Riparian, Wetland and Aquatic Locations

DATA STANDARD REPORT

May 18, 2010

Version 1.1

United States Department of Interior
Bureau of Land Management
National Operations Center
Division of Resource Services
Denver Federal Center
Denver, Colorado 80225

Purpose of Data Standard Report

The Data Standard Report is the necessary document for a new or revised National Data Standard. DOI Data standards process requires certain pieces of information to be documented for a data standard to be valid. The Data Standard Report is the tool BLM uses to accomplish this documentation. The completed Report is distributed for review and comment on the content of the standard. The comments are gathered and resolutions are developed through working with the appropriate data stewards, commenters and other Subject Matter Experts. More iterations can occur depending on comments and complexity of the data standard. Once all comments are resolved, the data standard report is then finalized.

Table of Contents

INTRODUCTION

Description of Standard

A riparian, wetland and aquatic location is either a site (lentic) or a further segmentation of a reach (lotic). These are defined using other tabular or geospatial information such as geomorphic, hydrographic and/or soil.

This data standard can be used in conjunction with other data such as Proper Functioning Condition (PFC) assessments, fish habitat and water quality measurements. This data standard does not include this data.

Affected Groups

Riparian PFC Assessors, Water Quality, Hydrologists, Ecologist, Rangeland Management Specialist, Fisheries and Wildlife Biologists

Sponsor

Rob Roudabush, WO220 Division Chief

DATA STEWARD / CONTACT INFORMATION

Office	Role	Name	Contact Information
WO-220	Riparian National Business Data Steward	Gordon Toevs	Gordon_Toevs@blm.gov 202-912-7202
WO-210	GIS Contact	Bob Bewley	Bob_Bewley@blm.gov 202 452-5111
WO-220	Fisheries National Business Data Steward	Tom Mendenhall	tom_mendenhall@blm.gov 202-912-7238
WO-280	Hydrologist/Water Rights Specialist	Michael Eberle	Michael_Eberle@blm.gov 202-912-7139

DATA SET CHARACTERISTICS

Overall Security

a.	**Identify Security Level**
	Public
b.	**Privacy Information**
	The name of the BLM person who identified the reach or site or photograph. This data will be kept locally, but not at the national level. If it is a contractor, the contracting company name will be identified, not the individual's name.

Data Privileges

Who has create, read, update, and/or delete privileges?
GIS Specialists, and Range Management, Wildlife Biologists, Ecologists, Riparian, Fisheries, and Hydrology specialists will have create, read, update and delete privileges and those as defined by each state as to who has these rights.

Data Collection & Maintenance Protocols

a.	**Location Accuracy Requirements**
	The accuracy of the location is to be within + or – 5 meters or 16 feet.
b.	**Data Content Accuracy Requirements**
	The accuracy (correctness) of the data that is expected is at least 90%.
c.	**Collection & Input Protocols:**
	Use protocols as defined in the National Hydrography Dataset (NHD, US Fish and Wildlife Services "A System for Mapping Riparian Areas in the Western United States" and FGDC Document Number FGDC-STD-015-2009, "Wetland Mapping Standard."
d.	**Update Procedures:**
	Each field office will track all changes in delineations of polygons and arcs, and input any changes into the geodatabase at a minimum of once per year. The field office data will be replicated to the national server at a minimum, on an annual basis, by the end of October for each year.

Data Quality

a.	**Transaction level data quality:**
	State or Field Office Data Stewards with the support of GIS specialists, are responsible to review the data for quality upon data entry or at pre-determined intervals.
b.	**Monitoring level data quality:**
	The national representative at the National Operations Center will review data only upon receipt to the national geodatabase.

Relationship To Other Standards

The following information can be used to help define reaches and sites

- Geomorphic and National Hydrography Dataset (NHD, USGS),
- Watershed Boundary dataset (NHD-WBD, NRCS),
- National Wetlands Inventory (NWI, FWS),
- Soil Data (NRCS),
- Stream Classifications (Rosgen or Montgomery/Buffington),
- Grazing Allotments and Pastures (BLM data standard)

The following data sets are used to help determine jurisdictional responsibility for reach or site:

- Jurisdictional/Administrative Boundaries (BLM)
- Land Ownserhip

Reach and Site data is used for:

- Riparian Properly Functioning Condition (PFC) Assessments (BLM, proposed data standard)
- Water Quality and and Aquatic/Terrestrial Species Habitat

Land Health Reporting (BLM, data standard in progress)

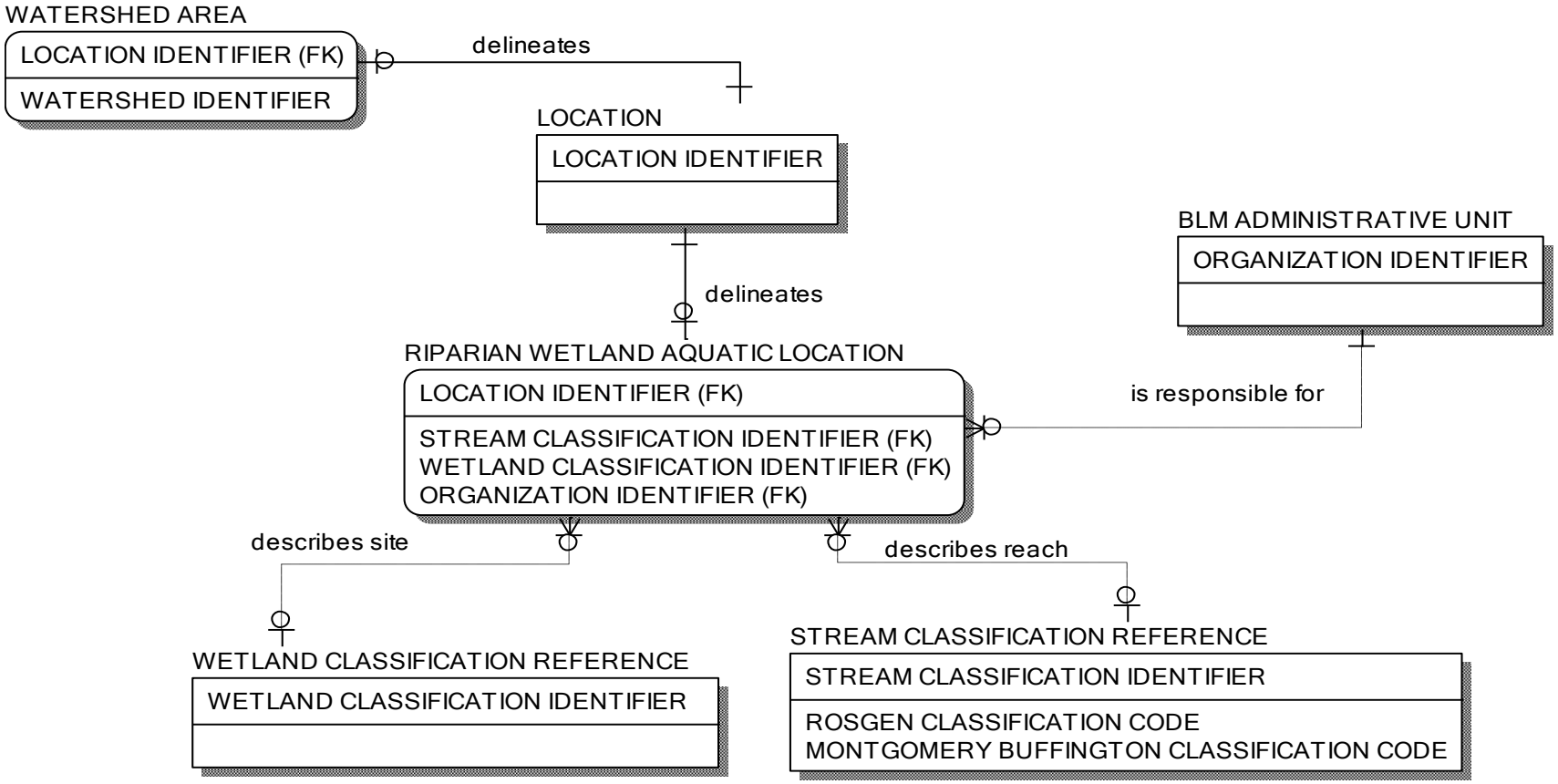
State/Agency Defined Reaches for Water Quality

DATA CHARACTERISTICS

Each data standard is to be supported by a data model which includes entities and relationships between entities. The logical data model with its associated data dictionary is included in Appendix B.

