superfluous or redundant. For example, there is no need to include a date if data are not date-specific, or are frequently or continuously updated. Additionally, if the geographic extent is implicit in the content text (e.g. Potomac River Basin Boundary), it may be omitted provided that the actual extent of the data matches the extent implied in the title (an example of a dataset whose actual extent does not match the implicitly titled extent would be National Hydrography Dataset clipped to a given state). Geographic extent should always refer to a place name, not coordinates.*

### Publisher



**Publisher**

\* **Published by:** {\*\*\*EPA DATA: ENTER FROM DROPDOWN. NON-EPA DAT}

\* **Published at:** {\*\*\*ENTER CITY, STATE OF EPA C} \* **Date:**

**Published by:** {\*\*\*EPA DATA: ENTER FROM DROPDOWN. NON-EPA DATA: TYPE THE AGENCY, VENDOR OR ORGANIZATION NAME\*\*\*}

- *Example:* EPA Office of Enforcement and Compliance Assurance (OECA)
- *NOTE: the Publisher element should reflect the name of the agency, vendor, or organization responsible for creating the dataset. For EPA datasets, Publisher should be populated by the most appropriate value in the dropdown. For non-EPA datasets, the name may be entered in the element, which can accommodate free text entries.*

**Published at:** {\*\*\*ENTER CITY, STATE OF EPA DATA PUBLISHER\*\*\*}

- *Example:* Research Triangle Park, NC

**Date:**

- Click the today button. Alternatively, a specific publication date may be entered.

## Online Linkage

The Online Linkage element may be expanded to reveal ten linkage elements. Press the plus button in the upper right corner.



*NOTE: Each linkage must comply with a standard convention for the online linkage type, and the sequence is critical. Review the descriptions below to understand the specific type of online resource assigned to each linkage. To preserve the sequence of the linkages, no blank linkages may exist earlier in the order—a placeholder URL must be used. The default button may be used to generate a placeholder URL, if desired.*

### Primary Linkage: {\*\*\*ENTER URL TO DOWNLOADABLE DATASET\*\*\*}

- Example: <http://edg-intranet.epa.gov/data/Restricted/OEI/GolfCourses/GolfCourses.zip>
- This linkage is mandatory if applicable. The standard convention for the Primary Linkage is a URL providing direct access to the download.
- **NOTE: If no downloadable version exists this element may be left blank unless a subsequent linkage is specified, in which case a placeholder URL must be used. The default button may be used to generate a placeholder URL, if desired.**

### Secondary Linkage: {\*\*\*ENTER ENDPOINT OF WEB SERVICE TO ACCESS THE DATASET\*\*\*}

- Example: [http://igeo.epa.gov/ArcGIS/Rest/Services/OEI\\_IGD/GolfCourses/MapServer](http://igeo.epa.gov/ArcGIS/Rest/Services/OEI_IGD/GolfCourses/MapServer)
- This linkage is mandatory if applicable. The standard convention for the Secondary Linkage is a URL pointing to the endpoint of a web service to access the dataset (REST endpoint, WMS GetCapabilities URL, or a Soap WSDL endpoint).
- **NOTE: If no web service exists this element may be left blank unless a subsequent linkage is specified, in which case a placeholder URL must be used. The default button may be used to generate a placeholder URL, if desired.**

### Linkage 3:

- The standard convention for Linkage 3 is a URL for accessing related documents such as technical information about a dataset, developer documentation, etc.

- **NOTE: If an appropriate URL does not exist this element may be left blank unless a subsequent linkage is specified, in which case a placeholder URL must be used. The default button may be used to generate a placeholder URL, if desired.**

**Linkage 4:**

- The standard convention for Linkage 4 is a URL for an alternative landing page used to redirect user to a contextual, Agency-hosted “homepage” for the dataset. This field is not intended for an agency’s homepage, but rather related to resources tied to the dataset.
- **NOTE: If an appropriate URL does not exist this element may be left blank unless a subsequent linkage is specified, in which case a placeholder URL must be used. The default button may be used to generate a placeholder URL, if desired.**

**Other Linkages:**

- Any other URLs related to this dataset. These may be left blank if no additional URLs exist.
- **NOTE: It is recommended that these elements remain blank if no linkages are provided in the Primary Linkage, Secondary Linkage, Linkage 3, and/or Linkage 4 elements.**

Description

The screenshot shows a metadata form with the following sections:

- Description:** A text area containing the following text: "This {\*\*\*raster (IF APPLICABLE)\*\*\*} GIS dataset contains {\*\*\*POINTS/LINES/POLYGONS/CELLS\*\*\*} depicting {\*\*\*CONTENT FROM TITLE\*\*\*}. {\*\*\*ADDITIONAL CONTEXTUAL INFORMATION.\*\*\*}"
- \* Abstract:** A text area containing the following text: "{\*\*\*TEXT DESCRIBING THE GENERAL PURPOSE OF THE GIS DATASET\*\*\*} The overall goal of the Chesapeake Bay Program is to lead and direct Chesapeake Bay restoration and protection."
- \* Purpose:** A text area containing the following text: "{\*\*\*TEXT DESCRIBING THE GENERAL PURPOSE OF THE GIS DATASET\*\*\*} The overall goal of the Chesapeake Bay Program is to lead and direct Chesapeake Bay restoration and protection."
- Supplemental Info:** A text input field.

FOR LAYER-LEVEL METADATA:

**Abstract:** This {\*\*\*raster (IF APPLICABLE)\*\*\*} GIS dataset contains {\*\*\*POINTS/LINES/POLYGONS/CELLS\*\*\*} depicting {\*\*\*CONTENT FROM TITLE\*\*\*}. {\*\*\*ADDITIONAL CONTEXTUAL INFORMATION.\*\*\*}

- This element is pre-populated with suggested text. Change the text to fit specific needs to describe the dataset as thoroughly as possible. Use clear and concise language, keeping in mind that different portals and clearinghouses that harvest metadata show only a portion of the abstract as a preview. As such, structure the abstract content in decreasing order of importance. Any additional contextual information that helps inform the user about the dataset is helpful.
- *Example:* This raster GIS dataset contains 100-meter-resolution cells depicting mean surface salinity (parts per thousand) in the Chesapeake Bay and its tidal tributaries during Fall season. Salinity was measured annually from 1985 to 2006.

**Purpose:** {\*\*\*TEXT DESCRIBING THE GENERAL PURPOSE OF THE GIS DATASET\*\*\*} The overall goal of the Chesapeake Bay Program is to lead and direct Chesapeake Bay restoration and protection.

- Populate this element with text describing the general purpose of the geospatial dataset.

- *Example:* The purpose of this dataset is to show the differences in salinity throughout the Chesapeake Bay during the Fall season. The overall goal of the Chesapeake Bay Program is to lead and direct Chesapeake Bay restoration and protection.

**Supplemental Info:**

- This element is frequently used to denote whether the dataset is EPA-created or EPA-Value-added, or for other information that should be communicated to the end user such as caveats. This element may be completed with such information or may be left blank.

FOR DATA DOWNLOAD PACKAGE METADATA:

**Abstract:** This downloadable data package contains the following layers: {\*\*\*DEFINE LAYERS HERE\*\*\*}. Included in this package are a file geodatabase, Esri ArcMap map document, and a XML file of this metadata record. Full FGDC metadata records for each layer are contained in the database.

- This element is pre-populated with suggested text which may be changed to fit specific needs. Complete the element using clear and concise language, keeping in mind that different portals and clearinghouses that harvest metadata show only a portion of the abstract as a preview. As such, structure the abstract content in decreasing order of importance.

**Purpose:** {\*\*\*TEXT DESCRIBING THE GENERAL PURPOSE OF THE DOWNLOAD PACKAGE\*\*\*}

- Populate this element with text describing the purpose of the data download package.
- *Example:* These data provide information about Toxic Release Inventory (TRI) locations in EPA Region 4 and are intended for geographic display and analysis at regional, state, and local levels.

**Supplemental Info:**

- This element is frequently used for data caveats or other information that should be communicated to the end user. This element may be completed with such information or may be left blank.

FOR WEB SERVICE METADATA:

**Abstract:** This web service contains the following map layers: {\*\*\*DEFINE LAYERS HERE\*\*\*}. Layers are drawn at scales of {\*\*\*DEFINE THIS IF MAP CONTAINS SCALE DEPENDENCIES\*\*\*}. Data used to create this web service are available as a separate download at the Primary Linkage listed. Full FGDC metadata records for each layer may be found by clicking the layer name at the web service endpoint (available through the online link provided above) and viewing the layer description.

- This element is pre-populated with suggested text which may be changed to fit specific needs. Complete the element using clear and concise language, keeping in mind that different portals and clearinghouses that harvest metadata show only a portion of the abstract as a preview. As such, structure the abstract content in decreasing order of importance. Once completed, review for errors and content prior to validating and publishing.

**Purpose:** {\*\*\*TEXT DESCRIBING THE GENERAL PURPOSE OF THE WEB SERVICE\*\*\*}

- Populate this element with text describing the general purpose of the web service.
- *Example:* These data provide information about Toxic Release Inventory (TRI) locations in EPA Region 4 and are intended for geographic display and analysis at regional, state, and local levels.

**Supplemental Info:**

- This element is frequently used for data caveats or other information that should be communicated to the end user. This element may be completed with such information or may be left blank.

### Time Period

#### **Date of Data Set:**

- Enter the date or time period that the resource reflects.

#### **Progress of the data:**

- Select the text that best describes the status of the dataset.

#### **Data currency:**

- Select the text that best describes the basis on which the time period of the content is determined.

#### **Update frequency:**

- Select the text that best describes the update frequency for the dataset.

### Bounding Box

#### FOR LAYER-LEVEL METADATA:

#### **N, E, S, W:**

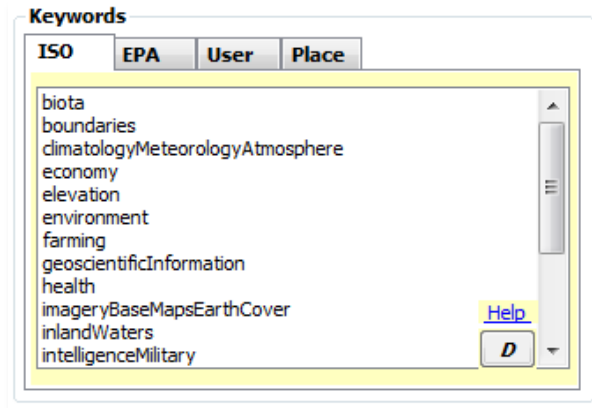
- These elements are automatically populated with the bounding box coordinates of the dataset when the metadata is synchronized with the dataset.

#### FOR DATA DOWNLOAD OR WEB SERVICE METADATA:

#### **N, E, S, W:**

- If using the EME, select the appropriate bounding box from the dropdown list. If the dropdown list options do not include the exact bounding box for the data, enter the extent values manually.

## Keywords



The full list of EME keywords can be found in the Appendix at the end of this document.

### **ISO:**

- Select at least one keyword.

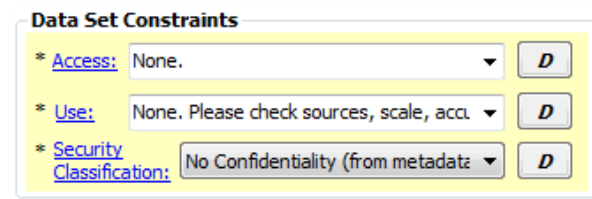
### **EPA:**

- Select at least one keyword.

