



Water Quality and Quantity

Spatial Data Standard



Stream Cross-Section at Sugarpine Creek, Medford District. Photo by BLM, date unknown.

Document Revisions

Revision	Date	Author	Description	Affected Pages
1.0	03/07/2018	Dana Baker-Allum et al.	Initial Release	All
2.0	04/17/2020	Dana Baker-Allum	Modifications to add new fields to the Water Temperature Summary table and adjust definitions.	Many
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3.0	1/26/2026	Dana Baker-Allum	Modified the document to match the latest data standard format. Modified edit tracking field names to match ODF standard. Modified relationship classes to use the Global ID field as the linking field and type/messaging to enforce cascading deletes of child records. Updated names to match current naming conventions. Added calculation, constraint, and data check-in validation rules (section 9).	All

Navigation

This document is easier to view if the Microsoft Word Navigation pane is displayed (View -> Navigation Pane). If viewing in PDF format, open the document in Acrobat and click the Contents button.

This document uses hyperlinks to display additional information on topics. External links are displayed with an [underline](#). Internal links are blue text, not underlined. After clicking on an internal link, press the Alt + Left Arrow keys to return to the original location from the target location.

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1 General Information

The Water Quality dataset represents spatial location and basic information about stream sampling activities. The spatial location of the data is stored in the related Sample Points data set. The Water Quality dataset includes tables to support the following data collection:

- **Cross-Section** - Cross-sectional surveys capture the shape of the stream channel at a specific location by measuring elevations at intervals across the channel. Cross-sections are used to determine bankfull width, mean bankfull depth, and entrenchment of a channel at a specific point. Cross-sections are usually installed and monitored to track geomorphic change in a stream before and after a physical alteration to the channel; these surveys can detect erosion and deposition of stream sediment as well as changes to the shape (profile) of stream bed and banks. The cross-section table defined in this data standard stores the summary measurements. Raw data can be stored in a spreadsheet or document and related to the record.
- **Discharge** - Stream discharge is the volume of water passing a location per unit of time and is generally expressed as cubic feet per second (cfs). The discharge table defined in this data standard stores the summary measurements. Raw data can be stored in a spreadsheet or document and related to the record.
- **Field Grab Sample** - A variety of data collected as single point in time at a point on the ground.
- **Shade** - Measurements of visible sky collected as a single point in time at a point on the ground.
- **Temperature** - Stream temperatures are the result of a variety of energy transfer processes, including solar radiation, evaporation, conduction, and advection. Stream temperatures reflect seasonal changes in net radiation and daily changes in air temperatures. Patterns of energy input are also modified by flow velocity, flow depth, bottom substrate, and spring and groundwater inflow. The temperature tables defined in this data standard store the raw temperature measurements recorded by a continuous reading device and the attributes that are summarized from the raw data.
- **Dataset (Theme) Name:** Water Quality and Quantity
- **Dataset (Tables):** WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_TEMP_TBL, WTR_TEMP_RAW_TBL

1.1 Roles and Responsibilities

To find the latest contact information for the employees assigned to these roles, see <https://www.blm.gov/about/data/oregon-data-management>.

- **[State Data Steward](#)** - the State Data Steward responsibilities include approving data standards and business rules, developing Quality Assurance/Quality Control procedures, identifying potential Privacy issues, and managing that data as a corporate resource. The State Data Steward coordinates with field office data stewards, the State Data Administrator, Geographic Information System (GIS) coordinators, and national data stewards. The State Data Steward reviews geospatial metadata for completeness and quality.
- **[GIS Technical Lead](#)** - the GIS Technical Lead works with data stewards to convert business needs into GIS applications and derive data requirements and participates in the development of data standards. The GIS technical lead coordinates with system administrators and GIS coordinators to manage the GIS databases. The GIS technical lead works with data editors to ensure consistency and accordance with the established data standards of data input into the enterprise Spatial Database Engine (SDE) geodatabase. The GIS technical lead provides technical assistance and advice on GIS analysis, query, and display of the dataset.
- **[State Data Administrator](#)** - the State Data Administrator provides information management leadership, data modeling expertise, and custodianship of the state data models. The State Data Administrator ensures compliance with defined processes for development of data standards and metadata, and process consistency and completeness. The State Data Administrator is responsible for making data standards and metadata accessible to all users. The State Data Administrator coordinates with data stewards and GIS coordinators to respond to national spatial data requests.

- [State FOIA/Privacy Act Team Lead](#) - the State FOIA/Privacy Act team lead assists the state data steward to identify any privacy issues related to spatial data. The State FOIA/Privacy Act team lead also provides direction and guidance on data release, fees, and classification under the appropriate Freedom of Information Act exemption.
- [State Records Administrator](#) - the state records administrator classifies data under the proper records retention schedule.

1.2 FOIA Category

The Water Quality and Quantity data fall under the standard Records Access Category 1B - BLM Records that may contain protected information that must be considered for segregation prior to release. See section 8 for more information on which data are available to the public.

1.3 Records Retention Schedule

The DRS/GRS/BLM Combined Records Schedule, under Schedule 20/52a (Electronic Records/Geographic Information Systems), does not list this theme as one of the system-centric themes that are significant for BLM's mission that must be permanently retained.

TEMPORARY. Delete when no longer needed for administrative, legal, audit, or other operational purposes (subject to any records freeze or holds that may be in place).

Oregon/Washington (OR/WA) BLM Guidebook for Management of Geospatial Data (v1) Section 15.2 - Corporate Data Online Archives prescribes:

"Vector annual archives are retained online for 12 years. Each year, data that has reached 12 years old is copied off-line to be retained until no longer needed (determined by data stewards and program leads) with format and readability maintained in a five (5) year 'tech refresh' update cycle."

1.4 Security/Access/Sensitivity

This dataset does not require any additional security other than that provided by the General Support System (the hardware/software infrastructure of the OR/WA BLM).

This dataset is not sensitive and there are no restrictions on access to this data within the BLM. This dataset falls under the standard Records Access Category 1B - BLM Records that may contain protected information that must be considered for segregation prior to release. See section 8 for more information on which data are available to the public.

1.5 Keywords

Keywords that can be used to locate this dataset include:

- BLM Thesaurus: Hydrology
- Additional keywords: Streams, Hydrography, Water Temperature, Cross-Section, Discharge, Grab Sample, Shade
- ISO Thesaurus: environment, inlandWaters

1.6 Subject Function Codes

BLM Subject Function codes used to describe this dataset include:

- 1283 - Data Administration
- 6720 - Aquatic Resource Management
- 6762 - Stream Management
- 7000 - Soil, Water, and Air Management
- 9167 - Geographic Information System (GIS)

2 Dataset Overview

2.1 Usage

This dataset is used to record summary and measured values for water quality inventory and monitoring sites. Tables within the dataset also include a field (FILEPATH) to hold the location of a spreadsheet or document that contains the raw data for the field visit. Only data that is suitable for public consumption should be entered into the data standard tables.

2.2 Sponsor/Affected Parties

The sponsor for this dataset is the Deputy State Director, Resource Use, Planning and Protection. Affected Parties include the Oregon Department of Environmental Quality (ODEQ). Temperature data is transferred to ODEQ on a semi-regular basis.

2.3 Relationship to Other Datasets, Databases, or Files

The Water Quality and Quantity data tables are related to the Sample Points dataset. Water Quality and Quantity inherits its spatial location and core attributes from Sample Points. There is a one-to-many relationship between the Sample Points feature class and the Water Quality and Quantity tables. A Sample Point can be revisited over time, resulting in many records related to a single Sample Point.

2.4 Data Category/Architecture Link

This data theme is a portion of the Oregon Data Framework (ODF) shown in Figure 1, Oregon Data Framework (ODF) Overview on page 9. The illustration is a simplified schematic of the entire ODF showing the overall organization and entity inheritance. The ODF utilizes the concept of inheritance to define specific instances of data. The ODF divides all OR/WA resource-related data into three general categories:

- Activities
- Resources
- Boundaries

These general categories are broken into sub-categories that inherit spatial characteristics and attributes from their parent category. These sub-categories may be further broken into more specific groups until the basic data set cannot be further sub-divided. Those basic data sets inherit all characteristics of all groups/categories above them. The basic data sets are where physical data gets populated. Those groups/categories above them do not contain actual data but set parameters which all data of that type must follow.

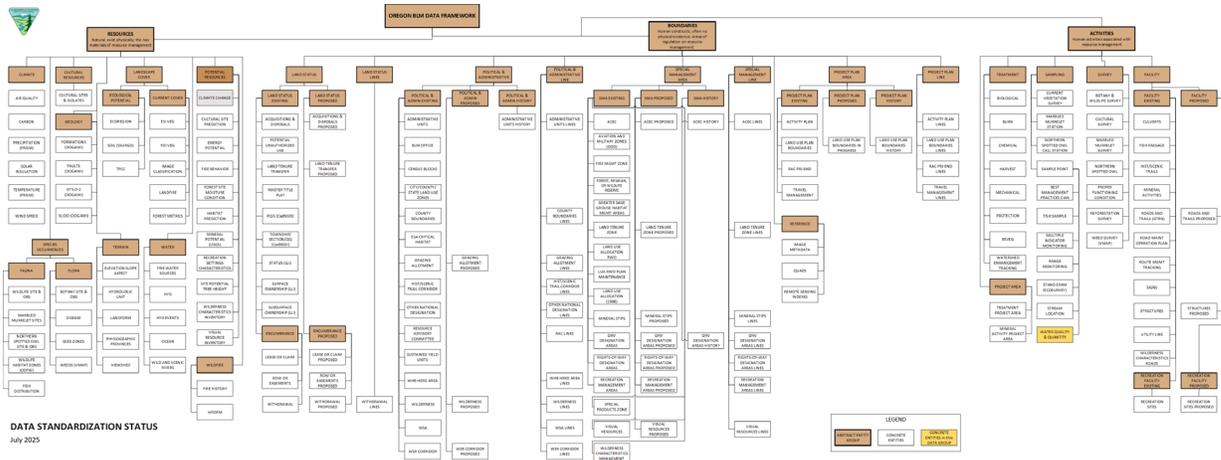


Figure 1 Oregon Data Framework Overview

For an easier to view version of the Oregon Data Framework diagram, go to: https://gis.blm.gov/ORDownload/DataFramework/BLM_ODF_Model_Mini_Status.pdf.

Physical data is populated in the basic data sets. Those groups/categories above them do not contain actual data but set parameters that all data of that type must follow. See Figure 2, Data Organization Structure for a simplified schematic of the entire ODF showing the overall organization and entity inheritance. The Water Quality and Quantity entities are highlighted. For additional information about the ODF, contact the [State Data Administrator](#). The State Data Administrator's contact information can be found at the following link: <https://www.blm.gov/about/data/oregon-data-management>.