Riparian, Wetland and Aquatic Location Conceptual Data Model

Aquatic Resource Locations will cover either lotic (reaches) or lentic (sites) areas. Lentic areas are classified based on the National Wetlands Inventory (NWI) classifications. The lotic areas are classified based on National Hydrography Dataset (NHD) and either the Montgomery-Buffington or Rosgen stream classifications.



Legend: See Appendix C

Riparian Wetland and Aquatic Location Data Elements

The following is a list of the data elements and associated metadata relevant to this data standard. Any design considerations for these data elements are included in the implementation guidelines. Naming Conventions can be found in the "Data Administration and Management Handbook" BLM Manual H 1283-1.

RIPARIAN WETLAND AQUATIC LOCATION DRAFT ENTITY

The site or reach segment that was identified through analysis of the area and using other criteria. The land areas and water segments can be delineated into units (lines and polygons) that share a common set of attributes and processes .

Data Element Name	Type	Size	Required?	Attribute Definition	Comments
RIPARIAN WETLAND AQUATIC LOCATION IDENTIFIER			Yes	The designed primary key that will uniquely identify a single occurrence of the entity.	The unique identifier for a reach or site; may be based on NHD.
RIPARIAN WETLAND AQUATIC LOCATION LOCAL IDENTIFIER	character	15	Opt	The identifier that was used locally for the riparian wetland aquatic location.	
RIPARIAN WETLAND AQUATIC LOCATION IDENTIFICATION DATE	date		Yes	The date on which a riparian wetland aquatic location was identified based on analysis of the area and other criteria.	
NHD WATER BODY NAME	character	50	Opt	The name of the water body as designated for National Hydrography.	Only required if based on NHD segment.
RIPARIAN WETLAND AQUATIC LOCAL AQUATIC BODY NAME	character	40	Opt	The name of the local stream, lake, pond, river or other water body.	Could be River, Stream Name, Lake or Pond name
RIPARIAN WETLAND AQUATIC LOCATION ACCESS TEXT	character	400	Opt	The text that describes how a riparian wetland aquatic location can be found and/or accessed.	
RIPARIAN WETLAND AQUATIC LOCATION DETERMINATION TEXT	character	400	Yes	The text that describes how a reach segment or site was determined.	
SEGMENTATION PURPOSE NAME	character	15	Yes	The name of the reason why riparian wetland aquatic location was segmented.	Only value at this time will be "RIPARIAN".
ORGANIZATION IDENTIFIER			Yes	(Use BLM organization codes (FPPS) that has responsibility / manages the area.)	
PERSON or ORGANIZATION NAME			Yes	(This will be the name of the person(s) or organization that identified the location.)	BLM employee or contracting company name.
DATA SOURCE CODE				The code that indicates the source of the data.	See domain document.

Attributes specific to a Riparian Location .

RIPARIAN LOCATION DRAFT ENTITY A riparian wetland aquatic location that is identified as a riparian site or reach segment.					
Data Element Name	**Type**	**Size**	**Required?**	**Attribute Definition**	**Comments**
RIPARIAN LOCATION NONRIPARIAN INDICATOR	character	3	Yes	An indicator that designates if this was determined not to be a riparian area.	"R" if riparian, "NR" if Not Riparian
RIPARIAN LOCATION POTENTIAL REFERENCE CODE	character	10	Yes	A code that indicates if this site or reach can be used as a reference site.	See domain document for list of values
RIPARIAN LOCATION POTENTIAL REFERENCE TEXT	character	400	Opt	The text that provides the rationale for why this reach or site can be used as a reference site.	If the Potential Reference Code = "REF", this is required.

Attributes specific to a reach.

RIPARIAN WETLAND AQUATIC REACH LOCATION DRAFT ENTITY A reach is a linear segment of an NHD unit that can be determined by gradient, vegetation type and land management.					
Data Element Name	**Type**	**Size**	**Required?**	**Attribute Definition**	**Comments**
STREAM CLASSIFICATION IDENTIFIER			Opt	(The stream classification as determined in the office)	See domains, Rosgen or Montgomery Buffington Classification
VERIFIED STREAM CLASSIFICATION IDENTIFIER			Opt	(The stream classification that was determined in the field)	Same domain as above, Field Verified Stream Classification
VERIFIED STREAM CLASSIFICATION RATIONALE TEXT	character	400	Opt	The text that provides the rationale for how the field-verified stream classification was determined.	
RIPARIAN WETLAND AQUATIC NHD FROM POINT RATE	Decimal		Opt	The percentage point where the segment begins within the NHD reach.	Only if NHD used
RIPARIAN WETLAND AQUATIC NHD TO POINT RATE	Decimal		Opt	The percentage point where the segment ends within the NHD reach.	Only if NHD used

Attributes specific to a site.

RIPARIAN WETLAND AQUATIC SITE LOCATION DRAFT ENTITY A site is an area with a soil condition which is wet enough, and with adequate duration to establish and maintain riparian vegetation.					
Data Element Name	**Type**	**Size**	**Required?**	**Attribute Definition**	**Comments**
WETLAND CLASSIFICATION CODE	character	10	Opt	The code that is assigned to a wetland based on its characteristics.	See domain document

Attributes specific to one or more points of interest, these are optional points linked to a reach or site.

LOCATION INTEREST POINT DRAFT ENTITY A point of interest that is a characteristic of the location.					
Data Element Name	**Type**	**Size**	**Required?**	**Attribute Definition**	**Comments**
INTEREST POINT TYPE CODE	character	10	Yes	A code that is related to the name of a characteristic that is of interest to the location.	See domain document for values
LOCATION INTEREST POINT DATE	date		Yes	The date on which a point of interest was identified for the location.	
LOCATION IDENTIFIER			Yes	The designed primary key that will uniquely identify a single occurrence of the entity.	This will be a point along the segment or near a site, linked to the location.

Attributes specific to a photograph taken about the reach or site or point of interest. One photo can be related to a location for more than one reason.

IMAGE DRAFT ENTITY An image is created by light falling on a light-sensitive surface, using some type of imaging equipment.					
Data Element Name	**Type**	**Size**	**Required?**	**Attribute Definition**	**Comments**
LOCATION IDENTIFIER			Yes	The designed primary key that will uniquely identify a single occurrence of the entity.	This will be a point along the segment or near a site, linked to the location or point of interest.
IMAGE TAKEN TIME	time		Opt		The time at which an image is taken.
IMAGE IDENTIFIER	integer		Yes	The designed primary key that will uniquely identify a single occurrence of the entity.	
IMAGE TAKEN DATE	date		Yes	The date on which the image was taken.	
PERSON or ORGANIZATION NAME			Yes	(the name of the BLM individual or contracting company).	Who took the picture. May use "UNKNOWN"
RELATED LOCATION REASON NAME			Yes	The name that indicates the reason why two locations are related.	See Domain Document (Photo Purpose.) The same photo can be used for more than 1 purpose.
(PHOTO DIRECTION CODE)				(The direction from which the image was taken.	See Domain Document

BUSINESS RULES

Rules under which data is used and modified (See H 1283-1, Data Administration and Management Handbook, Chapter 8.