### **Place:**

- Select all of the geographic names associated with the dataset extent.
- *Example:* If the dataset includes all 50 United States, select “United States” and the names of each of the states.

## Data Set Constraints



### **Access:** None.

- This element is pre-populated for public datasets. Change if necessary for datasets that are restricted. This element contains statements that are intended to supply a supporting reason for why a document is classified as “non-public” or “restricted public” in the Security Classification element. Therefore, the Access Constraints and Security Classification elements should be considered together when editing metadata.

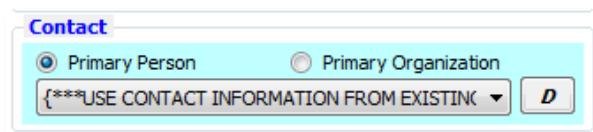
**Use:** None. Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata. Acknowledgement of the EPA would be appreciated.

- This element is pre-populated for public datasets. Change if necessary for datasets for which redistribution is not permitted.

**Security Classification:** public

- This element is pre-populated for public datasets. Change if necessary for restricted datasets.
- **NOTE: This element is a critical Project Open Data requirement. Choices and definitions are:**
  - *public* – Data asset is or could be made publicly available to all without restrictions.
  - *restricted public* – Data asset is available under certain use restrictions.
  - *non-public* – Data asset is not available to members of the public.

Contact



- {\*\*\*USE CONTACT INFORMATION FROM EXISTING METADATA IF AVAILABLE, OR ADD CONTACT INFORMATION FROM DROPDOWN. IF PRECISE CONTACT INFORMATION DOES NOT EXIST IN DROPDOWN, ADD THE INFORMATION WITH A TEXT EDITOR OR ADD IT TO THE EME DATABASE\*\*\*}.
- **NOTE:** Although the Contact element appears as a single element in EME, it is actually a compound element that draws information from multiple fields in the EME database to populate several fields in the metadata record. When a user selects a contact from the dropdown, all EPA and Project Open Data requirements are satisfied. If custom contact information is desired (contact information that does not appear in the dropdown), there are two options: 1) add the information to the metadata XML file manually using a text editor, or 2) add the information to the EME database to make the contact available in the EME dropdown (see the “Setting up the EME Database” section under “Getting Started” in EME Help for guidance on editing the EME database), then select the new contact from the dropdown. In either case, care must be taken to ensure that the following contact fields are complete in the metadata record in order to be compliant:
  - *Publisher (organization name)*
  - *Contact name (may be substituted with position name)*
  - *Email address*
  - *Mailing address (not a Project Open Data requirement, but required to meet EPA metadata standards)*
- **NOTE:** When selecting from the dropdown, the Contact will always be “Primary Person” and that radio button should be selected. However, for some datasets it may be more appropriate to use a position name and group email address instead of a contact name and email, in which case the “Primary Organization” contact button may be selected. In this case, custom contact information is necessary and the metadata record must be manually edited in the manner listed above.



## EME Tab 2: Quality, Coordinate System, and Attribute Information

### Quality

**Quality**

- \* **Integrity Tests:** Tests for integrity have not been performed.
- \* **Completeness of Data:** Features represented have not been tested fo

**Integrity Tests:** Tests for integrity have not been performed.

- This section is pre-populated. If available, replace the template text with integrity test information from the dataset.

**Completeness of Data:** Features represented have not been tested for completeness.

- This section is pre-populated. If available, replace the template text with completeness information from the dataset.

### Horizontal Positional Accuracy

**Horizontal Positional Accuracy**

- \* **Report:** Data were collected using methods that have unknown accuracy

\*\* **Value:**  (m)    \*\* **Test used:**

**Report:** Data were collected using methods that have unknown accuracy (EPA National Geospatial Data Policy [NGDP] Accuracy Tier 10). For more information, please see EPA's NGDP at <http://epa.gov/geospatial/policies.html>.

- This section is pre-populated. If available, replace the template text with horizontal positional accuracy collection reporting information from the dataset.

**Value:**

- This element is not required. If available, enter the value of the horizontal positional accuracy from the dataset.

**Test used:**

- This element is not required. If available, enter the test used to determine the horizontal positional accuracy from the dataset.

### Vertical Positional Accuracy

**Vertical Positional Accuracy**

- \*\* **Report:**

\*\* **Value:**  (m)    \*\* **Test used:**

**Report:**

- This element is not required. If available, enter vertical positional accuracy collection reporting information from the dataset.

**Value:**

- This element is not required. If available, enter the value of the vertical positional accuracy from the dataset.

**Test used:**

- This element is not required. If available, enter the test used to determine the vertical positional accuracy from the dataset

*Lineage*

The image shows a summary box for the 'Lineage' element. It has a blue title bar. Below the title, there are two sections: a green one for 'Source Information' with the text 'No sources recorded.' and a yellow one for 'Processing Steps' with the text 'No processing steps recorded. (\* only 1 processing step required)'. To the right of these sections is a button labeled 'Edit Lineage', which is circled in red.

*NOTE: The Lineage element of the EME is divided into two child elements: Source Information and Processing Steps. Click the **Edit Lineage** button to access the two child elements.*

**Source Information:**

The image shows a table titled '\*\* Source Information'. The table has seven columns: Source Citation, Source Scale Denominator, Type of Source Media, Source Currentness Reference, Time Period of Content, Source Citation Abbreviation, and Source Contribution. The table is currently empty, with a large green area below the header.

While completion of the Source Information section is not required for minimum EPA compliancy, consider completing the Source Information elements to provide details about the source data used to create the resource. Refer to EME help for additional information on these elements.

**Processing Steps:**

The image shows a table titled '\* Processing Steps (\* only 1 processing step required)'. The table has three columns: Date, Description, and Contact. The first row contains placeholder text: '{\*\*\*ENTER DAT...' in the Date column, '{\*\*\*ENTER PROCESSING STEP\*\*\*}' in the Description column, and a slash '/' in the Contact column.

The completion of at least one processing step is required for minimum FGDC compliancy. The elements suggested here have been generalized. Each step suggested is a separate entry and multiple steps may

contain the same value for Date if they were performed on the same date. Modify these suggested entries and create additional entries if necessary.

#### PROCESSING STEPS FOR LAYER-LEVEL METADATA:

**Date:** {\*\*\*ENTER DATE PROCESSING STEP WAS PERFORMED\*\*\*}

**Description:** {\*\*\*ENTER PROCESSING STEP\*\*\*}

- *Example Processing Steps:*
  - Converted Excel spreadsheet with latitude/longitude coordinates to GIS shapefile.
  - Projected GIS Shapefile to UTM Zone 18, NAD 83 projection.
  - Standardized attribute units from acres to hectares.
  - Created FGDC-compliant metadata for GIS shapefile.
  - Imported GIS shapefile into SDE as new feature class.

#### PROCESSING STEPS FOR DATA DOWNLOAD PACKAGE METADATA:

**Date:** {\*\*\*ENTER DATE PROCESSING STEP WAS PERFORMED\*\*\*}

**Description:** {\*\*\*ENTER PROCESSING STEP\*\*\*}

- *Example Processing Steps:*
  - Imported shapefiles into file geodatabase as new feature classes.
  - Created FGDC-compliant metadata for each file geodatabase feature class.
  - Created Esri ArcMap map document (MXD).
  - Created FGDC-compliant metadata for the data download package.
  - Zipped data, map document, and metadata.

#### PROCESSING STEPS FOR WEB SERVICE METADATA:

**Date:** {\*\*\*ENTER DATE PROCESSING STEP WAS PERFORMED\*\*\*}

**Description:** {\*\*\*ENTER PROCESSING STEP\*\*\*}

- *Example Processing Steps:*
  - Imported data into file geodatabase as new feature classes in Web Mercator projection.
  - Created FGDC-compliant metadata for each file geodatabase feature class.
  - Created Esri ArcMap map document (MXD).
  - Published the web service.
  - Created FGDC-compliant metadata for the web service.

### [Spatial Data Organization Information](#)

The screenshot shows a dialog box titled "Spatial Data Organization Information". It contains two main input areas: a dropdown menu labeled "Direct Spatial Reference:" and a text input field labeled "Indirect Spatial Reference:". To the right of the dropdown is a button labeled "Edit Object Info". To the right of the text field is a button labeled "D". The background of the dialog is light green.

*NOTE: These elements are not required. They should be left blank for data download and web service metadata preparation. For layer-level metadata, detailed data object information for specific vector and*

raster formats may be entered by clicking the **Edit Object Info** button. Refer to EME help for more information on these elements.

#### FOR LAYER-LEVEL METADATA:

##### **Direct Spatial Reference:**

- This element is not required. If desired, use the dropdown to select the system used to represent the objects in the dataset.

##### **Indirect Spatial Reference:**

- This element is not required. If desired, enter the name of the types of geographic features, addressing schemes, or other means through which locations are referenced in the dataset.

#### *Coordinate System Information (Horizontal)*

The screenshot shows a dialog box titled "Coordinate System Information" with a "Horizontal" tab. The dialog contains the following fields:

- \* **Projection:** A dropdown menu with a "D" button to its right.
- \* **Projection Name:** A dropdown menu.
- \* **Units:** A dropdown menu.
- \* **Datum:** A dropdown menu.
- \* **Resolution:** Two input fields labeled "X:" and "Y:" with a "=" button between them.

#### FOR LAYER-LEVEL METADATA:

##### **Projection:**

##### **SPCS Zone / UTM Zone / Projection Name:**

##### **Units:**

##### **Datum:**

##### **Resolution: X: / Y:**

- These elements are automatically populated with the coordinate system information of the dataset when the metadata is synchronized with the dataset.

#### FOR DATA DOWNLOAD OR WEB SERVICE METADATA:

##### **Projection:**

- Use the dropdown to select the projection reference system for the dataset. If the reference system is not in the list, use a text editor to populate this field.

##### **SPCS Zone / UTM Zone / Projection Name:**

- Use the dropdown to select the State Plane Coordinate System Zone, UTM Zone, or Projection Name for the dataset. If the zone or name is not in the list, use a text editor to populate this field.
- *NOTE: The dropdown selections in this field will correspond with the projection reference system selected in the Projection field.*

##### **Units:**

- Use the dropdown to select the coordinate system units. If the correct entry for units is not in the list, use a text editor to populate this field.

- *NOTE: The dropdown selection(s) in this field will correspond with the entry in the Projection field and the entry in the SPCS Zone, UTM Zone, or Projection Name field.*

**Datum:**

- Use the dropdown to select the coordinate system datum. If the correct entry for the datum is not in the list, use a text editor to populate this field.
- *NOTE: The dropdown selection(s) in this field will correspond with the entries in the other fields in this section.*

**Resolution: X: / Y:**

- Enter the coordinate resolution (minimum distance between two adjacent points). For vector data, these values usually correspond to the fuzzy tolerance of the dataset. For raster data, these values usually correspond to the raster cell size.

