Vegetation Treatment Area

IMPLEMENTATION GUIDELINES

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 Implementation Guidelines

This document describes the physical design of the national data standard for the geospatial dataset. It is intended as a guideline for implementation. States may extend and expand upon this guideline in order to meet their specific needs, provided that when the data is pushed up to the national level, it will meet the minimum requirements as set forth in the Data Standard.

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INTRODUCTION

Data Structures Implemented

The data for inclusion in this data set shall be collected in a known datum and coordinate system. The data stored on the EGIS server in Denver shall be stored in geographic coordinates for national layers using the Bureau standard NAD 83 datum rather than in a specific projection. While the standard datum is NAD 83, there are multiple realizations of that datum in existence. The metadata for each data set shall contain more specific labeling of the datum as appropriate. Examples of this would include: NAD 83 (2007) or NAD 83 (CORS 96) (1997). Every effort should be made to be as specific as possible in delineating the appropriate datum.

	Data Structures Implemented	
	There are 5 structures in this implementation:	
A	*vtrt_prpse_arc*	represents the arc features that will define the proposed vegetation treatment polygons. These arcs will have the feature level metadata attributes shown assigned to them.
B	*vtrt_prpse_poly*	represents the polygon features that show the boundaries for the proposed vegetation treatment areas.
C	*vtrt_cmplt_arc*	represents the arc features that will define the completed vegetation treatment polygons. These arcs will have the feature level metadata attributes shown assigned to them.
D	*vtrt_cmplt_poly*	represents the polygon features that show the boundaries for the completed vegetation treatment areas.
E	*vtrt_upd_tbl*	is a non-spatial table used for tracking the currency of the data from each system.

Design Considerations
Domains
There are domain tables that are common across other data standards and feature classes, and as such they must be implemented differently than those domains that are specific to the data standard (reference Domain Information Section located at http://web.blm.gov/data_mgt/std_proc.htm). These shared domains are not included in the geodatabase associated with these implementation guidelines.
The common domain names are included in the tables, in italic text. The domain values may be located in the Access Database at

http://web.blm.gov/data_mgt/std_proc.htm.

- *DOM_COORD_SOURCE_TYPE*
- *DOM_DEF_FEATURE_TYPE*
- *DOM_TRTMNT_BIO_SUBTYPE*
- *DOM_TRTMNT_CHEM_SUBTYPE*
- *DOM_TRTMNT_PHY_SUBTYPE*
- *DOM_TRTMNT_FIRE_SUBTYPE*

The following domains are unique to the dataset; therefore, they are associated in the geodatabase and are included in the XML schema. The domain names are included in the tables, in normal text.
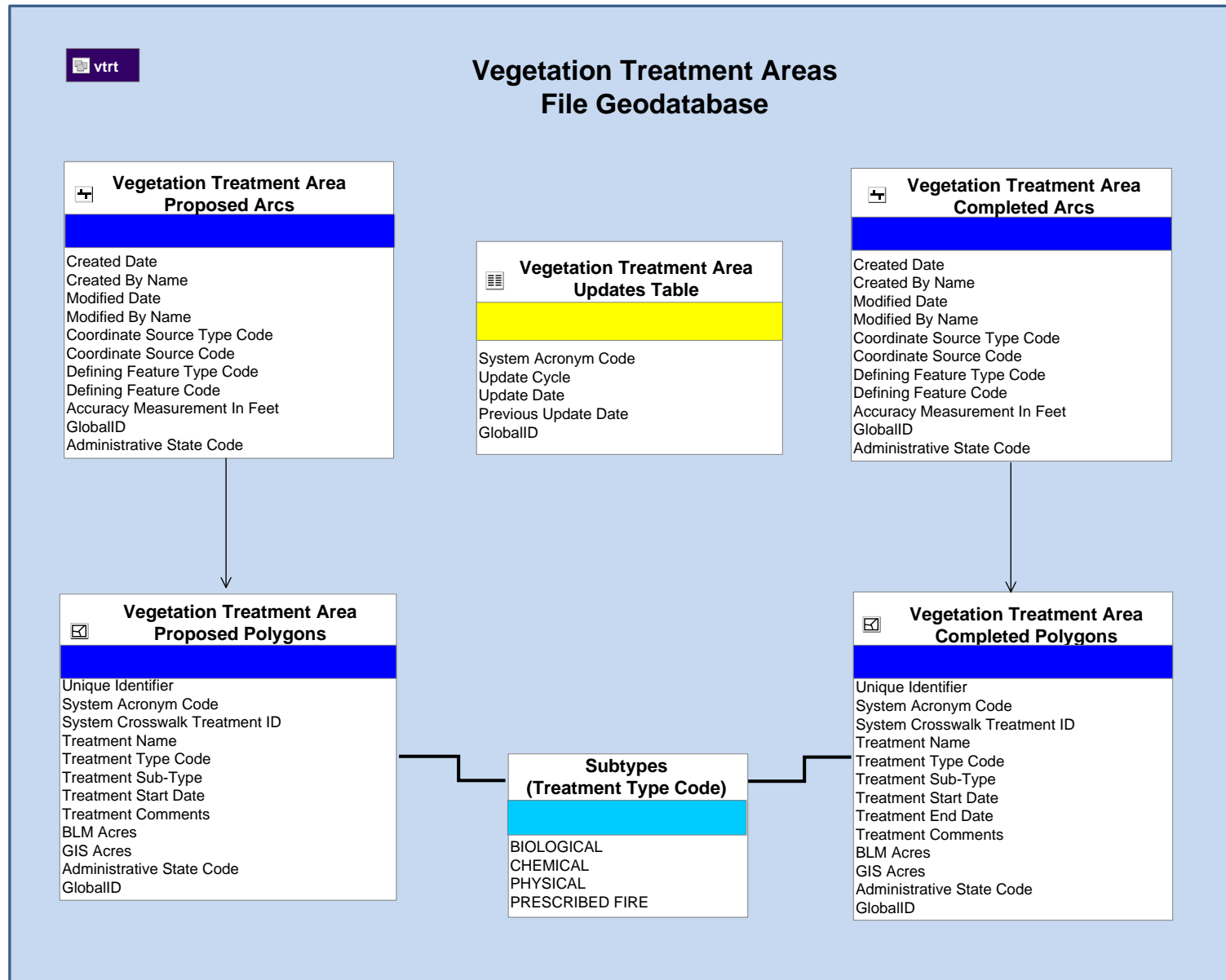
- VTRT_DOM_SYS_CD
- VTRT_DOM_UPD_CYCLE