1. Identifying Reaches

The National Hydrography Dataset (NHD) can be used to determine reaches. For those reaches, the Hydrography Unit Identifier will be included in the identifier of the reach. If a water body is found that is not in the NHD data set, a new reach is identified and the Data Source Code is "NEW".	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Manual Process

2. Identifying Sites

The FGDC National Wetlands Inventory Data Standard (FWS) can be used to determine Sites. All new Sites, including non-flowing springs, will be portrayed as polygons, the extent of the polygon will be determined by the field office. Non-flowing springs, i.e., seeps are lentic features and should be captured as lentic sites (polygon features). Features that should be lentic, but have a channel (s) and flow because they are impaired, should be captured as lentic (Polygon) features if their potential is lentic. Springs that were identified as points in historical data will be captured in a historical point feature class with the estimated acreage.	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Manual Process

3. Hydrography Event Management Tool

The Hydrography Event Management (HEM) Tool may be used to document the 'blue line'. NHD is the authoritative source for Hydrography data. Updates to the Hydrography information will be provided to the USGS,	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Computer Application

4. Cross Jurisdictional Boundaries

If a reach or site crosses field office boundaries, the reach will be split between the 2 offices and the state office(s) will determine who is responsible for the site. Non-BLM lands will not be included in the implementation of this data standard.	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Manual

5. Reference Site

A site chosen to obtain reference data useful for identifying potential condition and for establishing initial desired condition objectives for a similar riparian reach or site being assessed. Reference sites are most likely to be minimally or least disturbed by human activities.	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Manual

OTHER MATERIAL

Other supporting material that aids in the understanding or use of the data standard
Riparian Area Data Standard Proposal

DOMAINS SPECIFIC TO THIS DATA STANDARD

To see Domains specific to Riparian, Wetland, Aquatic Locations, please see the file named 4_Riparian_Wetland_Aqautic_Locations_Domains.doc

APPENDIX A: DOI DATA CATEGORIES

Data Subject Areas and Information classes are categories of information that support a DOI line of business. According to the DOI Data Standardization Handbook, one or more categories must be identified for a data standard. Any changes to these categories and their definitions would be made through the DOI Data Advisory Committee (DAC).

Subject Area: A collection of data classifications representing broad categories of information that support a line of business.
Information Class: A logical grouping of entities that are subcategories of the subject areas.

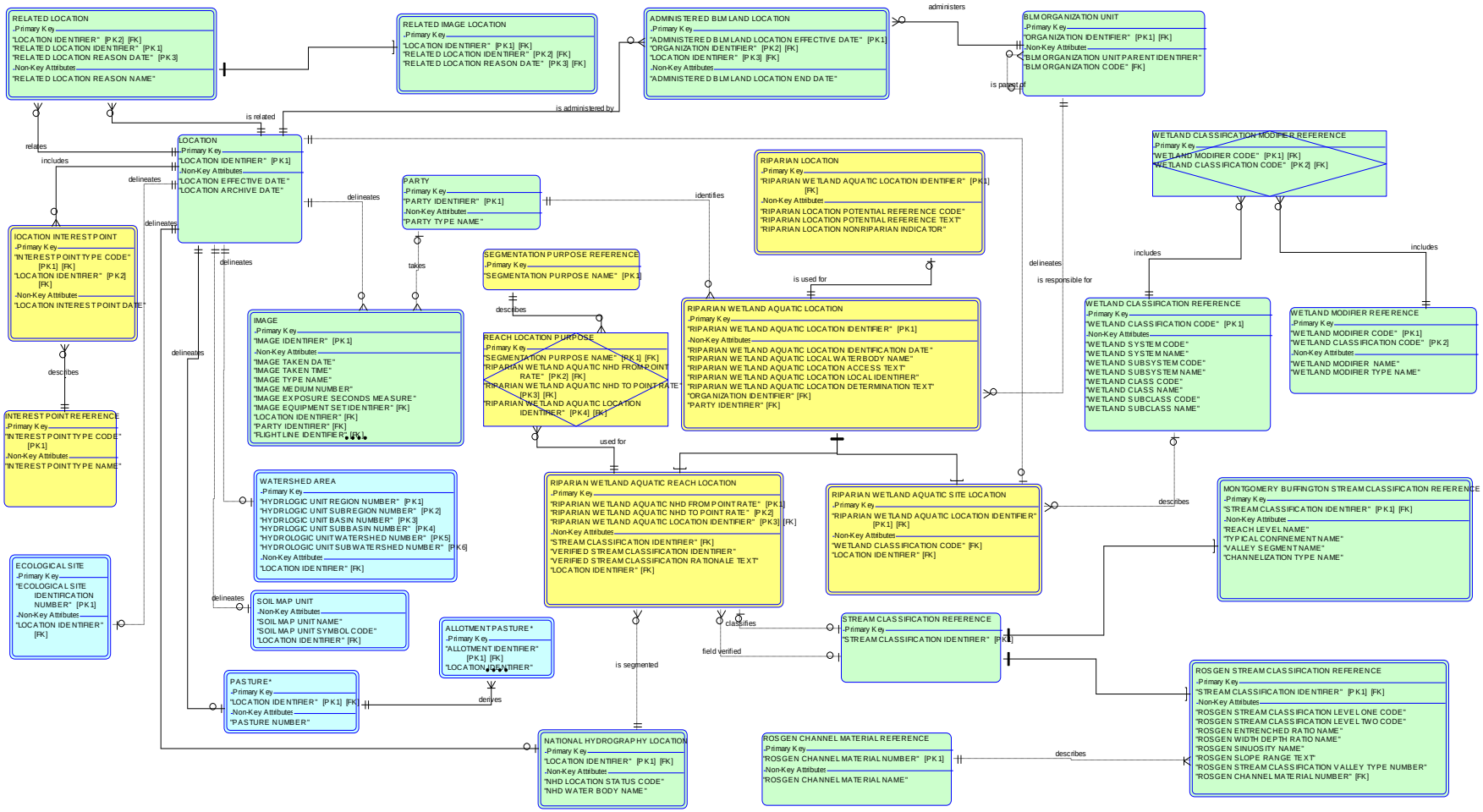
Only the Subject Areas and Information Classes that are appropriate to this data standard are included in this listing. For the full list of Subject Areas and their Information Classes please see http://web.blm.gov/data_mgt/guidelines/DOI_SubjectArea_InfoClass.doc

This standard proposal covers the following DOI Subject Areas and Information Classes:

Geospatial and Geography (Subject Area)	*Information about data that includes a terrestrial coordinate system or geographic reference. This includes geospatial data sets, mapping, imagery, coverages, elevations, and features.*
• Location (Information Class)	*Information about an identifiable place of existence. A geographic or spatial identification assigned to a region or feature based on a specific coordinate system, or by other precise information such as a street address, a postal address, a descriptive location, a legal land definition, etc. Location data types primarily consist of Vector data.*
Natural and Cultural Resource (Subject Area)	*Information about the natural and ecological resources, cultural resources, cultural resources, archaeological, and paleontology resources, and national heritage resources of the nation.*
• Water Resource (Information Class)	*Information about the Nation's water resources, and the partnerships developed to nourish a healthy environment and sustain a vibrant economy.*
• Biological Resource (Information Class)	*Information about genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.*

APPENDIX B: LOGICAL DATA MODEL

The entities in green are not part of this standard and do not need to be reviewed. They are provided to show context and provide relationships to other data only. To improve viewing, zoom to 200%; to print a larger version, use the 11"x17" model on the same webpage as this document.



