Vegetation Treatment Area

DATA STANDARD REPORT

August 11, 2010

Version 1.1

United States Department of the 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

This data set will be a warehouse of vegetation treatment areas and associated attribute information for the BLM. Each system that currently maintains vegetation treatments will provide treatment area information on a regular basis to the treatment area data set.

Affected Groups

People who conduct vegetation treatments on BLM-managed land including Invasive Species Treatments, Emergency Stabilization, and Rehabilitation Treatments. Range Improvement Treatments, Fuels Treatments, and/or Forest Treatments

Sponsor

Susan Goodman

DATA STEWARD/CONTACT INFORMATION

Office	Role	Name	Contact Information
OC-534	BLM Business Data Steward (fire)	Susan Goodman	Susan_Goodman@blm.gov 303-236-4242
OC-570	BLM Business Data Steward (forestry)	Tim Bottomley	Tim_Bottomley@blm.gov 202-236-0681
OC-570	BLM Business Data Steward (vegetation)	Sherm Karl	Sherm_Karl@blm.gov 303-236-0166
WO-220	BLM Business Data Steward (range)	Richard Mayberry	Richard_Mayberry@blm.gov 202-452-7750
WO-220	BLM Business Data Steward (invasive weeds)	Gina Ramos	Gina_Ramos@blm.gov 202-452-5084

DATA SET CHARACTERISTICS

Overall Security

a.	**Identify Security Level**
	Public (only completed treatments will be public).
b.	**Privacy Information**
	Not Applicable.

Data Privileges

Who has create, read, update, and/or delete privileges?
Data from BLM systems that contain treatment data will provide data to this data set, this data will be read only. Treatment data that is not contained in BLM systems can be created and updated by GIS Specialists and other personnel as necessary.

Data Collection & Maintenance Protocols

a.	**Location Accuracy Requirements**
	The desired spatial accuracy will be within + or – 40 feet. Spatial Accuracy. Data that comes from the existing systems may not be within desired spatial accuracy; however, spatial accuracy is part of the feature level metadata.
b.	**Data Content Accuracy Requirements**
	Expected data content accuracy will be the same as each of the source systems for the treatment data.
c.	**Collection & Input Protocols**
	This will depend on the source of the data. - Data already captured in the existing systems will be downloaded from that system. - For systems that do not have a spatial component, this data set will be the original source of the area (polygon) data.
d.	**Update Procedures**
	Updates are completed based on the vegetation treatment in the treatment-related systems on a quarterly basis at a minimum. This will include metadata about when systems provided updates to this data set. If data was downloaded from a system, it can only be edited in the original system and will be included in the quarterly updates. If new treatment area data is entered to this data set, it can be modified in this data set.

Data Quality

a.	**Transaction-level data quality**
	The review of data quality will have a main point of contact in Division of Resource Services (DRS, OC534) with the support of a designated advisory team (from each system/program). The review will be completed after updates are completed. The data set will include metadata on how current or complete the data is from each system. The implementation plans will determine how to handle duplicate data and which source is most appropriate for this use.
b.	**Monitoring-level data quality**
	The review will include error reports as appropriate, which will be published as needed. Other procedures, such as auditing will be determined by the designated advisory team.

Relationship to Other Standards

Data Standards:

- Land Health Reporting Standards, Land Use Planning Decision Areas, and Analysis Areas.