Treatment Types and Sub-Types, and ESRI Subtypes

Vegetation treatments documented in this data set may be categorized by the general type of treatment that is used on the area being treated. These different types of vegetation treatments are Chemical, Physical, Biological, and Prescribed Fire. The first three are further categorized by the treatment sub-type. Chemical treatments are either pesticide or fertilizer; Physical treatments are alteration, planting, or removal; and Biological treatments are either classical or non-classical. Prescribed Fire is the only fire related treatment and therefore has no sub-types.

ESRI subtypes are a subset of features in a feature class, or objects in a table, that share the same attributes. They are used as a method to categorize data, and assign multiple domains according to how the data is categorized. This data set uses subtypes to group the features according to the treatment types, and to assign the appropriate domain for that treatment's sub-types. The features are grouped based on the TRTMNT_TYPE_CD (Treatment Type Code) attribute; acceptable values are 1 (BIOLOGICAL), 2 (CHEMICAL), 3 (PRESCRIBED FIRE) and 4 (PHYSICAL). One of the four treatment sub-type domains is then activated for the TRTMNT_SUBTYPE (Treatment Sub-Type) attribute according to the value coded for the Treatment Type Code. The domains are DOM_TRTMNT_BIO_SUBTYPE for biological treatments, DOM_TRTMNT_CHEM_SUBTYPE for chemical treatments, DOM_TRTMNT_FIRE_SUBTYPE for prescribed fires, and DOM_TRTMNT_PHY_SUBTYPE for physical treatments.

Please refer to the ESRI help documentation, or contact the NOC Data Standards Team for additional information about ESRI subtypes.

Physical Database Diagram

vtrt

Vegetation Treatment Areas
File Geodatabase

Vegetation Treatment Area
Proposed Arcs

Created Date
Created By Name
Modified Date
Modified By Name
Coordinate Source Type Code
Coordinate Source Code
Defining Feature Type Code
Defining Feature Code
Accuracy Measurement In Feet
GlobalID
Administrative State Code

Vegetation Treatment Area
Updates Table

System Acronym Code
Update Cycle
Update Date
Previous Update Date
GlobalID

Vegetation Treatment Area
Completed Arcs

Created Date
Created By Name
Modified Date
Modified By Name
Coordinate Source Type Code
Coordinate Source Code
Defining Feature Type Code
Defining Feature Code
Accuracy Measurement In Feet
GlobalID
Administrative State Code

Vegetation Treatment Area
Proposed Polygons

Unique Identifier
System Acronym Code
System Crosswalk Treatment ID
Treatment Name
Treatment Type Code
Treatment Sub-Type
Treatment Start Date
Treatment Comments
BLM Acres
GIS Acres
Administrative State Code
GlobalID

Subtypes
(Treatment Type Code)

BIOLOGICAL
CHEMICAL
PHYSICAL
PRESCRIBED FIRE

Vegetation Treatment Area
Completed Polygons

Unique Identifier
System Acronym Code
System Crosswalk Treatment ID
Treatment Name
Treatment Type Code
Treatment Sub-Type
Treatment Start Date
Treatment End Date
Treatment Comments
BLM Acres
GIS Acres
Administrative State Code
GlobalID

Topology

Geodatabase and map topologies will be established to relate the active feature classes together, to maintain feature geometry, and to aid in the editing of features. The implementation of this data standard requires that polygons be defined by bounding arcs. Therefore, a minimum set of geodatabase topology rules are defined as part of the geodatabase to verify the coincidence between these two feature classes.

Map topology shall be established during edit sessions. Edits to the polygon shape will be performed by modifying the bounding arc. (Historical or archived polygons will not be edited once they become inactive). For additional information, refer to the best practices document http://web.blm.gov/egis/DataManagementdocs.htm (available on the Spatial Data Management subsection on the EGIS web page.) It is recommended that these tools be used and implemented to improve data quality and integrity.

Geodatabase Topology Rules

The following are the minimum that should be implemented. Additional topology rules may be added depending on data requirements for each office. xxxx_arc, xxxx_poly represents the names of the feature class that participate in the rule.