In the ODF, Water Quality and Quantity is considered an Activity and categorized as follows:

<the remainder of this page is intentionally left blank>

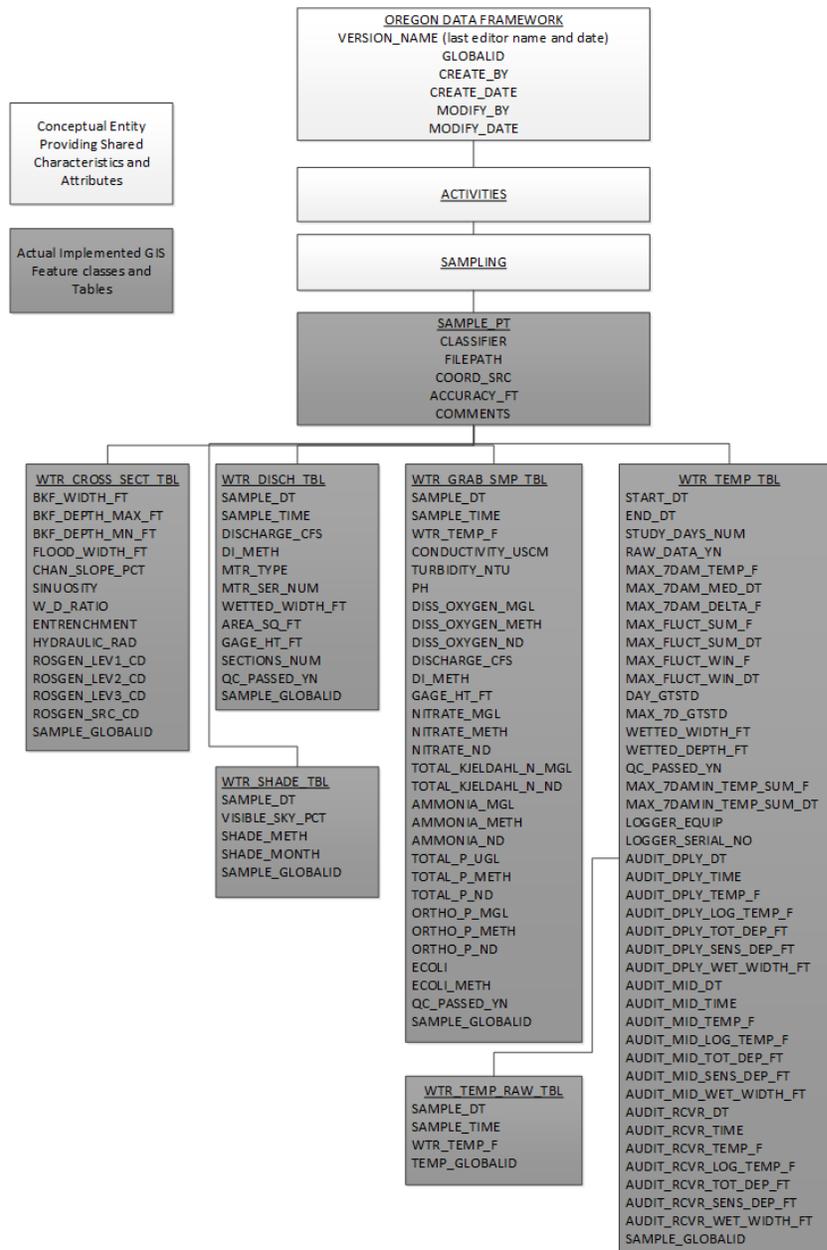


Figure 2 Data Organization Structure

2.5 Relationship to DOI Enterprise Architecture Data Resource Model

The Department of the Interior (DOI) Enterprise Architecture contains a component called the Data Resource Model. This model addresses the concepts of data sharing, data description, and data context. This data standard provides information needed to address each of those areas. Data sharing is addressed through complete documentation and simple data structures which make sharing easier. Data description is addressed through the section on Attribute Descriptions. Data context is addressed through the data organization and structure portions of this document. In addition, the DOI Data Resource Model categorizes data by use of standardized Data Subject Areas and Information Classes. For this data set, the Data Subject Area and Information Class are:

- Data Subject Area: Geospatial
- Information Class: Location

3 Data Management Protocols

3.1 Accuracy Requirements

Water Quality Sample points require a high level of positional accuracy (generally within 30 feet) to be useful for intended purposes. A sample point represents the location of specific measurement of a resource at a point in time. The resource being measured may not even exist in a different (even if nearby) location. It may be critical that a point is located on one side or the other of a stream or road. If multiple sample locations are near one another, multiple points are to be captured. There may be many sample points close together and different Global Positioning System (GPS) locations obtained with every visit. Accurate location is critical to being able to distinguish points that are supposed to be different locations from points that are supposed to be in the same location. The attribute ACCURACY_FT in the related Sample Point feature class provides the accuracy of each point.

3.2 Collection, Input, and Maintenance Protocols

Most monitoring and sampling points are input from GPS coordinates or while using Digital Raster Graphic (DRG) or Digital Orthoquad (DOQ) backdrops during heads-up digitizing. The source of the coordinates is captured in the attribute COORD_SRC in the related Sample Point feature class. It is possible and likely that there will be multiple sampling points in the same location, so it is important to check for unintentional duplicates. Often a district will have a long history of monitoring and sampling locations and there may be multiple sets of coordinates and multiple different names for the same spot.

Records should only be created in the Water Quality and Quantity tables for Sample Points with a sample type of: "Water Contaminants", "Water Temperature", "Water (Multiple)", or "Shade." It is recommended that if you plan to revisit a point and record attributes in more than one Water Quality and Quantity table, that you assign the Sample Point the Sample Type of "Water (Multiple)".

3.3 Update Frequency and Archival Protocols

Data is updated annually, after field season or as needed. Data will be captured once a year during the corporate database annual archive, which occurs at the end of the calendar year.

3.4 Statewide Monitoring

The State Data Stewards are responsible for checking consistency across districts in the amount, type and method of monitoring and sampling relevant to their programs.

Each year, the Resource Science Data team of the BLM Division of Resources, Lands, and Minerals meets with each state data steward for every corporate geospatial theme to conduct an annual review of the data. During the annual review, geospatial staff present the state data stewards with a report detailing Quality Assurance/Quality Control (QAQC) results performed on the data. The QAQC does the following:

- Checks that all attribute values conform to the range or coded-value domains to which they are applied.
- Checks that all attributes marked as required in the data standard have values.
- Checks for duplicate features which have the same geometry and attributes.
- Checks for overlapping features if forbidden by the data standard.
- Checks for invalid geometry.
- Other checks as necessary (can be customized according to the data standard).

In addition to this report, geospatial staff conduct a qualitative needs assessment with the steward to identify any unmet needs or problems with the status of the data. At the conclusion of the review, the team records the steward's approval of the datasets reviewed. These approvals are then added to the corporate metadata.

4 Water Quality and Quantity Schema (simplified)

General Information: Attributes are listed in the order they appear in the geodatabase feature class. The order is an indication of the importance of the attribute for theme definition and use. There are no aliases unless specifically noted. The domains used in this data standard can be found in Appendix A. These are the domains at the time the data standard was approved. Domains can be changed without a re-issue of the data standard. Current domains are found on the internal OR/WA SharePoint data management page. Some of the domains used in this data standard are also available at the following web site: <https://www.blm.gov/about/data/oregon-data-management>.

For domains not listed at that site contact: [State Data Administrator](#).

4.1 Water Quality Tables

4.1.1 WTR_CROSS_SECT_TBL (Water Cross-Section Table)

For domain and default values, see [Section 7 Attribute Characteristics and Definition \(In alphabetical order\)](#) in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
CLASSIFIER	String	30		Yes	
SAMPLE_DT	Date			Yes	
BKF_WIDTH_FT	Double	7,2		Yes	
BKF_DEPTH_MAX_FT	Double	5,2		No	
BKF_DEPTH_MN_FT	Double	5,2		No	
FLOOD_WIDTH_FT	Double	8,2		No	
CHAN_SLOPE_PCT	Double	6,2		No	
SINUOSITY	Double	3,1		No	
W_D_RATIO	Double	5,1		No	
ENTRENCHMENT	Double	3,1		No	
HYDRAULIC_RAD	Double	6,2		No	
ROSGEN_LEV1_CD	String	4		No	dom_ROSGEN_LEV1
ROSGEN_LEV2_CD	Short Integer			No	dom_ROSGEN_LEV2
ROSGEN_LEV3_CD	String	2		No	dom_ROSGEN_LEV3
ROSGEN_SRC_CD	String	20		Conditional	dom_ROSGEN_SRC
FILEPATH	String	150		No	
VERSION_NAME	String	50	InitialLoad	Yes ***	
GLOBALID	GUID			Yes *	
SAMPLE_GLOBALID	GUID			Yes **	
CREATE_BY	String	50		No *	
CREATE_DATE	Date			No *	
MODIFY_BY	String	50		No *	
MODIFY_DATE	Date			No *	

- * Values automatically generated
- ** Enforced during quality control, may appear in data as not required
- *** Maintained through versioning tools, may appear not required in database

4.1.2 WTR_DISCH_TBL (Water Discharge Table)

For domain and default values, see [Section 7 Attribute Characteristics and Definition \(In alphabetical order\)](#) in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
CLASSIFIER	String	30		Yes	
SAMPLE_DT	Date			Yes	
SAMPLE_TIME	String	4		Yes	
DISCHARGE_CFS	Double	8,2		Yes	
DI_METH	String	30		Yes	dom_DI_METH
MTR_TYPE	String	20		Yes	dom_MTR_TYPE
MTR_SER_NUM	String	15		No	
WETTED_WIDTH_FT	Double	7,2		No	
AREA_SQ_FT	Double	8,2		No	
GAGE_HT_FT	Double	5,2		No	
SECTIONS_NUM	Short Integer			No	
QC_PASSED_YN	String	2		Yes	dom_QC_PASSED
FILEPATH	String	150		No	
COMMENTS	String	255		No	
VERSION_NAME	String	50	InitialLoad	Yes ***	
GLOBALID	GUID			Yes *	
SAMPLE_GLOBALID	GUID			Yes **	
CREATE_BY	String	50		No *	
CREATE_DATE	Date			No *	
MODIFY_BY	String	50		No *	
MODIFY_DATE	Date			No *	

- * Values automatically generated
- ** Enforced during quality control, may appear in data as not required
- *** Maintained through versioning tools, may appear not required in database

