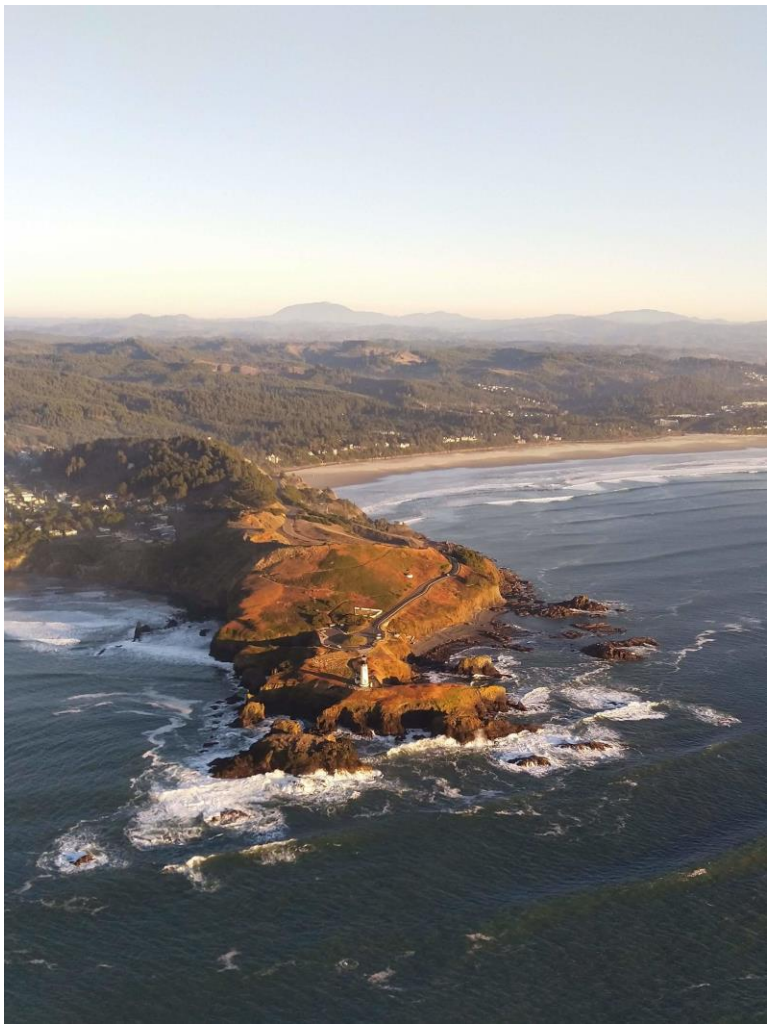
Oregon/Washington Bureau of Land Management

Ocean

Spatial Data Standard



Aerial view of the Oregon coastline at Yaquina Head. Photo taken by Meredith Matherly, BLM on January 30, 2019.

Document Revisions

Revision	Date	Author	Description	Affected Pages
1.0	3/6/2008	Corey Plank, Pam Keller, Stan Frazier	Initial Release	All
1.0	2/15/2011	Corey Plank, Pam Keller, Stan Frazier	Reissue	All
1.1	4/15/2013		Minor editorial corrections	
1.2	03/10/2017	Kyler Diershaw	Updated contact information for State Data Steward, GIS Technical Lead, State Data Administrator, State Records Administrator. Added Document Revision Table.	Section 1.1, 2.5, 2.6, 4.0, Appendix
1.3	03/15/2017	Kyler Diershaw	Added hyperlinked TOC Updated BLM_ORG_CD Updated Records Retention Schedule Updated Shoreline attribute and domain	TOC A2 1.3 7.5, A.3
1.4	6/21/2017	Eric Hiebenthal	Added missing SHORELINE attribute to Section 4. Updated domain example values for dom_ORGANIZATION. Added subtitle to front page graphic. Cleaned up formatting. Added BLM Shield to front page. Corrected spelling.	
2.0	6/11/2021	Dana Baker-Allum	Reformat and editing. New front page graphic with photo credit. Verified and updated records retention schedule. Added PIA. Updated references to RAB/DOB to ADMU. Updated dom_COORD_SRC domain. Updated figure 1 and figure 2. Updated keywords.	All

Navigation	
	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.