**Entity and Attribute Information**

*NOTE: These elements are not required. They should be left blank for data download and web service metadata preparation. For layer-level metadata, while completion of the Entity and Attribute Information section is not required for minimum FGDC compliancy, it is considered a best practice to complete these elements so that details about the dataset’s attributes are recorded.*

**FOR LAYER-LEVEL METADATA:**

The Entity and Attribute Information section of EME has two tabs: Overview and Detailed. Choose one or the other to document the attributes in the dataset’s table. As a best practice, it is recommended that the elements in the Detailed tab be completed for geospatial datasets created within EPA. For datasets that originate from outside of EPA it is recommended that the Overview tab be used unless there is a desire to provide detailed attribute information.

**Overview:**

The screenshot shows a dialog box titled "Entity and Attribute Information". It has two tabs: "Overview" (selected) and "Detailed". The "Overview" tab contains a large text area with a light green border. At the top left of this area is the text "\*\* Overview Description" and at the top right is a small button with the letter "D". At the bottom left of the dialog box is the text "\*\* Citation:" followed by a text input field and a dropdown arrow.

The Overview tab provides two metadata elements: Overview Description and Citation. The Overview Description element is a free-text block in which to enter a description of the geospatial dataset attributes. This is useful if “official” definitions of the attributes were not provided with the source data from which the geospatial dataset was created. If descriptive text about the dataset was provided, that may be transferred to this tab. Additionally, hyperlinks that point to an online resource with additional information about the dataset may be used. Note that if the Overview Description element is completed, the Citation element becomes required. The metadata will not validate if the Citation element is left blank.

**Overview Description:**

- Provide a summary of the information contained in the dataset. Use the descriptive text that accompanied the original data if any existed, or make a best effort to summarize the contents.
- *Example:* Zebra mussel sightings from 1991 to 2010 data provided to the Chesapeake Bay Program for use in GIS analysis and visualization. Data provided by US Geological Survey Nonindigenous Aquatic Species (NAS) Program. Inquiries regarding attribute data may be addressed to the Metadata Contact.

**Citation:**

- Provide a citation if available, or minimally the name of the source data provider.
- *Example:* Pawlitz, R.J., and David, K.D., 2012, The National Nonindigenous Aquatic Species Program: U.S. Geological Survey Fact Sheet 2012-3100, 4 p.
- Example: National Register of Historic Places, US Department of the Interior National Parks Service

Detailed:

The screenshot shows a software window titled "Entity and Attribute Information" with two tabs: "Overview" and "Detailed". The "Detailed" tab is active. It contains three main sections:

- Entity Information:** Includes a "Label" field with expand/collapse icons (+/-) and a "Definition Source" dropdown menu. Below these is a "Definition" text input field.
- Attribute Information:** Similar to the Entity section, with a "Label" field, "Definition Source" dropdown, and "Definition" text input field.
- Domain Information:** Features four radio buttons: "Range", "Codeset", "Enumerated", and "Unrepresentable". Below the radio buttons are two text input fields labeled "Min" and "Max".

The Detailed tab provides several elements that permit the entry of detailed information about each attribute in the geospatial dataset attribute table. If the original dataset contained a linked FGDC

metadata record with defined Entity and Attribute information, these elements are automatically populated with that information. If these fields are all blank, synchronizing the metadata with the dataset will populate these elements with information from the metadata record. If no metadata record exists, performing synchronization will populate the Attribute Information – Label element with the names of all of the attributes.

**Entity Information - Label:**

- The name of the dataset. Automatically populated when metadata is synchronized.

**Entity Information – Definition Source:**

- The source of the geospatial dataset. Generally corresponds with the name provided in the Origin element on Tab 1.
- *Example:* US Census Bureau
- *Example:* Virginia Institute of Marine Science and U.S. Fish and Wildlife Service

**Entity Information – Definition:**

- The definition of the geospatial dataset. Generally corresponds with the information provided in the Title element on Tab 1.
- *Example:* Toxics Release Inventory (TRI) Locations, Oklahoma, 2012, EPA OIAA, EPA REG 06, WQPD
- *Example:* Tribal Lands, Idaho, 2000, Bureau of Indian Affairs, EPA REG 10
- *Example:* Potomac River Basin Boundary, Chesapeake Bay Program

**Attribute Information - Label:**

- The name of the attributes. Dropdown is automatically populated with all the attribute names when metadata is synchronized.

**Attribute Information – Definition Source:**

- The source of the attribute. Attributes that are properties of the geospatial dataset (e.g. OBJECTID and Shape) are automatically credited to Esri when metadata is synchronized.
- *Example:* US Census Bureau

**Attribute Information – Definition:**

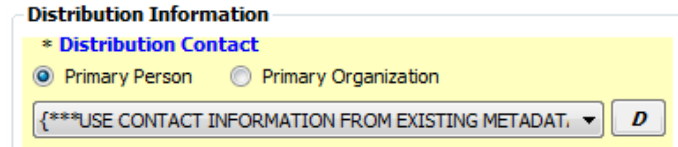
- The definition of the attribute. It is recommended that a one- or two-sentence definition be used, although the element accepts very long character strings.

**Domain Information:**

- Refer to EME help for details on selecting the proper domain type (Range, Codeset, Enumerated, or Unrepresentable) and completing Domain Information section.

## EME Tab 3: Distribution & Metadata Information


### Distribution Information



**Distribution Contact:** {\*\*\*USE CONTACT INFORMATION FROM EXISTING METADATA IF AVAILABLE, OR ADD CONTACT INFORMATION FROM DROPDOWN. IF PRECISE CONTACT INFORMATION DOES NOT EXIST IN DROPDOWN, ADD THE INFORMATION WITH A TEXT EDITOR OR ADD IT TO THE EME DATABASE\*\*\*}.

- *NOTE: Although the Contact element appears as a single element in EME, it is actually a compound element that draws information from multiple fields in the EME database to populate several fields in the metadata record. When a user selects a contact from the dropdown, all EPA and Project Open Data requirements are satisfied. If custom contact information is desired (contact information that does not appear in the dropdown), there are two options: 1) add the information to the metadata XML file manually using a text editor, or 2) add the information to the EME database to make the contact available in the EME dropdown (see the “Setting up the EME Database” section under “Getting Started” in EME Help for guidance on editing the EME database), then select the new contact from the dropdown. In either case, care must be taken to ensure that the following contact fields are complete in the metadata record in order to be compliant:*
  - *Publisher (organization name)*
  - *Contact name (may be substituted with position name)*
  - *Email address*
  - *Mailing address (not a Project Open Data requirement, but required to meet EPA metadata standards)*
- *NOTE: When selecting from the dropdown, the Contact will always be “Primary Person” and that radio button should be selected. However, for some datasets it may be more appropriate to use a position name and group email address instead of a contact name and email, in which case the “Primary Organization” contact button may be selected. In this case, custom contact information is necessary and the metadata record must be manually edited in the manner listed above.*

### Data Resource Type



#### FOR LAYER-LEVEL METADATA:

##### **Type of dataset?:**

- Use the dropdown to select the content type classification (method of access) for the geospatial dataset. The most common classifications are:



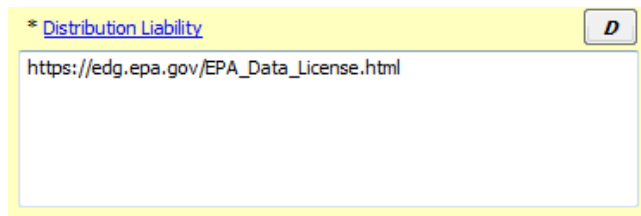
- Downloadable Data – dataset is made available as part of a data download package.
- Live Data and Maps – dataset is made available as a layer in a web service.
- Offline Data – dataset is not made available through the internet.

#### FOR DATA DOWNLOAD OR WEB SERVICE METADATA:

##### Type of dataset?:

- “Downloadable Data” for data download package metadata.
- “Live Data and Maps” for web service metadata.
- This element is pre-populated and should not be updated.

#### *Distribution Liability*



- [https://edg.epa.gov/EPA\\_Data\\_License.html](https://edg.epa.gov/EPA_Data_License.html)
- This element is pre-populated with the URL to the EPA Distribution Liability text. For EPA-produced datasets, this text is all that is necessary in this element.
- For non-EPA-produced datasets, please retain the distribution liability text from the source, if available.
  - *Example – Non-EPA dataset FROM A GOVERNMENT SOURCE:* The New York State Department of Environmental Conservation (NYSDEC) provides these geographic data "as is". NYSDEC makes no guarantee or warranty concerning the accuracy of information contained in the geographic data. NYSDEC further makes no warranty, either expressed or implied, regarding the condition of the product or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on a computer system at NYSDEC, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly recommended that careful attention be paid to the contents of the metadata file associated with these data. NYSDEC shall not be held liable for improper or incorrect use of the data described and/or contained herein.
  - *Example – Non-EPA dataset FROM A COMMERCIAL SOURCE:* This data can only be distributed to NAVTEQ customers, as detailed specifically in NAVTEQ licensing terms and agreements.
- If original distribution liability information is not available, please follow one of these examples:
  - *Example – Non-EPA dataset FROM A GOVERNMENT SOURCE:*  
[https://edg.epa.gov/EPA\\_Data\\_License.html](https://edg.epa.gov/EPA_Data_License.html)

- *Example – Non-EPA dataset FROM A COMMERCIAL SOURCE:* This is a licensed product by [insert licensor here] for use within the U.S. EPA. No third party copy of this product will be permitted.

### Metadata Information

#### **Metadata Date:**

- Click the **today** button.

#### **Metadata Future Review Date:**

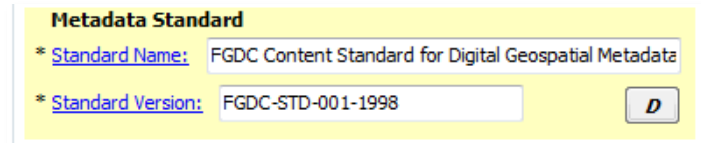
- Click the **4 yrs** button.

### Metadata Contact

- {\*\*\*USE CONTACT INFORMATION FROM EXISTING METADATA IF AVAILABLE, OR ADD CONTACT INFORMATION FROM DROPDOWN. IF PRECISE CONTACT INFORMATION DOES NOT EXIST IN DROPDOWN, ADD THE INFORMATION WITH A TEXT EDITOR OR ADD IT TO THE EME DATABASE\*\*\*}.
- *NOTE: Although the Contact element appears as a single element in EME, it is actually a compound element that draws information from multiple fields in the EME database to populate several fields in the metadata record. When a user selects a contact from the dropdown, all EPA and Project Open Data requirements are satisfied. If custom contact information is desired (contact information that does not appear in the dropdown), there are two options: 1) add the information to the metadata XML file manually using a text editor, or 2) add the information to the EME database to make the contact available in the EME dropdown (see the “Setting up the EME Database” section under “Getting Started” in EME Help for guidance on editing the EME database), then select the new contact from the dropdown. In either case, care must be taken to ensure that the following contact fields are complete in the metadata record in order to be compliant:*
  - *Publisher (organization name)*
  - *Contact name (may be substituted with position name)*
  - *Email address*
  - *Mailing address (not a Project Open Data requirement, but required to meet EPA metadata standards)*

- *NOTE: When selecting from the dropdown, the Contact will always be “Primary Person” and that radio button should be selected. However, for some datasets it may be more appropriate to use a position name and group email address instead of a contact name and email, in which case the “Primary Organization” contact button may be selected. In this case, custom contact information is necessary and the metadata record must be manually edited in the manner listed above.*

### Metadata Standard



The screenshot shows a form titled "Metadata Standard" with a yellow background. It contains two fields: "\* Standard Name:" with the value "FGDC Content Standard for Digital Geospatial Metadata" and "\* Standard Version:" with the value "FGDC-STD-001-1998". There is a small button with the letter "D" to the right of the second field.