4.1.3 WTR_GRAB_SMP_TBL (Water Grab Sample Table)

For domain and default values, see [Section 7 Attribute Characteristics and Definition \(In alphabetical order\)](#) in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
CLASSIFIER	String	30		Yes	
SAMPLE_DT	Date			Yes	
SAMPLE_TIME	String	4		Yes	
WTR_TEMP_F	Double	5,2		No	dom_TEMP_F
CONDUCTIVITY_USCM	Double	6,2		No	
TURBIDITY_NTU	Double	6,2		No	
PH	Double	6,2		No	
DISS_OXYGEN_MGL	Double	6,2		No	
DISS_OXYGEN_METH	String	20		No	dom DISS_OXYGEN_METH
DISCHARGE_CFS	Double	8,2		No	
DI_METH	String	30		No	dom_DI_METH
GAGE_HT_FT	Double	5,2		No	
NITRATE_MGL	Double	6,2		No	
NITRATE_METH	String	20		No	dom_NITRATE_METH
NITRATE_ND	Double	6,2		No	
TOTAL_KJELDAHL_N_MGL	Double	6,2		No	
TOTAL_KJELDAHL_N_ND	Double	6,2		No	
AMMONIA_MGL	Double	6,2		No	
AMMONIA_METH	String	20		No	dom_AMMONIA_METH
AMMONIA_ND	Double	6,2		No	
TOTAL_P_UGL	Double	6,2		No	
TOTAL_P_METH	String	20		No	dom_TOTAL_P_METH
TOTAL_P_ND	Double	6,2		No	
ORTHO_P_MGL	Double	6,2		No	
ORTHO_P_METH	String	20		No	dom_ORTHO_P_METH
ORTHO_P_ND	Double	6,2		No	
ECOLI	Double	6,2		No	
ECOLI_METH	String	20		No	dom_ECOLI_METH
QC_PASSED_YN	String	2		Yes	dom_QC_PASSED
FILEPATH	String	150		No	
COMMENTS	String	255		No	
VERSION_NAME	String	50	InitialLoad	Yes ***	

Attribute Name	Data Type	Length	Default Value	Required	Domain
GLOBALID	GUID			Yes *	
SAMPLE_GLOBALID	GUID			Yes **	
CREATE_BY	String	50		No *	
CREATE_DATE	Date			No *	
MODIFY_BY	String	50		No *	
MODIFY_DATE	Date			No *	

* Values automatically generated

** Enforced during quality control, may appear in data as not required

*** Maintained through versioning tools, may appear not required in database

4.1.4 WTR_SHADE_TBL (Water Shade Table)

For domain and default values, see [Section 7 Attribute Characteristics and Definition \(In alphabetical order\)](#) in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
CLASSIFIER	String	30		Yes	
SAMPLE_DT	Date			Yes	
VISIBLE_SKY_PCT	Double	4,1		Yes	
SHADE_METH	String	30		Yes	dom_SHADE_METH
SHADE_MONTH	String	3		Yes	dom_SHADE_MONTH
FILEPATH	String	150		No	
COMMENTS	String	255		No	
VERSION_NAME	String	50	InitialLoad	Yes ***	
GLOBALID	GUID			Yes *	
SAMPLE_GLOBALID	GUID			Yes **	
CREATE_BY	String	50		No *	
CREATE_DATE	Date			No *	
MODIFY_BY	String	50		No *	
MODIFY_DATE	Date			No *	

* Values automatically generated

** Enforced during quality control, may appear in data as not required

*** Maintained through versioning tools, may appear not required in database

4.1.5 WTR_TEMP_TBL (Water Temperature Table)

For domain and default values, see [Section 7 Attribute Characteristics and Definition \(In alphabetical order\)](#) in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
CLASSIFIER	String	30		Yes	
START_DT	Date			Yes	
END_DT	Date			Yes	
STUDY_DAYS_NUM	Short Integer	5,0		Yes	
RAW_DATA_YN	String	1		Yes	dom_YN
MAX_7DAM_TEMP_F	Double	5,2		Yes	dom_TEMP_F
MAX_7DAM_MED_DT	Date			Yes	
MAX_7DAM_DELTA_F	Double	5,2		No	dom_TEMP_F
MAX_7DAMIN_TEMP_SUM_F	Double	5,2		No	dom_TEMP_F
MAX_7DAMIN_TEMP_SUM_DT	Double	5,2		No	
MAX_FLUCT_SUM_F	Double	3,2		No	dom_TEMP_F
MAX_FLUCT_SUM_DT	Date			No	
MAX_FLUCT_WIN_F	Double	3,2		No	dom_TEMP_F
MAX_FLUCT_WIN_DT	Date			No	
DAY_GTSTD	Short Integer			No	
MAX_7D_GTSTD	Short Integer			No	
BKF_WIDTH_FT	Double	5,2		No	
LOGGER_EQUIP	String	30		No	
LOGGER_SERIAL_NO	String	30		No	
AUDIT_DPLY_DT	Date			No	
AUDIT_DPLY_TIME	String	4		No	
AUDIT_DPLY_TEMP_F	Double	5,2		No	dom_TEMP_F
AUDIT_DPLY_LOG_TEMP_F	Double	5,2		No	dom_TEMP_F
AUDIT_DPLY_TOT_DEP_FT	Double	5,2		No	
AUDIT_DPLY_SENS_DEP_FT	Double	5,2		No	
AUDIT_DPLY_WET_WIDTH_FT	Double	5,2		No	
AUDIT_MID_DT	Date			No	
AUDIT_MID_TIME	String	4		No	
AUDIT_MID_TEMP_F	Double	5,2		No	dom_TEMP_F
AUDIT_MID_LOG_TEMP_F	Double	5,2		No	dom_TEMP_F

Attribute Name	Data Type	Length	Default Value	Required	Domain
AUDIT_MID_TOT_DEP_FT	Double	5,2		No	
AUDIT_MID_SENS_DEP_FT	Double	5,2		No	
AUDIT_MID_WET_WIDTH_FT	Double	5,2		No	
AUDIT_RCVR_DT	Date			No	
AUDIT_RCVR_TIME	String	4		No	
AUDIT_RCVR_TEMP_F	Double	5,2		No	dom_TEMP_F
AUDIT_RCVR_LOG_TEMP_F	Double	5,2		No	dom_TEMP_F
AUDIT_RCVR_TOT_DEP_FT	Double	5,2		No	
AUDIT_RCVR_SENS_DEP_FT	Double	5,2		No	
AUDIT_RCVR_WET_WIDTH_FT	Double	5,2		No	
QC_PASSED_YN	String	2		Yes	dom_QC_PASSED
FILEPATH	String	150		No	
COMMENTS	String	255		No	
VERSION_NAME	String	50	InitialLoad	Yes ***	
GLOBALID	GUID			Yes *	
SAMPLE_GLOBALID	GUID			Yes **	
CREATE_BY	String	50		No *	
CREATE_DATE	Date			No *	
MODIFY_BY	String	50		No *	
MODIFY_DATE	Date			No *	

* Values automatically generated

** Enforced during quality control, may appear in data as not required

*** Maintained through versioning tools, may appear not required in database

4.1.6 WTR_TEMP_RAW_TBL (Water Temperature Raw Data Table)

For domain and default values, see [Section 7 Attribute Characteristics and Definition \(In alphabetical order\)](#) in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
SAMPLE_DT	Date			Yes	
SAMPLE_TIME	String	4		Yes	
WTR_TEMP_F	Double	5,2		Yes	dom_TEMP_F
VERSION_NAME	String	50	InitialLoad	Yes ***	
GLOBALID	GUID			Yes *	
TEMP_GLOBALID	GUID			Yes **	
CREATE_BY	String	50		No *	

Attribute Name	Data Type	Length	Default Value	Required	Domain
CREATE_DATE	Date			No *	
MODIFY_BY	String	50		No *	
MODIFY_DATE	Date			No *	

- * Values automatically generated
- ** Enforced during quality control, may appear in data as not required
- *** Maintained through versioning tools, may appear not required in database

4.2 Relationship Classes

4.2.1 rel_SAMPLE_PT_WTR_CROSS_SECT_TBL

Origin Table	SAMPLE_PT
Origin Primary Key	GLOBALID
Destination Table	WTR_CROSS_SECT_TBL
Destination Foreign Key	SAMPTS_GLOBALID
Relationship Type	Composite
Labels	Water Cross-Section, Sample Points
Messages	Forward (origin to destination)
Cardinality	1 to Many

4.2.2 rel_SAMPLE_PT_WTR_DISCH_TBL

Origin Table	SAMPLE_PT
Origin Primary Key	GLOBALID
Destination Table	WTR_DISCH_TBL
Destination Foreign Key	SAMPTS_GLOBALID
Relationship Type	Composite
Labels	Water Cross-Section, Sample Points
Messages	Forward (origin to destination)
Cardinality	1 to Many

4.2.3 rel_SAMPLE_PT_WTR_GRABSMP_TBL

Origin Table	SAMPLE_PT
Origin Primary Key	GLOBALID
Destination Table	WTR_GRAB_SMP_TBL
Destination Foreign Key	SAMPTS_GLOBALID

Relationship Type	Composite
Labels	Water Grab Sample, Sample Points
Messages	Forward (origin to destination)
Cardinality	1 to Many

4.2.4 rel_SAMPLE_PT_WTR_SHADE_TBL

Origin Table	SAMPLE_PT
Origin Primary Key	GLOBALID
Destination Table	WTR_SHADE_TBL
Destination Foreign Key	SAMPTS_GLOBALID
Relationship Type	Composite
Labels	Water Shade, Sample Points
Messages	Forward (origin to destination)
Cardinality	1 to Many

4.2.5 rel_SAMPLE_PT_WTR_TEMP_TBL

Origin Table	SAMPLE_PT
Origin Primary Key	GLOBALID
Destination Table	WTR_TEMP_TBL
Destination Foreign Key	SAMPTS_GLOBALID
Relationship Type	Composite
Labels	Water Temperature Summary, Sample Points
Messages	Forward (origin to destination)
Cardinality	1 to Many

4.2.6 rel_WTR_TEMP_WTR_RAW_TBL

Origin Table	WTR_TEMP_TBL
Origin Primary Key	GLOBALID
Destination Table	WTR_TEMP_RAW_TBL
Destination Foreign Key	TEMP_GLOBALID
Relationship Type	Composite
Labels	Water Temperature Raw Data, Water Temperature Summary
Messages	Forward (origin to destination)
Cardinality	1 to Many

5 Projection and Spatial Extent

All feature classes and feature datasets are in Geographic, North American Datum 83. Units are decimal degrees. Spatial extent (area of coverage) includes all lands managed by the BLM OR/WA, bordered on the North by Latitude 49.5, on the South by Latitude 41.5, on the East by Longitude -116 and on the West by Longitude -125.