Contents

1 General Information

The Ocean data standard contains requirements for the GIS representation of the Pacific Ocean, its coastline with Oregon and Washington (land/ocean interface) and near-shore islands. The polygon representing the ocean is squared off at an arbitrary distance in the ocean. At some time in the future, the coastline and islands may be included in a broader hydrography theme or themes. In particular, the National Hydrography Dataset (NHD) and the Watershed Boundaries (WBD) datasets have shoreline components. As those datasets mature, they should become the source for the coastline data. The OCEAN data set may not be needed when that occurs and will be archived, if that is the case.

- Dataset (Theme) Name: Ocean Boundary
- Dataset (Feature Class): OCEAN_POLY, OCEAN_ARC

1.1 Roles and Responsibilities

Table 1 Roles and Responsibilities

Roles	Responsibilities
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 the 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 Records Administrator	The State Records Administrator assists the state data steward to identify any privacy issues related to spatial data. The state records administrator also provides direction and guidance on data release and fees. The state records administrator classifies data under the proper records retention schedule and determines the appropriate Freedom of Information Act category.

1.2 FOIA Category

Category 1(A) - BLM Records that do not contain protected information and can be released in whole.

1.3 Records Retention Schedule

The DRS/GRS/BLM Combined Records Schedule, under Schedule 20/52 (4) (Electronic Records/Geographic Information Systems), lists Hydrography as very important to BLM GIS systems, however responsibility is assigned to another Federal agency (USGS) by OMB Circular A-16, Appendix E, and is excluded from BLM submission.

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) Bureau of Land Management (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

The Ocean Boundary (OCEAN) theme 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 data is not sensitive and has no restrictions on access from either within the BLM or external to the BLM.

There are no privacy issues or concerns associated with these data themes. A privacy impact assessment was completed on 6/11/2021.

1.5 Keywords

Keywords that can be used to locate this dataset include:

- BLM Thesaurus: Hydrology, Geospatial
- Additional keywords: Ocean, 3-Mile, Boundary, coastline
- ISO Thesaurus: oceans

1.6 Subject Function Codes

BLM Subject Function codes used to describe this dataset include:

- 1283 - Data Administration
- 9160 - Mapping Sciences

2 Dataset Overview

2.1 Usage

The Ocean dataset is used for display on maps and for GIS analysis. A known use for the coastline arcs will be to create a "land only" Administrative Units (ADMU) dataset (described in a separate data standard) for the westernmost districts of OR/WA BLM. This boundary may be used in a wide range of applications including Resource Management Plans (RMP). In addition, the ocean islands, or a selection of them, may be used for analysis and planning. Some have BLM surface jurisdiction, and many provide special wildlife habitat. Coastline arcs may also be used to delineate Hydrologic Unit (HU) (watershed) boundaries.

2.2 Sponsor/Affected Parties

The sponsor for this data set is the Deputy State Director, Division of Resources, Lands, Minerals, and Fire.

Since the coastline and islands fall into the broader hydrography data group, affected parties include the US Fish and Wildlife Service, US Geological Survey, and US Forest Service, as well as State agencies for Oregon and Washington with responsibilities for water resources. It is expected that OR/WA BLM will coordinate with these agencies and use the accepted interagency standards where they exist.

2.3 Relationship to Other Datasets, Databases, or Files

The Ocean dataset is used in conjunction with the ADMU dataset to show the legal limit of jurisdiction (3 miles into the ocean). There is no relationship to any other database.

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.