**Standard Name:** FGDC Content Standard for Digital Geospatial Metadata

- This element is pre-populated and should not be updated.

**Standard Version:** FGDC-STD-001-1998

- This element is pre-populated and should not be updated.

## Prepare ArcMap MXD Documentation for Web Service Metadata

This subsection of the Style Guide is intended to guide developers through the preparation of an Esri ArcMap map document (MXD), focusing on documentation of the MXD as it relates to associated map service REST page metadata. Where applicable, this guide provides common language intended to make EPA REST pages more consistent.

This guide assumes that, while the individual layers in a web service may have different themes, all layers will represent the same geographic extent, temporal extent, and data source. This simplifies the naming conventions for the overall web service name, group layer names, and individual layer names. It is recommended that layers which represent different geographic extents, temporal extents, and/or data sources not be combined in a web service, but rather be separated into individual web services. This modular approach is preferred by most web map developers because web services with numerous divergent layers are often difficult to incorporate into web maps and applications. Modularity also promotes consistency in naming conventions so the web services are easier to maintain.

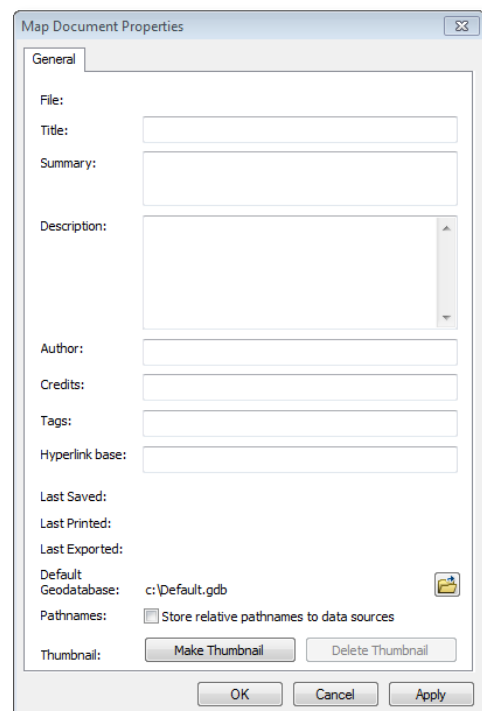
It is also assumed that ArcGIS Server services will be given brief and intuitive names and be grouped logically into folders at the discretion of the developer. No standard convention for service name, folder, or hostname will be instituted.

### Instructions for using this section of the guide

Open the MXD in ArcMap and follow along in the guide which steps through Map Document Properties, Data Frame Properties, and Group and Layer Properties, element by element, with instructions. Suggested text is provided for most elements; the text prompts are enclosed in brackets and asterisks {\*\*\*ENTER HERE\*\*\*} which the user must replace with text that describes the data layer.

### ArcMap Map Document Properties

*(File → Map Document Properties → General)*



## Title

Title:

(Corresponding REST page field: Document Info: Title:)

Enter the map title using the following naming convention:

{\*\*\*ENTER SUBJECT, GEOGRAPHIC EXTENT, RELEVANT TIME PERIOD, DATA OWNER/PROVIDER, OFFICE/REGION/ RESEARCH LAB OF EPA WEB SERVICE CREATOR\*\*\*}

- *Example:* Toxics Release Inventory (TRI) Locations, Oklahoma, 2012, EPA OIAA, EPA REG 06, WQPD
- *Example:* Tribal Lands, Idaho, 2000, BIA, EPA REG 10, OETPA
- *NOTE:* for services that will subsequently be registered with EPA GeoPlatform Online, the length limit for the title is 250 characters. It is recommended that the Title be kept brief, and that details about the service be included in the Summary and Description. Individual elements in this convention may be omitted if they are superfluous or redundant. For example, there is no need to include a date if data are not date-specific, or are frequently or continuously updated. Additionally, if the geographic extent is implicit in the content text (e.g. Potomac River Basin Boundary), it may be omitted provided that the actual extent of the data matches the extent implied in the title (an example of a dataset whose actual extent does not match the implicitly titled extent would be National Hydrography Dataset clipped to a given state). Geographic extent should always refer to a place name, not coordinates.

## Summary

Summary:

(Corresponding REST page field: Document Info: Subject: )


Enter a one- to two-sentence description (limited to 120 characters, per Esri guidance, less than the length of a tweet) of the contents in the web service following this general format:

This {\*\*\*ENTER OFFICE/REGION/RESEARCH LAB OF EPA WEB SERVICE CREATOR\*\*\*} web service contains {\*\*\*ENTER "Point", "Line" and/or "Polygon" \*\*\*} layer(s) depicting {\*\*\*ENTER DESCRIPTION OF CONTENT\*\*\*} in {\*\*\*ENTER GEOGRAPHIC LOCATION\*\*\*} from {\*\*\*ENTER DATA SOURCE\*\*\*}

- *Example:* This EPA Region 6 WQPD web service contains points depicting 2012 TRI locations in Oklahoma from EPA OIAA's TRI Program.
- *Example:* This EPA ORD NERL ESD web service contains point and polygon layers depicting Superfund sites in the US from EPA OSWER.

- *NOTE: developers have some discretion on the formatting of the Summary element due to the character limit imposed. Individual elements in this convention may be omitted if they are superfluous or redundant, as with the Title (i.e. date, geographic extent, etc.).*

## Description

Description: 

*(Corresponding REST page fields: Document Info: Comments: and Service Description:)*

- *NOTE: completing the Map Document Properties Description field is a two-step process. Step 1 is to create the overall descriptive text for the web service in the Description field. Step 2, which takes place after web service metadata has been published to the [Environmental Dataset Gateway \(EDG\)](#), is to embed HTML code into the beginning of the Description field that provides a hyperlink directly from the REST page to the metadata details page at the EDG. Developers are encouraged to complete ArcMap MXD preparation and create and publish web service metadata, then return to the MXD to complete Step 2. Guidance for developing FGDC metadata for a web service is provided in the “Prepare FGDC-Compliant Metadata for a Geospatial Resource” section of this document. The steps for completing the Map Document Properties Description field are described here:*

### **STEP 1**

Enter overall descriptive information about the web service, with more detail than the summary in this general format:

This {\*\*\* ENTER OFFICE/REGION/RESEARCH LAB OF EPA WEB SERVICE CREATOR\*\*\*} web service contains the following layers: {\*\*\*DEFINE LAYERS HERE\*\*\*}. Layers are drawn at scales of {\*\*\*DEFINE THIS IF MAP CONTAINS SCALE DEPENDENCIES\*\*\*}. {\*\*\*ENTER THE APPROPRIATE SECURITY CLASSIFICATION STATEMENT FROM THE CHOICES BELOW\*\*\*}. {\*\*\*ENTER THE APPROPRIATE ACCESS CONSTRAINTS STATEMENT FROM THE CHOICES BELOW\*\*\*}. {\*\*\*ENTER THE APPROPRIATE USE CONSTRAINTS STATEMENT FROM THE CHOICES BELOW\*\*\*}.

There is no limit to the length of the description. Use this area to include any pertinent ancillary information that does not belong in another explicitly-defined field. For example, access constraints and use constraints are required elements in other metadata formats but do not have corresponding fields on the REST page. Please note that some applications (including EDG and EPA GeoPlatform Online) show users only a snippet of the description as a preview, so it is wise to include the most important details at the beginning of the description.

### **Security classification statements:**

For data that is or can be made publicly available to all without restrictions, paste the following statement into this element:

Security classification: Public.

For data that is or can be made available to a restricted audience under certain use restrictions, paste the following statement into this element:

Security classification: Restricted public.

For data that may not be made available to members of the public, paste the following statement into this element:

Security classification: Non-public.

### **Access constraints statements:**

For public data that has no access restrictions, paste the following statement into this element:

Access constraints: None.

For data that are intended for EPA use only, review the following specific access constraints statements to determine if one would be appropriate for the restricted-access dataset:

- Access constraints: EPA Category: Mission Sensitive, NARA Category: Critical Infrastructure
- Access constraints: EPA Category: Drinking Water Vulnerability Assessments, NARA Category: Critical Infrastructure-Water Assessments
- Access constraints: EPA Category: Sensitive Drinking Water Related, NARA Category: Critical Infrastructure-Water Assessments
- Access constraints: EPA Category: IT Security, NARA Category: Information Systems Vulnerability Information
- Access constraints: EPA Category: Law Enforcement Sensitive, NARA Category: Law Enforcement
- Access constraints: EPA Category: Attorney Client Privilege, NARA Category: Legal-Privilege
- Access constraints: EPA Category: Attorney Work Product, NARA Category: Legal-Privilege
- Access constraints: EPA Category: Deliberative Process Privilege, NARA Category: Legal-Privilege
- Access constraints: EPA Category: Personally Identifiable Information (PII), NARA Category: Privacy
- Access constraints: EPA Category: Proprietary, NARA Category: Proprietary
- Access constraints: EPA Category: Confidential Business Information, NARA Category: Proprietary-Manufacturer
- Access constraints: EPA Category: Source Selection Information, NARA Category: Proprietary-Source Selection

For data that are restricted, but for which none of the above statements suitably describe the reason for restriction, paste one of the following general access constraints statements into this element:

- Access constraints: Data are restricted to internal EPA personnel only.
- Access constraints: Data are restricted to internal EPA personnel only and state partners.

**Use constraints statements:**

For public data that has no use or distribution restrictions, paste the following statement into the element:

Use constraints: None. Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata. Acknowledgement of the EPA would be appreciated.

For data that are intended for EPA use only, except where distribution is explicitly granted to other users, paste the following statement into the element:

Use constraints: These data should not be distributed to users unless distribution is explicitly granted. Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata. Acknowledgement of the EPA would be appreciated.

For data that are intended for EPA use only and must not be distributed, paste the following statement into the element:

Use constraints: These data should not be distributed. Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata. Acknowledgement of the EPA would be appreciated.

- *Example Description:* This EPA Office of Enforcement and Compliance Assurance, Office of Site Remediation Enforcement, Policy and Program Evaluation Division (OECA, OSRE, PPEd) web service contains the following layers related to 2012 enforcement actions and cases: Federal Facility, Criminal, CleanUp, Air, Waste, Water, and Chemical. Layers are drawn at all scales. Security classification: Public. Access constraints: None. Use constraints: None. Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata. Acknowledgement of the EPA would be appreciated.

