

# Chesapeake Bay Program Metadata Specification



**Chesapeake Bay Program**

*Science. Restoration. Partnership.*

May 7, 2025

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# Introduction

Data resources are foundational to the success of the Chesapeake Bay Program Office (CBPO), with effective management, quality control, publication, and use critical to its mission. A carefully formulated framework of data publishing requirements and processes helps stewards maximize resource usefulness for stakeholders. The Data Governance Workgroup has prepared this document to provide clarity and consistency for Data Stewards regarding data resource documentation (metadata).

CBPO creates, receives, and publishes metadata for several types of data resources. Data provided to CBPO are delivered with metadata that contains detailed information regarding the data's origin, processing, accuracy, limitations, and authors. This content is critical for understanding data resource limitations for use by Bay Program personnel, partners, and customers. CBPO maintains several data publishing environments that provide public access to CBPO's authoritative data and metadata. Customers who use CBPO data resources expect access to information regarding the data resource's originator(s), quality control and review, data modifications, accuracy, and other limitations on use. As such, standards that outline minimal metadata requirements for different types of data resources are important for ensuring that information managed across all CBPO environments is documented consistently.

Metadata is critical for providing broad-based search, discovery, and access for all CBPO data. This directly supports [CBPO's Guiding Principles for Data Governance](#), including discovery and accessibility, classification, quality, data standards, value, transparency, and interoperability. Well documented metadata with consistent syntax not only supports CBPO guiding principles but also creates a baseline for supporting advanced technologies that can parse content to identify and present key information such as how the data was produced and tracking lineage across multiple versions.

Please refer questions to the [CBPO Data Managers](#).

## Purpose

This document is intended as a set of minimal requirements for data resources that can be implemented across all CBPO data management and publishing environments. The requirements listed within this document may be implemented using the data steward's preferred tools and standards, given that the standard used adheres to the minimal set of requirements for the data as described in this document. The requirements outlined in this document will be used by CBPO data stewards and will be provided to organizations and individuals developing data for delivery to CBPO as part of CBPO's grant guidance. It is intended to increase documentation consistency across data providers, analysts, and publishers so that CBPO data resources contain the minimal documentation needed to support their use across all consumers and publishing environments. This document is also intended to outline minimum requirements for all documentation so that CBPO data resources may be discoverable at [ChesapeakeData](#). It is considered a living document that will be updated as needed to support the mission of the CBPO.

## Audience

The primary audience for this document includes CBPO data managers, stewards, analysts, and publishers who work with CBPO authoritative data that may be published to CBPO's data sharing environments. It also includes

organizations and individuals who develop data that is delivered to the CBPO as a component of grants, direct CBPO funding, or indirect (matching funds).

## Scope

The requirements described in this document pertain to all **CBPO quality-assured authoritative data**, all data that is delivered to the CBPO via grants, and all data that is funded by the CBPO whether direct CBPO funding or indirect (matching funds). Authoritative data may be public or internal; current or legacy; raw or processed. Non-authoritative data, while often crucial in supporting CBPO's mission, are not within-scope of this document. These include data resources obtained from external collaborators or data generated internally that have not undergone a documented QAQC process.

The metadata requirements provided in this document are a refresh of the 1998 [Chesapeake Information Management System Metadata Reporting Guidelines](#). This document is intended to build on and supersede the 1998 CIMS publication. The metadata requirements listed in the 1998 CIMS document were a direct implementation of the [Federal Geographic Data Committee's \(FGDC\) Content Standard for Digital Geospatial Metadata \(CSDGM\)](#). The 1998 CIMS document laid out requirements for metadata across three levels of data. Requirements described in **this document differ** from the CIMS 1998 document in the following important ways:

- Metadata levels are retained but are described based on content type so that data stewards can understand which types of data resources fall into each category.
- This document aligns with the FGDC CSDGM standard, but requirements are presented such that the mandatory elements can be implemented using any metadata standard, such as International Organization for Standardization (ISO), FGDC, Esri-specific flavors of those, or another metadata standard.
- Metadata elements may be implemented using the standard that data stewards are comfortable with, however the standard used must satisfy element requirements.

## Metadata Requirements

This section presents minimum metadata requirements applicable to different data resources. Required metadata elements are presented along with definitions, examples, and applicability. Data stewards may, and are encouraged to, go beyond the minimally required element list for their own data documentation needs. The fields listed in this document are mapped to FGDC CSDGM elements for ease of use; however, it is not required that stewards adopt a particular standard to document their data with the minimum requirements presented here. Data providers should ensure that the standard or template used for their documentation aligns with and meets the minimums presented in this section.