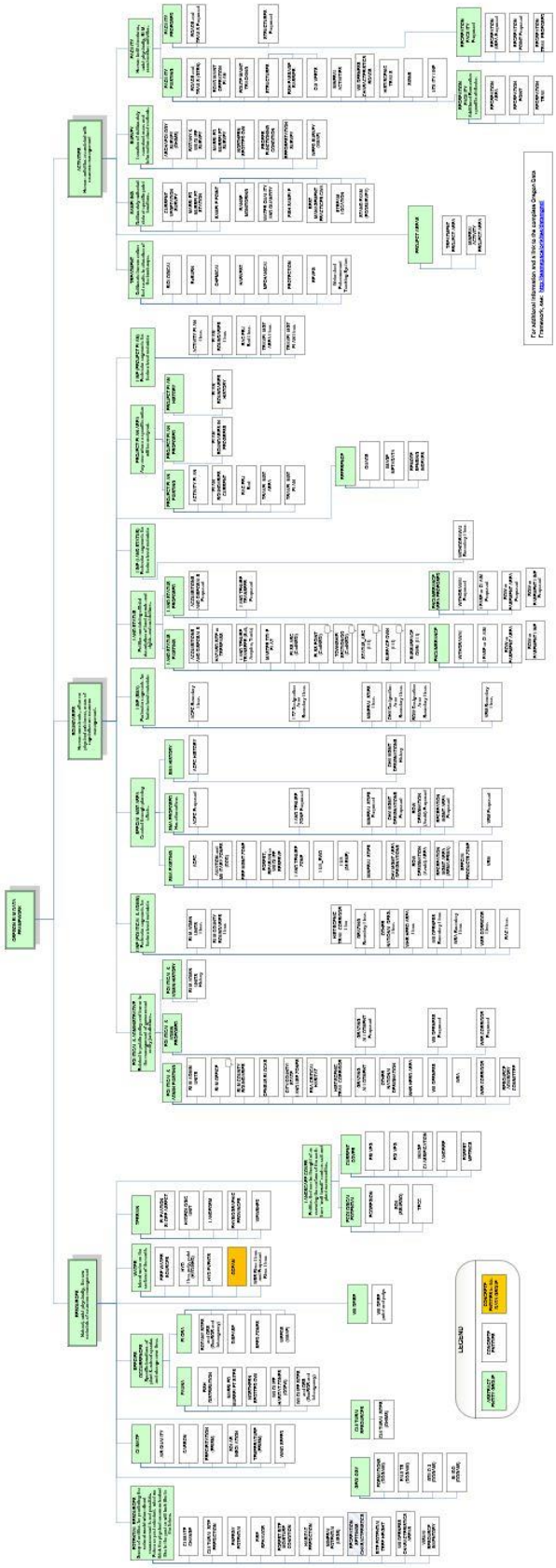


Figure 1 Oregon Data Framework Overview

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 Ocean 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, Ocean is considered a natural resource and categorized as follows:

ODF

Resources

Water

Ocean

OCEAN_POLY

OCEAN_ARC

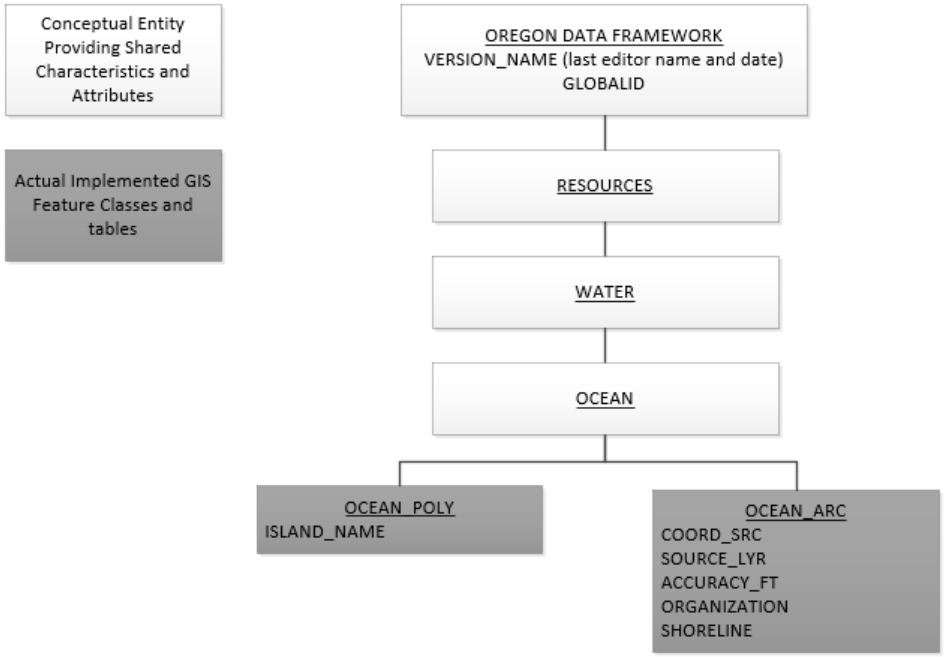


Figure 2 Data Organization Structure

2.5 Relationship to DOI Enterprise Architecture Data Resource Mode

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

The coastline arcs represent the mean high tide of the ocean. At a minimum, this data is to meet national map accuracy requirements at 1:24,000 scale (the accuracy of the paper source). Island minimum size is approximately 60 feet along the shortest axis.