Topology Rule	Required?
vtrt_prpse_arc **Must Be Covered By Boundary Of** *vtrt_prpse_poly*	Yes
vtrt_prpse_arc **Must Not Self-Overlap**	Yes
vtrt_prpse_arc **Must Not Have Dangles**	No
vtrt_prpse_poly **Boundary Must Be Covered By** *vtrt_prpse_arc*	Yes
vtrt_cmplt_arc **Must Be Covered By Boundary Of** *vtrt_cmplt_poly*	Yes
vtrt_cmplt_arc **Must Not Self-Overlap**	Yes
vtrt_cmplt_arc **Must Not Have Dangles**	No
vtrt_cmplt_poly **Boundary Must Be Covered By** *vtrt_cmplt_arc*	Yes

Data Guidelines

Implementation of the data standards will occur at those organizational levels of the Bureau as appropriate. The standards are intended to be platform-independent.

There are some attributes that are intended to eventually become system generated when a system or application is developed to manage this dataset. At the present time there is no specific application for maintaining this data layer and therefore those attributes will currently need to be manually edited.

The attributes included in this implementation are those that have been established for the national data standard and cannot be modified except through the Data Standards Maintenance process. If additional attributes or domain values are desired by individual states/offices, create a new attribute and populate with a new attribute domain assignment. Metadata for the additional attributes must be documented by that office.

The format for entering the date in the geodatabase (GDB) will be MM/DD/YYYY. The ESRI software displays the date field according to how dates are formatted for display on the computer. The FGDC-compliant format for the date field is YYYYMMDD. There are two methods in which the FGDC format could be used for storing the date. The date format on the computer can be reset which may introduce unintended consequences within other programs, or the date field could be defined as a text field which would leave ample room for errors being introduced to the data. Although the National Data Standards are intended to be platform-independent, the ESRI GDB format is the current platform implemented throughout the BLM.

If a treatment is a point or line, it will be buffered to create a polygon feature. If there is a point feature treatment in a source system, the source system will buffer the point to a minimum 20 yards (representing a minimum area of .25 acres) and treat it as a polygon. If there is a line feature treatment in a source system, the source system will buffer the line to 20 yards of each plant or the edge of an infestation (rounded up to the nearest acre) and treat it as a polygon.

This system is not a replacement for the source data sets.

Review Cycle

The data for the Vegetation Treatment Boundaries should be reviewed on a regular basis for updates. Individual program direction will dictate the timing of the updates. The data standard itself will also be reviewed annually or at the time of request by the users through the data steward.

National Dataset Update Cycle

The national level data for the Vegetation Treatment Areas should be updated quarterly, at a minimum, on the NOC EGIS server. State and local offices shall determine an update cycle that fits their specific needs.

Records Retention

The entire geodatabase for Vegetation Treatment Areas will be archived on an annual basis, by October 15, for the previous fiscal year. **Note: Records issues will be handled according to official policy for Records Management.**

DATA STANDARD IMPLEMENTATION DETAILS

A. Vegetation Treatment Area Proposed Arcs (vtrt_prpse_arc)

The arc features used to define the polygons are described in the following table. These attributes serve to store the feature level metadata information for the polygon boundaries. The last five attributes document the origin and characteristics of each arc.

Vegetation Treatment Area Proposed Arcs Attributes						
GIS NAME	ALIAS	DATA FORMAT	REQUIRED?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
CREATE_DATE	Created Date	Date	YES	09/09/9999		Yes
CREATE_BY	Created By Name	Char(30)	YES	UNK		Yes
MODIFY_DATE	Modified Date	Date	YES	09/09/9999		Yes
MODIFY_BY	Modified By Name	Char(30)	YES	UNK		Yes
COORD_SRC_TYPE	Coordinate Source Type Code	Char(5)	YES	UNK	*DOM_COORD_SOURCE_TYPE*	No
COORD_SRC2	Coordinate Source Code	Char(25)	NO			No
DEF_FET_TYPE	Defining Feature Type Code	Char(15)	YES	UNK	*DOM_DEF_FEATURE_TYPE*	No
DEF_FET2	Defining Feature Code	Char(30)	NO			No
ACCURACY_FT	Accuracy Measurement In Feet	Long Integer(4)	YES	-1		No
ADMIN_ST	Administrative State Code	Char(2)	YES		*DOM_ADMIN_ST*	No
GlobalID	GlobalID	UUID	YES			No

GIS Name	Logical Name	Definition
CREATE_DATE	Location Effective Date	**Logical Definition**: The date which is the calendar year, month, and day when the position of the Location was produced. **Design Considerations:** As a new feature is added to the system its creation date will be collected and maintained. The date will be in the format of MM/DD/YYYY. Default: 09/09/9999

GIS Name	Logical Name	Definition
CREATE_ BY	Not applicable	**Logical Definition**: Not on the logical model. **Design Considerations:** The UserID (BLM login ID) of the person who created or imported the data into the BLM GIS system. This attribute will be deleted before providing the data to the public. Default: UNK
MODIFY_ DATE	Location Modified Date	**Logical Definition**: The date which is the calendar year, month, and day when the position of the Location was last modified. **Design Considerations:** As a feature is edited or modified while in the system its modification date will be collected and maintained. The date will be in the format of MM/DD/YYYY. Default: 09/09/9999
MODIFY_BY	Not applicable	**Logical Definition**: Not on the logical model. **Design Considerations:** The UserID (BLM login ID) of the person who edited or modified data in the BLM GIS system will be collected and maintained. This attribute will be deleted before providing the data to the public. Default: UNK
COORD_ SRC_TYPE	Location Source Type Name	**Logical Definition**: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. **Design Considerations:** Attribute Domain Assignment: *DOM_COORD_SOURCE_TYPE* Default: UNK