Legend: See Appendix C

Data Dictionary

This lists entities and attributes (in alphabetical order, not hierarchical or chronological order) in the logical data model shown above.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
RIPARIAN WETLAND AQUATIC REACH LOCATION							DRAFT ENTITY
	A reach is a linear segment of an NHD unit that can be determined by gradient, vegetation type and land management.						
		STREAM CLASSIFICATION IDENTIFIER	integer		Opt	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		STREAM CLASSIFICATION IDENTIFIER	integer		Yes		The designed primary key that will uniquely identify a single occurrence of the entity.
		RIPARIAN WETLAND AQUATIC NHD FROM POINT RATE	decimal		Yes	PK	The percentage point where the segment begins within the NHD reach.
		RIPARIAN WETLAND AQUATIC NHD TO POINT RATE	decimal		Yes	PK	The percentage point where the segment ends within the NHD reach.
		RIPARIAN WETLAND AQUATIC LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		VERIFIED STREAM CLASSIFICATION RATIONALE TEXT	character	400	Yes		The text that provides the rationale for how the field-verified stream classification was determined.
REACH LOCATION PURPOSE							DRAFT ENTITY
	The reason why a portion of the NHD reach was identified.						
		SEGMENTATION PURPOSE NAME	character	15	Yes	PK	The name of the reason why a riparian wetland aquatic location was segmented.
		RIPARIAN WETLAND AQUATIC NHD FROM POINT RATE	decimal		Yes	PK	The percentage point where the segment begins within the NHD reach.
		RIPARIAN WETLAND AQUATIC NHD TO POINT RATE	decimal		Yes	PK	The percentage point where the segment ends within the NHD reach.
		RIPARIAN WETLAND AQUATIC LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
RIPARIAN WETLAND AQUATIC LOCATION							DRAFT ENTITY
	The site or reach segment that was identified through analysis of the area and using other criteria. The land areas and water segments can be delineated into units (lines and polygons) that share a common set of attributes and processes.						
		RIPARIAN WETLAND AQUATIC LOCATION IDENTIFICATION DATE	date		Yes		The date on which a riparian wetland aquatic location was identified based on analysis of the area and other criteria.
		RIPARIAN WETLAND AQUATIC LOCAL WATERBODY NAME	character	40	Opt		The name of the local stream, lake, pond, river or other water body.
		RIPARIAN WETLAND AQUATIC LOCATION ACCESS TEXT	character	400	Opt		The text that describes how a riparian wetland aquatic location can be found and/or accessed.
		RIPARIAN WETLAND AQUATIC LOCATION LOCAL IDENTIFIER	character	15	Opt		The identifier that was used locally for the riparian wetland aquatic resource.
		RIPARIAN WETLAND AQUATIC LOCATION DETERMINATION TEXT	character	400	Yes		The text that describes how a reach segment or site was determined.
		ORGANIZATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		RIPARIAN WETLAND AQUATIC LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		PARTY IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
RIPARIAN WETLAND AQUATIC SITE LOCATION							DRAFT ENTITY
	A site is an area with a soil condition which is wet enough, and with adequate duration to establish and maintain riparian vegetation..						
		WETLAND CLASSIFICATION CODE	character	10	Opt	FK	The code that is assigned to a wetland based on its characteristics.
		RIPARIAN WETLAND AQUATIC LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
INTEREST POINT REFERENCE							DRAFT ENTITY
	The domain of values for a characteristic that is of interest to the location.						
		INTEREST POINT TYPE CODE	character	10	Yes	PK	A code that is related to the name of a characteristic that is of interest to the location.
		INTEREST POINT TYPE NAME	character	40	Yes		The name of a characteristic that is of interest to the location.
LOCATION INTEREST POINT							DRAFT ENTITY
	A point of interest that is a characteristic of the location.						
		RESOURCE LOCATION INTEREST POINT DATE	date		Yes		The date on which a point of interest was identified for the location.
		LOCATION IDENTIFIER	integer		Yes	PK FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		INTEREST POINT TYPE CODE	character	10	Yes	PK FK	A code that is related to the name of a characteristic that is of interest to the resource location.
SEGMENTATION PURPOSE REFERENCE							DRAFT ENTITY
	The domain of values for the reason why a riparian wetland aquatic location was segmented into smaller portions.						
		SEGMENTATION PURPOSE NAME	character	15	Yes	PK	The name of the reason why a riparian wetland aquatic resource location was segmented.

The following entities shown on the logical data model are not part of this standard but are here for informational purposes.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
ADMINISTERED BLM LAND LOCATION							DRAFT ENTITY
	The area of land that is administered by BLM administrative unit. Not all administrative units have jurisdiction over land.						
		ADMINISTERED BLM LAND LOCATION END DATE	date		Yes		The date on which an area of BLM Land is no longer the responsibility of a BLM administrative unit.
		ADMINISTERED BLM LAND LOCATION EFFECTIVE DATE	date		Yes	PK	The date on which an area of BLM Land is becomes the responsibility of a BLM administrative unit.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		ORGANIZATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
ALLOTMENT PASTURE*							APPROVED ENTITY: BLM
The association of which pastures belong to a given allotment. Business Rule: if the internal boundaries of pastures change, the allotment does not change. If the allotment size changes for administrative reasons, a new allotment number is created and the old allotment becomes inactive.							
		PASTURE NAME	character	50	Yes		A pasture name is given to an area that is a subset area of an allotment. Some allotments may have multiple pastures where a name would be appropriate while some allotments may have no pastures delineated in which case the default value should be 'NA'.
		ALLOTMENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
BLM ADMINISTRATIVE UNIT							DRAFT ENTITY
An organizational unit within BLM, where some units have distinct jurisdictional responsibility for all activities in a geographic area. The formal grouping of positions into designated units and the assignment of functions and responsibilities to those units.							
		ORGANIZATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		PARENT BLM ORGANIZATION IDENTIFIER	character	10	Opt		The identifier for the administrative unit that has responsibility for other units. For example, the Administrative Office is responsible for the Administrative State Office, which is responsible for District Offices. District Offices are responsible for Field Offices.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		BLM ORGANIZATION CODE	character	10	Yes	FK	The code that indicates the formal grouping of positions at into designated units and the assignment of functions and responsibilities to those units based on the DOI FBMS structure.
		BLM ADMINISTRATIVE UNIT END DATE	date		Yes		The date on which a BLM Administrative unit ends.
		BLM ADMINISTRATIVE UNIT EFFECTIVE DATE	date		Yes		The date on which a BLM Administrative unit begins.
		LAND RESPONSIBILITY CODE	character	10	Yes	FK	A code that indicates if the BLM administrative unit is responsible for an area of BLM land.
		BLM ADMINISTRATIVE UNIT LEVEL NUMBER	number	2	Yes		A number that indicates the level of the organization for the BLM administrative unit.
		BLM UNIT TYPE NAME	character	20	Yes	FK	A name that indicates the type of BLM organizational unit.
ECOLOGICAL SITE							CONCEPTUAL ENTITY
		A functional edaphic unit which is a distinctive kind of land with specific soil and physical characteristics that differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation, and in its ability to respond similarly to management actions and natural disturbances.					
		ECOLOGICAL SITE IDENTIFICATION NUMBER	character	10	Yes	PK	A number that consists of a site type-either R for rangeland or F for forestland-followed by 3 digits and a character for the Major Land Resource Area (MLRA), 1 character for the Land Resource Unit (LRU), a 3 digit unique number assigned by a state, and a 2 character state postal code. An example is R035XF603AZ.
		LOCATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
IMAGE							DRAFT ENTITY
		An image is created by light falling on a light-sensitive surface, using some type of imaging equipment.					
		IMAGE TYPE NAME	character	10	Yes		The name that indicates the category of image including aerial, ground, underwater.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		IMAGE TAKEN TIME	time		Yes		The time at which an image is taken.
		IMAGE IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		IMAGE TAKEN DATE	date		Yes		The date on which the image was taken.
		IMAGE MEDIUM FRAME NUMBER	number	5	Yes		The number for a frame on the image medium. Photos are numbered consecutively to the last frame.
		IMAGE EXPOSURE SECONDS MEASURE	decimal		Yes		The measure, in seconds for how long an image frame is exposed.
		INDIVIDUAL IDENTIFIER	integer		Opt	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		IMAGE MEDIUM IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		IMAGEIC EQUIPMENT SET IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
LOCATION							DRAFT ENTITY
A defined place that requires a way to locate it by some means. Note: Entities linked to Location have the potential for a geospatial aspect.							
		LOCATION ARCHIVE DATE	date		Opt		The date which is the calendar year, month, and day when the position of the Location is considered no longer valid but has historical value.
		LOCATION EFFECTIVE DATE	date		Yes		The date which is the calendar year, month, and day when the position of the Location was produced.
		LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
MONTGOMERY BUFFINGTON STREAM CLASSIFICATION REFERENCE							CONCEPTUAL ENTITY
The Montgomery-Bufflington classification provides a geomorphic, process-oriented method of identifying valley segments and stream reaches; based on hierarchies of topographic and fluvial characteristics. 1993 TFW document. Report TFW-SI-110-93-002							