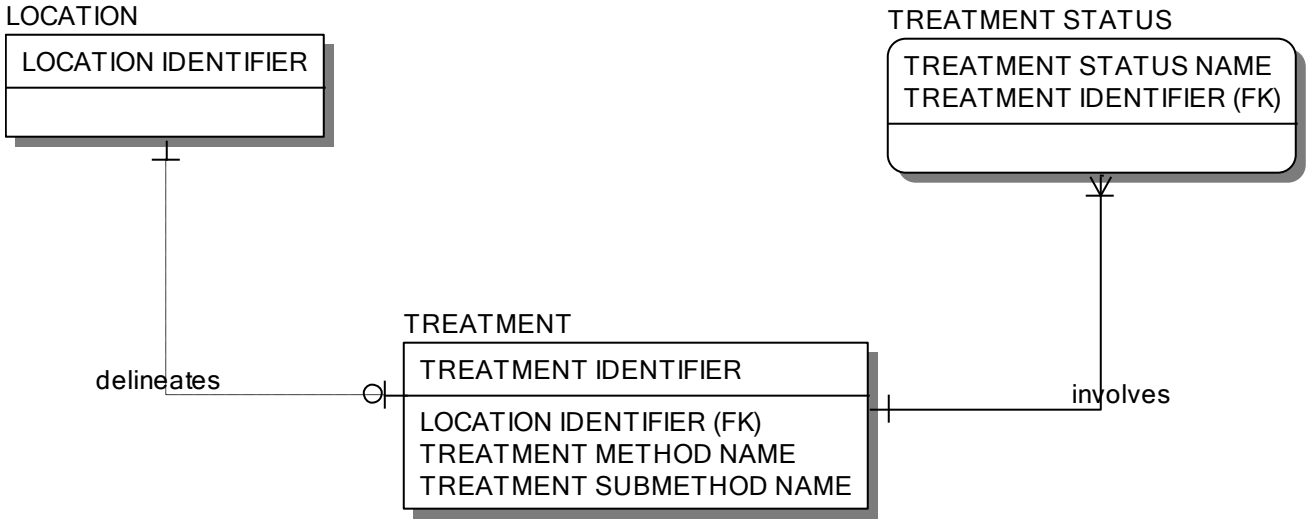
Systems:

- RIPS – Rangeland Improvement Project System (RIPS Project Number)
- NISIMS – National Invasive Species Information Management System (Treatment Id)
- FORVIS – Forest Vegetation Information System (FORVIS Id)
- ESRS – Emergency Stabilization and Rehabilitation (will have a global universal identifier)
- TSIS – Timber Sale Information System
- NFPORS – National Fire Plan Operations and Reporting System
- MICRO*STORMS – Western Oregon's Vegetation and Land Management Treatment Database

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.

Vegetation Treatment Area Conceptual Data Model



Legend: See Appendix C

Vegetation Treatment Area 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.

Data Element Name	Type	Size	Req'd?	Definition	Comments
TREATMENT IDENTIFIER	integer		Yes	A designed primary key that uniquely identifies a treatment in the data set.	This will be a designed key, either a serial (next number) or global id (ESRI) or another method to uniquely identify each occurrence when implemented.
SYSTEM ACRONYM CODE	character	12	Yes	The code for the system where the authoritative source for the treatment data resides.	See related domain document.
SYSTEM CROSSWALK TREATMENT IDENTIFIER	character	21	Yes	Not logical attribute: The identifier that the system uses to uniquely identify an occurrence of a treatment in that system.	NISIMS: Treatment Comp Id (reverse time stamp) FORVIS: char (21) RIPS: integer NFPORS: integer
TREATMENT NAME	character	50	Yes	(A name that is a local name or way to call a specific treatment.)	This can also be considered the Project Name in some systems.
TREATMENT STATUS NAME	character	10	Yes	A name that designates whether the treatment is proposed or completed.	
TREATMENT TYPE NAME	character	15	Yes	The name of the type of treatment that is being used.	See related domain document.
TREATMENT SUBTYPE NAME (not logical attribute)	character	15	Yes	Biological: Biological Treatment Type Name Chemical: Chemical Treatment Type Name Physical: Physical Treatment Type Name Fire: Fire Start Type Name = "prescribed"	See below, appendix B, data dictionary for definitions of the 4 attributes listed which depends on the Treatment Type.
TREATMENT COMPONENT STATUS START DATE	date		Opt	The date the status of the treatment is proposed to start or the treatment is started.	Completed treatments: required if in the source system; Proposed treatments: required, if just the year is known use 0101 for the month and day.
TREATMENT COMPONENT STATUS END DATE	date	No	Opt	The date the status of the treatment is no longer valid or the treatment is completed.	Completed treatments: required Proposed treatments: not required If only the year is known for date prior to implementation of this standard then use 0101 for month and day.
TREATMENT (COMPONENT) COMMENTS TEXT	character	200	Opt	The text that provides additional information or description of the treatment.	Text that provides additional information on a treatment.
BLM Acre Measure	decimal		Yes	**Derived:**Total acres within the treatment area that are BLM acre).	If have in the system, upload, or this data set will provide a way to determine.
POLYGON FORM AREA MEASURE	decimal		Yes	The area of the polygon described in Polygon Form UOM Type Name units.	This will be a calculated attribute.
Feature Level Metadata					Standard set