Metadata fields are presented using three designations:

- “Mandatory” meaning the field must be provided within the metadata record
- “Mandatory If Applicable” meaning it must be provided if the field is relevant to the data resource
- “Optional” meaning information can be provided if desired

The CBPO minimum metadata standard includes a total of 22 metadata fields across all levels. Of these 22 metadata fields, 13 are classified as mandatory for Level 1 data resources, 16 are classified as mandatory for Level 2 data resources, and 18 are classified as mandatory for Level 3 data resources.

CBPO develops a wide range of data resources, from content that is primarily visual in nature such as StoryMaps, charts, and graphics, to more detailed tabular data sets, to specialized raster and vector geospatial data sets. Metadata for a geospatial data resource will require some elements that may not be applicable to the content such as StoryMaps or graphics. As such, the following data resource levels have been created to help data stewards understand what is required when documenting different types of data resources.

- **Level 1:** Includes StoryMaps, graphics, reports, and other non-tabular data that is presented in visual form. Primarily supports Discovery and Access, Transparency, and Classification Principles. This level is considered the minimal metadata that is required for all information types. **All resources published at CBPO will be provided with metadata that meets the minimal requirements of Level 1.**
- **Level 2:** Includes data that are not spatially referenced. Includes all level 1 content, in addition to non-spatial data resources. Supports all Level 1 principles, as well as Quality and Value. This level is considered minimal for all tabular data at CBPO that does not include geospatial features or coordinates.
- **Level 3:** Includes geospatial features and tabular data resources with coordinates. Supports all Level 1 and Level 2 principles. This level is considered minimal for all spatially referenced data resources at CBPO.

Metadata levels presented above build on each other such that each inherits the requirements of the preceding level. For example, the minimal elements required for metadata level 1 are inherited in level 2, and requirements for level 2 metadata are inherited in level 3. Level 1 requirements are considered the baseline for all data resources managed and published by CBPO.