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		STREAM CLASSIFICATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		REACH LEVEL NAME	character	12	Yes		The name of the distinct morphology that may be identified based on sediment transport characteristics and channel roughness characteristics.
		CHANNELIZATION TYPE NAME	character	15	Opt		The name that indicates if the colluvial reach is channelized or unchannelized.
		TYPICAL CONFINEMENT NAME	character	15	Opt		The name that indicates if the water is unconfined or confined, being controlled by woody debris.
		VALLEY SEGMENT NAME	character	10	Yes		The name that distinguishes the transport process and general relationship between transport capacity and sediment supply.
NATIONAL HYDROGRAPHY LOCATION CONCEPTUAL ENTITY A location within the National Hydrography Dataset (NHD) which is a comprehensive set of digital spatial data that encodes information about naturally occurring and constructed bodies of water, paths through which water flows, and related entities.							
		NHD LOCATION STATUS CODE	character	10	Yes		A code that indicates if the location is identified in National Hydrography or is a potential location.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		NHD WATER BODY NAME	character	50	Yes		The name of the water body as designated for National Hydrography.
PARTY DRAFT ENTITY General information (the name) about the individuals and organizations (agencies, companies, etc.) which interact with the BLM.							
		PARTY IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		PARTY TYPE NAME	character	12	Yes		The name that categorizes whether this is a subtype of individual or organization.
PASTURE* APPROVED ENTITY: BLM A pasture is an area that is a subset area of an allotment. Allotments may have one or more pastures.							

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		PASTURE NUMBER	character	2	Yes		The number that identifies a specific pasture within one Allotment. Note: numbering usually starts at 1 for each allotment.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
RELATED IMAGE LOCATION							CONCEPTUAL ENTITY
An image or photograph location that is linked to another location.							
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		RELATED LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity. The first location that has a relationship with another location.
		RELATED LOCATION REASON DATE	date		Yes	PK, FK	The date when two locations became related for the reason stated.
RELATED LOCATION							DRAFT ENTITY
A valid relationship between two LOCATIONs for a specific reason.							
		RELATED LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity. The first location that has a relationship with another location.
		RELATED LOCATION REASON NAME	character	40	Yes		The name that indicates the reason why two locations are related. Possible values: multi-part polygon, polygon lines, overlapping polygons.
		RELATED LOCATION REASON DATE	date		Yes	PK	The date when two locations became related for the reason stated.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
ROSGEN CHANNEL MATERIAL REFERENCE							CONCEPTUAL ENTITY
The domain of values for the types of channel materials that are present for Rosgen Stream Classifications.							

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		ROSGEN CHANNEL MATERIAL NAME	character	10	Yes		The name of the channel material that is represented by Rosgen Channel Material Name.
		ROSGEN CHANNEL MATERIAL NUMBER	character	1	Yes	PK	The number that indicates the major type of material present in the channel.
ROSGEN STREAM CLASSIFICATION REFERENCE							CONCEPTUAL ENTITY
	The Rosgen classification system is a widely-used method for classifying streams and rivers based on common patterns of channel morphology.						
		ROSGEN STREAM CLASSIFICATION VALLEY TYPE NUMBER	character	5	Yes		A number which designates the valley type which is used as primary determinant of stream form.
		ROSGEN STREAM CLASSIFICATION LEVEL ONE CODE	character	1	Yes		The code which identifies the level one classification based on the stream characteristics that result from relief, landform, and valley morphology;
		STREAM CLASSIFICATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		ROSGEN WIDTH DEPTH RATIO NAME	character	10	Yes		
		ROSGEN ENTRENCHED RATIO NAME	character	10	Yes		
		ROSGEN SLOPE RANGE TEXT	character	10	Yes		
		ROSGEN SINUOSITY NAME	character	10	Yes		
		ROSGEN CHANNEL MATERIAL NUMBER	character	1	Yes	FK	The number that indicates the major type of material present in the channel.
		ROSGEN STREAM CLASSIFICATION LEVEL TWO CODE	character	1	Yes		The code which provides more detailed morphological description of stream type from field measurements of channel form and bed composition.
SOIL MAP UNIT							CONCEPTUAL ENTITY