BUSINESS RULES

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

1. Prescribed Fire Treatments

Only Prescribed Fires will be included in this data set. If a wildfire occurs and can be considered for fire use, it will not be included in this data set.	
Business Rule Source and Description	
Wildfire areas already have a data set, so to eliminate redundancy of boundary information, only prescribed fire treatment areas will be included in this data set.	
Type of Business Rule	Current Implementation
Guideline	Not Applicable

2. Treatment Start and End Dates

After implementation of the data standard, all treatment start and end dates will be required to have a month and day. If an existing treatment does not have the month and day, the default 0101 (January 1st) will be used for the month and day.	
Business Rule Source and Description	
Guidance. Subject Matter Experts agreement	
Type of Business Rule	Current Implementation
Guideline	Not Applicable

3. Proposed and Completed Treatment Dates

If the Treatment Status is 'proposed', only the start date is populated If the Treatment Status is 'completed', the Treatment End Date must be populated and Treatment Start Date is optional.	
Business Rule Source and Description	
Guidance.	
Type of Business Rule	Current Implementation
Guideline	Not Applicable

4. Source System Data

Data from Source Systems cannot be updated except in the source system. If the vegetation treatment area data is provided to the data set by an existing system, it cannot be updated in the geospatial data set. It can only be updated in the source system.

Business Rule Source and Description	
Guidance.	
Type of Business Rule	Current Implementation
Guideline	Not Applicable

5. Treatments Created in this Data Set

A Vegetation Treatment Area that is created in this data set can be edited if it has a proposed status, if it has a completed status, the existing data must be moved to archive. For those systems that do not have a means to create a geospatial feature, this data set can be used to create those features. If the status is proposed, any of the data can be changed. If the status is completed, the existing values must be archived and the new values added. Currently, these systems include RIPS and TSIS.	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Not Applicable

6. Re-Treatments

A new treatment area (polygon) will be created for re-treatments and each method/submethod used for the same area. If an area is a re-treatment, it will be considered a different treatment with a new 'treatment identifier.' The source system can use the same System Crosswalk Treatment Identifier. If more than one method/submethod is used for the same area it will be considered a different treatment with a new 'treatment identifier.'	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Not Applicable

7. Treatment Polygons and Overlaps

If a treatment is a point or line, it will be buffered. Only polygon features will be implemented for the treatment area. If there is a point feature treatment in a source system, the source system will buffer their points to a minimum of 0.1 acre and treated as a polygon. Treatments can overlap.	
Business Rule Source and Description	
Guidance	
Type of Business Rule	Current Implementation
Guideline	Not Applicable

OTHER MATERIAL

Other supporting material that aids in the understanding or use of the data standard
Vegetation Treatment Boundary (Area) Data Standard Proposal

DOMAINS SPECIFIC TO THIS DATA STANDARD

Link to domains specific to this data standard

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).