3.2 Collection, Input, and Maintenance Protocols

The best GIS data from all available sources was combined to create an initial shoreline dataset. The definition used for coastline includes jetties with a closure line from endpoint to endpoint. The coastline will be coincident with hydrologic unit boundaries from the National Hydrologic Dataset once those are rectified. Future updates will take place as feature representations are refined to higher accuracy.

Once the theme has been created, it is the responsibility of the state data steward to ensure that the theme remains current. It is the responsibility of district data stewards and GIS coordinators to keep the state data steward apprised of improvements to the GIS source data and to assist with updates. Proposed changes will be provided to the state data steward who will coordinate with the appropriate interagency data steward(s) for approval of the change. Changes may also originate from outside of OR/WA BLM and it is the responsibility of the state data steward to oversee these changes. Finally, it is the responsibility of the state data steward to notify the district data stewards and GIS coordinators when there is an update.

3.3 Update Frequency and Archival Protocols

The unit of processing for updating the Ocean theme is the BLM State. Editors at the OR/WA State Office will initiate transactions by "checking-out" the Ocean theme features. They will then add, delete, or modify the features prior to "check-in".

Updates to Ocean should be very infrequent because there is no ongoing data collection effort related to coastline or island perimeters. Changes are discouraged because of the need for interagency approval and the significant impact on planning boundaries.

It is also the responsibility of the data steward to ensure that any database external to the Corporate GIS remains current. There are no known databases associated with Ocean, but if the coastline was used in a planning area boundary and the coastline arcs are modified, a plan amendment may be required to document a change in acres.

Data is archived annually at the end of the fiscal year.

3.4 Statewide Monitoring

The state data steward, in conjunction with the GIS technical lead and district data stewards, are responsible for reviewing the Ocean theme across the state at least once per year. An interagency review is preferred. Coincidence of Ocean arcs with dependent themes (see Spatial Entity Characteristics section) is also checked.

4 Ocean 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 Ocean Feature Dataset

4.1.1 OCEAN_POLY Feature Class (Ocean Polygons)

For domain and default values, see Section 7, **Attribute Characteristics and Definition** in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
ISLAND_NAME	String	50		No	
VERSION_NAME	String	50	InitialLoad	Yes *	

* Values automatically generated

4.1.2 OCEAN_ARC Feature Class (Ocean Lines)

For domain and default values, see Section 7, **Attribute Characteristics and Definition** in this document.

Attribute Name	Data Type	Length	Default Value	Required	Domain
SHORELINE	String	50		No	dom_SHORELINE
COORD_SRC	String	7	UNK	Yes	dom_COORD_SRC
SOURCE_LYR	String	15		Yes	
ACCURACY_FT	Short Integer			No	
ORGANIZATION	String	15		No	dom_ORGANIZATION
VERSION_NAME	String	50	InitialLoad	Yes *	

* Values automatically generated

5 Projection and Spatial Extent

All feature classes and feature datasets are in Geographic, NAD83. Units are decimal degrees. Spatial extent (area of coverage) is the coastline for Oregon and Washington, extending into British Columbia and California and an arbitrary distance well past the 3-mile coastal waters boundary. See the metadata for this data set for more precise description of the extent.

6 Spatial Entity Characteristics

- Ocean Polygons (OCEAN_POLY)
  - Description: Instance of Resources Water Ocean group.
  - Geometry: Polygons that form a continuous "wall-to-wall" cover with no gaps or overlaps.
  - Topology: Yes. OCEAN_POLY lines are coincident with OCEAN_ARC lines and together make the feature dataset, Ocean.
  - Integration Requirements: Polygon features are used with Administrative Unit boundaries to create publication layers.
- Ocean Lines (OCEAN_ARC)
  - Description: Instance of Resources Water Ocean group.
  - Geometry: Simple, non-overlapping lines are the split between endpoints as needed.
  - Topology: Yes. OCEAN_POLY lines are coincident with OCEAN_ARC lines and together make the feature dataset, Ocean.
  - Integration Requirements: Arcs must remain coincident with other GIS themes as indicated by COORD_SRC (for example with HU when COORD_SRC is SOURCEL and SOURCE_LYR is HU) and with Boundary group themes that have arc segments defined by ocean coastline or islands.