GIS Name	Logical Name	Definition
COORD_ SRC2	Location Source Description Specific Name	**Logical Definition**: The name that identifies a more specific description of the location (coordinate source). **Design Considerations:** <u>Suggested</u> values for codes appear in the domains appendix. The user may leave this value "null," choose one of the suggested codes, or enter another value appropriate to the data. This domain is not intended to be all inclusive, but may be used as a starting point for state-level lists of domain values. This list is not intended to be a substitute for the accuracy values that are found in the 'Accuracy Measurement Table.' <u>This is an optional attribute</u>.
DEF_FET_ TYPE	Defining Feature Type Name	**Logical Definition**: The name that identifies the high-level category for the actual physical or mapping characteristics (features) from which the arcs are derived. **Design Considerations:** Attribute Domain Assignment: *DOM_DEF_FEATURE_TYPE* Default: UNK
DEF_FET2	Defining Feature Description Name	**Logical Definition**: 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. **Design Considerations:** <u>Suggested</u> code values appear in the domains appendix. The user may leave this value "null," choose one of the suggested codes, or enter another value appropriate to the data. This domain is not intended to be all inclusive but may be used as a starting point for state-level lists of domain values. <u>This is an optional attribute.</u>

GIS Name	Logical Name	Definition
ACCURACY_FT	Line Form Accuracy Measure	**Logical Definition**: The measure that describes how close, in Line Form UOM Type Name the actual location is to the spatial depiction. **Design Considerations:** The Accuracy Measurement defines how close (in feet) the actual ground location is to the spatial depiction in GIS. This value would typically be determined by one of three methods: 1) the map accuracy value, if a USGS map was used to define the boundary; 2) the expected spatial accuracy achieved with GPS; or, 3) the measurement of that accuracy as is noted in the *National Standard for Spatial Data Accuracy (NSSDA)[1]* which is a data usability standard issued by the Federal Geographic Data Committee (FGDC). Default: -1 **A value of -1 indicates that the accuracy is unknown or that no reliable estimate can be made**. Below is an sample table of accuracy measurements. (Attempting to list all values in a domain table would produce an infinite list.)

Accuracy Measurement Example Table	
1	+/- 1 Feet
10	+/- 10 Feet
15	+/- 15 Feet
20	+/- 20 Feet
100	+/- 100 Feet

[1]Federal Geographic Data Committee. 1998. Geospatial Positioning Accuracy Standards Part 3: National Standard for Spatial Data Accuracy, FGDC-STD-007.3-1998

GIS Name	Logical Name	Definition
ADMIN_ST	State Alphabetic Code	**Logical Definition**: An alphabetic abbreviation that represents each of the 50 states of the United States, the District of Columbia, the outlying areas of the United States, and associated areas. FIPS PUB 5-2 **Design Considerations:** An administrative unit that identifies the state or geographic area which has administrative jurisdiction over lands, and cases. The land for a case may not be physically located in the associated administrative state. Only those states that are BLM administrative states are in the domain for this entity. Example: Montana is the Administrative State for public lands in the geographic States of Montana, South and North Dakota. Two letter, upper case abbreviation for the administrative state office. The current list of values is: AK, AZ, CA, CO, ES, ID, MT, NM, NV, OR, UT, and WY. In the FBMS Organization Codes, use the second two characters (after the LL) (e.g. LL**AK**030900) Note: This attribute is included for purposes of replication. Attribute Domain Assignment: *DOM_ADMIN_ST*
GlobalID	Not Applicable	**Logical Definition**: Not on logical model. **Design Considerations:** Software generated value. A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. This field is not editable and is automatically populated when it is added for existing data. Note: This attribute is included for purposes of replication only. It is not used as a unique identifier for relationships between feature classes/tables.

B. Vegetation Treatment Area Proposed Polygons (vtrt_prpse_poly)

The polygon features for the proposed vegetation treatment area polygons are defined below. Domain values are used when appropriate. The methodology to transition from "Proposed" to "Completed" status will be outlined in the Implementation Plan for each system.

The Treatment Type Code attribute (represented as Subtypes in the ESRI Feature Class) corresponds to each of the four treatment types (Biological, Chemical, Fire, and Physical). The Treatment Sub-Type attribute contains the acceptable domain values for each (ESRI Feature Class) Subtype.

Vegetation Treatment Area Proposed Polygon Attributes						
GIS NAME	ALIAS	DATA FORMAT	REQUIRED?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
UNIQUE_ID	Unique Identifier	Char(33)	YES			No
SYS_CD	System Acronym Code	Char(12)	YES		VTRT_DOM_SYS_CD	No
SYS_TRTMNT_ID	System Crosswalk Treatment ID	Char(21)	YES			No
TRTMNT_NM	Treatment Name	Char(50)	YES			No
TRTMNT_TYPE_CD	Treatment Type Code	Short Integer	YES	4 (PHYSICAL)		No
TRTMNT_SUBTYPE	Treatment Sub-Type	Char(15)	YES		DOM_TRTMNT_BIO_SUBTYPE DOM_TRTMNT_CHEM_SUBTYPE DOM_TRTMNT_FIRE_SUBTYPE DOM_TRTMNT_PHY_SUBTYPE	No
TRTMNT_START_DT	Treatment Start Date	Date	YES	01/01/9999		No
TRTMNT_COMMENTS	Treatment Comments	Char(200)	NO			No
BLM_ACRES	BLM Acres	Double(16.6)	YES	0		No
GIS_ACRES	GIS Acres	Double(16.6)	YES	0		Yes
ADMIN_ST	Administrative State Code	Char(2)	YES		DOM_ADMIN_ST	No
GlobalID	GlobalID	UUID	YES			No