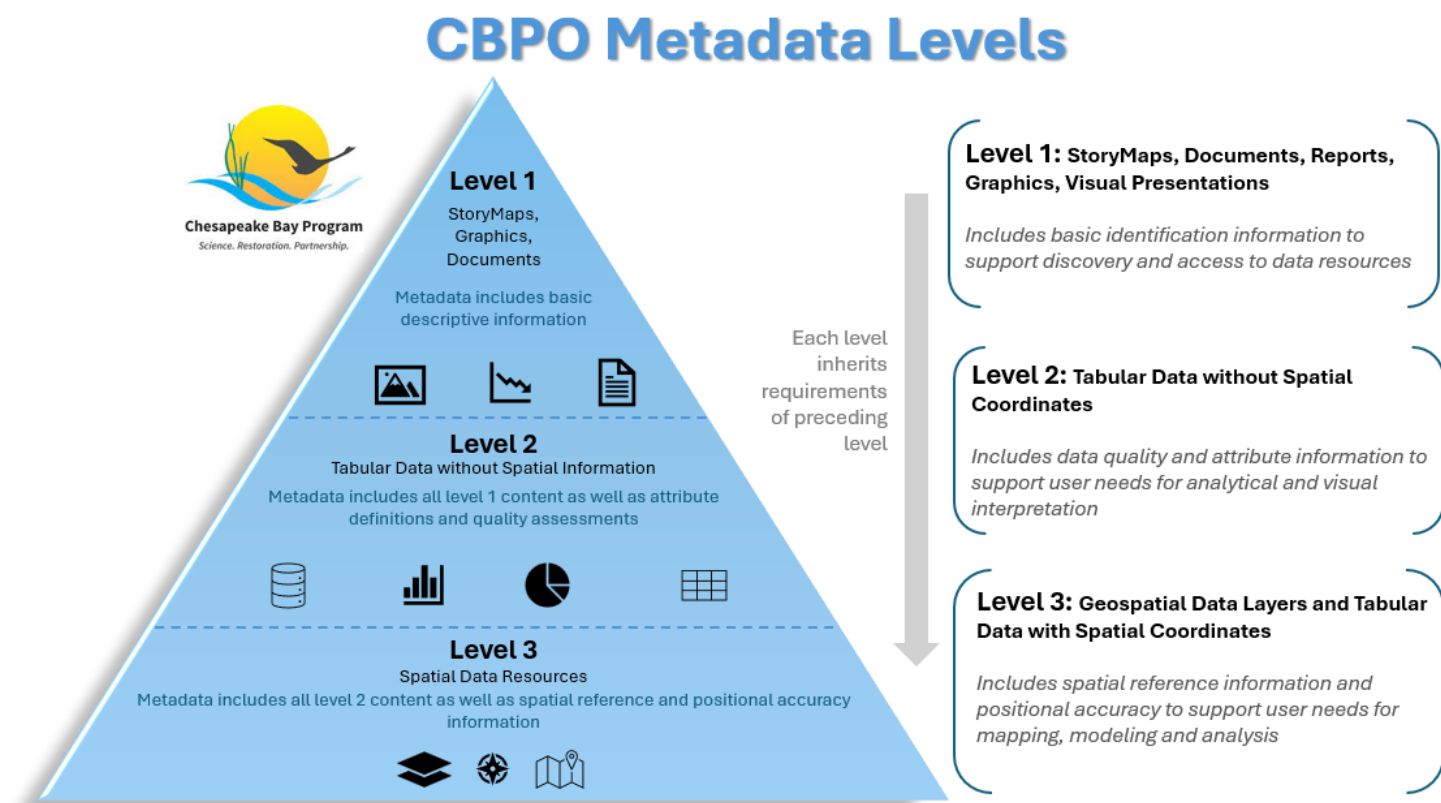


Figure 1. CBPO Metadata Levels

Each level is presented in its own section within this document that describes the required fields, definitions, guidelines for implementation, FGDC CSDGM mapping, and additional notes. A summary table depicting all metadata elements and their applicability across all levels is also presented at the end of this document. A full list of all CBPO minimal metadata fields is provided below for reference.

#### **Level 1 Minimum Fields (\*indicates mandatory if applicable)**

1. **Originator:** The organization or individual that developed the resource.
2. **Data Resource Date:** Date when the resource was published or otherwise made available for release.
3. **Title:** The name by which the resource is known.
4. **Summary:** A short summary of the intentions with which the resource was developed.
5. **Description:** Detailed information about the data resource.
6. **Time Period:** The timeframe that the resource represents.
7. **Maintenance and Update Frequency:** The frequency with which changes are made to the data resource after initial completion.
8. **Spatial Extent (Bounding Box)\*:** Describes the data set's "footprint" using east, west, north and south bounding coordinates.
9. **Theme Keyword(s):** Words that describe the subject of a resource. They are used to categorize data within data catalogs and search interfaces.
10. **Place Keyword(s):** Geographic locations characterized by the data set.
11. **Terms of Use:** Restrictions or prerequisites for accessing and using the resource. Any special limitations on using the data resource.
12. **Data Resource Type:** The type of resource published.
13. **URL\*:** The web address (or link) of the data resource.
14. **Metadata Date:** The date that the metadata were created or last updated.
15. **Metadata Contact:** The author of the metadata (individual or organization).

#### **Level 2 Additional Minimum Fields (\*indicates mandatory if applicable)**

16. **Processing Steps:** Details the processes used to create and process the data, including data acquisition, processing, and analysis.
17. **Attribute Accuracy:** A description of the accuracy of the attribute information in the data set, including identification of tests used, methodology, and results obtained, where applicable
18. **Attribute Details:** Provide a description of the attributes, including their meaning, purpose, and any relevant context.

#### **Level 3 Additional Minimum Fields (\*indicates mandatory if applicable)**

19. **Horizontal Positional Accuracy\*:** An explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.
20. **Vertical Positional Accuracy\*:** Documents the accuracy of vertical coordinate measurements within a dataset. It can include both quantitative and qualitative assessments.
21. **Data Type:** The type of spatial data depicted in the resource.
22. **Spatial Reference Information (Coordinate System Information):** Describes the system used for representing locations on the Earth's surface.

## Level 1 Metadata

Level 1 metadata is considered the baseline, or minimal, information required for all data resources at CBPO. The fields required for level 1 metadata are intended to support documentation of core information needed to identify the data resource for a variety of data consumers. There are 15 level 1 fields, with 2 of those fields considered “mandatory if applicable”.

1. **Originator:** The organization or individual that developed the resource.
2. **Data Resource Date:** Date when the resource was published (p), updated (u), or deprecated (d). Publishers should indicate what the date represents using (c), (p), or (d). Multiple dates may be entered, and publishers may choose to provide additional details in the description.
3. **Title:** The name by which the resource is known.
4. **Summary:** A short summary of the resource, including its purpose and intended use.
5. **Description:** Detailed information about the resource.
6. **Time Period:** The timeframe that the resource represents.
7. **Maintenance and Update Frequency:** The frequency with which changes are made to the resource after initial completion.
8. **Spatial Extent (Bounding Box)\*:** Describes the resource’s “footprint” using east, west, north and south bounding coordinates.
9. **Theme Keyword(s):** Words that describe the subject of a resource. They are used to categorize data within data catalogs and search interfaces.
10. **Place Keyword(s):** Geographic locations characterized by the resource.
11. **Terms of Use:** Restrictions or prerequisites for accessing and using the resource. Any special limitations on using the data resource.
12. **Data Resource Type:** The type of resource published.
13. **URL\*:** The web address (or link) of the resource.
14. **Metadata Date:** The date that the metadata were created or last updated.
15. **Metadata Contact:** The author of the metadata.