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
	A soil map unit is a collection of areas defined and named the same in terms of their soil components or miscellaneous areas or both. Each soil map unit differs in some respect from all others in a soil survey area and each soil map unit has a symbol that uniquely identifies the soil map unit on a soil map. Each individual area, point, or line so identified on the soil map is a delineation. Soil map units in adjoining soil survey areas are comparable especially within the same major land resource area.						
		SOIL MAP UNIT NAME	character	40	Yes		The name that accurately and uniquely identifies the unit within the legend used. Two or more soil phase terms are commonly part of most soil map unit names. A phase term conveys important connotations about the map unit and distinguishes it from other map units. The Natural Resources Conservation Service soil survey project office names map units according to the procedures in the National Soil Survey Handbook and the descriptions in the Soil Survey Manual.
		SOIL MAP UNIT SYMBOL CODE	character	6	Yes		Soil survey map unit symbols combine alpha, alpha-numeric, or numeric characters. Symbols should be as short as possible, but may contain up to six characters, including special characters like hyphens.
		LOCATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
WATERSHED AREA	A watershed is the area of land where all of the water drains to the same place – this includes water that flows on the surface and water located underground. Watersheds come in all shapes and sizes. It is a land feature that can be identified by tracing a line along the highest elevations between two areas on a map, often a ridge.						CONCEPTUAL ENTITY
		HYDRLOGIC UNIT BASIN NUMBER	character	2	Yes	PK	The number associated with the third level of the hydrologic unit hierarchy, basins are nested within or are sometimes equivalent to sub-regions. Basins were formerly named accounting units.
		HYDRLOGIC UNIT SUBBASIN NUMBER	character	2	Yes	PK	The number associated with the fourth level of the hydrologic unit hierarchy, subdivisions of basins. Sub-basins were formerly named cataloging unit. The average size is about 450,000 acres.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		HYDRLOGIC UNIT SUBREGION NUMBER	character	2	Yes	PK	The number associated with the second level of the hydrologic unit hierarchy divides the 21 regions into 221 subregions. A subregion includes the area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage area.
		HYDRLOGIC UNIT REGION NUMBER	character	2	Yes	PK	The number associated with the first level of the hydrologic unit hierarchy, a region which is the largest drainage basins, containing either the drainage area of a major river or the combined drainage areas of several rivers. These 21 geographic areas contain either the drainage area of a major river, such as the Missouri region, or the combined drainage areas of a series of rivers, such as the Texas-Gulf region, which includes a number of rivers draining into the Gulf of Mexico.
		HYDROLOGIC UNIT WATERSHED NUMBER	character	2	Yes	PK	The number associated with the fifth level of classification in the hierarchy of hydrologic units, nested within subbasins.
		HYDROLOGIC UNIT SUBWATERSHED NUMBER	character	2	Yes	PK	of the hydrologic unit hierarchy, subdivisions within watersheds. Subwatershed is the sixth level (12 digit) in the hydrologic unit hierarchy. Subwatersheds generally range in size from 10,000 to 40,000 acres.
		LOCATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
WETLAND CLASSIFICATION MODIFIER REFERENCE The modifiers that may apply to a wetland classification to further define the water body.							CONCEPTUAL ENTITY
		WETLAND MODIFIER CODE	character	1	Yes	PK, FK	The code that indicates the wetland classification modifier being applied to the water body.
		WETLAND CLASSIFICATION CODE	character	10	Yes	PK, FK	The code that is assigned to a wetland based on its characteristics.

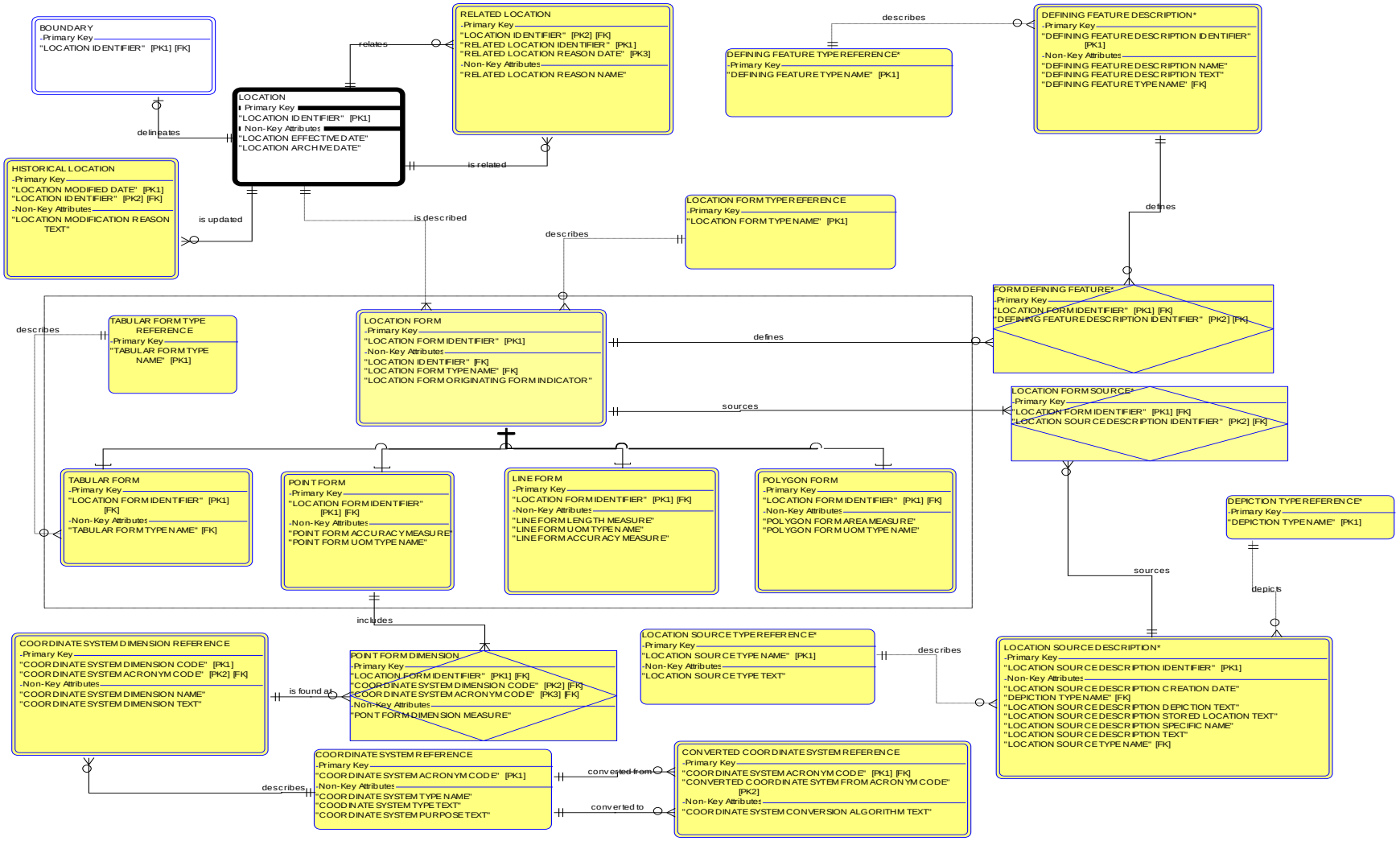
Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
WETLAND CLASSIFICATION REFERENCE							CONCEPTUAL ENTITY
	The wetland classification system as developed by US Fish and Wildlife in 1979. Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.						
		WETLAND SUBSYSTEM NAME	character	15	Yes		The name that indicates the subsystem within the wetland system to which the water body belongs.
		WETLAND SYSTEM NAME	character	10	Yes		The name that indicates the wetland system to which the water body belongs.
		WETLAND CLASS NAME	character	20	Yes		The name that indicates the class of the water body within a specific wetland subsystem.
		WETLAND CLASSIFICATION CODE	character	10	Yes	PK	The code that is assigned to a wetland based on its characteristics.
		WETLAND SUBCLASS CODE	character	1	Yes		The code that indicates that subclass of the water body within a specific wetland class.
		WETLAND CLASS CODE	character	2	Yes		The code that indicates the class of the water body within a specific wetland subsystem.
		WETLAND SUBCLASS NAME	character	20	Yes		The name that indicates that subclass of the water body within a specific wetland class.
		WETLAND SYSTEM CODE	character	1	Yes		The code that indicates the wetland system to which the water body belongs.
		WETLAND SUBSYSTEM CODE	character	1	Yes		The code that indicates the subsystem within the wetland system to which the water body belongs.
WETLAND MODIFIER REFERENCE							CONCEPTUAL ENTITY
	Modifiers that more adequately describe the wetland and deepwater habitats, one or more of the water regime, chemistry, soil or special modifiers may be applied at the class or lower level of the hierarchy.						
		WETLAND MODIFIER CODE	character	1	Yes	PK	The code that indicates the wetland classification modifier being applied to the water body.