6 Spatial Entity Characteristics

There are no spatial entities described in this data standard. All the spatial entities are inherited from the Sample Points Spatial Data Standard. Data standards are available at the following web site:

<http://www.blm.gov/or/datamanagement/index.php>

7 Attribute Characteristics and Definition (In alphabetical order)

7.1 AMMONIA_MGL

Geodatabase Name	AMMONIA_MGL
BLM Structured Name	Water_Grab_Sample_Ammonia_mgl_Measure
Alias	Ammonia (mg/L)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Measurement of dissolved ammonia in the water sample. Measurements are recorded in milligrams per liter (mg/L).
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: -1, 0.18, 0.02
Data Type	Double (6,2)

7.2 AMMONIA_METH

Geodatabase Name	AMMONIA_METH
BLM Structured Name	Water_Grab_Sample_Ammonia_Method_Code
Alias	Ammonia Method
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The method used to measure ammonia in the water sample.
Required/Optional	Optional
Domain (Valid Values)	dom_AMMONIA_METH
Data Type	String (20)

7.3 AMMONIA_ND

Geodatabase Name	AMMONIA_ND
BLM Structured Name	Water_Grab_Sample_Ammonia_NonDetect_Level_Number
Alias	Ammonia ND
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The non-detect level of the ammonia sample.
Required/Optional	Optional
Domain (Valid Values)	No domain. Example: 0.01
Data Type	Double (6,2)

7.4 AREA_SQ_FT

Geodatabase Name	AREA_SQ_FT
BLM Structured Name	Water_Discharge_Area_Square_Feet_Measure
Alias	Area (sq ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL
Definition	The cross-sectional area of the wetted width of the channel in square feet.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 200, 141.9
Data Type	Double (8,2)

7.5 AUDIT_DPLY_DT

Geodatabase Name	AUDIT_DPLY_DT
BLM Structured Name	Water_Temperature_Audit_Deploy_Date
Alias	Audit Deploy Date
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The date that the deployment audit was performed. This should be the same day the temperature logging equipment was inserted into the stream or water feature. If one of the Audit Deploy fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	No Domain. Examples: 5/1/2000, 10/15/1999
Data Type	Date

7.6 AUDIT_DPLY_LOG_TEMP_F

Geodatabase Name	AUDIT_DPLY_LOG_TEMP_F
BLM Structured Name	Water_Temperature_Audit_Deploy_Logger_Temperature_Fahrenheit_Measure
Alias	Audit Deploy Logger Temp F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The temperature measured by the temperature logging equipment at the time of the deployment audit. Values are recorded in degrees Fahrenheit and rounded to two decimal places. If one of the Audit Deploy fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional

Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5, 2)

7.7 AUDIT_DPLY_SENS_DEP_FT

Geodatabase Name	AUDIT_DPLY_SENS_DEP_FT
BLM Structured Name	Water_Temperature_Audit_Deploy_Sensor_Depth_Feet_Number
Alias	Audit Deploy Sensor Depth (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The depth of the temperature sensor at the time of the deployment audit. Measured in feet.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.8 AUDIT_DPLY_TEMP_F

Geodatabase Name	AUDIT_DPLY_TEMP_F
BLM Structured Name	Water_Temperature_Audit_Deploy_Audit_Temperature_Fahrenheit_Measure
Alias	Audit Deploy Temp F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The temperature measured by the sampling instrument at the time of the deployment audit. Values are recorded in degrees Fahrenheit and rounded to two decimal places. This value is used to compare against values recorded by the temperature logging equipment. If one of the Audit Deploy fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5, 2)

7.9 AUDIT_DPLY_TIME

Geodatabase Name	AUDIT_DPLY_TIME
BLM Structured Name	Water_Temperature_Audit_Deploy_Time_Text
Alias	Audit Deploy Time
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL

Definition	The time of day (in military measurements) that the deployment audit was performed. If one of the Audit Deploy fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	No Domain. Examples: 0512, 1455
Data Type	String (4)

7.10 AUDIT_DPLY_TOT_DEP_FT

Geodatabase Name	AUDIT_DPLY_TOT_DEP_FT
BLM Structured Name	Water_Temperature_Audit_Deploy_Total_Depth_At_Sensor_Feet_Number
Alias	Audit Deploy Total Depth @ Sensor (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The total depth at the temperature sensor at the time of deployment audit. Measured in feet.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.11 AUDIT_DPLY_WET_WIDTH_FT

Geodatabase Name	AUDIT_DPLY_WET_WIDTH_FT
BLM Structured Name	Water_Temperature_Audit_Deploy_Wetted_Width_Feet_Number
Alias	Audit Deploy Wetted Width (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The estimated width (in feet) of the channel that contains flow (is wetted) at the location where measurements were taken at the time of the deployment audit.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.12 AUDIT_MID_DT

Geodatabase Name	AUDIT_MID_DT
BLM Structured Name	Water_Temperature_Audit_Midseason_Date
Alias	Audit Mid-Season Date

Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The date that the mid-season audit was performed. If one of the Audit Midseason fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	No Domain. Examples: 5/1/2000, 10/15/1999
Data Type	Date

7.13 AUDIT_MID_LOG_TEMP_F

Geodatabase Name	AUDIT_MID_LOG_TEMP_F
BLM Structured Name	Water_Temperature_Audit_Midseason_Logger_Temperature_Fahrenheit_Measure
Alias	Audit Mid-Season Logger Temp F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The temperature measured by the temperature logging equipment at the time of the mid-season audit. Values are recorded in degrees Fahrenheit and rounded to two decimal places. If one of the Audit Midseason fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5, 2)

7.14 AUDIT_MID_SENS_DEP_FT

Geodatabase Name	AUDIT_MID_SENS_DEP_FT
BLM Structured Name	Water_Temperature_Audit_Mid-Season_Sensor_Depth_Feet_Number
Alias	Audit Mid-Season Sensor Depth (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The depth of the temperature sensor at the time of the mid-season audit. Measured in feet.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.15 AUDIT_MID_TEMP_F

Geodatabase Name	AUDIT_MID_TEMP_F
BLM Structured Name	Water_Temperature_Audit_Mid-Season_Audit_Temperature_Fahrenheit_Measure
Alias	Audit Mid-Season Temp F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The temperature measured by the sampling instrument at the time of the mid-season audit. Values are recorded in degrees Fahrenheit and rounded to two decimal places. This value is used to compare against values recorded by the temperature logging equipment. If one of the Audit Midseason fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5, 2)

7.16 AUDIT_MID_TIME

Geodatabase Name	AUDIT_MID_TIME
BLM Structured Name	Water_Temperature_Audit_Midseason_Time_Text
Alias	Audit Mid-Season Time
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The time of day (in military measurements) that the mid-season audit was performed. If one of the Audit Midseason fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	No Domain. Examples: 0512, 1455
Data Type	String (4)

7.17 AUDIT_MID_TOT_DEP_FT

Geodatabase Name	AUDIT_MID_TOT_DEP_FT
BLM Structured Name	Water_Temperature_Audit_Mid-Season_Total_Depth_At_Sensor_Feet_Number
Alias	Audit Mid-Season Total Depth @ Sensor (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The total depth at the temperature sensor at the time of mis-season audit. Measured in feet.

Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.18 AUDIT_MID_WET_WIDTH_FT

Geodatabase Name	AUDIT_MID_WET_WIDTH_FT
BLM Structured Name	Water_Temperature_Audit_Mid-Season_Wetted_Width_Feet_Number
Alias	Audit Mid-Season Wetted Width (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The estimated width (in feet) of the channel that contains flow (is wetted) at the location where measurements were taken at the time of the mid-season audit.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.19 AUDIT_RCVR_DT

Geodatabase Name	AUDIT_RCVR_DT
BLM Structured Name	Water_Temperature_Audit_Recover_Date
Alias	Audit Recovery Date
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The date that the recovery audit was performed. This should be the same day the temperature logging equipment was removed from the stream or water feature. If one of the Audit Recovery fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	No Domain. Examples: 5/1/2000, 10/15/1999
Data Type	Date

7.20 AUDIT_RCVR_LOG_TEMP_F

Geodatabase Name	AUDIT_RCVR_LOG_TEMP_F
BLM Structured Name	Water_Temperature_Recover_Deploy_Logger_Temperature_Fahrenheit_Measure
Alias	Audit Recovery Logger Temp F
Inheritance	Not Inherited

Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The temperature measured by the temperature logging equipment at the time of the recovery audit. Values are recorded in degrees Fahrenheit and rounded to two decimal places. If one of the Audit Recovery fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5, 2)

7.21 AUDIT_RCVR_SENS_DEP_FT

Geodatabase Name	AUDIT_RCVR_SENS_DEP_FT
BLM Structured Name	Water_Temperature_Audit_Recovery_Sensor_Depth_Feet_Number
Alias	Audit Recovery Sensor Depth (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The depth of the temperature sensor at the time of the recovery audit. Measured in feet.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.22 AUDIT_RCVR_TEMP_F

Geodatabase Name	AUDIT_RCVR_TEMP_F
BLM Structured Name	Water_Temperature_Audit_Recover_Audit_Temperature_Fahrenheit_Measure
Alias	Audit Recovery Temp F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The temperature measured by the sampling instrument at the time of the recovery audit. Values are recorded in degrees Fahrenheit and rounded to two decimal places. This value is used to compare against values recorded by the temperature logging equipment. If one of the Audit Recovery fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5, 2)

7.23 AUDIT_RCVR_TIME

Geodatabase Name	AUDIT_RCVR_TIME
BLM Structured Name	Water_Temperature_Audit_Recover_Time_Text
Alias	Audit Recovery Time
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The time of day (in military measurements) that the recovery audit was performed. If one of the Audit Recovery fields is filled out, ALL the fields should be filled out.
Required/Optional	Optional
Domain (Valid Values)	No Domain. Examples: 0512, 1455
Data Type	String (4)

7.24 AUDIT_RCVR_TOT_DEP_FT

Geodatabase Name	AUDIT_RCVR_TOT_DEP_FT
BLM Structured Name	Water_Temperature_Audit_Recover_Total_Depth_At_Sensor_Feet_Number
Alias	Audit Recovery Total Depth @ Sensor (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The total depth at the temperature sensor at the time of recovery audit. Measured in feet.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.25 AUDIT_RCVR_WET_WIDTH_FT

Geodatabase Name	AUDIT_RCVR_WET_WIDTH_FT
BLM Structured Name	Water_Temperature_Audit_Recover_Wetted_Width_Feet_Number
Alias	Audit Recovery Wetted Width (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The estimated width (in feet) of the channel that contains flow (is wetted) at the location where measurements were taken at the time of the recovery audit.
Required/Optional	Optional
Domain (Valid Values)	No Domain. 5.5, 10
Data Type	Double