**STEP 2**

Once web service metadata is created and published to the EDG, insert the following HTML code at the beginning of the Description field. This provides a hyperlink directly from the REST page to the web service metadata record in the Environmental Dataset Gateway (EDG). Replace the **ENLARGED** text with the universally unique identifier (UUID) of the metadata record:



```
<A href="https://edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=%7B101CD940-B0CC-497D-BAC0-A329155F7501%7D">Full Metadata</A>
```

- *NOTE: see [http://geodata.epa.gov/arcgis/rest/services/OEI/EPA\\_Locations/MapServer](http://geodata.epa.gov/arcgis/rest/services/OEI/EPA_Locations/MapServer) for an example of the appearance of the Service Description at the REST page. This Service Description was entered into the Map Document Properties Description field as follows:*

```
<A href="https://edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=%7B101CD940-B0CC-497D-BAC0-A329155F7501%7D">Full Metadata</A> This SEGS web service contains EPA facilities, EPA facilities labels, small- and large-scale versions of EPA region boundaries, and EPA region boundaries extended to the 200nm exclusive economic zone (EEZ). Small scale EPA boundaries and boundaries with EEZ render at scales of less than or equal to 5 million, large scale EPA boundaries draw at scales greater than 5 million. EPA facilities labels draw at scales greater than 2 million. This SEGS dataset was produced by EPA's Office of Environmental Information (OEI). Access constraints: None. Use constraints: None. Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata. Acknowledgement of the EPA would be appreciated.
```

- *NOTE: When publishing a service in ArcGIS, this embedded URL will convey to the Summary field in the Item Description tab of the Service Editor window – even though it will not appear to exist. Also, this URL will disappear from the Map Document Properties Description if the Map Document Properties window is closed and then reopened. The URL is actually there even though it cannot be seen.*

## Author

Author:

*(Corresponding REST page field: Document Info: Author:)*

{\*\*\*ENTER OFFICE/REGION/RESEARCH LAB OF EPA WEB SERVICE CREATOR\*\*\*}

- *Example: US EPA Region 2 Division of Enforcement and Compliance Assistance (REG 02, DECA)*
- *Example: US EPA Office of Water, Office of Wetlands Oceans and Watersheds, Wetlands Division (OW, OWOW, WLD)*

## Credits

Credits:

*(Corresponding REST page field: Copyright Text:)*

Enter credits for the EPA web service creator as the web service provider and the name of data source. Spell out abbreviations unless text length constraints dictate that an abbreviation must be used.

Map Service: {\*\*\* ENTER OFFICE/REGION/RESEARCH LAB OF EPA WEB SERVICE CREATOR\*\*\*}. Data: {\*\*\*ENTER DATA SOURCE\*\*\*}.

- *Example:* Map Service: US EPA Office of Water, Office of Ground Water and Drinking Water, Drinking Water Protection Division (OW, OGWDW, DWPD). Data: US Geological Survey.
- *NOTE: it is recommended that the Credits text not exceed 250 characters, as that is the length limit for the corresponding Credits field in EPA GeoPlatform Online.*

## Tags

Tags:

*(Corresponding REST page field: Document Info: Keywords:)*

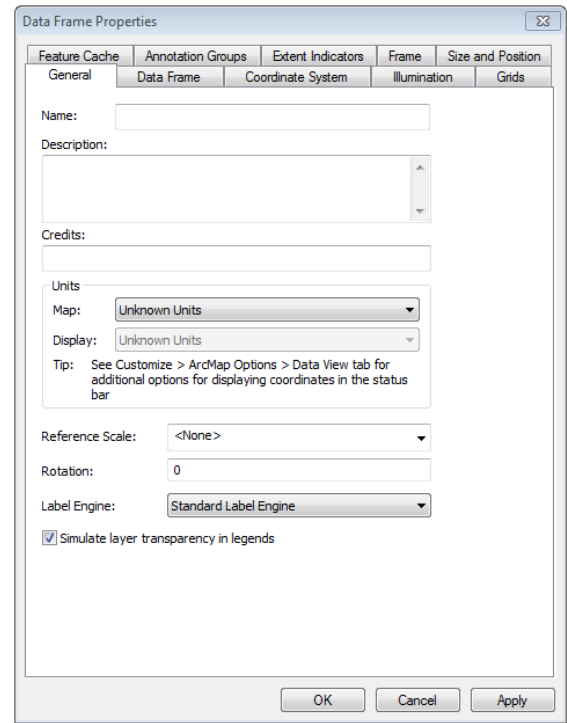
Enter relevant keywords (limited to 250 characters). A list of potential keywords, matching those in the EPA Metadata Editor, can be found in Appendix 1 at the end of this document. At a minimum, include:

US EPA, {\*\*\*ENTER OFFICE/REGION/RESEARCH LAB OF EPA WEB SERVICE CREATOR\*\*\*}, {\*\*\*ENTER SUBJECT\*\*\*}, {\*\*\*ENTER DATA SOURCE\*\*\*}, {\*\*\*ENTER GEOGRAPHIC EXTENT\*\*\*}, {\*\*\*ENTER TIME PERIOD\*\*\*}

- *Example:* US EPA, EPA Region 7, Environmental Services Division, REG 07, ESD, Toxics Release Inventory, TRI, EPA Office of Information Analysis and Access, OIAA, Iowa, Kansas, Missouri, Nebraska, 2012
- *NOTE: it is recommended that the Tags text not exceed 250 characters, as that is the length limit for the corresponding Tags field in EPA GeoPlatform Online.*

## ArcMap Data Frame Properties

(right-click map → Data Frame Properties... → General tab)



### Name

Name:

(Corresponding REST page field: Map Name:)

It is recommended that this field match the Title in the Map Document Properties unless there is a good reason for the two names to differ.

- *Example:* Toxics Release Inventory (TRI) Locations, Oklahoma, 2012, EPA OIAA, EPA REG 06, WQPD

### Description

Description:

(Corresponding REST page field: Description:)

It is recommended that this field match the Description in the Map Document Properties. Populating this field should be done in the same two-step process to embed HTML code into the beginning of the Description field that provides a hyperlink directly from the REST page to the metadata details page at the EDG.

## Credits

Credits:

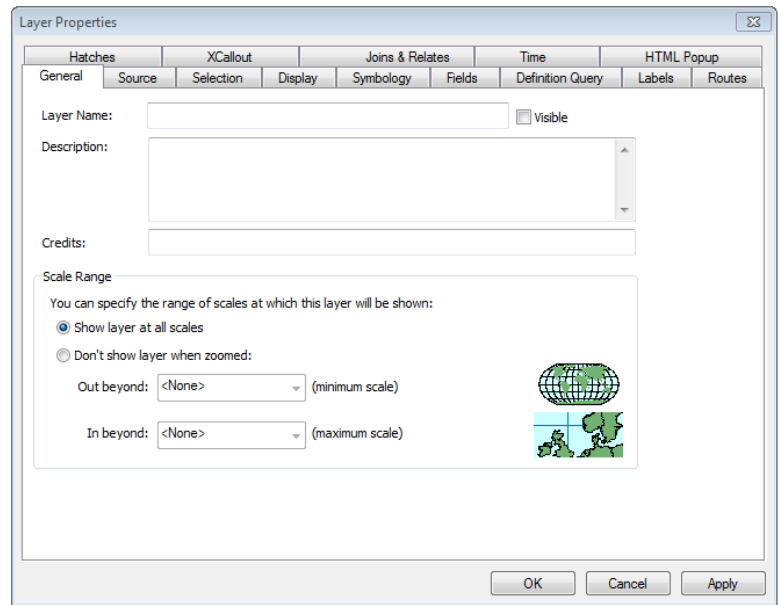
*(No Corresponding REST page field)*

It is recommended that this field match the data source name from Credits in the Map Document Properties.

- *Example:* Map Service: US EPA Office of Water, Office of Wetlands Oceans and Watersheds, Wetlands Division (OW, OWOW, WLD). Data: US Geological Survey.

## ArcMap Group and Layer Properties

*(right-click Layer or Group → Properties... → General tab)*



## Layer Name

Layer Name:

*(Corresponding REST page field: Layers:)*

Enter the layer name using the following naming convention:

{SUBJECT}

- *Example:* Toxics Release Inventory (TRI) Facility

## Description

Description:

*(Corresponding group-level or layer-level REST page field: Description:)*

Layer Group Description and Layer Description are handled differently:

### FOR LAYER GROUP DESCRIPTION:

Enter descriptive information for grouped layers in this general format:

This web service layer group contains the following layers: {\*\*\*DEFINE LAYERS HERE\*\*\*}. Layers are drawn at scales of {\*\*\*DEFINE THIS IF MAP CONTAINS SCALE DEPENDENCIES\*\*\*}.

- *Example:* This web service layer group contains two Confined Animal Feeding Operation (CAFO) layers: one New Jersey CAFO layer and one New York CAFO layer. Layers in this group are drawn at scales of 1:3 million and larger.
- *Example:* This web service layer group contains three Sole Source Aquifers layers. Each layer displays Sole Source Aquifers at specific scales as detailed in the layer name.

### FOR LAYER DESCRIPTION:

Enter descriptive information for the map layer in this general format:

This web service layer displays {\*\*\*DEFINE LAYER HERE\*\*\*}. This layer is drawn at scales of {\*\*\*DEFINE THIS IF MAP CONTAINS SCALE DEPENDENCIES\*\*\*}.

- *Example:* This web service layer displays stream lines depicting Spring Chinook Salmon distribution in Oregon. This layer is drawn at scales of 1:250,000 and larger.
- *NOTE: It is strongly recommended that every layer in the web service include a hyperlink to a corresponding layer-level FGDC metadata document. The format of the HTML code is the same as that described in the service description above. This provides a hyperlink directly from the layer-level REST page to the layer-level metadata record in the Environmental Dataset Gateway (EDG). Replace the **ENLARGED** text with the universally unique identifier (UUID) of the layer metadata record:*

```
<A href="https://edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=%7B101CD940-B0CC-497D-BAC0-A329155F7501%7D">Full Metadata</A>
```

*However, registering metadata documents in the EDG for every service layer can potentially create redundancy and clutter and cause record management difficulties. The recommended alternative approach is to utilize EDG Download Locations to store the layer metadata records. EDG Download Locations provides an online resource to store data and metadata to make them readily available to both internal EPA and external public users. The [Procedures for Storing Data](#)*

[at the Environmental Dataset Gateway \(EDG\) Download Locations](#) document offers step-by-step instructions on setting up an EDG Download Location for your organization.

Once the metadata records are placed in a metadata folder on the EDG Data Download Locations, a hyperlink can be created to link to the layer metadata record. To include the metadata link in the Layer Description text, copy the following HTML code, replacing the **ENLARGED** text with the path to the metadata record, and place the code at the beginning of the layer description:

Intranet example (restricted metadata record):

```
<A href="http://edg-intranet.epa.gov/metadata/rest/document?xsl=esri_fgdc&xml=/restricted/OrganizationAcronym/DatasetName/layer_metadata/LayerName.xml">Full Metadata</A>
```

Internet example:

```
<A href="http://edg.epa.gov/metadata/rest/document?xsl=esri_fgdc&xml=/public/OrganizationAcronym/DatasetName/layer_metadata/LayerName.xml">Full Metadata</A>
```

- NOTE: see [http://geodata.epa.gov/arcgis/rest/services/OEI/EPA\\_Locations/MapServer/2](http://geodata.epa.gov/arcgis/rest/services/OEI/EPA_Locations/MapServer/2) for an example of the appearance of the Layer Description at the REST page. This Layer Description was entered into the ArcMap Layer Properties Description field as follows:

```
<A href="https://edg.epa.gov/metadata/rest/document?xsl=esri_fgdc&xml=/Public/OEI/EPA_Facilities/layer_metadata/RegionBoundaries.XML">Full Metadata</A> This web service layer shows the boundaries of EPA regions based on 2011 TIGER/Line geometry. This layer is drawn at scales of 5,000,001 or less. This SEGS dataset was produced by EPA through the Office of Environmental Information (OEI).
```

## Credits

Credits:

*(Corresponding group-level or layer-level REST page field: Copyright Text)*

It is recommended that this field match the data source name from Credits in the Map Document Properties.