Entity Name	Entity Definition	Attribute Name	Type	Size	Required?	Key*	Attribute Definition
		WETLAND MODIFIER NAME	character	20	Yes		The name that indicates the wetland classification modifier being applied to the water body.
		WETLAND MODIFIER TYPE NAME	character	10	Yes		The name that designates the type of modifier being applied to the water body. valid values include: regime, chemistry, soil and special.
		WETLAND CLASSIFICATION CODE	character	10	Yes	PK	

***Key** **(PK: Primary Key) (FK: Foreign Key which is PK of related entity) (PK, FK: Foreign Key part of PK)**

Location Logical Data Model

*Data Model that provides information on standard attributes for feature level metadata. It is **not part of this data standard** and does not need to be reviewed for the data standard, merely provides more information and relationships.*



Legend: See Appendix C

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
BOUNDARY	The edge of a location that demarks the change from one location to another location.						DRAFT ENTITY
		LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
CONVERTED COORDINATE SYSTEM REFERENCE	The domain of values for the algorithm used to convert from one coordinate system to another.						DRAFT ENTITY
		COORDINATE SYSTEM CONVERSION ALGORITHM TEXT	character	60	Yes		The text that contains the algorithm used to convert from one coordinate system to another.
		COORDINATE SYSTEM ACRONYM CODE	character	10	Yes	PK, FK	The code that is considered the acronym for the coordinate system type.
		CONVERTED COORDINATE SYSTEM FROM ACRONYM CODE	character	10	Yes	PK	The code for the coordinate system that is being converted from (to another coordinate system).
COORDINATE SYSTEM DIMENSION REFERENCE	The dimensions that are part of given coordinate system type.						DRAFT ENTITY
		COORDINATE SYSTEM DIMENSION TEXT	character	100	Yes		The text that further describes the dimension for a given coordinate system type.
		COORDINATE SYSTEM DIMENSION CODE	character	10	Yes	PK	The code that is used to designate a dimension for a coordinate system type.
		COORDINATE SYSTEM DIMENSION NAME	character	10	Yes		The name associated with a code that is used to designate a dimension for a coordinate system type.
		COORDINATE SYSTEM ACRONYM CODE	character	10	Yes	PK, FK	The code that is considered the acronym for the coordinate system type.
COORDINATE SYSTEM REFERENCE	A reference framework consisting of a set of points, lines and/or surfaces; including a set of rules used to define the positions of points in space in either two or three dimensions.						DRAFT ENTITY
		COODINATE SYSTEM TYPE TEXT	character	100	Yes		The text that describes the particular coordinate system type.
		COORDINATE SYSTEM TYPE NAME	character	40	Yes		The name given to a particular coordinate system type.
		COORDINATE SYSTEM ACRONYM CODE	character	10	Yes	PK	The code that is considered the acronym for the coordinate system type.
		COORDINATE SYSTEM PURPOSE TEXT	character	100	Yes		The text that describes the purpose or purposes of a given coordinate system type.
DEFINING FEATURE DESCRIPTION*	The values associated with second level of detail that can be used to define / create the location, based on the Defining Feature Type Name. There is not a finite set of values for this.						APPROVED ENTITY: BLM
		DEFINING FEATURE DESCRIPTION NAME	character	40	Opt		The name that identifies a more specific description of the feature from which the arcs are derived to create polygon boundaries. This information further describes the physical or mapping feature that makes up the polygon boundary.