7.26 BKF_DEPTH_MAX_FT

Geodatabase Name	BKF_DEPTH_MAX_FT
BLM Structured Name	Water_Cross_Section_Maximum_Bankfull_Depth_Feet_Measure
Alias	Max Bankfull Depth (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL
Definition	The maximum depth in feet across a channel cross-section at bankfull stage.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 0.59, 1.01
Data Type	Double (5,2)

7.27 BKF_DEPTH_MN_FT

Geodatabase Name	BKF_DEPTH_MN_FT
BLM Structured Name	Water_Cross_Section_Mean_Bankfull_Depth_Feet_Measure
Alias	Mean Bankfull Depth (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL
Definition	The average depth in feet across a channel cross-section at bankfull stage.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 0.37, 1
Data Type	Double (5,2)

7.28 BKF_WIDTH_FT

Geodatabase Name	BKF_WIDTH_FT
BLM Structured Name	Water_Cross_Section_Bankfull_Width_Feet_Measure
Alias	Bankfull Width (ft) +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_TEMP_TBL
Definition	The horizontal distance in feet across a stream channel measured at bankfull stage.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 11.34, 6.1
Data Type	Double (7,2)

7.29 CHAN_SLOPE_PCT

Geodatabase Name	CHAN_SLOPE_PCT
BLM Structured Name	Water_Cross_Section_Channel_Slope_Percent_Measure
Alias	Channel Slope %
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL
Definition	Average vertical drop in elevation per unit distance as measured along 20-130 bankfull channel widths at the thalweg expressed as a percent. It is calculated as: vertical drop / horizontal distance * 100. 0 to no maximum value.
Required/Optional	Optional
Domain (Valid Values)	Range domain: 0.0-no maximum value.
Data Type	Double (5,2)

7.30 CLASSIFIER

Geodatabase Name	CLASSIFIER
BLM Structured Name	Classifier_Name
Alias	Investigator +
Inheritance	Inherited from SAMPLING
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL
Definition	Name (mixed case, first and last) of the subject matter specialist most knowledgeable about the sample.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: Mary Smith, John Doe
Data Type	String (30)

7.31 COMMENTS

Geodatabase Name	COMMENTS
BLM Structured Name	Comments_Text
Alias	Comments
Inheritance	Inherited from SAMPLING
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL
Definition	Free text for comments about the temperature or cross-section summary.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: "Thermograph failed.", "No surface flow at August audit – isolated pools."

Data Type	String (255)
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7.32 CONDUCTIVITY_USCM

Geodatabase Name	CONDUCTIVITY_USCM
BLM Structured Name	Water_Grab_Sample_Conductivity_Measure
Alias	Conductivity (uS/cm)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Electrical conductance is a measure of the capacity of water to conduct an electrical current.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 130, 47.4
Data Type	Double (6,2)

7.33 CREATE_BY

Geodatabase Name	CREATE_BY
BLM Structured Name	Record_Created_By_Text
Inheritance	Inherited from entity ODF
Alias Name	Created By
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL, WTR_TEMP_RAW_TBL
Definition	The BLM login ID of the person who entered the data. This field is auto populated during editing.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: jdoe, msmith
Data Type	String (50)

7.34 CREATE_DATE

Geodatabase Name	CREATE_DATE
BLM Structured Name	Record_Created_Date
Inheritance	Inherited from entity ODF
Alias Name	Created Date
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL, WTR_TEMP_RAW_TBL
Definition	The date the record was entered. This field is auto populated during editing.
Required/Optional	Optional

Domain (Valid Values)	No domain. Examples: 1/5/1999, 10/15/2021
Data Type	Date

7.35 DAY_GTSTD

Geodatabase Name	DAY_GTSTD
BLM Structured Name	Water_Temperature_Days_Greater_Than_Standard_Number
Alias	No. of Days > Standard
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	Enter the number of days the temperature reading was above the State's standard for that stream for the data collection period.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 5, 33
Data Type	Short Integer

7.36 DI_METH

Geodatabase Name	DI_METH
BLM Structured Name	Water_Discharge_Method_Code
Alias	Method +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL, WTR_GRAB_SMP_TBL
Definition	Code to indicate method used to determine flow.
Required/Optional	Required in the Discharge table , Optional in the Grab Sample table
Domain (Valid Values)	dom_DI_METH
Data Type	String (30)

7.37 DISCHARGE_CFS

Geodatabase Name	DISCHARGE_CFS
BLM Structured Name	Water_Discharge_CFS_Measure
Alias	Discharge (cfs) +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL, WTR_GRAB_SMP_TBL
Definition	Stream flow discharge for a given date and time in cubic feet per second.
Required/Optional	Required in the Discharge table , Optional in the Grab Sample table
Domain (Valid Values)	No domain. Examples: 0.1, 7.5

Data Type	Double (8,2)
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7.38 DISS_OXYGEN_MGL

Geodatabase Name	DISS_OXYGEN_MGL
BLM Structured Name	Water_Grab_Sample_Dissolved_Oxygen_mgl_Measure
Alias	Dissolved Oxygen (mg/L)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Measurement of the concentration of dissolved oxygen in the water sample. Measurements are recorded in milligrams per liter (mg/L).
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 104.3, 8.89
Data Type	Double (6,2)

7.39 DISS_OXYGEN_METH

Geodatabase Name	DISS_OXYGEN_METH
BLM Structured Name	Water_Grab_Sample_Dissolved_Oxygen_Method_Code
Alias	Dissolved Oxygen Method
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The method used to measure dissolved oxygen in the water sample.
Required/Optional	Optional
Domain (Valid Values)	dom_DISS_OXYGEN_METH
Data Type	String (25)

7.40 ECOLI

Geodatabase Name	ECOLI
BLM Structured Name	Water_Grab_Sample_EColi_Measure
Alias	E. Coli (cfu/100mL or mpn/100mL)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Measurement of E. Coli in the water sample. E. Coli measurements are recorded in CFU/100mL (colony forming units) or MPN/100mL (most probable number of colonies). These values are equivalent.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 110, 7

Data Type	Double (6,2)
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7.41 ECOLI_METH

Geodatabase Name	ECOLI_METH
BLM Structured Name	Water_Grab_Sample_EColi_Method_Code
Alias	E. Coli Method
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The method used to measure E. Coli in the water sample.
Required/Optional	No
Domain (Valid Values)	dom_ECOLI_METH
Data Type	String (20)

7.42 END_DT

Geodatabase Name	END_DT
BLM Structured Name	Water_Temperature_Data_Collection_End_Date
Alias	End Date +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The ending date of the data collection period. Date is entered as MM/DD/YYYY.
Required/Optional	Required
Domain (Valid Values)	No domain. Example: 8/15/2017
Data Type	Date

7.43 ENTRENCHMENT

Geodatabase Name	ENTRENCHMENT
BLM Structured Name	Water_Channel_Entrenchment_Ratio_Measure
Alias	Entrenchment
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL
Definition	The entrenchment ratio describes the degree of vertical containment of a river channel. It is the flood prone width divided by the bankfull width.
Required/Optional	Optional
Domain (Valid Values)	No domain
Data Type	Double (3,1)

7.44 FILEPATH

Geodatabase Name	FILEPATH
BLM Structured Name	Filename_Path_Text
Alias	File Path
Inheritance	Inherited from SAMPLING
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL
Definition	Computer storage location for a photo file (e.g., jpg), Word document, spreadsheet, or another associated document. The value in this field serves as a hyperlink to that location and the file it opens. Could also be a directory or dataset that opens for further browsing (where multiple files are being referenced).
Required/Optional	Optional
Domain (Valid Values)	No domain.
Data Type	String (150)

7.45 FLOOD_WIDTH_FT

Geodatabase Name	FLOOD_WIDTH_FT
BLM Structured Name	Water_Floodprone_Width_Feet_Measure
Alias	Floodprone Width (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL
Definition	The width of the flood prone area at channel transects in feet. The flood prone width should be measured at riffles (a rocky or shallow part of a stream or river with rough water). It corresponds to the width of the channel cross-section at the elevation that is two times the maximum bankfull depth.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 8.08, 10.82
Data Type	Double (8,2)

7.46 GAGE_HT_FT

Geodatabase Name	GAGE_HT_FT
BLM Structured Name	Water_Gage_Height_Feet_Measure
Alias	Gage Ht (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL, WTR_GRAB_SMP_TBL

Definition	The gage height at the time of measurement (or the mean gate height if the stage changes during sampling).
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 4, 5.5
Data Type	Double (5,2)

7.47 GLOBALID

Geodatabase Name	GLOBALID
BLM Structured Name	Global_Unique_Identifier
Inheritance	Inherited from entity ODF
Alias Name	None
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL
Definition	An alpha-numeric code that serves as the universal and unique identifier for each feature within the feature class or table of a geodatabase. Software generated value. A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. This field is not editable and is automatically populated when it is added for existing data.
Required/Optional	Required
Domain (Valid Values)	No domain. Example: {4747B796-44B4-4628-B069-2D496422E59F}
Data Type	GUID

7.48 HYDRAULIC_RAD

Geodatabase Name	HYDRAULIC_RAD
BLM Structured Name	Water_Cross_Section_Hydraulic_Radius_Number
Alias	Hydraulic Radius
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL
Definition	The ratio of the cross-sectional area divided by the wetted perimeter.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 0, 50
Data Type	Double (6,2)

7.49 LOGGER_EQUIP

Geodatabase Name	LOGGER_EQUIP
BLM Structured Name	Water_Temperature_Logger_Equipment_Text

Alias	Logger Make/Model
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The make and model of the temperature logging equipment used for taking measurements.
Required/Optional	Optional
Domain (Valid Values)	No domain.
Data Type	String (30)

7.50 LOGGER_SERIAL_NO

Geodatabase Name	LOGGER_SERIAL_NO
BLM Structured Name	Water_Temperature_Logger_Serial_Number_Text
Alias	Logger Serial No
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The serial number of the temperature logging equipment.
Required/Optional	Optional
Domain (Valid Values)	No domain.
Data Type	String (30)

7.51 MAX_7DAM_DELTA_F

Geodatabase Name	MAX_7DAM_DELTA_F
BLM Structured Name	Water_Temperature_7_Day_Max_Change_Fahrenheit_Number
Alias	7-Day Max Delta Temp F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The total fluctuation on the day of the seven-day maximum temperature. For the maximum seven-day average max, subtract the lowest temperature from the highest temperature (between 12:01AM and 11:59PM local time). Values are recorded in degrees Fahrenheit and rounded to two decimal places.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5,2)

7.52 MAX_7DAM_MED_DT

Geodatabase Name	MAX_7DAM_MED_DT
BLM Structured Name	Water_Temperature_7_Day_Max_Change_Median_Date
Alias	7-Day Max Median Date +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The date when the 7-day maximum temperature occurs. If the 7-day maximum temperature occurs on multiple days during the data collection period, enter the date occurring latest in the year. Date is entered as MM/DD/YYYY.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 7/10/2007, 9/25/2010
Data Type	Date

7.53 MAX_7DAM_TEMP_F

Geodatabase Name	MAX_7DAM_TEMP_F
BLM Structured Name	Water_Temperature_Max_7Day_Average_DailyMax_Number
Alias	Max 7DAM Temp F +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The 7-day average of the daily maximum stream temperature (7DAM) is "the 7-day moving average of the daily maximum temperatures." (Body, Mathew and Debra Sturdevant, p. 2) To calculate the rolling 7DAM, average the daily maximum temperature for that day plus the three previous days and three following days. The Max 7DAM is the highest 7DAM value for the data collection period.
Required/Optional	Required
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5,2)

7.54 MAX_7DAMIN_TEMP_SUM_DT

Geodatabase Name	MAX_7DAMIN_TEMP_SUM_DT
BLM Structured Name	Water_Temperature_Max_7Day_Average_Summer_DailyMin_Date
Alias	Max 7DAMIN Temp Sum Date
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The maximum 7DAMin is the highest value of the rolling daily minimum stream temperature for the Summer (May 21 to Sept 21). This field records the date this occurs.