## CBPO Level 1 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example(s)	CSDGM Field Name/ Notes
1-1	Originator	The organization or individual that developed the resource	Mandatory	Provide <b>organization</b> rather than <b>individual</b> where possible. See CBPO Organization List in <a href="#">Appendix A</a> .	Chesapeake Bay Program	<b>CSDGM Field:</b> Originator
1-2	Data Resource Date	Date when the resource was <b>published (p)</b> , <b>updated (u)</b> , or <b>deprecated (d)</b> . (d).	Mandatory	Provide specific date(s) where possible. This date represents the <b>date the resource was published (p)</b> , <b>updated (u)</b> , or <b>deprecated (d)</b> . (not the time-period the data resource represents). Publishers should indicate what the date represents with the use of (p), (u), or (d). Multiple dates may be entered, and publishers may choose to provide additional details in the description.	2020-10-09 (p) 2022-01-19 (u)	<b>CSDGM Field:</b> Publication Date May be a single date, range of dates, or multiple dates. May contain text.
1-3	Title	The name by which the resource is known	Mandatory	Provide an informative, yet succinct title for the data resource.	Stream Miles Opened to Fish Passage in the Chesapeake Bay Watershed	<b>CSDGM Field:</b> Title



## CBPO Level 1 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example(s)	CSDGM Field Name/ Notes
1-4	Summary	A short summary of the intentions with which the resource was developed.	Mandatory	Provide a short description of the resource. The summary should be action-oriented, direct and understandable.	View trends in the restoration of historical fish migration routes.	<b>CSDGM Field:</b> Purpose
1-5	Description	Detailed information about the data resource.	Mandatory	Provide key details regarding the contents of the data resource.	This Chesapeake Bay Program indicator of progress toward the Fish Passage Outcome shows the stream miles that have been opened to fish passage by the removal of dams and the implementation of fish passage projects. Data are calculated by counting the available upstream miles located between a removed blockage and the waterway’s headwaters or the next blockage that is in place. Dam removals and fish passage projects in Delaware, New York and West Virginia are not included in this indicator’s dataset.	<b>CSDGM Field:</b> Abstract
1-6	Time Period	The timeframe that the resource represents	Mandatory	This date describes the time period the data resource represents (not the date it was published). May be a single date, range of	Beginning Date: 2012-01-01 Ending Date: 2021-12-31	<b>CSDGM Field:</b> Time Period

## CBPO Level 1 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example(s)	CSDGM Field Name/ Notes
				dates, or multiple dates. The date may be provided as a year, month and year, or month, day and year. May contain text.		
1-7	Maintenance and Update Frequency	The frequency with which changes are made to the data resource after initial completion.	Mandatory	Provide details regarding when and how often the data resource is updated. Select from a predefined list in <a href="#">Appendix A</a> or provide a text description.	As needed	<b>CSDGM Field:</b> Maintenance and Update Frequency
1-8	Spatial Extent (Bounding Box)*	Describes the data set's "footprint" using bounding coordinates for west, south, east, and north (left, bottom, right, top OR x min, y min, x max, y max)	Mandatory if Applicable	Geographic area covered by a dataset, typically documented using bounding box coordinates. This field is not required for level 1 data resources if the content does not contain geospatial information.	West Bounding Coordinate: -80.5516 East Bounding Coordinate: -74.2272 North Bounding Coordinate: 43.5578 South Bounding Coordinate: 36.6248	<b>CSDGM Field:</b> Bounding Coordinates

## CBPO Level 1 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example(s)	CSDGM Field Name/ Notes
1-9	Theme Keyword(s)	Words that describe the subject of a resource. They are used to categorize data within data catalogs and search interfaces.	Mandatory	Choose one or more theme keywords from the list in <a href="#">Appendix A</a> . This field is used to categorize data consistently. Stewards may choose to add keywords but must include one from the CBPO Theme Keyword List.	Finfish	<b>CSDGM Field:</b> Theme Keywords
1-10	Place Keyword(s)	Geographic locations characterized by the data set	Mandatory	Include jurisdictions relevant to your data resource, at the level of detail that applicable. If the content spans the entire Chesapeake Bay Watershed, the term Chesapeake Bay Watershed may be used.	Chesapeake Bay Watershed, Tidal Chesapeake Bay, New York, Pennsylvania, Virginia, West Virginia, Maryland, Delaware.	<b>CSDGM Field:</b> Place Keywords