7 Attribute Characteristics and Definition (In alphabetical order)

7.1 ACCURACY_FT

Geodatabase Name	ACCURACY_FT
BLM Structured Name	Accuracy_Feet_Measure
Inheritance	Inherited from entity POLITICAL ADMIN SMA LINE
Alias Name	None
Feature Class Use/Entity Table	OCEAN_ARC
Definition	How close, in feet, the spatial GIS depiction is to the actual location on the ground. There are several factors to consider in GIS error: scale and accuracy of map-based sources, accuracy of Global Positioning System (GPS) equipment, and the skill level of the data manipulators. A value of "0" indicates no entry was made. This is the correct value when the COORD_SRC is another GIS theme (Digital Line Graph, Cadastral National Spatial Data Infrastructure and Digital Elevation Model (DEM)) because the accuracy is determined by that theme. However, if COORD_SRC is MAP (digitized from a paper map) or GPS, a value of "0" indicates a missing value that should be filled in either with a non-zero number or "-1." A value of "-1" indicates that the accuracy is unknown, and no reliable estimate can be made.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 3 (for high accuracy GPS), 40 (best possible for United States Geological Survey (USGS) 24K topo map), 200
Data Type	Short Integer

7.2 COORD_SRC

Geodatabase Name	COORD_SRC
BLM Structured Name	Coordinate_Source_Code
Inheritance	Inherited from POLITICAL ADMIN SMA LINE
Alias Name	None
Feature Class Use/Entity Table	OCEAN_ARC
Definition	The actual source of the GIS coordinates for the polylines. If the line is copied from another theme, and already has COORD_SRC, it should be reviewed and may need to be changed for use in this dataset.
Required/Optional	Required
Domain (Valid Values)	dom_COORD_SRC
Data Type	String (7)

7.3 ISLAND_NAME

Geodatabase Name	ISLAND_NAME
BLM Structured Name	Island_Name
Inheritance	Not Inherited
Alias Name	None
Feature Class Use/Entity Table	OCEAN_POLY
Definition	The official name of the island, as listed in the U.S. Geographic Names Information System (GNIS) or the British Columbia GNIS (BCGNIS). If the island is not named, fill with a null value and if the polygon represents the ocean fill with "Pacific Ocean."
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: "Bowen Island", "Tunnel Island"
Data Type	String (50)

7.4 ORGANIZATION

Geodatabase Name	ORGANIZATION
BLM Structured Name	Organization_Code
Inheritance	Not Inherited
Alias Name	None
Feature Class Use/Entity Table	OCEAN_ARC
Definition	The name of the organization that supplied the spatial feature.
Required/Optional	Optional
Domain (Valid Values)	dom_ORGANIZATION
Data Type	String (15)

7.5 SHORELINE

Geodatabase Name	SHORELINE
BLM Structured Name	Shoreline_Type
Inheritance	Not Inherited
Alias Name	None
Feature Class Use/Entity Table	OCEAN_ARC
Definition	The type of shoreline for cartographic representation.
Required/Optional	Optional
Domain (Valid Values)	dom_SHORELINE
Data Type	String (50)

7.6 SOURCE_LYR

Geodatabase Name	SOURCE_LYR
BLM Structured Name	Source_Layer_Name
Inheritance	Not Inherited
Alias Name	None
Feature Class Use/Entity Table	OCEAN_ARC
Definition	The name of the feature class from which features are duplicated. Required if COORD_SRC is SOURCEL. Otherwise, field is blank.
Required/Optional	Optional
Domain (Valid Values)	dom_SHORELINE
Data Type	String (15)

7.7 VERSION_NAME

Geodatabase Name	VERSION_NAME
BLM Structured Name	Geodatabase_Version_Text
Inheritance	Inherited from entity ODF
Alias Name	None
Feature Class Use/Entity Table	OCEAN_POLY, OCEAN_ARC
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: ehiebenthal.OCEAN-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)

8 Layer Files (Publication Views)

8.1 General

Master corporate feature classes/datasets maintained in the edit database (currently ORSOEDIT) are "published" to the user database (currently ORSOVCTR) 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 (ORSOEDIT) data whenever necessary.