GIS Name	Logical Name	Definition
UNIQUE_ID	Treatment Identifier	**Logical Definition**: A designed primary key that uniquely identifies a treatment in the data set. **Design Considerations:** The unique identifier for the polygon or line feature. This primary key is a concatenation of: - SYS_CD (the System Acronym Code) + - SYS_TRTMNT_ID (the System Crosswalk Treatment ID) This attribute will be derived from a calculated expression: UNIQUE_ID = [SYS_CD] + [SYS_TRTMNT_ID]
SYS_CD	System Acronym Code	**Logical Definition**: The code for the system where the authoritative source for the treatment data resides. **Design Considerations:** The source system for the treatment data. Attribute Domain Assignment: VTRT_DOM_SYS_CD
SYS_TRTMNT_ID	Not Applicable	**Logical Definition**: Not on the logical data model. **Design Considerations:** The identifier that the system uses to uniquely identify an occurrence of a treatment in that system.
TRTMNT_NM	Treatment Name	**Logical Definition**: A name that is a local name or way to call a specific treatment. **Design Considerations:** None
TRTMNT_TYPE_CD	Treatment Type Name	**Logical Definition**: The name of the type of treatment type that is being used. **Design Considerations:** This data standard is implemented with each Type represented as a one-digit code for the Subtype of the feature class. Each Type has one or more Sub-Types which are filtered based on the Type. The four types are 1 (BIOLOGICAL), 2(CHEMICAL), 3(PRESCRIBED FIRE), 4 (PHYSICAL) Default: 4 (PHYSICAL)

GIS Name	Logical Name	Definition
TRTMNT_SUBTYPE	Biological Treatment Type Name, Chemical Treatment Type Name, Physical Treatment Type Name, Fire Start Type Name	**Logical Definition**: The definitions for the sub-type covers 4 different logical attributes, depending on the Treatment Type Name. See Data Standard Report for definitions of these specific attributes. **Design Considerations:** The name that further describes a treatment type. Attribute Domain Assignment: *DOM_TRTMNT_BIO_SUBTYPE* *DOM_TRTMNT_CHEM_SUBTYPE* *DOM_TRTMNT_FIRE_SUBTYPE* *DOM_TRTMNT_PHY_SUBTYPE*
TRTMNT_START_DT	Treatment Status Start Date	**Logical Definition**: The date the status of the treatment is proposed to start or the treatment is started. **Design Considerations:** The date the treatment begins. This is the proposed start date. If the start month and day are unknown, 0101 is used for the start month and day with the year. Default: 01/01/9999
TRTMNT_COMMENTS	Treatment Component Comments Text	**Logical Definition**: The text that provides additional information on a treatment. **Design Considerations:** None
BLM_ACRES	Not Applicable	**Logical Definition**: Not on the logical model. **Design Considerations:** The acres within the polygon that are under BLM jurisdiction. Default: 0

GIS Name	Logical Name	Definition
GIS_ACRES	Polygon Form Area Measure	**Logical Definition**: The area of the polygon described in the Polygon Form UOM Type Name. **Design Considerations:** The entire acreage of the polygon regardless of land status. Default: 0 This is a calculated value of area, in units of acres, based on the area field created by default within the ESRI Polygon data structure. For the purposes of a 'national data layer,' the data are to be stored in geographic coordinates which do not correspond to ground values. This requires that there be a standard method for calculating this attribute. The method used for these data are as follows. The data are projected into a standard projection such as the ESRI default Albers projection for the continental United States, "US Albers NAD 1983." Once the data are projected, then a calculation of "SHAPE_Area (square meters) * 0.0002471044 = acres" is applied to the existing 'area' field that is default area created by the ESRI software resulting in the field (Attribute) 'SHAPE_Area'. Please note that the figure used in this calculation is the factor for converting the US Survey Foot value from the length of a meter, as opposed to the International Standard for converting meters and feet.

GIS Name	Logical Name	Definition
ADMIN_ST	State Alphabetic Code	**Logical Definition**: An alphabetic abbreviation that represents each of the 50 states of the United States, the District of Columbia, the outlying areas of the United States, and associated areas. FIPS PUB 5-2 **Design Considerations:** An administrative unit that identifies the state or geographic area which has administrative jurisdiction over lands, and cases. The land for a case may not be physically located in the associated administrative state. Only those states that are BLM administrative states are in the domain for this entity. Example: Montana is the Administrative State for public lands in the geographic States of Montana, South and North Dakota. Two letter, upper case abbreviation for the administrative state office. The current list of values is: AK, AZ, CA, CO, ES, ID, MT, NM, NV, OR, UT, and WY. In the FBMS Organization Codes, use the second two characters (after the LL) (e.g. LL**AK**030900) Note: This attribute is included for purposes of replication. Attribute Domain Assignment: *DOM_ADMIN_ST*
GlobalID	Not Applicable	**Logical Definition**: Not on logical model. **Design Considerations:** Software generated value. A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. This field is not editable and is automatically populated when it is added for existing data. Note: This attribute is included for purposes of replication only. It is not used as a unique identifier for relationships between feature classes/tables.