## CBPO Level 1 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example(s)	CSDGM Field Name/ Notes
1-11	Terms of Use	Restrictions or prerequisites for accessing and using the resource. Any special limitations on using the data resource.	Mandatory	Please provide information about how the data resource can be used and by whom.	While significant effort has been made to ensure the accuracy of content, CBPO data are often derived from multiple sources, gathered in multiple ways at different points in time and at different resolutions. Therefore, the Chesapeake Bay Program cannot guarantee that the resource is 100 percent accurate. The Chesapeake Bay Program assumes no liability for any damages caused by errors or omissions in the data or for misuse, misrepresentation or misinterpretation of the resource.	<b>CSDGM Field:</b> Access and Use Constraints
1-12	Data Resource Type	The type of resource published	Mandatory	Select one from the list of format name options provided in <a href="#">Appendix A</a> . The use of these categories helps consumers find your data, by allowing them to filter by type.	Downloadable Data	<b>CSDGM Field:</b> Data Resource Type
1-13	URL*	<b>The web address (or link) of the data resource.</b>	Mandatory if Applicable	Provide a direct link to the resource described by the metadata. More than one URL may be provided. This field is <b>strongly</b> encouraged wherever applicable.	<a href="https://www.chesapeakeprogress.com/abundant-life/fish-passage">https://www.chesapeakeprogress.com/abundant-life/fish-passage</a>	<b>CSDGM Field:</b> Online Linkage
1-14	Metadata Date	The date that the metadata were	Mandatory	Date may be entered as the year, and optionally	2025-03-11	<b>CSDGM Field:</b> Metadata Date

## CBPO Level 1 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example(s)	CSDGM Field Name/ Notes
		created or last updated.		month, or month and day.		
1-15	Metadata Contact	Author of the metadata	Mandatory	May provide <b>organization</b> rather than <b>individual</b> where applicable.	Chesapeake Bay Program	<b>CSDGM Field:</b> Metadata Contact

## Level 2 Metadata

Level 2 metadata is required for tabular data resources that do not contain geospatial information. The fields required for level 2 metadata are intended to provide information regarding any processing that was done to the data as well as a description of the attributes included within the data. Documentation for level 2 resources includes all level 1 required fields as well as an overview of processing steps, attribute accuracy information, and a depiction of attribute fields and data dictionaries. There are only three additional fields required at level 2. All fields are considered mandatory. The list of fields required for level 2 resources is provided below.

16. **Processing Steps:** Details the processes used to create and process the data, including data acquisition, processing, and analysis.
17. **Attribute Accuracy:** A description of the accuracy of the attribute information in the data set, including identification of tests used, methodology, and results obtained, where applicable.
18. **Attribute Details:** Provide a description of the attributes, including their meaning, purpose, and any relevant context.

## CBPO Level 2 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

No.	Field Name	Definition	Required	Guidance	Example	CSDGM Field Name/ Notes
2-1	Processing Steps	Details the processes used to create and process the data, including data acquisition, processing, and analysis	Mandatory	<p>This field should include information about:</p> <p><b>Data Acquisition:</b> How the data was collected (e.g., field surveys, remote sensing, existing datasets).</p> <p><b>Processing:</b> Any transformations or manipulations applied to the data.</p> <p><b>Analysis:</b> Any analytical procedures or methods used to derive new information from the data.</p>	University of Maryland Center for Environmental Science (UMCES) Chesapeake Biological Laboratory (CBL), Nutrient Analytical Services Laboratory (NASL) analyzed total dissolved nitrogen, particulate nitrogen, nitrite, nitrite + nitrate, ammonium, total dissolved phosphorus, particulate phosphorus, orthophosphate, dissolved organic carbon, particulate carbon, total suspended solids, and volatile suspended solids. NASL began performing chlorophyll analyses in the year 2009. Prior to 2009, chlorophyll analyses were performed by the Maryland Department of Health and Mental Hygiene.	<b>CSDGM Field:</b> Process Description and Process Date
2-2	Attribute Accuracy	A description of the accuracy of attribute information, including identification of tests used, methodology, and results obtained, where applicable.	Mandatory	Use this field to provide context for the attributes contained in the data resource, including if there have been any tests performed. If this information is unknown, the term "unknown" may be used.	The procedures used to control and assure the accuracy of field measurements involved the calibration of field instruments, the verification of calibrations, and equipment maintenance. Most of the details of how data acquired with YSI sondes and Hydrolab sondes were quality assured and quality controlled are described in the process description elements in this metadata record.	<b>CSDGM Field:</b> Attribute Accuracy Report