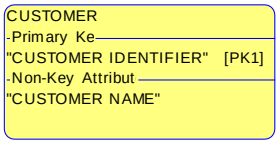
Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		DEFINING FEATURE DESCRIPTION TEXT	character	200	Yes		The text that provides further details on the Defining Feature Description.
		DEFINING FEATURE DESCRIPTION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		DEFINING FEATURE TYPE NAME	character	30	Yes		The name that identifies the high-level category for the actual physical or mapping characteristics (features) from which the arcs are derived.
DEFINING FEATURE TYPE REFERENCE* A domain for the description of the characteristic (feature) constructed from a geographic feature that was used to create the location boundary.							APPROVED ENTITY: BLM
		DEFINING FEATURE TYPE NAME	character	30	Yes	PK	The name that identifies the high-level category for the actual physical or mapping characteristics (features) from which the arcs are derived.
DEPICTION TYPE REFERENCE* The domain of values for the way a location is depicted either in scale or resolution.							APPROVED ENTITY: BLM
		DEPICTION TYPE NAME	character	10	Yes	PK	The name that designates the detail with which the location is depicted, either in resolution or scale.
FORM DEFINING FEATURE* The defining features associated with a specific location form.							APPROVED ENTITY: BLM
		LOCATION FORM IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		DEFINING FEATURE DESCRIPTION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
HISTORICAL LOCATION The date and reason why a location's information has changed. Business Rule: this is for administrative changes, not necessarily for corrections to data.							DRAFT ENTITY
		LOCATION MODIFICATION REASON TEXT	character	200	Yes		The text which is the explanation for why data about a location has changed for administrative reasons.
		LOCATION MODIFIED DATE	date		Yes	PK	The date which is the calendar year, month, and day when the position of the Location was last modified.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
LINE FORM A series of connected, co-ordinate points forming a simple linear feature. It is used to represent rivers, and roads, or to form the boundary of polygons. (GIS dictionary) Note: In our current physical environment this includes all types of straight and curved lines including ones that intersection.							DRAFT ENTITY
		LOCATION FORM IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LINE FORM LENGTH MEASURE	decimal		Yes		The measure of the length of the line described in the Line Form UOM Type Name.
		LINE FORM UOM TYPE NAME	character	20	Yes		The domain value associated with the Unit of Measure used for the Line Form Length Measure.
		LINE FORM ACCURACY MEASURE	decimal		Yes		The measure that describes how close, in Line Form UOM Type Name the actual location is to the spatial depiction.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
LOCATION	A defined place that requires a way to locate it by some means. Note: Entities linked to Location have the potential for a geospatial aspect.						DRAFT ENTITY
		LOCATION ARCHIVE DATE	date		Opt		The date which is the calendar year, month, and day when the position of the Location is considered no longer valid but has historical value.
		LOCATION EFFECTIVE DATE	date		Yes		The date which is the calendar year, month, and day when the position of the Location was produced.
		LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
LOCATION FORM	The form in which the location is described such as the description, shape, or appearance of the location.						DRAFT ENTITY
		LOCATION FORM IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION FORM TYPE NAME	character	10	Yes	FK	The type of form in which the location is described or appears. point, line, polygon, tabular
		LOCATION FORM ORIGINATING FORM INDICATOR	character	3	Yes		The value that indicates if this is the way in which the location was first drawn/described. (yes, no)
LOCATION FORM SOURCE*	The actual origin of the location sources that were used to create a specific location form.						APPROVED ENTITY: BLM
		LOCATION FORM IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION SOURCE DESCRIPTION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
LOCATION FORM TYPE REFERENCE	The domain for the type of form in which the location is described or appears whether in words, numbers of features (point line, polygon). This has been called feature in geospatial communities.						DRAFT ENTITY
		LOCATION FORM TYPE NAME	character	10	Yes	PK	The type of form in which the location is described or appears. point, line, polygon, tabular
LOCATION SOURCE DESCRIPTION*	The values that provide a second level of detail about the location (coordinate) source origin. Note: there is not a finite set of these values.						APPROVED ENTITY: BLM
		LOCATION SOURCE DESCRIPTION CREATION DATE	date		Yes		The date on which the location source was originally created. This could just be a year (ccyy).
		LOCATION SOURCE DESCRIPTION STORED LOCATION TEXT	character	100	Yes		The text that provides the additional description of where the coordinate source can be found
		LOCATION SOURCE DESCRIPTION DEPICTION TEXT	character	20	Yes		The text that describes the actual resolution or scale in which the location is depicted. Examples for Resolution: 1 meter, 10 feet. Examples for Scale: 1 in 10,000, 1 in 100. This does not have a domain or list of valid values.
		DEPICTION TYPE NAME	character	10	Yes	FK	The name that designates the detail with which the location is depicted, either in resolution or scale.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		LOCATION SOURCE DESCRIPTION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LOCATION SOURCE DESCRIPTION TEXT	character	200	Yes		The text that provides further details on the Location (coordinate) Source Description.
		LOCATION SOURCE DESCRIPTION SPECIFIC NAME	character	40	Opt		The name that identifies a more specific description of the location (coordinate source).
		LOCATION SOURCE TYPE NAME	character	40	Yes	FK	The name that identifies the general category for the origin of the location coordinate, representing a compilation of the state adopted source codes. The domain contains those values that would most likely be used in the determination of source codes for the data set.
LOCATION SOURCE TYPE REFERENCE* The domain for the types of sources for the original location description / form.							APPROVED ENTITY: BLM
		LOCATION SOURCE TYPE NAME	character	40	Yes	PK	The name that identifies the general category for the origin of the location coordinate, representing a compilation of the state adopted source codes. The domain contains those values that would most likely be used in the determination of source codes for the data set.
		LOCATION SOURCE TYPE TEXT	character	100	Yes		The text that describes the Location Source Type.
POINT FORM A zero-dimensional abstraction of an object, with its location specified by a set of coordinates. (GIS dictionary)							DRAFT ENTITY
		LOCATION FORM IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		POINT FORM ACCURACY MEASURE	decimal		Yes		The measure that describes how close the spatial depiction of the point is to the actual location.
		POINT FORM UOM TYPE NAME	character	20	Yes		The name of the domain value associated with the Unit of Measure used for the Point Form Accuracy Measure.
POINT FORM DIMENSION The measure associated with each dimension of a Coordinate System.							DRAFT ENTITY
		PONT FORM DIMENSION MEASURE	decimal		Yes		The measure that is associated with a specific coordinate system dimension.
		LOCATION FORM IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		COORDINATE SYSTEM DIMENSION CODE	character	10	Yes	PK, FK	The code that is used to designate a dimension for a coordinate system type.
		COORDINATE SYSTEM ACRONYM CODE	character	10	Yes	PK, FK	The code that is considered the acronym for the coordinate system type.
POLYGON FORM An area bounded by a closed line. It is used to describe spatial elements, such as administrative and political boundaries and areas of homogeneous land use and soil types. (GIS dictionary). Note: In our physical environment, this includes all types of polygons, including ones that overlap.							DRAFT ENTITY
		LOCATION FORM IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		POLYGON FORM UOM TYPE NAME	character	20	Yes		The name of the domain value associated with the Unit of Measure used for the Polygon Form Length Measure.
		POLYGON FORM AREA MEASURE	decimal		Yes		The area of the polygon described in the Polygon Form UOM Type Name.
RELATED LOCATION A valid relationship between two LOCATIONs for a specific reason.							DRAFT ENTITY
		RELATED LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity. The first location that has a relationship with another location.
		RELATED LOCATION REASON NAME	character	40	Yes		The name that indicates the reason why two locations are related. Possible values: multi-part polygon, polygon lines, overlapping polygons.
		RELATED LOCATION REASON DATE	date		Yes	PK	The date when two locations became related for the reason stated.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
TABULAR FORM Descriptive information about a location, usually alphanumeric. This can be a single name or a combination of attributes that make up an address.							DRAFT ENTITY
		LOCATION FORM IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		TABULAR FORM TYPE NAME	character	20	Yes	FK	The name of the sub-category of the location form type which is true for tabular or alphanumeric descriptions of a location.
TABULAR FORM TYPE REFERENCE The domain for the type of tabular form that is being used to describe the location.							DRAFT ENTITY
		TABULAR FORM TYPE NAME	character	20	Yes	PK	The name of the sub-category of the location form type which is true for tabular or alphanumeric descriptions of a location.
						***Key**	**(PK: Primary Key) (FK: Foreign Key which is PK of related entity) (PK, FK: Foreign Key part of PK)**

APPENDIX C: READING A LOGICAL DATA MODEL

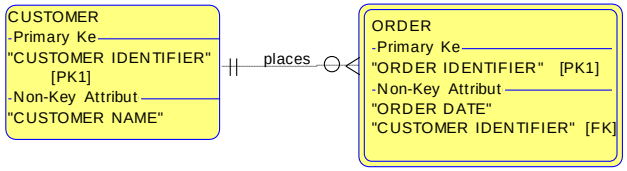


ENTITY

- *The noun or object on something of relevance to the business*
- *Shown as a box, with the name (singular in capitol letters at the top, example below: ORDER)*

ATTRIBUTES

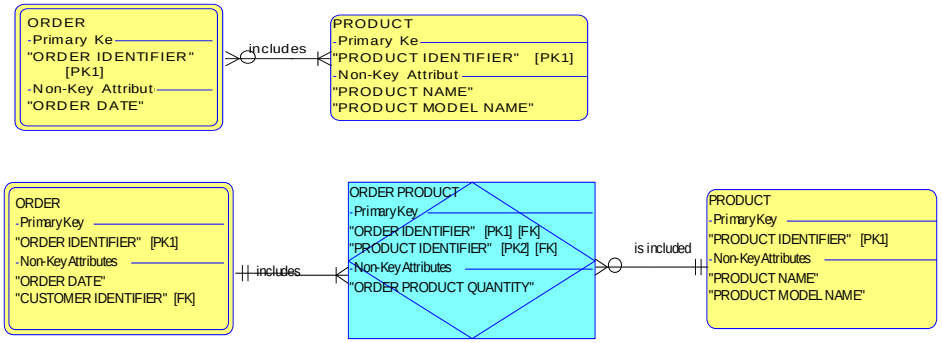
- *The adjective which is the data or information about an entity; describes an entity (ORDER NUMBER, ORDER DATE)*
- *Has **only one** valid value for an occurrence of an entity at any given time The same value of an attribute may describe more than one entity occurrence*
- *PK = Primary Key – uniquely identifies an occurrence of an entity (one customer may have same name as another customer, so CUSTOMER IDENTIFIER is unique for a customer)*
- *FK = Foreign Key – the primary key of the parent entity is a Foreign key in the child entity*
- *The Word Identifier indicates that this will be a designed key, its format is not known, but the modeling tool required a format and size. The actual content and size of the identifier will be determined during design.*



The line includes optionality (minimum occurrences, inner symbol) and cardinality (maximum occurrences, symbol next to entity) | = one 0 = zero < or > = many

RELATIONSHIP

- *The verb which shows an association between entities and represents business rules*
- *Represented by a line between two entities with active verb or verb phase (all small letters)*
- *Reading : Left to right (A CUSTOMER places zero to many ORDERs) and right to left (An ORDER is placed by one and only one CUSTOMER)*
- *Because a Customer can have many Orders, the Customer is considered the Parent Entity and the Order is considered the Child Entity). So the way you read it is normally from the Parent Entity to the Child Entity*



Many to Many:

- *In a logical data model, many to many relationships are resolved. In the example to the left an ORDER includes one to many PRODUCTs and a PRODUCT can be in zero or many ORDERs.*

Associative Entity:

- resolves the many to many
- with the diamond symbol