Required/Optional	Optional
Domain (Valid Values)	No Domain. Examples: 7/10/2007, 9/25/2010
Data Type	Date

7.55 MAX_7DAMIN_TEMP_SUM_F

Geodatabase Name	MAX_7DAMIN_TEMP_SUM_F
BLM Structured Name	Water_Temperature_Max_7Day_Average_Summer_DailyMin_Number
Alias	Max 7DAMIN Temp Sum F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The maximum 7DAMin is the highest value of the rolling daily minimum stream temperature for the Summer (May 21 to Sept 21). Values are recorded in degrees Fahrenheit and rounded to two decimal places.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5, 2)

7.56 MAX_FLUCT_SUM_F

Geodatabase Name	MAX_FLUCT_SUM_F
BLM Structured Name	Water_Temperature_Max_Daily_Summer_Fluctuation_Fahrenheit_Number
Alias	Max Daily Summer Fluct F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The largest diurnal temperature fluctuation during the Summer (May 21 - Sept 21). Values are recorded in degrees Fahrenheit and rounded to two decimal places.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double ()

7.57 MAX_FLUCT_SUM_DT

Geodatabase Name	MAX_FLUCT_SUM_DT
BLM Structured Name	Water_Temperature_Max_Daily_Summer_Fluctuation_Date
Alias	Max Fluct. Summer Date
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL

Definition	The date of the maximum daily Summer fluctuation. Values are entered as MM/DD/YYYY.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 7/23/2017, 8/4/2013
Data Type	Date

7.58 MAX_FLUCT_WIN_F

Geodatabase Name	MAX_FLUCT_WIN_F
BLM Structured Name	Water_Temperature_Max_Daily_Winter_Fluctuation_Fahrenheit_Number
Alias	Max Daily Winter Fluct F
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The largest diurnal temperature fluctuation during the Winter (Nov 21 - March 21). Values are recorded in degrees Fahrenheit and rounded to two decimal places.
Required/Optional	Optional
Domain (Valid Values)	dom_TEMP_F
Data Type	Double ()

7.59 MAX_FLUCT_WIN_DT

Geodatabase Name	MAX_FLUCT_WIN_DT
BLM Structured Name	Water_Temperature_Max_Daily_Winter_Fluctuation_Date
Alias	Max Fluct. Winter Date
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The date of the maximum daily Winter fluctuation. Values are entered as MM/DD/YYYY.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 12/5/2012, 3/7/2007
Data Type	Date

7.60 MAX_7D_GTSTD

Geodatabase Name	MAX_7D_GTSTD
BLM Structured Name	Water_Temperature_7Day_Max_Greater_Than_Standard_Number
Alias	No. 7-Day Max > Standard
Inheritance	Not Inherited

Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The number of 7-day max rolling values that are greater than the standard for the stream. Comparing values year to year is useful for monitoring trend.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 15, 73
Data Type	Date

7.61 MODIFY_BY

Geodatabase Name	MODIFY_BY
BLM Structured Name	Record_Last_Modified_By_Text
Inheritance	Inherited from entity ODF
Alias Name	Modified By
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL
Definition	The BLM login ID of the person who last edited the data. This field is auto populated during editing.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: jdoe, msmith
Data Type	String (50)

7.62 MODIFY_DATE

Geodatabase Name	MODIFY_DATE
BLM Structured Name	Record_Last_Modified_Date
Inheritance	Inherited from entity ODF
Alias Name	Modified Date
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL
Definition	The date the record was last edited. This field is auto populated during editing.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 1/5/1999, 10/15/2021
Data Type	Date

7.63 MTR_SER_NUM

Geodatabase Name	MTR_SER_NUM
BLM Structured Name	Water_Meter_Serial_Number_Text

Alias	Meter Serial No.
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL
Definition	Meter serial number used to measure discharge.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 261552, 388693
Data Type	String (15)

7.64 MTR_TYPE

Geodatabase Name	MTR_TYPE
BLM Structured Name	Water_Meter_Type_Code
Alias	Meter Type +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL
Definition	Code to identify what type of current meter was used to determine water velocity.
Required/Optional	Required
Domain (Valid Values)	dom_MTR_TYPE
Data Type	String (20)

7.65 NITRATE_MGL

Geodatabase Name	NITRATE_MGL
BLM Structured Name	Water_Nitrate_mgl_Measure
Alias	Nitrate (mg/L)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Measurement of soluble nitrate in the water sample. Measurements are recorded in milligrams per liter (mg/L).
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: -1, 0.08, 1.3
Data Type	Double (6,2)

7.66 NITRATE_METH

Geodatabase Name	NITRATE_METH
BLM Structured Name	Water_Nitrate_Method_Code

Alias	Nitrate Method
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The method used to measure nitrate in the water sample.
Required/Optional	Optional
Domain (Valid Values)	dom_NITRATE_METH
Data Type	String (20)

7.67 NITRATE_ND

Geodatabase Name	NITRATE_ND
BLM Structured Name	Water_Nitrate_Non_Detect_Number
Alias	Nitrate ND
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The non-detect level of the nitrate sample.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 0.02, 0.1
Data Type	Double (6,2)

7.68 ORTHO_P_MGL

Geodatabase Name	ORTHO_P_MGL
BLM Structured Name	Water_Sample_Orthophosphate_mgl_Measure
Alias	Ortho P (mg/L)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Orthophosphate is the biologically available form of phosphorus for animals. Plants, bacteria, and animals use it for growth. Sources include fertilizers and decaying biological matter produced in the phosphorus cycle. Measurements are recorded in milligrams per liter (mg/L).
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 0.22, 0.1
Data Type	Double (6,2)

7.69 ORTHO_P_METH

Geodatabase Name	ORTHO_P_METH
BLM Structured Name	Water_Sample_Orthophosphate_Method_Code

Alias	Ortho P Method
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The method used to measure orthophosphate in the water sample.
Required/Optional	Optional
Domain (Valid Values)	dom_ORTHO_P_METH
Data Type	String (20)

7.70 ORTHO_P_ND

Geodatabase Name	ORTHO_P_ND
BLM Structured Name	Water_Sample_Orthophosphate_NonDetect_Number
Alias	Ortho P ND
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The non-detect level of the orthophosphate sample.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 0.05, 0.07
Data Type	Double (6,2)

7.71 PH

Geodatabase Name	PH
BLM Structured Name	Water_pH_Measure
Alias	pH
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	pH is a measurement of the potential activity of hydrogen ions (H ⁺) in the sample. pH measurements run on a scale from 0 (acidic) to 14 (basic), with 7.0 considered neutral.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples:
Data Type	Double (6,2)

7.72 QC_PASSED_YN

Geodatabase Name	QC_PASSED_YN
BLM Structured Name	Water_QC_Passed_YN_Code

Alias	QC Passed? +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_TEMP_TBL
Definition	A yes/no field to indicate if the record met quality control requirements. Quality control requirements can vary.
Required/Optional	Required
Domain (Valid Values)	dom_QC_PASSED
Data Type	String (2)

7.73 RAW_DATA_YN

Geodatabase Name	RAW_DATA_YN
BLM Structured Name	Water_Temperature_Raw_Data_Present_Code
Alias	Raw Data?
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	A Yes/No flag field to indicate if there is related raw temperature measurement data.
Required/Optional	Required
Domain (Valid Values)	dom_YN
Data Type	String (1)

7.74 ROSGEN_LEV1_CD

Geodatabase Name	ROSGEN_LEV1_CD
BLM Structured Name	Water_Rosgen_Rosgen_Level_1_Code
Alias	Rosgen Level 1
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT
Definition	Rosgen Level 1 Classification
Required/Optional	Optional
Domain (Valid Values)	dom_ROSGEN_LEV1
Data Type	String (3)

7.75 ROSGEN_LEV2_CD

Geodatabase Name	ROSGEN_LEV2_CD
BLM Structured Name	Water_Rosgen_Rosgen_Level_2_Code

Alias	Rosgen Level 2
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT
Definition	Rosgen Level 2 Classification
Required/Optional	Optional
Domain (Valid Values)	dom_ROSGEN_LEV2
Data Type	Short Integer

7.76 ROSGEN_LEV3_CD

Geodatabase Name	ROSGEN_LEV3_CD
BLM Structured Name	Water_Rosgen_Level_3_Code
Alias	Rosgen Level 3
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT
Definition	Rosgen Level 3 Classification
Required/Optional	Optional
Domain (Valid Values)	dom_ROSGEN_LEV3
Data Type	String (2)

7.77 ROSGEN_SRC_CD

Geodatabase Name	ROSGEN_SRC_CD
BLM Structured Name	Water_Rosgen_Source_Code
Alias	Rosgen Source
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT
Definition	Source used to determine the Rosgen Level 1, 2, and 3 classification values.
Required/Optional	Optional
Domain (Valid Values)	dom_ROSGEN_SRC
Data Type	String (20)

7.78 SAMPLE_DT

Geodatabase Name	SAMPLE_DT
BLM Structured Name	Sample_Date
Alias	Sample Date +
Inheritance	Not Inherited

Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_RAW_TBL
Definition	The date the data was collected in the field. Entered as MM/DD/YYYY.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 5/1/2017, 10/20/2005
Data Type	Date