## CBPO Level 2 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

No.	Field Name	Definition	Required	Guidance	Example	CSDGM Field Name/ Notes
2-3	Attribute Details	Provide a description of the attributes, including their meaning, purpose, and any relevant context.	Mandatory	Stewards may choose to provide attribute definitions within the metadata, point to an external data dictionary or look up table, or both.	The entity Water_Quality_Data is comprised of the attributes: Agency, BiasPC, CBSEg2003, CBSEgmentShed2009, Cruise, Depth, Details, EventId, FIPS, HUC8, HUC12...UpperPycnocline. Please see the Water Quality Database - Database Design and Data Dictionary [https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/cbwqdb2004_rb.pdf].	<b>CSDGM Field:</b> Attribute Definition or Entity and Attribute Overview

## Level 3 Metadata

Level 3 metadata is required for geospatial data and tabular data resources that contain geospatial information. The fields required for level 3 metadata are intended to provide information regarding the geospatial aspects of the data, including positional accuracy and coordinate system details.

Documentation for level 3 resources includes all level 1 and 2 required fields as well as horizontal accuracy, vertical accuracy (where applicable), and spatial reference information. There are only four additional fields required at level 3. All fields are considered mandatory. The list of fields applicable to level 3 resources is provided below.

19. **Horizontal Positional Accuracy\*:** An explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.
20. **Vertical Positional Accuracy\*:** Documents the accuracy of vertical coordinate measurements within a dataset. It can include both quantitative and qualitative assessments.
21. **Data Type:** The type of spatial data depicted in the resource.
22. **Spatial Reference Information (Coordinate System Information):** Describes the system used for representing locations on the Earth's surface.

## CBPO Level 3 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example	CSDGM Field Name/ Notes
3-1	Horizontal Positional Accuracy*	An explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.	Mandatory if Applicable	If you are collecting the spatial data yourself, make sure to include horizontal accuracy at the time of data collection. GPS units may report horizontal accuracy as a radius or a distance that indicates the likelihood that the reported location is within the radius of the true position. This number should be reported in the horizontal accuracy report. Stewards may also measure accuracy of a pre-existing dataset by comparing known locations to those represented in the data. A root mean square estimate may be calculated and provided in the horizontal accuracy report. Helpful information regarding positional accuracy is available in <a href="#">Appendix B</a> . Ensure units are listed (e.g., centimeters, meters, feet).	<p>This report details the horizontal positional accuracy assessment of the dataset, focusing on the accuracy of its spatial coordinates. The assessment was conducted by comparing the dataset's coordinates with those of an independent, higher-accuracy dataset (e.g., a survey dataset, GPS data).</p> <p>Tested 34.8 feet horizontal accuracy at 95% confidence level.</p>	<b>CSDGM Field:</b> Horizontal Positional Accuracy



## CBPO Level 3 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example	CSDGM Field Name/ Notes
3-2	Vertical Positional Accuracy*	Documents the accuracy of vertical coordinate measurements within a dataset. Can include both quantitative and qualitative assessments	Mandatory if Applicable	If you are collecting the spatial data yourself, make sure to include vertical accuracy at the time of data collection. GPS units may report vertical positional accuracy information, like horizontal accuracy. Helpful information regarding positional accuracy is available in <a href="#">Appendix B</a> . Ensure units are listed (e.g., centimeters, meters, feet).	Dataset: LiDAR-derived Digital Elevation Model (DEM) generated on March 17, 2025. <b>Independent Checkpoints:</b> GPS survey points collected on March 17, 2025, with an accuracy of +/- 0.05 meters. <b>Testing Methodology:</b> 20 randomly selected GPS survey points were used to compare the elevations in the DEM with the GPS survey elevations. The difference between the DEM and GPS elevations was calculated for each point.	<b>CSDGM Field:</b> Vertical Positional Accuracy
3-3	Data Type	The type of spatial data that is depicted in the resource.	Mandatory	Identify if the data is comprised of raster, vector, points, lines, polygons, or multiple features. Include the number of features or records. Publishers may also expand this field to include more specific details regarding the spatial types used within the data resource.	Points	<b>CSDGM Field:</b> Spatial Data Organization Information