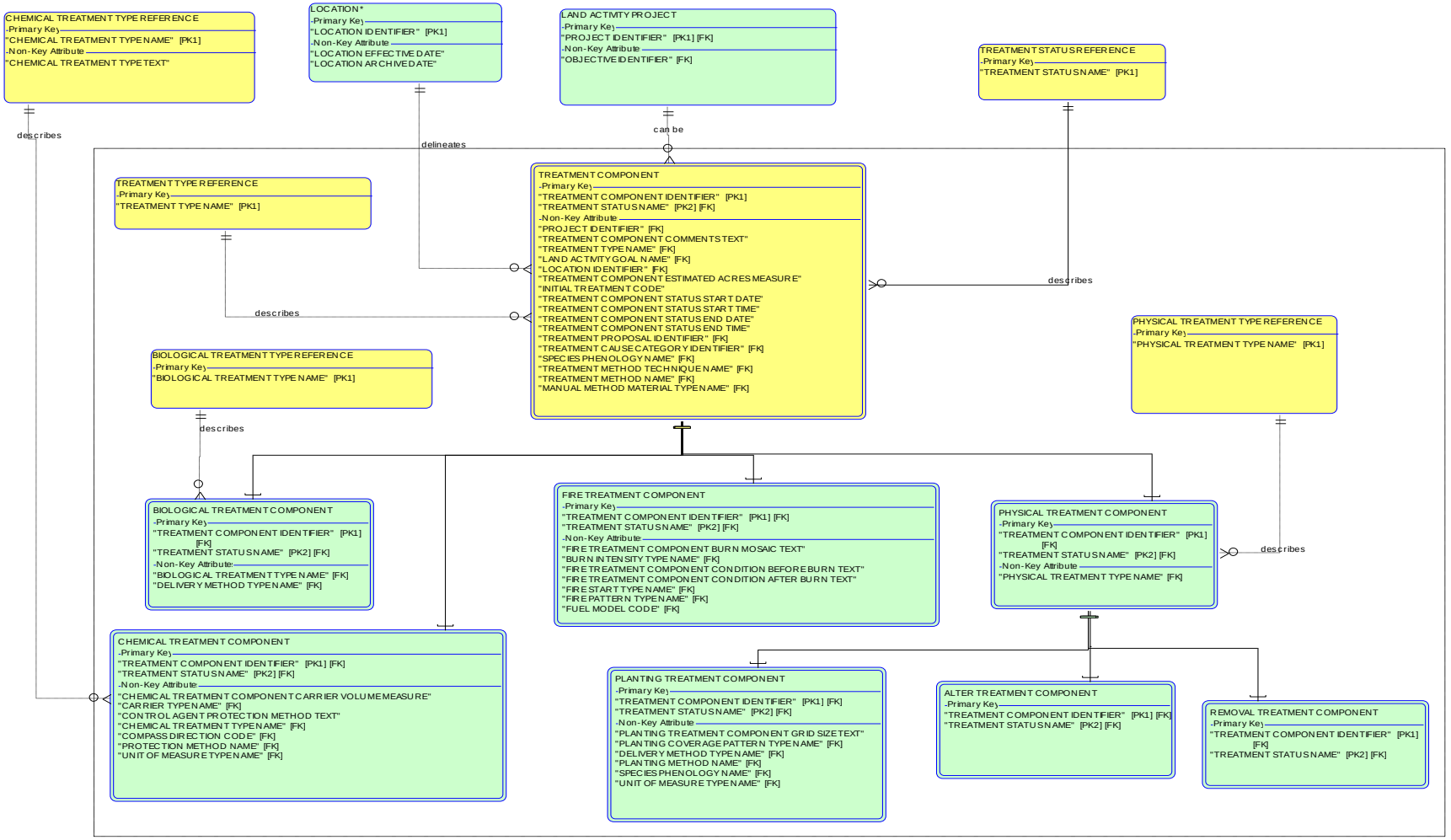
Subject Area: A collection of data classifications representing broad categories of information that support a line of business.
Information Class: A logical grouping of entities that are subcategories of the subject areas.

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 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, coverage's, 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.*
PROTECTION (Subject Area)	*Information about activities that protect something or someone from exposure, injury, damage, or destruction.*
• Habitat Protection (Information Class)	*Information about all activities performed to protect the environment in which an organism or biological population lives and grows.*
RISK MANAGEMENT (Subject Area)	*Information pertaining to the processes of analyzing exposure to risk and determining appropriate measures.*
• Contingency (Information Class)	*Information about the actions required to plan for, respond to, and mitigate damaging events.*
CONTROLS & OVERSIGHT (Subject Area)	*Information about the supervision, oversight, and administrative operations and programs of the DOI and its external partners that ensure compliance with applicable laws and regulations, and the prevention of waste, fraud and abuse. This includes the evaluation of conformance with policy, guidance, standards, and statutory requirements, as well as a means to evaluate the overall quality of products and services.*
• Conservation (Information Class)	*Information about activities devoted to ensuring the preservation of land, water, wildlife, and natural resources, both domestically and internationally. It also includes information about the sustainable stewardship of natural resources on federally owned/controlled lands for commercial use (mineral mining, grazing, forestry, fishing, etc.).*