7.79 SAMPLE_GLOBALID

Geodatabase Name	SAMPLE_GLOBALID
BLM Structured Name	Sample_Globally_Unique_Identifier
Inheritance	Not Inherited
Alias Name	Sample GlobalID
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL, WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_SHADE_TBL, WTR_TEMP_TBL
Definition	Unique identifier for the Sample Points feature class. Used to relate records to the SAMPLE_PT feature class using the GLOBALID field.
Required/Optional	Required, but does not appear as a required field in the geodatabase.
Domain (Valid Values)	No domain. Example: "FFE30070-D02A-4143-9596-60CDCBA82AE1}"
Data Type	GUID

7.80 SAMPLE_TIME

Geodatabase Name	SAMPLE_TIME
BLM Structured Name	Water_Sample_Time_Text
Alias	Time +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL, WTR_GRAB_SMP_TBL, WTR_TEMP_RAW_TBL
Definition	Time of day (in military measurements) that the discharge measurement was taken at the stream.
Required/Optional	Required
Domain (Valid Values)	No Domain. Examples: 1816, 1100, 1235
Data Type	String (4)

7.81 SECTIONS_NUM

Geodatabase Name	SECTIONS_NUM
BLM Structured Name	Water_Discharge_Sections_Number
Alias	Sections

Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL
Definition	The number of sections used to compute the discharge.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 8, 12, 23
Data Type	Short Integer

7.82 SHADE_METH

Geodatabase Name	SHADE_METH
BLM Structured Name	Water_Shade_Method_Code
Alias	Shade Method +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_SHADE_TBL
Definition	The method used to capture the shade visible sky measurement.
Required/Optional	Required
Domain (Valid Values)	dom_SHADE_METH
Data Type	String (30)

7.83 SHADE_MONTH

Geodatabase Name	SHADE_MONTH
BLM Structured Name	Water_Shade_Month_Code
Alias	Shade Month +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_SHADE_TBL
Definition	The month of the path of the sun that the shade monitoring method is modeling. For some methods (solar pathfinder and hemispheric photography), the date for the sun path modeled is different than the date the measurement is taken.
Required/Optional	Required
Domain (Valid Values)	dom_SHADE_MONTH
Data Type	String (3)

7.84 SINUOSITY

Geodatabase Name	SINUOSITY
BLM Structured Name	Water_Sinuosity_Measure
Alias	Sinuosity

Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT
Definition	Sinuosity of the channel defined as Stream Length divided by Valley Length or Valley Slope divided by Channel Slope as measured over 20-30 Bankfull Channel Widths.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 1.6, 1.1
Data Type	Double (3,1)

7.85 START_DT

Geodatabase Name	START_DT
BLM Structured Name	Water_Temperature_Data_Collection_Start_Date
Alias	Start Date +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The starting date of the data collection period.
Required/Optional	Required
Domain (Valid Values)	No domain. Example: 5/1/2017
Data Type	Date

7.86 STUDY_DAYS_NUM

Geodatabase Name	STUDY_DAYS_NUM
BLM Structured Name	Water_Temperature_Study_Days_Number
Alias	# Days in Study +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_TEMP_TBL
Definition	The number of full (24 hour) days of temperature recordings.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 112, 100
Data Type	Short Integer

7.87 TEMP_GLOBALID

Geodatabase Name	TEMP_GLOBALID
BLM Structured Name	Water_Temperature_Raw_Globally_Unique_Identifier
Alias	None
Inheritance	Not Inherited

Feature Class Use/Entity Table	WTR_TEMP_RAW_TBL
Definition	This field is used to relate records from the Raw Temperature table to the Temperature table using the Temperature GlobalID field.
Required/Optional	Required, but does not appear as a required field in the geodatabase.
Domain (Valid Values)	Example value: "{E37EF156-4C20-4A78-A9BE-9EB4E6F00544}"
Data Type	GUID

7.88 TOTAL_KJELDAHL_N_MGL

Geodatabase Name	TOTAL_KJELDAHL_N_MGL
BLM Structured Name	Water_Total_Kjeldahl_Nitrogen_Measure
Alias	Total Kjeldahl Nitrogen (mg/L)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The sum of nitrogen in organic substances measured using the Kjeldahl method. Measurements are recorded in milligrams per liter (mg/L).
Required/Optional	Optional
Domain (Valid Values)	No domain.
Data Type	Double (6,2)

7.89 TOTAL_KJELDAHL_N_ND

Geodatabase Name	TOTAL_KJELDAHL_N_ND
BLM Structured Name	Water_Total_Kjeldahl_Nitrogen_Non_Detect_Number
Alias	Total Kjeldahl Nitrogen ND
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The non-detect level of the nitrogen sample.
Required/Optional	Optional
Domain (Valid Values)	No domain.
Data Type	Double (6,2)

7.90 TOTAL_P_UGL

Geodatabase Name	TOTAL_P_UGL
BLM Structured Name	Water_Total_Phosphorus_ugl_Measure
Alias	Total P (ug/L)
Inheritance	Not Inherited

Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Total Phosphorous is all forms of phosphorus, including orthophosphate, organic phosphate, and condensed phosphorus. Sources include run-off, fertilizers, and decaying biological matter. Measurements are recorded in micrograms per liter (ug/L).
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 280, 560, -1
Data Type	Double (6,2)

7.91 TOTAL_P_METH

Geodatabase Name	TOTAL_P_METH
BLM Structured Name	Water_Sample_Total_Phosphate_Method_Code
Alias	Total P Method
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The method used to measure total phosphate in the water sample.
Required/Optional	Optional
Domain (Valid Values)	dom_TOTAL_P_METH
Data Type	String (20)

7.92 TOTAL_P_ND

Geodatabase Name	TOTAL_P_ND
BLM Structured Name	Water_Sample_Total_Phosphate_NonDetect_Number
Alias	Total P ND
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	The non-detect level of the total phosphate sample.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 100, 500
Data Type	Double (6,2)

7.93 TURBIDITY_NTU

Geodatabase Name	TURBIDITY_NTU
BLM Structured Name	Water_Turbidity_NTU_Measure
Alias	Turbidity (NTU)
Inheritance	Not Inherited

Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL
Definition	Turbidity measures the scattering effect that suspended solids have on light. Sediment and other waterborne particles such as fine organic matter, plankton, and microscopic organisms scatter light. Thus, turbidity varies with the number, size and type of particles present in the water column. Turbidity is measured in nephelometric turbidity units (NTU). Turbidity measurements reported for regulatory purposes require a true nephelometric measurement (in NTU) using turbidimeter instruments that meet EPA specifications. One such instrument is the HACH 2100P Portable Turbidimeter.
Required/Optional	No
Domain (Valid Values)	No domain. Examples: 1.5, 11.3, 1.84
Data Type	Double (6,2)

7.94 VERSION_NAME

Geodatabase Name	VERSION_NAME
BLM Structured Name	Geodatabase_Version_Text
Alias	Version Name
Inheritance	Inherited from Entity ODF
Feature Class Use/Entity Table	All tables
Definition	Name of the corporate geodatabase version previously used to edit the record. InitialLoad = feature has not been edited in ArcSDE. Format: username.XXX-mmddyy-hhmmss = version name of last edit (hours might be a single digit; leading zeros are trimmed for hours only). XXX=theme abbreviation. Example: sfrazier.FIRE_POLY-121210-111034 Only appears in the transactional (edit) version. Public version (which is also the version used internally for mapping or analysis) does not contain this attribute.
Required/Optional	Required (automatically generated)
Domain (Valid Values)	No domain
Data Type	String (50)

7.95 VISIBLE_SKY_PCT

Geodatabase Name	VISIBLE_SKY_PCT
BLM Structured Name	Water_Visible_Sky_Percent_Measure
Alias	Visible Sky % +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_SHADE_TBL
Definition	The percentage of visible sky measured.
Required/Optional	Required.

Domain (Valid Values)	No domain. Examples: 23, 50
Data Type	Double (4,1)

7.96 W_D_RATIO

Geodatabase Name	W_D_RATIO
BLM Structured Name	Water_Cross_Section_Width_Depth_Ratio_Number
Alias	W/D Ratio
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_CROSS_SECT_TBL
Definition	The bankfull width/bankfull depth ratio. This ratio indicates the shape of the channel cross-section. Calculated using mean bankfull depth.
Required/Optional	Optional
Domain (Valid Values)	No domain.
Data Type	Double (5,1)

7.97 WETTED_WIDTH_FT

Geodatabase Name	WETTED_WIDTH_FT
BLM Structured Name	Water_Wetted_Width_Feet_Measure
Alias	Wetted Width (ft)
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_DISCH_TBL
Definition	The estimated width (in feet) of the channel that contains flow (is wetted) at the location where measurements were taken.
Required/Optional	Optional
Domain (Valid Values)	No domain.
Data Type	Double (7,2)

7.98 WTR_TEMP_F

Geodatabase Name	WTR_TEMP_F
BLM Structured Name	Water_Temperature_Fahrenheit_Measure
Alias	Water Temp C +
Inheritance	Not Inherited
Feature Class Use/Entity Table	WTR_GRAB_SMP_TBL, WTR_TEMP_RAW_TBL
Definition	The temperature measured by the sampling instrument at the time of the sample. Values are recorded in degrees Fahrenheit and rounded to two decimal places.

Required/Optional	Required in WTR_TEMP_RAW_TBL, Optional in WTR_GRAB_SMP_TBL
Domain (Valid Values)	dom_TEMP_F
Data Type	Double (5,2)

8 Publication Views

8.1 General

Master corporate feature classes/datasets maintained in the edit database are "published" to the user database in several ways:

- Copied completely with no changes (replicated).
- Copied with no changes except to omit one or more feature classes from a feature dataset.
- Minor changes made (e.g., clip, dissolve, union with ownership) to make the data easier to use. Feature classes that have been changed are indicated by "PUB" in their name. They are created through scripts that can be automatically executed and are easily rebuilt from the master data whenever necessary.

8.2 Specific to This Dataset

A publication dataset will be created for *internal* use where:

- The attribute VERSION_NAME is removed (for privacy reasons).
- The edit tracking attributes CREATE_BY, CREATE_DATE, MODIFY_BY, MODIFY_DATE are removed.
- Five feature classes will be created as publication datasets – one for each table except for the WTR_TEMP_RAW_TBL.
- Data from the Water Quality and Quantity tables will be joined to the Sample Points feature class to "flatten" the relationship. Sample Points will be duplicated if there are more than one related record in the tables.
- Only Sample Points that have a corresponding record in the related Water Quality and Quantity table will be included in the publication dataset.