## CBPO Level 3 **Minimum** Metadata Fields

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Definition	Required	Guidance	Example	CSDGM Field Name/ Notes
3-4	Spatial Reference Information (Coordinate System Information)	Describes the system used for representing locations on the Earth's surface	Mandatory	Software used for working with geospatial datasets will typically generate spatial reference information within the dataset's metadata. If your data doesn't include projection or spatial reference information, it is important to obtain this information from the data collector.	<b>Spatial_Reference_Information:</b> Horizontal_Coordinate_System_Definition: Geographic: Latitude_Resolution: 0.0001 Longitude_Resolution: 0.0001 Geographic_Coordinate_Units: Decimal degrees Geodetic_Model: Horizontal_Datum_Name: North American Datum of 1983 Ellipsoid_Name: Geodetic Reference System 80 Semi-major_Axis: 6378137 Denominator_of_Flattening_Ratio: 298.257	<b>CSDGM Field:</b> Spatial Reference

## Summary of Metadata Elements

All CBPO minimal metadata fields are presented below. Each field is listed along with its applicability at each level. The CBPO minimum metadata standard includes a total of 22 metadata fields across all levels. Of these 22 metadata fields, 13 are classified as mandatory for level 1 data resources, 16 are classified as mandatory for level 2 data resources, and 18 are classified as mandatory for level 3 data resources. The URL field is considered “mandatory if applicable” at all levels (but is strongly recommended), and the horizontal/vertical positional accuracy reports are considered “mandatory if applicable” for level 3 data resources.

## All Metadata Elements (Levels 1, 2 and 3).

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Description	Level 1 (StoryMaps, Graphics, Reports)	Level 2 (Non-Geospatial Data)	Level 3 (Geospatial Data)
1-1	Originator	The organization or individual that developed the resource	Mandatory	Mandatory	Mandatory
1-2	Data Resource Date	The <b>Date the resource was published (p), updated (u), or deprecated (d)</b> . Publishers should indicate what the date represents using (p), (u), or (d). Multiple dates may be entered, and publishers may choose to provide additional details in the description.	Mandatory	Mandatory	Mandatory
1-3	Title	The name by which the resource is known	Mandatory	Mandatory	Mandatory
1-4	Summary	A short summary of the intentions with which the resource was developed.	Mandatory	Mandatory	Mandatory
1-5	Description	Detailed information about the data resource.	Mandatory	Mandatory	Mandatory
1-6	Time Period	The timeframe that the resource represents	Mandatory	Mandatory	Mandatory
1-7	Maintenance and Update Frequency	The frequency with which changes are made to the data resource after initial completion.	Mandatory	Mandatory	Mandatory
1-8	Spatial Extent (Bounding Box)*	Describes the data set's "footprint" using east, west, north and south bounding coordinates	Mandatory if applicable	Mandatory if applicable	Mandatory

## All Metadata Elements (Levels 1, 2 and 3).

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Description	Level 1 (StoryMaps, Graphics, Reports)	Level 2 (Non-Geospatial Data)	Level 3 (Geospatial Data)
1-9	Theme Keyword(s)	Words that describe the subject of a resource. They are used to categorize data within data catalogs and search interfaces.	Mandatory	Mandatory	Mandatory
1-10	Place Keyword(s)	Geographic locations characterized by the data set	Mandatory	Mandatory	Mandatory
1-11	Terms of Use	Restrictions or prerequisites for accessing and using the resource. Any special limitations on using the data resource.	Mandatory	Mandatory	Mandatory
1-12	Data Resource Type	The type of resource published	Mandatory	Mandatory	Mandatory
1-13	URL*	The web address (or link) of the data resource.	Mandatory if applicable	Mandatory if applicable	Mandatory if applicable
1-14	Metadata Date	The date that the metadata were created or last updated.	Mandatory	Mandatory	Mandatory
1-15	Metadata Contact	Author of the metadata	Mandatory	Mandatory	Mandatory
2-1	Processing Steps	Details the processes used to create and process the data, including data acquisition, processing, and analysis	Optional	Mandatory	Mandatory
2-2	Attribute Accuracy	A description of the accuracy of the attribute information in the data set, including identification of tests used, methodology, and results obtained, where applicable	Optional	Mandatory	Mandatory

## All Metadata Elements (Levels 1, 2 and 3).

Data stewards may provide more details than described in this table.