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.

8.2 Specific to This Dataset

The Ocean polygons are intersected with Administrative Unit (ADMU) boundaries to create those portions occurring on land only. Please see the data standard for ADMU for details on the layer files and publication feature classes that Ocean is a component.

9 Editing Procedures

9.1 Managing Overlap (General Guidance)

"Overlap" means there are potentially more than one feature in the same feature class that occupies the same space ("stacked" polygons). Depending on the query, acres will be double-counted.

In this discussion, an area entity may consist of more than one polygon, and a line entity may consist of more than one arc. They would have multiple records in the spatial table (with identical attributes). Multi-part features are not allowed. Multi-part features are easily created inadvertently and not always easy to identify. If they are not consciously and consistently avoided, feature classes will end up with a mixture of single and multi-part features. Multi-part features can be more difficult to edit, query, and select, along with impacting overall performance.

Overlap is only allowed in the ODF in limited and controlled scenarios. In each case, the "cause" of the overlap (the attribute changes that "kick off" a new feature which may overlap an existing feature) is carefully defined and controlled. In other words, in feature classes that permit overlap for a change in spatial extent, there is always a new feature created which may overlap an existing feature, but in addition there are certain attribute(s) that will result in a new feature even if there is no spatial change. The feature classes (and the one feature dataset) that allow overlap, and the attributes that lead to a new, possibly overlapping feature, are described below.

9.1.1 Overlapping Polygons where polygons are part of a POLY/ARC feature dataset.

Topology rules apply only to the POLY/ARC relationship (Polylines in the POLY feature class covered by arcs in the ARC feature class and vice versa; Arcs must not have dangles, intersect, self-overlap or overlap adjacent arcs). The AVY_PLAN dataset allows any number of plans or projects to overlap; a new PLANID creates a new polygon. For all other POLY/ARC feature datasets, overlap is only allowed if there is a dataset for proposed entities, for example proposed ACEC (ACEC_P POLY/ARC dataset) or wilderness (WLD_P POLY/ARC dataset).

9.1.2 Overlapping Polygons where polygons are a stand-alone feature class.

- No topology rules.
- Species Occurrence Group: These are distinct sites defined by species and time. A different species creates a new polygon which may overlap another site in whole or part. A change in time (new visit date) will create a new polygon if it is desired that the old spatial extent and date is retained (as historic). Additionally, for wildlife, a different season/type of use (e.g., winter range vs. spring breeding) will create new polygon that may overlap others. Examples: WEEDS_POLY, GB_FLORA_SITE.
- Survey Group: Within each feature class a new survey is created only for a new date. This group might also include proposed surveys in separate feature classes. Examples: GB_SURVEY, Archeological Survey (CULT_SURV).
- Treatment Activity Group: Within each feature class (BURN, HARV, MECH, CHEM, BIO, REVEG, PROT), an overlapping treatment area is created only for a new date, and sometimes for a different method (if it is not possible to SPLIT the treatment area by method and it is important to capture more than one method applied to the same area on the same day). This group also includes proposed treatments which could overlap existing treatments and have additional overlap created by different treatment alternatives
- Recreation Site Polygons (RECSITE_POLY): An overlapping site polygon is created only for different name, type, or development level.
- Land Status Encumbrances Group: A new, possibly overlapping polygon is created for a new casefile number even if it is the same area. Examples: easement/ROW areas (ESMTROW_POLY) and land acquisitions/disposals (ACQ_DSP_POLY).

9.1.3 Overlapping Arcs where arcs are a stand-alone feature class.

- No topology rules.

- Examples: easement/ROW lines (ESMTROW_ARC) a new, possibly overlapping arc is created for a new casefile number; structures (STRCT_ARC) a new, possibly overlapping arc is created for a different name, type, RIPS number or construction date.

9.1.4 Overlapping Points.

Generally, these are allowed and do not cause a problem since points have no spatial extent. However, it is easy to inadvertently create more than one point making it important to search for and delete duplicates.