C. Vegetation Treatment Area Completed Arcs (vtrt_cmplt_arc)

The arc features used to define the polygons are described in the following table. These attributes serve to store the feature level metadata information for the polygon boundaries. The last five attributes document the origin and characteristics of each arc.

GIS NAME	ALIAS	DATA FORMAT	REQUIRED?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
CREATE_DATE	Created Date	Date	YES	09/09/9999		Yes
CREATE_BY	Created By Name	Char(30)	YES	UNK		Yes
MODIFY_DATE	Modified Date	Date	YES	09/09/9999		Yes
MODIFY_BY	Modified By Name	Char(30)	YES	UNK		Yes
COORD_SRC_TYPE	Coordinate Source Type Code	Char(5)	YES	UNK	DOM_COORD_SOURCE_TYPE	No
COORD_SRC2	Coordinate Source Code	Char(25)	NO			No
DEF_FET_TYPE	Defining Feature Type Code	Char(15)	YES	UNK	DOM_DEF_FEATURE_TYPE	No
DEF_FET2	Defining Feature Code	Char(30)	NO			No
ACCURACY_FT	Accuracy Measurement In Feet	Long Integer(4)	YES	-1		No
ADMIN_ST	Administrative State Code	Char(2)	YES		DOM_ADMIN_ST	No
GlobalID	GlobalID	UUID	YES			No

Vegetation Treatment Area Completed Arcs Attributes

GIS Name	Logical Name	Definition
CREATE_DATE	Location Effective Date	**Logical Definition**: The date which is the calendar year, month, and day when the position of the Location was produced. **Design Considerations:** As a new feature is added to the system its creation date will be collected and maintained. The date will be in the format of MM/DD/YYYY. Default: 09/09/9999

GIS Name	Logical Name	Definition
CREATE_ BY	Not applicable	**Logical Definition**: Not on the logical model. **Design Considerations:** The UserID (BLM login ID) of the person who created or imported the data into the BLM GIS system. This attribute will be deleted before providing the data to the public. Default: UNK
MODIFY_ DATE	Location Modified Date	**Logical Definition**: The date which is the calendar year, month, and day when the position of the Location was last modified. **Design Considerations:** As a feature is edited or modified while in the system its modification date will be collected and maintained. The date will be in the format of MM/DD/YYYY. Default: 09/09/9999
MODIFY_BY	Not applicable	**Logical Definition**: Not on the logical model. **Design Considerations:** The UserID (BLM login ID) of the person who edited or modified data in the BLM GIS system will be collected and maintained. This attribute will be deleted before providing the data to the public. Default: UNK
COORD_ SRC_TYPE	Location Source Type Name	**Logical Definition** 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. **Design Considerations:** Attribute Domain Assignment: *DOM_COORD_SOURCE_TYPE* Default: UNK

GIS Name	Logical Name	Definition
COORD_ SRC2	Location Source Description Specific Name	**Logical Definition**: The name that identifies a more specific description of the location (coordinate source). **Design Considerations:** Suggested values for codes appear in the domains appendix. The user may leave this value "null," choose one of the suggested codes, or enter another value appropriate to the data. This domain is not intended to be all inclusive but may be used as a starting point for state-level lists of domain values. This list is not intended to be a substitute for the accuracy values that are found in the 'Accuracy Measurement Table.' This is an optional attribute.
DEF_FET_ TYPE	Defining Feature Type Name	**Logical Definition**: The name that identifies the high-level category for the actual physical or mapping characteristics (features) from which the arcs are derived. **Design Considerations:** Attribute Domain Assignment: *DOM_DEF_FEATURE_TYPE* Default: UNK
DEF_FET2	Defining Feature Description Name	**Logical Definition**: 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. **Design Considerations:** Suggested code values appear in the domains appendix. The user may leave this value "null," choose one of the suggested codes, or enter another value appropriate to the data. This domain is not intended to be all inclusive but may be used as a starting point for state-level lists of domain values. This is an optional attribute.

GIS Name	Logical Name	Definition
ACCURACY_FT	Line Form Accuracy Measure	**Logical Definition**: The measure that describes how close, in Line Form UOM Type Name the actual location is to the spatial depiction. **Design Considerations:** The Accuracy Measurement defines how close (in feet) the actual ground location is to the spatial depiction in GIS. This value would typically be determined by one of three methods: 1) the map accuracy value, if a USGS map was used to define the boundary; 2) the expected spatial accuracy achieved with GPS; or 3) the measurement of that accuracy as is noted in the *National Standard for Spatial Data Accuracy (NSSDA)*[1] which is a data usability standard issued by the Federal Geographic Data Committee (FGDC). Default: -1 **A value of -1 indicates that the accuracy is unknown or that no reliable estimate can be made**. Below is an sample table of accuracy measurements. (Attempting to list all values in a domain table would produce an infinite list.) <table><tr><th colspan="2">Accuracy Measurement Example Table</th></tr><tr><td>1</td><td>+/- 1 Feet</td></tr><tr><td>10</td><td>+/- 10 Feet</td></tr><tr><td>15</td><td>+/- 15 Feet</td></tr><tr><td>20</td><td>+/- 20 Feet</td></tr><tr><td>100</td><td>+/- 100 Feet</td></tr></table> [1]Federal Geographic Data Committee. 1998. <u>Geospatial Positioning Accuracy Standards Part 3: National Standard for Spatial Data Accuracy</u>, FGDC-STD-007.3-1998.