\*Indicates field is classified as “mandatory if applicable”

No.	Field Name	Description	Level 1 (StoryMaps, Graphics, Reports)	Level 2 (Non-Geospatial Data)	Level 3 (Geospatial Data)
2-3	Attribute Details	Provide a description of the attributes, including their meaning, purpose, and any relevant context.	Optional	Mandatory	Mandatory
3-1	Horizontal Positional Accuracy*	An explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.	Optional	Optional	Mandatory if Applicable
3-2	Vertical Positional Accuracy*	Documents the accuracy of vertical coordinate measurements within a dataset. Can include both quantitative and qualitative assessments	Optional	Optional	Mandatory if Applicable
3-3	Data Type	The type of spatial data that is depicted in the resource.	Optional	Optional	Mandatory
3-4	Spatial Reference Information (Coordinate System Information)	Describes the system used for representing locations on the Earth's surface	Optional	Optional	Mandatory

## Summary

Metadata are essential to enable the effective transfer of information to data users and the public. Metadata describes the content, quality, usability, access instructions, and other characteristics about data and publications. Consistent metadata at CBPO ensures that public users have critical information about all data resources, regardless of the publisher. Different levels of detail may be provided for metadata records depending on the nature of the resource being described, but a minimum level of detail should be included such that an individual searching for the resource in question can find it and quickly determine its contents, among other characteristics.

This document provides a minimal set of fields that should be included for CBPO data resources. The 22 fields provided in this document are considered a baseline for CBPO data resources. Data stewards should go beyond the minimum to meet their own data quality objectives and requirements.

# Appendix

## Appendix A. CBPO Defined Value Lists for Metadata Fields

### 1. CBPO Organizations: Possible Values

The following list of organizations is provided as a primary set of options for the **Originator Field** where applicable. In general, government agencies and universities are described with acronyms, and other organizations are spelled out. If your organization is not listed, please contact the [CBPO Data Managers](#) to have the content added.

- American Forests
- Chesapeake Bay Program
- Chesapeake Conservancy
- Chesapeake Conservation Partnership
- Chesapeake Monitoring Cooperative
- EPA
- FEMA
- ICPRB
- i-Tree
- MD DNR
- NFWF
- NOAA
- ODU
- RAND Corporation
- The Nature Conservancy
- Trust for Public Land
- UMCES
- USACE
- USFS
- USFWS
- USGS
- VA DEQ
- Versar, Inc.
- VIMS

### 2. CBPO Maintenance and Update Frequency: Possible Values

The following list is provided as a set of possible options for the **Maintenance and Update Frequency Field** where applicable. This field is a free text field that may be documented as desired, but the following values are provided as a standard set of options for describing this field.

- Continual
- Daily
- Weekly
- Monthly
- Quarterly

- Annually
- Biennial
- As needed
- Irregular
- None planned

### 3. CBPO Theme Keywords: Required Values

Select one or more values from the following list of CBPO **Theme Keywords**. Theme keywords are used to categorize data sets into common themes. CBPO data publishers are required to select one or more of the following keywords to represent their data resources. Additional theme keywords may be included at the publisher's discretion.

- Boundaries
- BMPs
- Climate Resiliency
- Environmental Literacy
- Finfish
- Forest Buffers
- Healthy Watersheds
- Land Use/Land Cover
- Land Conservation
- Modeling
- Monitoring
- Nutrients
- Public Access
- SAV
- Sediment
- Shellfish
- Stewardship
- Stream Health
- Toxic Contaminants
- Watershed Planning
- Water Quality
- Waterfowl
- Wetlands

### 4. CBPO Data Resource Types: Required Values

Select one value from the following list of CBPO **Data Resource Types**. Data Resource Types organize content into major categories for users to access types of data. For ease of use, each resource type is provided with a list of relevant types of resources that fall into that category.

- **Downloadable Dataset:** e.g., files, spreadsheets, tables, databases, feature services, APIs, applications, geospatial data
- **Story Map:** e.g., Story Maps, Interactive Maps



- **Tool:** e.g., Models, Web Applications
- **Image Service:** e.g., Image services that allow users to download images of the data
- **Scientific Paper:** e.g., Scientific journals, web-based publications, white papers, research papers
- **Supplemental Document:** e.g., Web accessible documents.

## Appendix B. Related Information

- [CBPO Data Governance Group Charter](#)
- [Data Publishing Guidelines](#)
- [ChesapeakeData Resource Suggestion Page](#)
- [FGDC CSDGM Workbook](#)
- [Helpful Positional Accuracy Information](#)
- [Living Resources Look-up Tables](#)
- [ChesapeakeProgress A&M Documents](#)
- [USGS Metadata Creation](#)

## Appendix C. Common Metadata Tools

There are several tools available for use in creating and editing metadata. The following links provide access to freely available metadata tools used regularly by CBPO personnel.

- <https://www.usgs.gov/software/metadata-wizard>
- <https://www.epa.gov/geospatial/epa-metadata-editor>
- <https://github.com/Esri/arcgis-pro-metadata-toolkit>

## Appendix D. Metadata Examples at CBPO

- ChesapeakeData – [Minimal Record](#)
- Water Quality – [FGDC Records in PDF format](#)
- USGS Example - [ScienceBase Content](#) and [Chesapeake Bay LULC](#)