- Example: Map Service: US EPA Office of Water, Office of Wetlands Oceans and Watersheds, Wetlands Division (OW OWOW WLD). Data: US Geological Survey.

## Prepare Metadata for an EPA GeoPlatform Online Content Item

This subsection of the Style Guide is intended to guide users through EPA GeoPlatform Online documentation. Where applicable, this guide provides common language intended to make EPA GeoPlatform Online content more consistent.

EPA GeoPlatform Online stewardship requires that all shared content contain descriptive metadata. Additionally, it is good practice to complete metadata for every item, including items that are not shared.

### Metadata in EPA GeoPlatform Online.

Metadata and other characteristics of an EPA GeoPlatform Online content item may be viewed at the item's details page. General information about the details page may be found on the ArcGIS Online help page at <http://doc.arcgis.com/en/arcgis-online/share-maps/item-details.htm>. Content item characteristics contained on the details page are collectively referred to as "item properties." This subsection of the Style Guide focuses on the properties that allow descriptive metadata entries; refer to the ArcGIS Online help document for more information about the other item properties found on the details page.

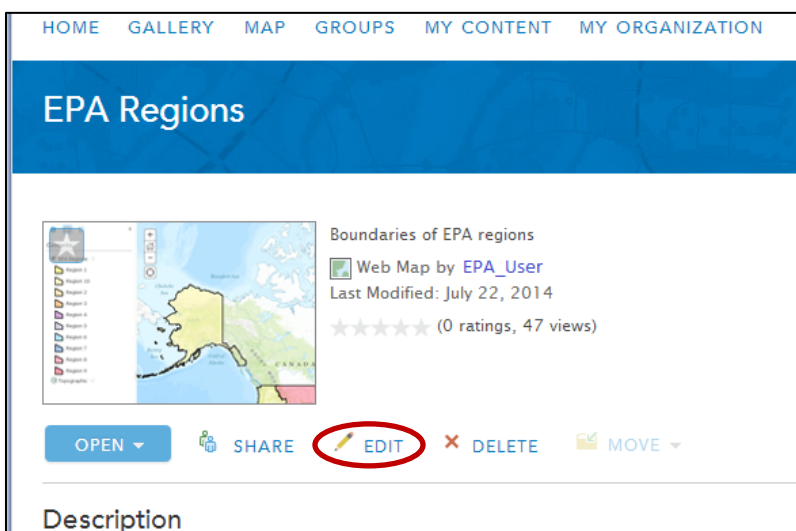
Metadata in EPA GeoPlatform Online may be edited by the owner of the content item. Navigate to [Edit item details](#) at ArcGIS Online help for instructions on how to edit the item properties. This document provides guidance for content provided in the metadata fields.

### Adding metadata to a content item

Metadata is defined and created for each web map or content item added to EPA GeoPlatform Online. In most cases when the details page for a new content item is accessed, metadata properties such as the Description and the Access and Use Constraints fields will be blank and must be completed. However, if the item added is a web resource such as an ArcGIS Server web service, some properties may be pre-populated with metadata text from the web service. This will be the case if the web service preparer followed the guidance in the subsection of this Style Guide titled "Prepare ArcMap MXD documentation for web service metadata."

To add or edit metadata for the content item, click the **Edit** link. The following guidance is provided to assist in completing the metadata properties:

1. **Title** – The title will appear when a user performs a search, therefore a descriptive title will convey much more information than, say, "Fred's Map" or even "Water Quality Sites." Although a lengthy title



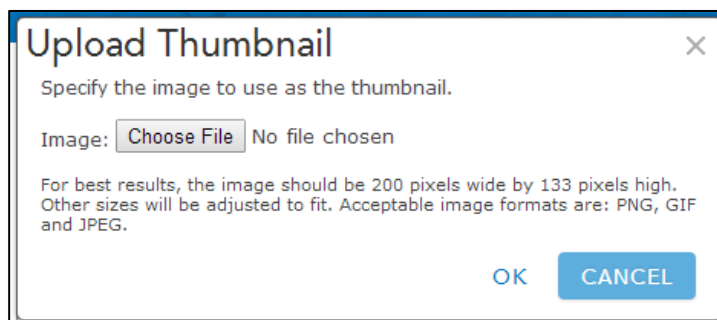






selecting a saved graphic image with dimensions of 200 pixels wide by 133 pixels high. Images with different dimensions are automatically resized when uploaded and may appear warped. The image file size must be no larger than 1MB.

4. **Thumbnail image** – The thumbnail image displays along with the title and summary when the item is returned during a content search. The default thumbnail is a miniature map of the data extent. If the default thumbnail does not depict the dataset appropriately, or if a program or project logo is preferred for the thumbnail, it may be changed by



5. **Access and Use Constraints** – Access and use constraints include all information needed to ensure that the data are being used as intended by the data creator or provider. Before completing this section, answer the following questions:
- Should the dataset or web map include security restrictions? Does it include sensitive data, personally-identifiable data, intellectual property, etc.?
  - Does the data layer have scale restrictions? In other words, was the dataset originally created at a specific spatial scale that makes it inappropriate to view or otherwise use at a different scale?
  - Are there any known issues with the accuracy of the data that the user should be aware of?
  - Do the data represent a discrete time period that the user should be aware of?
  - Does the item originate from outside of EPA? If so, did the data originator include information about data constraints?

**If the item has constraints** based on the answers to the questions above, details must be provided in the Access and Use Constraints text box:

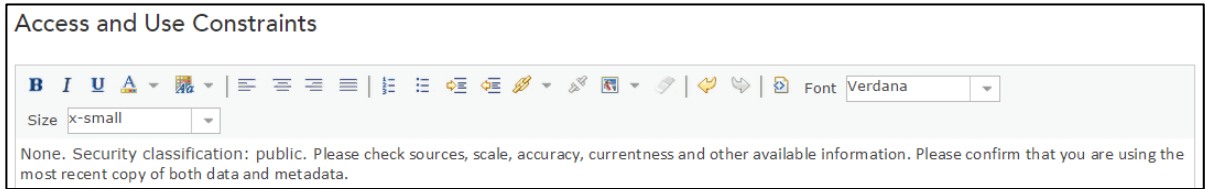
- **List the data’s security classification**
  - restricted public – Data asset is available under certain use restrictions.
  - non-public – Data asset is not available to members of the public.
- **List access constraints**
  - If the item is considered confidential, explain:
    - The reason(s) for restricting distribution (e.g. data are sensitive, contain personally-identifiable information, or the item is intellectual property). Use one of the following EPA Use Constraints Statements for restricted data:
      - “These Data Are Restricted to Internal EPA Personnel Only.”

- “These Data Are Restricted to Internal EPA Personnel Only and State Partners.”
- “EPA Category: Mission Sensitive, NARA Category: Critical Infrastructure”
- “EPA Category: Drinking Water Vulnerability Assessments, NARA Category: Critical Infrastructure-Water Assessments”
- “EPA Category: Sensitive Drinking Water Related, NARA Category: Critical Infrastructure-Water Assessments”
- “EPA Category: IT Security, NARA Category: Information Systems Vulnerability Information”
- “EPA Category: Law Enforcement Sensitive, NARA Category: Law Enforcement”
- “EPA Category: Attorney Client Privilege, NARA Category: Legal-Privilege”
- “EPA Category: Attorney Work Product, NARA Category: Legal-Privilege”
- “EPA Category: Deliberative Process Privilege, NARA Category: Legal-Privilege”
- “EPA Category: Personally Identifiable Information (PII), NARA Category: Privacy”
- “EPA Category: Proprietary, NARA Category: Proprietary”
- “EPA Category: Confidential Business Information, NARA Category: Proprietary-Manufacturer”
- “EPA Category: Source Selection Information, NARA Category: Proprietary-Source Selection”
- **List use constraints**
  - For data originating from within EPA, make a best effort to list:
    - Scale constraints – Example: “Data are intended to be used at scales of 1:24,000 or smaller.”
    - Accuracy constraints – Example: “Data were collected with a horizontal accuracy of 30 meters.”
    - Temporal constraints – Example: “Data represent ground condition on April 24, 1998.”
  - For data originating from outside of EPA:
    - Retain the originator’s use constraints information (if provided in their metadata or documentation).
    - Include the following EPA General Use Constraints Statement:
      - “Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata.”
  - If use constraints details cannot be ascertained for the data, use the EPA General Use Constraints Statement.

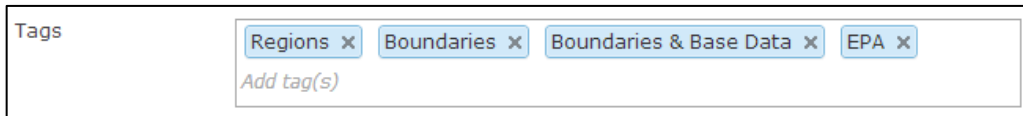
**If there are no known access and/or use constraints for the data** based on the answers to the questions above:

- **List the data’s security classification**
  - public – Data asset is or could be made publicly available to all without restrictions.
- **List access constraints**
  - Use the term “None.”
  - Include the EPA General Use Constraints Statement provided above for data originating outside of EPA.

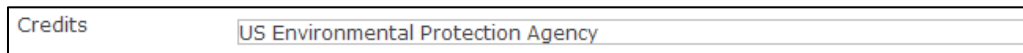
The [EPA Geospatial Metadata Technical Specification](#) provides detailed guidance on access and use constraints.



6. **Tags** – Tags are individual words, short phrases, and abbreviations that describe the content item and help direct a user to the item when they use one or more tags in an EPA GeoPlatform Online search. Additionally, a tag appears as a hyperlink on the content item details page. When the hyperlink is selected, a search returns additional content items containing the same tag. Separate tags with commas when entering them on the content item’s details page. For example, *ACS Demographics* is considered one tag, while *ACS, Demographics* is considered two tags.



7. **Credits** – Credits are acknowledgements of content item creators and providers. Acknowledge all entities that were involved in making the content item available for use. Credits provide users with important information about the origin of the content item.



## Metadata Preparation for Non-Geospatial Resources

On May 9<sup>th</sup>, 2013, the White House issued Memo M-13-13, entitled “Open Data Policy—Managing Information as an Asset” which outlined a set of policy requirements designed to make federal data more open and accessible. One component of this policy was the adoption of a new metadata format based on international standards. Relative to the old Data.gov DMS standard for non-spatial metadata, this new “Project Open Data” standard is both simpler and more reflective of the way data is published and consumed in a modern, service-oriented enterprise. Full details on the memo, the other components of the Open Data Policy (ODP), and Project Open Data metadata are available on the [Project Open Data website](#).

### *EME v4.0 and non-geospatial metadata*

The metadata standard continues to be refined and improved as of the date of this document, and OEI is continuing to develop tools and associated guidance in response to OMB’s changes in order to help metadata stewards produce and maintain non-geospatial metadata. Specifically, the EPA Metadata Editor Version 4.0 (EME v4.0) was designed to handle non-geospatial metadata in the new metadata format.