An *external* publication dataset will be created that meets these requirements:

- All requirements of the internal dataset.
- The attributes CLASSIFIER, COMMENTS, FILEPATH, is removed (for privacy reasons).
- The dataset will be intersected with the ownership layer and only records that occur on BLM lands will be included in data published to public-facing websites.

8.3 Layer Files

Layer files are not new data requiring storage and maintenance but point to existing data. They have appropriate selection and symbolization for correct use and display of the data. They provide the guidance for data published on the web. Layer files are created by simple, documented processes, and can be deleted and recreated at any time.

9 Editing Procedures

9.1 Editing Quality Control

Check that all date fields contain valid dates in MM/DD/YYYY format. If an attribute has a domain, check for invalid values. The values must be exact.

Check for capitalization and spacing differences in attribute values that should be the same. Check for leading or trailing blanks what will make a different value even if it looks identical.

9.2 Theme Specific Guidance

There is much in the data standard that addresses editing and provides guidance especially in the Data Management Protocols (Section 3).

9.2.1 Calculation Data Rules

The following are a list of calculation rules that occur during editing. Calculation rules are used to automatically populate attributes in a field. These are in addition to the default values defined in Sections 4 and 7.

- Calculate CLASSIFIER on create using the editor name if the field is null or empty.

9.2.2 Constraint Data Rules

The following are a list of data constraint rules that are enforced during editing. Constraint rules specify allowable combinations of values between two or more fields in a record. They are used to ensure that specific conditions are met.

- If ROSGEN_LEV1_CD, ROSGEN_LEV1_CD, or ROSGEN_LEV1_CD is not null or empty, ROSGEN_SRC_CD must be not null or empty.

9.2.3 Data Check-in Validation Rules

The following are a list of rules that are enforced on edit version check-in for versions. Typically, they are enforced on check-in because the existing data is not 100% in compliance with the rule, so an attribute rule cannot be created or because the check cannot be accomplished with an attribute rule.

- Check for compliance with all assigned geodatabase domains.
- Check for multi-part polygons (not allowed).
- Check for null geometry.
- SAMPLE_GUID must not be null or empty.
- TEMP_GUID must not be null or empty.

10 Abbreviations and Acronyms

Does not include abbreviations/acronyms used as codes for data attributes or domain values.

Table 1 Abbreviations/Acronyms Used

Abbreviations	Descriptions
ARC	GIS line feature
BLM	Bureau of Land Management, U.S. Department of the Interior
CADNSDI	Cadastral National Spatial Data Infrastructure
DEM	Digital Elevation Model
DLG	Digital Line Graphs
FOIA	Freedom of Information Act
GIS	Geographic Information System
GNIS	Geographic Names Information System
GPS	Global Positioning System
GTRN	Ground Transportation GIS dataset
IDP	Interdisciplinary
NAD	North American Datum
NARA	National Archives and Records Administration
NEPA	National Environmental Policy Act
ODF	Oregon Data Framework
OR/WA	Oregon/Washington BLM Administrative State
POLY	GIS polygon feature
PUB	Publication
RMP	Resource Management Plan
USFS	United States Forest Service, U.S. Department of Agriculture
USGS	United States Geological Survey, U.S. Department of the Interior
SDE	Spatial Database Engine
WEB	Worldwide Web (internet)
WODDB	Western Oregon Digital Database

A Domains (Valid Values)

These are the domains at the time the data standard was approved. Domains can be changed without a re-issue of the data standard. Current domains are found on the internal OR/WA SharePoint data management page. Some of the domains used in this data standard are also available at the following web site:

<http://www.blm.gov/or/datamanagement/index.php>

For domains not listed at that site contact: contact the [State Data Administrator](#).

A.1 dom_AMMONIA_METH

Ammonia Method. Code to indicate the method used to measure ammonia in the water sample.

Code	Description
SM 4500 NH3 G	SM 4500 NH3 G - Ammonia (as N) by Automated Phenate
EPA 350.1	EPA 350.1 - Ammonia (as N) by Automated Colorimetry

A.2 dom_DI_METH

Discharge Method. Code to indicate the method used to determine flow.

Code	Description
ACDP	Acoustic Doppler Current Profiler
Current Meter	Current Meter
Contracted Opening	Contracted Opening
Flow Through Culverts	Flow Through Culverts
Flow Over Dams and Weirs	Flow Over Dams and Weirs
Float	Float
Other Direct	Other Direct
Other Indirect	Other Indirect
Portable Parshall Flume	Portable Parshall Flume
Portable Weir Plate	Portable Weir Plate
Rating Curve	Rating Curve
Slope-Area	Slope-Area
Unknown	Unknown
Volumetric	Volumetric

A.3 dom DISS_OXYGEN_METH

Dissolved Oxygen Method. Code to indicate the method used to measure dissolved oxygen in the water sample.

Code	Description
EPA 360.1	EPA 360.1 - Dissolved Oxygen by Membrane Electrode
EPA 360.2	EPA 360.2 - Dissolved Oxygen Using Modified Winkler

Code	Description
ASTM D888-09 (C)	ASTM D888-09 (C) - Luminescence Based Sensor
USGS-OWQ NFM 6.2.1-Lum	USGS-OWQ NFM 6.2.1-Lum - Dissolved Oxygen concentration, luminescent sensor

A.4 dom_ECOLI_METH

ECOLI Method. Code to indicate the method used to measure E. Coli in the water sample.

Code	Description
EPA 1603 MF	EPA 1603 MF - E. coli Membrane Filtration single step
SM 9223 B	SM 9223 B - E. coli and Total Coliforms Enzyme substrate (ONPG-MUG)
Colilert	Colilert - E. coli IDEXX multiple tube/multiple well

A.5 dom_MTR_TYPE

Meter Type. Code to identify what type of current meter was used to determine water velocity.

Code	Description
Flow Tracker	Flow Tracker
March-McBirney/Hach FH950	March-McBirney/Hach FH950
Other	Other
Price AA	Price AA
Pygmy	Pygmy
Swoffer	Swoffer

A.6 dom_NITRATE_METH

Nitrate Method. Code to indicate the method used to measure nitrate in the water sample.

Code	Description
EPA 353.2	EPA 353.2 - Nitrate-nitrite (as N) Cadmium reduction, Automated
SM 4500 NO3-E-2011	SM 4500 NO3-E-2011 - Nitrate-nitrite (as N) Cadmium reduction, Automated
EPA 300.0	EPA 300.0 - Nitrate-nitrite (as N) Ion Chromatography
SM 4110 B-2011	SM 4110 B-2011 - Nitrate-nitrite (as N) Ion Chromatography
SM 4110 C-2011	SM 4110 C-2011 - Nitrate-nitrite (as N) Ion Chromatography

A.7 dom_ORTHO_P_METH

Orthophosphate Method. Code to indicate the method used to measure orthophosphate in the water sample.

Code	Description
SM 4500-P F or G	SM 4500-P F or G - Ortho-phosphate (as P) by Automated Ascorbic Acid Reduction
EPA 365.1 v 2	EPA 365.1 v 2 - Ortho-phosphate (as P) by Automated Ascorbic Acid Reduction

Code	Description
EPA 300.0	EPA 300.0 - Ortho-phosphate (as P) by Ion Chromatography

A.8 dom_QC_PASSED

Quality Control Passed code. Code to indicate if the record met quality control requirements.

Code	Description
Y	Yes
N	No
NA	No Assessment
U	Unknown

A.9 dom_ROSGEN_LEV1

Rosgen Level 1 Classification Code. Stream classification qualifier based on the sinuosity of a stream.

Code	Description
A	A - Relatively straight
B	B - Slightly sinuous
C	C - Sinuous with active point bars
D	D - Multiple thread, braided
DA	DA - Multiple thread, anastomosed
E	E - Tortuous and/or highly sinuous
F	F - Moderately sinuous, F or Bs may have active point bars
G	G - Moderately sinuous, F or Bs may have active point bars

A.10 dom_ROSGEN_LEV2

Rosgen Level 2 Classification Code. Stream classification based on stream channel material.

Code	Description
1	1 - Bedrock
2	2 - Boulder
3	3 - Cobble
4	4 - Gravel
5	5 - Sand
6	6 - Silt/Clay

A.11 dom_ROSGEN_LEV3

Rosgen Level 3 Classification Code. Stream classification qualifier based on water surface slope.

Code	Description
a	a For Stream Type B, slope range is 0.04 – 0.099 (4% - 9.9%).
a+	a+ For Stream Type A, slope range is > 0.10 (>10%).
b	b For Stream Types F, E, C, and D, slope range is 0.02 – 0.039 (2% - 3.9%).
c	c For Stream Types G and B, slope range is < 0.02 (<2%).
c-	c- For Stream Types C and D, slope range is <0.001 (<0.1%).

A.12 dom_ROSGEN_SRC

Rosgen Source Code. Source used to determine the Rosgen Level 1, 2, and 3 values.

Code	Description
Field Estimated	Field Estimated
Map Estimated	Map Estimated
Photo Estimated	Photo Estimated
Computer Generated	Computer Generated
Hand Calculated	Hand Calculated
Other	Other

A.13 dom_TOTAL_P_METH

Total Phosphate Method. Code to indicate the method used to measure total phosphate in the water sample.

Code	Description
SM 4500-P F, G or H	SM 4500-P F, G or H - Total Phosphorus by Automated Ascorbic Acid Reduction
EPA 365.1 v 2	EPA 365.1 v 2 - Total Phosphorus by Automated Ascorbic Acid Reduction
EPA 300.0	EPA 300.0 - Total Phosphorus by Ion Chromatography

A.14 dom_SHADE_METH

Shade Method. The method used to capture the shade visible sky measurement.

Code	Description
Fisheye Lens	Fisheye Lens
Hemispherical Photography	Hemispherical Photography
LiDAR	LiDAR
Moose Horn	Moose Horn
Visual	Visual
Other	Other
Unknown	Unknown

A.15 dom_SHADE_MONTH

Shade Month. The month of the path of the sun that the shade method is modeling.

Code	Description
Jan	January
Feb	February
Mar	March
Apr	April
May	May
Jun	June
Jul	July
Aug	August
Sep	September
Oct	October
Nov	November
Dec	December
Unk	Unknown

A.16 dom_TEMP_F

Temperature Range Domain (Fahrenheit). Range domain where the allowable values are -1 to 115.

A.17 dom_YN

Yes/No Flag. Standard OR/WA BLM Yes/No flag domain.

Code	Description
Y	Yes
N	No
U	Unknown

B REFERENCES

Body, Mathew and Debra Sturdevant. 1997. The Scientific Basis for Oregon's Stream Temperature Standard: Common Questions and Straight Answers. Oregon Department of Environmental Quality. 29 pp.