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 Description	Logical Data Element Name	Type	Size	Required?	Key*	Definition
BIOLOGICAL TREATMENT TYPE REFERENCE	The domain of values for the type of biological treatment being used.						DRAFT ENTITY
		BIOLOGICAL TREATMENT TYPE NAME	character	15	Yes	PK	The name of the specific type used for biological treatments. (classical or non-classical).
CHEMICAL TREATMENT TYPE REFERENCE	The domain of values for the purpose of the chemical control agent usage.						DRAFT ENTITY
		CHEMICAL TREATMENT TYPE NAME	character	15	Yes	PK	The name that designates if a chemical component was used as a pesticide (control, including herbicides) or a fertilizer (promote).
		CHEMICAL TREATMENT TYPE TEXT	character	100	Yes		The text that describes the purpose of how the chemical component was used.
PHYSICAL TREATMENT TYPE REFERENCE	The domain of values for the type of physical treatment being done.						DRAFT ENTITY
		PHYSICAL TREATMENT TYPE NAME	character	15	Yes	PK	The name that indicates whether or not this is a planting, alter or removal.
TREATMENT COMPONENT	A Management Action that controls various aspects of land flora and fauna to meet Management Objectives.						DRAFT ENTITY
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		PROJECT IDENTIFIER	character	12	Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		TREATMENT COMPONENT COMMENTS TEXT	character	200	Opt		The text that provides additional information or description of the treatment.
		TREATMENT TYPE NAME	character	15	Yes	FK	The name of the type of treatment method that is being used.
		LAND ACTIVITY GOAL NAME	character	40	Yes	FK	The name that designates the overall goal for treatment or improvement projects.
		LOCATION IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Required?	Key*	Definition
		TREATMENT COMPONENT ESTIMATED ACRES MEASURE	decimal		Yes		A measure of the estimated number of acres in which a Treatment has been applied. Business Rule: An Infestation treated that is within 40 yards radius of each Plant or the edge of an Infestation rounded up to the nearest acre.
		INITIAL TREATMENT CODE	character	1	Yes		A code that indicates if the treatment was an initial action (I) or a follow-up (F) to an initial action.
		TREATMENT COMPONENT STATUS END TIME	time		Opt		The time the status of the treatment is no longer valid or the treatment is completed, using international time (HH:MM:SS).
		TREATMENT COMPONENT STATUS START TIME	time		Opt		The time the status of the treatment becomes valid or the treatment is actually started, using international time (HH:MM:SS).
		TREATMENT COMPONENT STATUS START DATE	date		Yes		The date the status of the treatment is proposed to start or the treatment is started.
		TREATMENT COMPONENT STATUS END DATE	date		Opt		The date the status of the treatment is no longer valid or the treatment is completed.
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.
		TREATMENT PROPOSAL IDENTIFIER	integer		Opt	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		TREATMENT CAUSE CATEGORY IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		SPECIES PHENOLOGY NAME	character	20	Opt	FK	The name of the predominant state or stage of the species based on the type of species.
		TREATMENT METHOD TECHNIQUE NAME	character	30	Yes	FK	The classification name for the technique being used for the treatment. These include the use of hand-operated power tools or hand tools or people using machines to physically remove something.
		TREATMENT METHOD NAME	character	10	Yes	FK	The name that designates if the work is mechanical or manual. If the treatment is mechanical, it uses equipment.
		MANUAL METHOD MATERIAL TYPE NAME	character	15	Opt	FK	The name of the type of material that can be used for certain manual category class techniques.
TREATMENT STATUS REFERENCE The domain of valid values for the status of a treatment.							DRAFT ENTITY

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Required?	Key*	Definition
		TREATMENT STATUS NAME	character	10	Yes	PK	A name that designates whether the treatment is proposed or completed.
TREATMENT TYPE REFERENCE							DRAFT ENTITY
The valid values for the types of treatments that can be used to change some aspect of the area.							
		TREATMENT TYPE NAME	character	15	Yes	PK	The name of the type of treatment method that is being used.