Review the following documents for more information on EME v4.0 and the creation of non-geospatial metadata:

- [About the EPA Metadata Editor Version 4.0](#) provides an overview of EME v4.0 and general information on how it works.
- [Getting Started with the EPA Metadata Editor Version 4.0](#) provides a thorough description of EME v4.0 including how to download and install the application, entering values and how to validate them, and customizing the database.

### *Updating non-geospatial metadata in the old format*

If you have existing metadata records in the old DMS format, contact the EDG Administrative Group at [edg@epa.gov](mailto:edg@epa.gov). The EDG Administrative Group can help with an initial bulk import of those records into this new format.

## Appendix 1: Keywords

Keywords (also known as Tags) are descriptive words that describe aspects of the dataset, including its subject, purpose, geographic extent, originator, etc. For GeoPlatform web services, keywords are used in the ArcMap MXD to create REST page documentation, in the EPA Metadata Editor to create FGDC metadata for the web service, and when registering the data in the EPA GeoPlatform Online. Keywords assist in locating data when a search is performed.

The following list of words and phrases (mostly derived from the EPA Metadata Editor database) should be considered potential keywords. This is not an exhaustive list. Specific datasets may require additional keywords not included in this list. Where allowed, take advantage of free text to create specific keywords that are not included in this list.

EPA KEYWORDS			
Agriculture	Ecosystem	Impact	Regulated Facilities
Air	Emergency	Indicator	Regulatory
Biology	Emergency Response	Indoor Air	Remediation
Boundaries and Base Data	Energy	Inspections	Response
Chemicals	Enforcement	Land	Risk
Cleanup	Environment	Management	Sites
Climate	Environmental Justice	Marine	Spills
Climate Change	Estuary	Modeling	Surface Water
Compliance	Exposure	Monitoring	Sustainability
Conservation	Facilities	Natural Resources	Toxics
Contaminant	Grants	Permits	Transportation
Disaster	Ground Water	Pesticides	Waste
Drinking Water	Hazards	Quality	Water
Ecological	Health	Radiation	
Ecology	Human	Recreation	

ISO KEYWORDS		
biota	geoscientificInformation	planningCadastre
boundaries	health	society
climatologyMeteorologyAtmosphere	imageryBaseMapsEarthCover	structure
economy	inlandWaters	transportation
elevation	intelligenceMilitary	utilitiesCommunication
environment	location	
farming	oceans	

<b>PLACE KEYWORDS</b>			
United States	Delaware	Mississippi	Rhode Island
Canada	Florida	Missouri	South Carolina
Mexico	Georgia	Montana	South Dakota
Alaska	Idaho	Nebraska	Tennessee
Hawaii	Illinois	Nevada	Texas
Washington DC	Indiana	New Hampshire	Utah
American Samoa	Iowa	New Jersey	Vermont
Puerto Rico	Kansas	New Mexico	Virginia
Virgin Islands	Kentucky	New York	Washington
Alabama	Louisiana	North Carolina	West Virginia
Arizona	Maine	North Dakota	Wisconsin
Arkansas	Maryland	Ohio	Wyoming
California	Massachusetts	Oklahoma	
Colorado	Michigan	Oregon	
Connecticut	Minnesota	Pennsylvania	

## Appendix 2: EPA Organization Names

In several instances throughout this document, developers are required to enter the “OFFICE/REGION/RESEARCH LAB OF EPA WEB SERVICE CREATOR”. In an effort to standardize the abbreviations of the office names, the following comprehensive list of approved office abbreviations is provided.

<b>OFFICE OF THE ADMINISTRATOR:</b>			
OA	OA, OCIR, OIR, NEPPS	OA, OEX, ECS	OA, OP, OSC, IO
OA, EAB	OA, OCIR, OIR, SL	OA, OEX, IO	OA, OP, OSEM
OA, IO	OA, OCIR, ORO	OA, OEX, RMOS	OA, OP, OSEM, ESD
OA, OALJ	OA, OCR	OA, OHS	OA, OP, OSEM, IESD
OA, OCEM	OA, OCR, AEDS	OA, OP	OA, OP, OSEM, IO
OA, OCEM, CMO	OA, OCR, ECRS	OA, OP, IO	OA, OP, OSEM, PSS
OA, OCEM, CPOS	OA, OCR, ECS	OA, OP, NCEE	OA, OP, OSEM, SMD
OA, OCEM, IO	OA, OCR, IO	OA, OP, NCEE, BAMDD	OA, OPEI, ASIS
OA, OCEM, PTOS	OA, ODA	OA, OP, NCEE, IO	OA, OPEI, NCEI
OA, OCHP	OA, OEAEE	OA, OP, NCEE, RPSD	OA, OPEI, NCEI, IO
OA, OCHP, IO	OA, OEAEE, IO	OA, OP, NCEE, SPAD	OA, OPEI, NCEI, OBCI
OA, OCHPEE, CAHPD	OA, OEAEE, OLRCP	OA, OP, ORPM	OA, OPEI, NCEI, OEPI
OA, OCHPEE, EED	OA, OEAEE, OMMCT	OA, OP, ORPM, IO	OA, OPEI, RMS
OA, OCIR	OA, OEAEE, OMR	OA, OP, ORPM, PRAD	OA, OSBP
OA, OCIR, IMD	OA, OEAEE, OPE	OA, OP, ORPM, RMD	OA, OSBP, IO
OA, OCIR, IO	OA, OEAEE, OS	OA, OP, OSC	OA, OSDBU, ODD

OA, OCIR, OCA	OA, OEAE, OWC	OA, OP, OSC, CARD	OA, SAB
OA, OCIR, OIR	OA, OES	OA, OP, OSC, CSSDD	OA, SAB, IO
OA, OCIR, OIR, IO	OA, OEX	OA, OP, OSC, FSD	

<b>OFFICE OF AIR AND RADIATION:</b>		
OAR, OAA	OAR, OAQPS, AQPD, OPG	OAR, OAQPS, SPPD, IO
OAR, OAA, CSIPS	OAR, OAQPS, AQPD, SLPG	OAR, OAQPS, SPPD, MICG
OAR, OAA, IO	OAR, OAQPS, CORE	OAR, OAQPS, SPPD, MMG
OAR, OAA, OPAR	OAR, OAQPS, HEID	OAR, OAQPS, SPPD, MPG
OAR, OAA, OPMO	OAR, OAQPS, HEID, AEG	OAR, OAQPS, SPPD, PSG
OAR, OAP	OAR, OAQPS, HEID, ASG	OAR, OAQPS, SPPD, RCG
OAR, OAP, CAMD	OAR, OAQPS, HEID, ATAG	OAR, ORIA
OAR, OAP, CCD	OAR, OAQPS, HEID, CIMG	OAR, ORIA, IED
OAR, OAP, CPPD	OAR, OAQPS, HEID, IO	OAR, ORIA, NAREL-MTG
OAR, OAP, OD	OAR, OAQPS, HEID, RBG	OAR, ORIA, OD
OAR, OAP, SPD	OAR, OAQPS, OD	OAR, ORIA, RIENL-LV
OAR, OAQPS	OAR, OAQPS, OID	OAR, ORIA, RPD
OAR, OAQPS, AQAD	OAR, OAQPS, OID, CTPG	OAR, ORIA, RSD
OAR, OAQPS, AQAD, AAMG	OAR, OAQPS, OID, IO	OAR, OTAQ
OAR, OAQPS, AQAD, AQAG	OAR, OAQPS, OID, IPOG	OAR, OTAQ, ASD
OAR, OAQPS, AQAD, AQMG	OAR, OAQPS, OID, ITG	OAR, OTAQ, ATD
OAR, OAQPS, AQAD, EIAG	OAR, OAQPS, OID, NADG	OAR, OTAQ, CD
OAR, OAQPS, AQAD, IO	OAR, OAQPS, OID, RDPAG	OAR, OTAQ, OD
OAR, OAQPS, AQAD, MTG	OAR, OAQPS, PACS	OAR, OTAQ, TATD
OAR, OAQPS, AQPD	OAR, OAQPS, SPPD	OAR, OTAQ, TCD
OAR, OAQPS, AQPD, GSG	OAR, OAQPS, SPPD, NRG	OAR, OTAQ, TRPD
OAR, OAQPS, AQPD, IO	OAR, OAQPS, SPPD, ESG	
OAR, OAQPS, AQPD, NSRG	OAR, OAQPS, SPPD, FIG	

<b>OFFICE OF ADMINISTRATION AND RESOURCES MANAGEMENT:</b>		
OARM	OARM, OAM, RTPPOD	OARM, OARM-RTP, IRMD
OARM, OA	OARM, OAM, SRRPOD	OARM, OGD
OARM, OA, FMSD	OARM, OARM-CINC	OARM, OGD, GIAMD
OARM, OA, IO	OARM, OARM-CINC, FMSD	OARM, OGD, IO
OARM, OA, SHEMD	OARM, OARM-CINC, HRMD	OARM, OGD, SDD
OARM, OA, SMD	OARM, OARM-CINC, HRMD-LV	OARM, OHR, ESDS
OARM, OAA	OARM, OARM-CINC, HRMD-LV, IO	OARM, OHR, ERD
OARM, OAA, IO	OARM, OARM-CINC, IO	OARM, OHR, HCMD
OARM, OAA, OPRM	OARM, OARM-CINC, IRMD	OARM, OHR, HQPERS
OARM, OAM	OARM, OARM-CINC-LV, HRSSC	OARM, OHR, HRPD

OARM, OAM, CPOD	OARM, OARM-RTP	OARM, OHR, IO, PMT, LERS
OARM, OAM, HPOD	OARM, OARM-RTP, FMSD	OARM, OHR, ITD
OARM, OAM, IO	OARM, OARM-RTP, HRMD	
OARM, OAM, PTOD	OARM, OARM-RTP, IO	

<b>OFFICE OF THE CHIEF FINANCIAL OFFICER:</b>			
OCFO	OCFO, OC, FMD	OCFO, OFM, PCS	OCFO, OPAA, BDSS
OCFO, CEF	OCFO, OC, FSD	OCFO, OFM, RAS	OCFO, OPAA, IO
OCFO, IO	OCFO, OC, IO	OCFO, OFM, WCFS	OCFO, OPAA, PS
OCFO, OB	OCFO, OC, SPIS	OCFO, OFS	OCFO, ORIM
OCFO, OB, FCPS	OCFO, OETI	OCFO, OFS, CFC	OCFO, OTS, AMS
OCFO, OB, IO	OCFO, OETI, BDSS	OCFO, OFS, IO	OCFO, OTS, BSS
OCFO, OB, MMAS	OCFO, OETI, IO	OCFO, OFS, LVFC	OCFO, OTS, IO
OCFO, OB, RPROS	OCFO, OETI, SPIS	OCFO, OFS, OSS	OCFO, OTS, PES
OCFO, OB, SIMS	OCFO, OFM	OCFO, OFS, RFC	OCFO, OTS, RTP
OCFO, OB, TFAAS	OCFO, OFM, FPPS	OCFO, OPAA	OCFO, OTS, WRS
OCFO, OC	OCFO, OFM, FSS	OCFO, OPAA, ACCTBLS	
OCFO, OC, APBD	OCFO, OFM, IO	OCFO, OPAA, AS	