GIS Name	Logical Name	Definition
ADMIN_ST	State Alphabetic Code	**Logical Definition**: An alphabetic abbreviation that represents each of the 50 states of the United States, the District of Columbia, the outlying areas of the United States, and associated areas. FIPS PUB 5-2 **Design Considerations:** An administrative unit that identifies the state or geographic area that has administrative jurisdiction over lands and cases. The land for a case may not be physically located in the associated administrative state. Only those states that are BLM-administrative states are in the domain for this entity. Example: Montana is the Administrative State for public lands in the geographic States of Montana, and South and North Dakotas. Two letter, upper case abbreviation for the administrative state office. The current list of values is: AK, AZ, CA, CO, ES, ID, MT, NM, NV, OR, UT, and WY. In the FBMS Organization Codes, use the second two characters (after the LL) (e.g. LL**AK**030900) Note: This attribute is included for purposes of replication. Attribute Domain Assignment: *DOM_ADMIN_ST*
GlobalID	Not Applicable	**Logical Definition**: Not on logical model. **Design Considerations:** Software generated value. A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. This field is not editable and is automatically populated when it is added for existing data. Note: This attribute is included for purposes of replication only. It is not used as a unique identifier for relationships between feature classes/tables.

D. Vegetation Treatment Area Completed Polygons (vtrt_cmplt_poly)

The polygon features for the completed vegetation treatment area polygons are defined below. Domain values are used when appropriate.

The Treatment Type Code attribute (represented as Subtypes in the ESRI Feature Class) corresponds to each of the four treatment types (Biological, Chemical, Fire, and Physical). The Treatment Sub-Type attribute contains the acceptable domain values for each (ESRI Feature Class) Subtype.

Vegetation Treatment Area Completed Polygon Attributes						
GIS NAME	ALIAS	DATA FORMAT	REQUIRED?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
UNIQUE_ID	Unique Identifier	Char(33)	YES			No
SYS_CD	System Acronym Code	Char(12)	YES		VTRT_DOM_SYS_CD	No
SYS_TRTMNT_ID	System Crosswalk Treatment ID	Char(21)	YES			No
TRTMNT_NM	Treatment Name	Char(50)	YES			No
TRTMNT_TYPE_CD	Treatment Type Code	Short Integer	YES	4 (PHYSICAL)		No
TRTMNT_SUBTYPE	Treatment Sub-Type	Char(15)	YES		*DOM_TRTMNT_BIO_SUBTYPE* *DOM_TRTMNT_CHEM_SUBTYPE* *DOM_TRTMNT_FIRE_SUBTYPE* *DOM_TRTMNT_PHY_SUBTYPE*	No
TRTMNT_START_DT	Treatment Start Date	Date	YES	01/01/9999		No
TRTMNT_END_DT	Treatment End Date	Date	NO	01/01/9999		No
TRTMNT_COMMENTS	Treatment Comments	Char(200)	NO			No
BLM_ACRES	BLM Acres	Double(16.6)	YES	0		No
GIS_ACRES	GIS Acres	Double(16.6)	YES	0		Yes
ADMIN_ST	Administrative State Code	Char(2)	YES		*DOM_ADMIN_ST*	No
GlobalID	GlobalID	UUID	YES			No

GIS Name	Logical Name	Definition

UNIQUE_ID	Treatment Identifier	**Logical Definition**: A designed primary key that uniquely identifies a treatment in the data set.
		
		Design Considerations: The unique identifier for the polygon or line feature. This primary key is a concatenation of:
		
		   • SYS_CD (the System Acronym Code) +
		   • SYS_TRTMNT_ID (the System Crosswalk Treatment ID)
		
		This attribute will be derived from a calculated expression:
		
		UNIQUE_ID = [SYS_CD] + [SYS_TRTMNT_ID]

SYS_CD	System Acronym Code	**Logical Definition**: The code for the system where the authoritative source for the treatment data resides. **Design Considerations:** The source system for the treatment data. Attribute Domain Assignment: VTRT_DOM_SYS_CD
SYS_TRTMNT_ID	Not Applicable	**Logical Definition**: Not on the logical data model. **Design Considerations:** The identifier that the system uses to uniquely identify an occurrence of a treatment in that system.
TRTMNT_NM	Treatment Name	**Logical Definition**: A name that is a local name or way to call a specific treatment. **Design Considerations:** None
TRTMNT_TYPE_CD	Treatment Type Name	**Logical Definition**: The name of the type of treatment method that is being used. **Design Considerations:** This data standard is implemented with each Type represented as a one-digit code for the Subtype of the feature class. Each Type has one or more Sub-Methods which are filtered based on the Type. Default: 4 (PHYSICAL)

GIS Name	Logical Name	Definition
TRTMNT_SUBTYPE	Biological Treatment Type Name, Chemical Treatment Type Name, Physical Treatment Type Name, Fire Start Type Name	**Logical Definition**: The definitions for the sub-type covers 4 different logical attributes, depending on the Treatment Type Name. See Data Standard Report for definitions of these specific attributes. **Design Considerations:** The name that further describes a treatment type. Attribute Domain Assignment: *DOM_TRTMNT_BIO_SUBTYPE* *DOM_TRTMNT_CHEM_SUBTYPE* *DOM_TRTMNT_FIRE_SUBTYPE* *DOM_TRTMNT_PHY_SUBTYPE*
TRTMNT_START_DT	Treatment Status Start Date	**Logical Definition**: The date the status of the treatment is proposed to start or the treatment is started. **Design Considerations:** The date the Treatment begins. This is the proposed start date. If the start month and day are unknown, 0101 is used for the start month and day with the year. Default: 01/01/9999
TRTMNT_END_DT	Treatment Status End Date	**Logical Definition**: The date the status of the treatment is no longer valid or the treatment is completed. **Design Considerations:** The date the treatment is completed. If the actual month and day for completing the treatment are unknown, "0101" is used for the start month and day with the actual year.
TRTMNT_COMMENTS	Treatment Component Comments Text	**Logical Definition**: The text that provides additional information on a treatment. **Design Considerations:** None.