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

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Required?	Key*	Definition
ALTER TREATMENT COMPONENT							DRAFT ENTITY
A treatment component where there physical changes are being made, but no materials are leaving the site. This includes the preparation of soil (the site) for revegetation.							
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.
BIOLOGICAL TREATMENT COMPONENT							DRAFT ENTITY
A treatment component that is the introduction of foraging species, predators or parasites to control plant or animal pests or to selectively suppress or remove vegetation. (NFP definition)							
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		BIOLOGICAL TREATMENT TYPE NAME	character	15	Yes	FK	The name of the specific method (classical or non-classical) used for biological treatments.
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.
		DELIVERY METHOD TYPE NAME	character	10	Yes	FK	The name of the method used to apply the treatment.
CHEMICAL TREATMENT COMPONENT							DRAFT ENTITY
A treatment component that uses pesticide (chemical control agent) or fertilizer to affect change.							
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		UNIT OF MEASURE TYPE NAME	character	20	Yes		The name that designates the type of unit of measurement which will be used in conjunction with a Measure attribute.
		CHEMICAL TREATMENT COMPONENT CARRIER VOLUME MEASURE	decimal		Yes		The measure of the actual amount of the chemical component carrier used, depending upon the Chemical Component Carrier UOM Name. Example: 14.5 (gallons)