9.2 POLY/ARC TOPOLOGY (BOUNDARY GROUP DATASETS)

A poly/arc feature dataset means there is a polygon feature class plus an arc feature class that represents the perimeter of the polygon, and which must be kept coincident with the polyline. This requires advanced topological editing skills and in the ODF these poly/arc pair datasets are limited to the "Boundary" group of themes. Recommended order of capture and maintenance for poly/arc datasets:

- Acquire annotated boundary maps or other sources defining the perimeters of the polygons.
- Create a line feature class with lines copied in from other sources. Fill in COORD_SRC, DEF_FEATURE and ACCURACY_FT as each set of lines is brought in. For planning designation boundary datasets start with the arcs for the planning area boundary.
- Clean up the lines:
    - Split and snap the line endpoints as needed.
    - Where there are duplicate lines, retain the line from the most accurate source.
    - Snap vertices between endpoints to the correct source.
    - Delete extra vertices or vertices too close together, especially at ends of lines.
    - Ensure that the lines are complete, with no overlap and no gaps.
    - Construct polygons from the full set of lines. Check for gaps or extra polygons (small slivers) and go back to step 3 if there is additional cleanup needed to the polygons.

9.3 Editing Quality Control

Duplicate features. Checking for undesired duplicates is critical. Polygons or arcs that are 100% duplicate are easily found by searching for identical attributes along with identical Shape_Area and/or Shape_Length. Searching for partially overlapping arcs or polygons is harder, and each case must be inspected to determine if the overlap is desired or not.

To avoid overlapping polygons on the same area, polygons from different input themes are incorporated with the Union spatial overlay tool, not copied.

Union rather than Intersect is used to prevent unintended data loss.

Gap and overlap slivers. These can be hard to find if there are no topology rules. A temporary map topology can be created to find overlap slivers. Gap slivers can be found by constructing polygons from all arcs and checking polygons with very small area.

Buffer and dissolve considerations. Where polygons are created with the buffer tool, the correct option must be selected. The default option is "None," which means overlap will be retained. Sometimes the overlap should be dissolved, and the option changed to "All." Lines resulting from buffer have vertices too close together, especially around the end curves. They should be generalized to thin the vertices. If the dissolve tool is used on polygons or arcs, the "Create multipart features" should be unchecked.

GPS considerations. GPS linework is often messy and should always be checked and cleaned up, as necessary. Often vertices need to be thinned (generalize) especially at line ends. Multi-part polygons are sometimes inadvertently created when GPS files with vertices too close together or crossing lines or spikes are brought into ArcGIS. Tiny, unwanted polygons are created but are "hidden" because they are in a multi-part.

Be careful when merging lines. Multi-part lines will be created if there are tiny unintentional (unknown) gaps and it can be difficult to find these unless the multi-parts are exploded.

Null geometry. Check any features that have 0 or very small Shape_Area or Shape_Length. If a feature has 0 geometry and you cannot zoom to it, it is probably an inadvertently created "Null" feature and should be deleted. Very small features may also be unintended, resulting from messy line work.

Check tolerances. In general, set Cluster Tolerance as small as possible. This is 0.000000009 Degree (0.000007 degree is approximately 1 meter).

Snapping considerations. Where line segments with different COORD_SRC meet, the most accurate or important (in terms of legal boundary representation) are kept unaltered, and other lines snapped to them. In general, the hierarchy of importance is PLSS (CadNSDI points/lines) first, with DLG or SOURCEL next, then DEM, and MAP last. When snapping to the data indicated in COORD_SRC (as opposed to duplicating with copy/paste), be sure there are the same number of vertices in the target, and source theme arcs. When the DEF_FEATURE is "SUBDIVISION," snap the line segment to PLSS points, and make sure there are the same number of vertices in the line as PLSS points.

Check that all date fields contain valid dates in YYYYMMDD, YYYYMM or 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.

9.4 Vertical Integration

In the ODF, the need for vertical integration is confined to, and characteristic of, the "Boundaries" group of themes. Boundaries polygons have perimeters that are defined by other features and are *required* to stay that way. Activities and Resources polygon perimeters are "self-defining." For example, a road, ownership, or watershed line might be used to build a prescribed burn unit, but the unit perimeter is *defined* by the actual burned area.

Boundaries polylines (arcs) have attributes DEF_FEATURE and COORD_SRC which provide the information needed for vertical integration. When the GIS feature class indicated by COORD_SRC changes, the arc might need to be re-snapped.