<b>OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION:</b>			
OCSP	OCSP, OPP, BPPD	OCSP, OPPT	OCSP, OPPT, RAD
OCSP, OAA	OCSP, OPP, EFED	OCSP, OPPT, CCD	OCSP, OSCP
OCSP, OAA, DAA	OCSP, OPP, FEAD	OCSP, OPPT, EAD	OCSP, OSCP, EACPD
OCSP, OAA, IO	OCSP, OPP, HED	OCSP, OPPT, EETD	OCSP, OSCP, HACPD
OCSP, OAA, OPMO	OCSP, OPP, IO	OCSP, OPPT, IMD	OCSP, OSCP, IO
OCSP, OPP	OCSP, OPP, ITRMD	OCSP, OPPT, IO	
OCSP, OPP, AD	OCSP, OPP, PRD	OCSP, OPPT, NPCD	
OCSP, OPP, BEAD	OCSP, OPP, RD	OCSP, OPPT, PPD	

<b>OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE:</b>			
OECA	OECA, OAP, PLCD	OECA, OCE, IO	OECA, OCEFT, LCRMD
OECA, FFEO	OECA, OC	OECA, OCE, RED	OECA, OCEFT, NEIC
OECA, HSD	OECA, OC, AD	OECA, OCE, SLPD	OECA, OCEFT, RMS
OECA, IO	OECA, OC, CAMPD	OECA, OCE, TPED	OECA, OFA
OECA, IO, ARMS	OECA, OC, CASPD	OECA, OCE, WCED	OECA, OFA, ICAD
OECA, IO, OEJ	OECA, OC, ETDD	OECA, OCE, WED	OECA, OFA, IO
OECA, IO, OPPAC	OECA, OC, IO	OECA, OCEFT	OECA, OFA, NCD
OECA, OAP, AMD	OECA, OC, MAMPD	OECA, OCEFT, CID	OECA, OSRE
OECA, OAP, BFMD	OECA, OC, NETI	OECA, OCEFT, HSD	OECA, OSRE, IO



OECA, OAP, IO	OECA, OCE	OECA, OCEFT, IO	OECA, OSRE, PPED
OECA, OAP, ITD	OECA, OCE, AED	OECA, OCEFT, LCD	OECA, OSRE, RSD

<b>OFFICE OF ENVIRONMENTAL INFORMATION:</b>			
OEI	OEI, OIAA	OEI, OIC	OEI, OTOP, ESD
OEI, IO	OEI, OIAA, EAD	OEI, OIC, CSTD	OEI, OTOP, IO
OEI, IO, OPRO	OEI, OIAA, IAD	OEI, OIC, IESD	OEI, OTOP, MISD
OEI, IO, PTT	OEI, OIAA, IO	OEI, OIC, IO	OEI, OTOP, NCC
OEI, IO, QS	OEI, OIAA, TRIPD	OEI, OTOP	

<b>OFFICE OF THE GENERAL COUNSEL:</b>			
OGC, ADRLO	OGC, CRFLO	OGC, PTSLO	OGC, WLO
OGC, ARLO	OGC, DGC	OGC, RMO	
OGC, CCILO	OGC, GLO	OGC, SWERLO	

<b>OFFICE OF THE INSPECTOR GENERAL:</b>			
OIG	OIG, OCIHS, IO	OIG, OMS, CAPRC	OIG, OMS, WRC
OIG, OA	OIG, OCPM	OIG, OMS, CENRC	OIG, OPE
OIG, OC	OIG, OI	OIG, OMS, ERC	
OIG, OCIHS	OIG, OMS	OIG, OMS, NRC	

<b>OFFICE OF INTERNATIONAL AND TRIBAL AFFAIRS:</b>			
OITA, AIEO	OITA, OGAP	OITA, OMIS	OITA, ORBA

<b>OFFICE OF RESEARCH AND DEVELOPMENT:</b>			
ORD	ORD, NERL	ORD, NHEERL, MED	ORD, NRMRL, STD
ORD, NCCT	ORD, NERL, AMAD	ORD, NHEERL, NTD	ORD, NRMRL, WSWRD
ORD, NCCT, IO	ORD, NERL, EERD	ORD, NHEERL, POS	ORD, OAA, ORMA
ORD, NCEA	ORD, NERL, ERD	ORD, NHEERL, RCU	ORD, OAA, OSA
ORD, NCEA, IO	ORD, NERL, ESD	ORD, NHEERL, RPCS	ORD, OAA, OSP
ORD, NCEA, IRISD	ORD, NERL, HEASD	ORD, NHEERL, RTD	ORD, OARS
ORD, NCEA, NCEA-CINC	ORD, NERL, IO	ORD, NHEERL, TAD	ORD, OARS, BED
ORD, NCEA, NCEA-RTP	ORD, NERL, IO-DD	ORD, NHEERL, WED	ORD, OARS, EMD
ORD, NCEA, NCEA-WASH	ORD, NERL, MCEARD	ORD, NHSRC	ORD, OARS, HRD
ORD, NCEA, ODD	ORD, NERL, ODD	ORD, NHSRC, DCMD	ORD, OARS, IO
ORD, NCEA, PSS	ORD, NHEERL	ORD, NHSRC, IO	ORD, OARS, OPARM
ORD, NCEA, RAFS	ORD, NHEERL, ADE	ORD, NHSRC, TCAD	ORD, OARS, TMD
ORD, NCER	ORD, NHEERL, ADH	ORD, NHSRC, WIPD	ORD, OSIM

ORD, NCER, ASD	ORD, NHEERL, AED	ORD, NRMRL	ORD, OSIM, ASD
ORD, NCER, HRFD	ORD, NHEERL, ECD	ORD, NRMRL, APPCD	ORD, OSIM, CSD
ORD, NCER, IO	ORD, NHEERL, EMAP	ORD, NRMRL, GWERD	ORD, OSIM, EOD
ORD, NCER, IO-DD	ORD, NHEERL, EPHD	ORD, NRMRL, IO-ETAVO	ORD, OSIM, IMSD
ORD, NCER, ODD	ORD, NHEERL, ETD	ORD, NRMRL, IO-IO	ORD, OSIM, IO
ORD, NCER, PRD	ORD, NHEERL, GED	ORD, NRMRL, IO-LSAS	ORD, OSIM, PMSD
ORD, NCER, QAD	ORD, NHEERL, HSD	ORD, NRMRL, IO-ROS	
ORD, NCER, RSD	ORD, NHEERL, IO	ORD, NRMRL, IO-TCOS	
ORD, NCER, TED	ORD, NHEERL, ISTD	ORD, NRMRL, LRPCD	

<b>OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE:</b>		
OSWER	OSWER, ORCR	OSWER, OSRTI, RMD, BPB
OSWER, OAA	OSWER, ORCR, MRWMD	OSWER, OSRTI, RMD, CMB
OSWER, OAA, CEPPPO	OSWER, ORCR, OD	OSWER, OSRTI, RMD, HRB
OSWER, OAA, FFRRO	OSWER, ORCR, PIID	OSWER, OSRTI, RMD, IMB
OSWER, OAA, IPCO	OSWER, ORCR, PMCAO	OSWER, OSRTI, RMD, IO
OSWER, OAA, OD	OSWER, ORCR, RCSD	OSWER, OSRTI, TIFSD
OSWER, OAA, OPM	OSWER, OSRTI	OSWER, OSRTI, TIFSD, ASB
OSWER, OAA, OSPS	OSWER, OSRTI, ARD	OSWER, OSRTI, TIFSD, ERT
OSWER, OAA, TIO	OSWER, OSRTI, ARD, 1-2-6-9-10SB	OSWER, OSRTI, TIFSD, IO
OSWER, OBLR	OSWER, OSRTI, ARD, 3-4-5-7-8SB	OSWER, OSRTI, TIFSD, TAB
OSWER, OEM	OSWER, OSRTI, ARD, CIPIB	OSWER, OSRTI, TIFSD, TIIB
OSWER, OEM, BOC	OSWER, OSRTI, ARD, CPCMB	OSWER, OUST
OSWER, OEM, ECD	OSWER, OSRTI, ARD, IO	OSWER, OUST, CRD
OSWER, OEM, IO	OSWER, OSRTI, ARD, SARDB	OSWER, OUST, IO
OSWER, OEM, NDT	OSWER, OSRTI, ARD, SPB	OSWER, OUST, MCD
OSWER, OEM, NPPD	OSWER, OSRTI, ARD, STSIB	OSWER, OUST, RPD
OSWER, OEM, POCD	OSWER, OSRTI, OD	
OSWER, OEM, RPDD	OSWER, OSRTI, RMD	

<b>OFFICE OF WATER:</b>			
OW	OW, OGWDW, DWPD	OW, OST, HECD	OW, OWM, WPD
OW, NAIEO	OW, OGWDW, IO	OW, OST, IO	OW, OWOW
OW, OAA	OW, OGWDW, SRMD	OW, OST, SHPD	OW, OWOW, AWPD
OW, OAA, AIEO	OW, OGWDW, WSD	OW, OWM	OW, OWOW, IO
OW, OAA, IO	OW, OST	OW, OWM, IO	OW, OWOW, OCPD
OW, OGWDW	OW, OST, EAD	OW, OWM, MSD	OW, OWOW, WLD

<b>REGIONAL OFFICES AND PROGRAMS:</b>			
REG 01	REG 03, PM	REG 06, CAED	REG 08, ORA, ORC
REG 01, OARM	REG 03, WPD	REG 06, MD	REG 08, OTMS
REG 01, OEME	REG 04	REG 06, MPPD	REG 09
REG 01, OEP	REG 04, APTMD	REG 06, OEA	REG 09, AIR
REG 01, OES	REG 04, OEA	REG 06, ORA	REG 09, CED
REG 01, ORA	REG 04, OPM	REG 06, ORC	REG 09, MTS
REG 01, OSRR	REG 04, ORA	REG 06, SD	REG 09, ORA
REG 02	REG 04, RCRA	REG 06, WQPD	REG 09, ORC
REG 02, CEPD	REG 04, SESD	REG 07	REG 09, SFD
REG 02, DECA	REG 04, SUPERFUND	REG 07, AWMD	REG 09, WST
REG 02, DEPP	REG 04, WMD	REG 07, ESD	REG 09, WTR
REG 02, DESA	REG 04, WPD	REG 07, ORA	REG 10
REG 02, ERRD	REG 05	REG 07, PM	REG 10, ECL
REG 02, OPM	REG 05, ARD	REG 07, SD	REG 10, OAWT
REG 02, ORA	REG 05, LCD	REG 07, WWPD	REG 10, OCE
REG 02, PAD	REG 05, ORA	REG 08	REG 10, OE
REG 03	REG 05, OSEC	REG 08, OECEJ	REG 10, OEA
REG 03, APD	REG 05, RMD	REG 08, OEPR	REG 10, OETPA
REG 03, EAID	REG 05, SFD	REG 08, OPRA	REG 10, OMP
REG 03, HSCD	REG 05, WD	REG 08, ORA	REG 10, ORC
REG 03, LCD	REG 06	REG 08, ORA, MO	REG 10, OW
REG 03, ORA	REG 06, BOO	REG 08, ORA, OCPI	