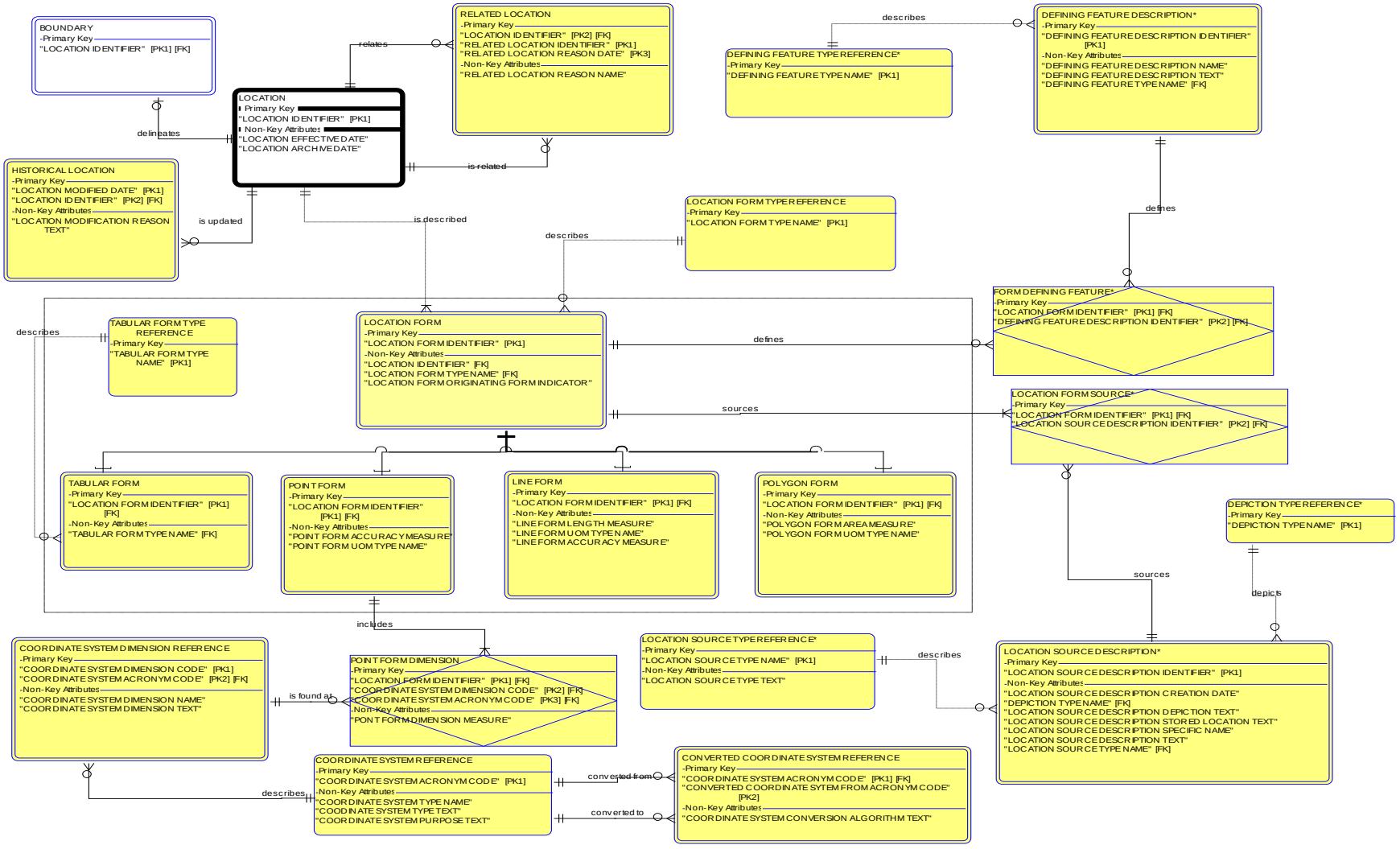
Entity Name	Entity Description	Logical Data Element Name	Type	Size	Required?	Key*	Definition
		CARRIER TYPE NAME	character	10	Yes	FK	The name of the type of propellant which is used to disperse the control agent compound. Example: water, diesel.
		CONTROL AGENT PROTECTION METHOD TEXT	character	100	Yes		The text that describes the method and way the area is protected for the Control Agent.
		CHEMICAL TREATMENT TYPE NAME	character	15	Yes	FK	The name that designates if a chemical component was used as a pesticide (control, including herbicides) or a fertilizer (promote).
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.
		COMPASS DIRECTION CODE	character	3	Yes	FK	A code that designates the compass direction.
		PROTECTION METHOD NAME	character	20	Yes	FK	The name of the method that is used to protect the usage of the treatment.
FIRE TREATMENT COMPONENT A treatment component that uses prescribed fire or a wildland fire as a single treatment, or as several treatments to achieve a management objective. May or may not be used in conjunction with other treatment methods. (NWCG)							DRAFT ENTITY
		BURN INTENSITY TYPE NAME	character	30	Yes	FK	The name that describes the fire characteristics, referring to the effects of temperature, flame length, rate of spread, heat of combustion, size of the fuels consumed, and the energy produced. A general term relating to the heat energy released by a fire. (NWCG)
		FIRE TREATMENT COMPONENT BURN MOSAIC TEXT	character	100	Yes		The text that describes the pattern of the burn post-fire. Example: The fire was a spotty burn in Unit 1 and a clean ellipse in Unit 2.
		FIRE TREATMENT COMPONENT CONDITION AFTER BURN TEXT	character varying	4000	Yes		The text that describes the general condition of the area post-burn after next growing season, including percent cover. Example: The weed infestation covers 75% of the treatment area post-burn.
		FIRE TREATMENT COMPONENT CONDITION BEFORE BURN TEXT	character	100	Yes		The text that describes the general condition of the area prior to the burn, including percent cover. Examples: 1) Weeds are in mature stage and represent a 60% cover. 2) Weed composition includes up to 10% squarrose knapweed, and 30% cheatgrass, both in a mature stage.
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		FIRE START TYPE NAME	character	20	Yes	FK	A name that designates how ignition occurred. The fire was either prescribed or wild fire (wildland fire for resource benefit).
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Required?	Key*	Definition
		FIRE PATTERN TYPE NAME	character	20	Opt	FK	The name (spot, broadcast) that designates a specific pattern used fire treatment.
		FUEL MODEL CODE	character	2	Yes	FK	The code that is associated with the NWCG fuel model text to describe the combustible materials used or consumed during a burn.
LAND ACTIVITY PROJECT							DRAFT ENTITY
The project that is to be completed based on a plan for work that is done on or to the land to improve or treat the area.							
		PROJECT IDENTIFIER	character	12	Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		OBJECTIVE IDENTIFIER	integer		Yes	FK	The designed primary key that will uniquely identify a single occurrence of the entity.
LOCATION							APPROVED ENTITY: BLM
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.
PHYSICAL TREATMENT COMPONENT							DRAFT ENTITY
A treatment component that consists of either the removal or alteration of soil or vegetation or the planting of vegetation.							
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.
		PHYSICAL TREATMENT TYPE NAME	character	15	Yes	FK	The name that indicates whether or not this is a planting, alter or removal.
PLANTING TREATMENT COMPONENT							DRAFT ENTITY
A treatment component that is the planting of one or more plant species.							
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		PLANTING TREATMENT COMPONENT GRID SIZE TEXT	character	40	Opt		The text that describes the grid sized used to define the amount of spacing between seedlings. (Examples: 10x10, 5x4.)
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Required?	Key*	Definition
		PLANTING COVERAGE PATTERN TYPE NAME	character	10	Yes	FK	The name of the coverage pattern applied for the dispersal of the seeds. Example: For a Delivery Method of Ground - Spot, Broadcast, Band.
		DELIVERY METHOD TYPE NAME	character	10	Yes	FK	The name of the method used to apply the treatment.
		PLANTING METHOD NAME	character	15	Yes	FK	The name of the method used to place the seed or seeding in the ground or on the surface.
		SPECIES PHENOLOGY NAME	character	20	Yes	FK	The name of the predominant state or stage of the species based on the type of species.
		UNIT OF MEASURE TYPE NAME	character	20	Yes	FK	The name that designates the type of unit of measurement which will be used in conjunction with a Measure attribute.
REMOVAL TREATMENT COMPONENT							DRAFT ENTITY
A treatment component where materials and/or vegetation ore removed from the site. This includes manual or mechanical types of work.							
		TREATMENT COMPONENT IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		TREATMENT STATUS NAME	character	10	Yes	PK, FK	A name that designates whether the treatment is proposed or completed.