Many boundaries are defined largely by legal land lines and therefore should be snapped to Cadastral NSDI PLSS Points. Theoretically, whenever PLSS Points are updated, all polylines with COORD_SRC = "CADNSDI" (or "GCD") should be re-snapped, but not all themes have the same need or priority. Sub-groups of ODF Boundaries provide a prioritization with the "Land Status" group being the highest priority, followed by the "Political and Administrative" group then the "Special Management Area" group.

Vertical Integration to updated legal land lines is accomplished simply by re-snapping vertices to PLSS Points and is not difficult if the polylines have vertices that coincide with PLSS points. Datasets can be updated independently of each other and partially, as time permits.

When arcs are copied from one boundary dataset to another, DEF_FEATURE may need to be changed. For example, a Resource Area Boundary (RAB) polyline might be defined as "SUBDIVISION", but when it is copied to Plan Area Boundary (PLANBDY) the plan boundary is defined by Resource Area and DEF_FEATURE should be changed to "BLM_ADMIN". It is important that boundary lines copied from other themes NOT be merged, even though the attributes are all the same. The splits in the original source theme should be retained to retain exact coincidence and facilitate future updates.

9.5 Theme Specific Guidance

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

10 Abbreviations and Acronyms

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

Table 2 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
FOIVEG	Forest Operations Inventory
GIS	Geographic 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
POLY	GIS polygon feature
PUB	Publication
RMP	Resource Management Plan
ODF	Oregon Data Framework
OR/WA	Oregon/Washington BLM Administrative State
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_COORD_SRC

Coordinate Source Code. The source of the geographic coordinates- lines, points, polygons.

Code	Description
CADNSDI	CADNSDI - Coordinates from or snapped to the CadNSDI dataset. CADNSDI is the cadastral national spatial data infrastructure publication data set for rectangular and non-rectangular public land survey system (PLSS) data.
CFF	CFF - Lines duplicated or buffered from Cartographic Feature Files (USFS)
DEM	DEM - Digital Elevation Model (30 m or better accuracy) used for creation of contours
DIS	DIS - Lines generated to connect discontinuous features
DLG	DLG - Lines duplicated or buffered from (24K scale accuracy) USGS Digital Line Graphs
DOQ	DOQ - Screen digitized linework over digital orthophotography backdrop (DOQ, NAIP, OSIP, or others)
DRG	DRG - Screen digitized linework over Digital Raster Graphic backdrop
GCD	GCD - Lines snapped to Geographic Coordinate Database Points
GPS	GPS - Lines obtained from a Global Positioning System device
IMG	IMG - Linework derived from interpretation of satellite or other non-photographic imagery
LiDAR	LiDAR - LiDAR points, lines, or polygons generated through interpretation or analysis. Features containing points, lines, or polygons generated through interpretation or analysis of LiDAR point clouds, LiDAR-derived surfaces, and photos.
MAP	MAP - Digitized coordinates from hardcopy map or onto a map backdrop
MTP	MTP - Lines duplicated from Digital Master Title Plat
SOURCEL	SOURCEL - Coordinates duplicated from a BLM GIS source layer.
SOURCEX	SOURCEX - Source Layer from non-BLM GIS
SRV	SRV - Survey methods were used to create the linework (e.g., COGO)
TIGER	TIGER - Tiger Data
TRS	TRS - Coordinates only given as a legal description (township, range, section)
UNK	UNK - Unknown coordinate source
WOD	WOD - WODDB Photogrammetric

A.2 dom_ORGANIZATION

Organization Code. Names or organizations that are the source of the data. Includes non-BLM organizations. This table only includes a subset of the domain that applies to this dataset.

Code	Description
BLM_OR_OSO	Oregon State Office, BLM

Code	Description
ST_WA_DNR	Department of Natural Resources, State of Washington

A.3 dom_SHORELINE

Shoreline Code. The type of shoreline for cartographic representation. Codes are sorted in logical order.

Code	Description
CANADA MAINLAND	Shoreline of the Canadian mainland
U.S. MAINLAND	Shoreline of the U.S. mainland
CANADA LARGE ISLAND	Shorelines of Canadian large islands
CANADA SMALL ISLAND	Shorelines of Canadian small islands
U.S. LARGE ISLAND	Shorelines of U.S. large islands
U.S. SMALL ISLAND	Shorelines of U.S. small islands