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.
		DEFINING FEATURE DESCRIPTION TEXT	character	200	Yes		The text that provides further details on the Defining Feature Description.

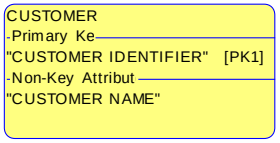
Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		DEFINING FEATURE DESCRIPTION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		DEFINING FEATURE TYPE NAME	character	30	Yes		The name that identifies 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 Line Form UOM Type Name units.
		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.
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.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		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.
		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).

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		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							APPROVED ENTITY: BLM
	The domain for the types of sources for the original location description / form.						
		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							DRAFT ENTITY
	A zero-dimensional abstraction of an object, with its location specified by a set of coordinates. (GIS dictionary)						
		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							DRAFT ENTITY
	The measure associated with each dimension of a Coordinate System.						
		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							DRAFT ENTITY
	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.						
		LOCATION FORM IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		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 Polygon Form UOM Type Name units.
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.

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		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

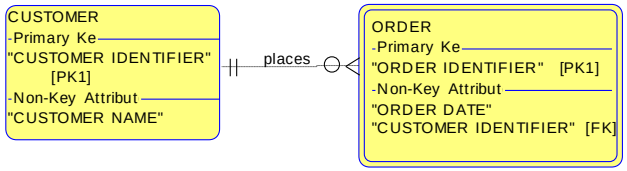


ENTITY

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

ATTRIBUTES

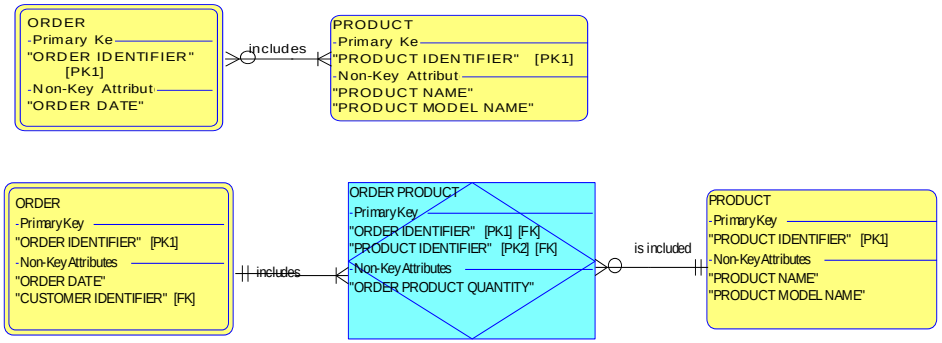
- *The adjective which is the data or information about an entity; describes an entity (ORDER NUMBER, ORDER DATE).*
- *Has **only one** valid value for an occurrence of an entity at any given time; The same value of an attribute may describe more than one entity occurrence.*
- *PK = Primary Key – uniquely 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