GIS Name	Logical Name	Definition
BLM_ACRES	Not Applicable	**Logical Definition**: Not on the logical model. **Design Considerations:** The acres within the polygon that are under BLM jurisdiction. Default: 0
GIS_ACRES	Polygon Form Area Measure	**Logical Definition**: The area of the polygon described in the Polygon Form UOM Type Name. **Design Considerations:** The entire acreage of the polygon regardless of land status. Default: 0 This is a calculated value of area, in units of acres, based on the area field created by default within the ESRI Polygon data structure. For the purposes of a 'national data layer,' the data are to be stored in geographic coordinates which do not correspond to ground values. This requires that there be a standard method for calculating this attribute. The method used for these data are as follows. The data are projected into a standard projection such as the ESRI default Albers projection for the continental United States, "US Albers NAD 1983." Once the data are projected, then a calculation of "SHAPE_Area (square meters) * 0.0002471044 = acres" is applied to the existing 'area' field that is default area created by the ESRI software resulting in the field (Attribute) 'SHAPE_Area.' Please note that the figure used in this calculation is the factor for converting the US Survey Foot value from the length of a meter, as opposed to the International Standard for converting meters and feet.

GIS Name	Logical Name	Definition
ADMIN_ST	State Alphabetic Code	**Logical Definition**: An alphabetic abbreviation that represents each of the 50 states of the United States, the District of Columbia, the outlying areas of the United States, and associated areas. FIPS PUB 5-2 **Design Considerations:** An administrative unit that identifies the state or geographic area that has administrative jurisdiction over lands and cases. The land for a case may not be physically located in the associated administrative state. Only those states that are BLM-administrative states are in the domain for this entity. Example: Montana is the Administrative State for public lands in the geographic States of Montana, South and North Dakota. Two letter, upper case abbreviation for the administrative state office. The current list of values is: AK, AZ, CA, CO, ES, ID, MT, NM, NV, OR, UT, and WY. In the FBMS Organization Codes, use the second two characters (after the LL) (e.g. LL**AK**030900) Note: This attribute is included for purposes of replication. Attribute Domain Assignment: *DOM_ADMIN_ST*
GlobalID	Not Applicable	**Logical Definition**: Not on logical model. **Design Considerations:** Software generated value. A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. This field is not editable and is automatically populated when it is added for existing data. Note: This attribute is included for purposes of replication only. It is not used as a unique identifier for relationships between feature classes/tables.

E. Vegetation Treatment Area Updates Table (vtrt_upd_tbl)

The Vegetation Treatment Area Updates Table applies to both the Proposed and Completed Vegetation Treatment Polygons tables. This stand alone table reflects the most current date when data is imported from each system into the GIS. By maintaining the update date and the previous update date, the frequency of the update cycle can be validated. This table will contain one row per system. Each time a system adds records to one of the vegetation treatment area feature classes, the row in this table for that system is updated with the date when records were added.

Vegetation Treatment Area Updates Table Attributes						
GIS NAME	ALIAS	DATA FORMAT	REQUIRED?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
SYS_CD	System Acronym Code	Char(12)	YES		VTRT_DOM_SYS_CD	No
UPD_CYCLE	Update Cycle	Char(10)	YES		VTRT_DOM_UPD_CYCLE	No
UPD_DT	Update Date	Date	YES	09/09/9999		No
PREV_UPD_DT	Previous Update Date	Date	YES	09/09/9999		No
GlobalID	GlobalID	UUID	YES			No

GIS Name	Logical Name	Definition
SYS_CD	System Acronym Code	**Logical Definition**: The code for the system where the authoritative source for the treatment data resides. **Design Considerations:** The value is not updateable. New rows are added only if additional systems will be added to this data set. Attribute Domain Assignment: VTRT_DOM_SYS_CD

GIS Name	Logical Name	Definition
UPD_CYCLE	Not Applicable	**Logical Definition**: Not on the logical data model. **Design Considerations:** The name that indicates the expected timeframe for updating the system's vegetation treatment area data in this data set. This value is only updated if the system changes its cycle for adding records to this dataset. Attribute Domain Assignment: VTRT_DOM_UPD_CYCLE
UPD_DT	Not Applicable	**Logical Definition**: Not on the logical data model. **Design Considerations:** The date on which data from this system was most recently added to this data set. This date is updated each time records from the system are added to the data set. When there is a system update, the existing System Update Date is moved to Previous System Update Date and the current date is moved to System Update Date. Default: 09/09/9999
PREV_UPD_DT	Not Applicable	**Logical Definition**: Not on the logical data model. **Design Considerations:** Each time records from the system are added to the database, the existing System Update Date replaces the previous update date. Default: 09/09/9999
GlobalID	Not Applicable	**Logical Definition**: Not on logical model. **Design Considerations:** Software generated value. A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. This field is not editable and is automatically populated when it is added for existing data. Note: This attribute is included for purposes of replication only. It is not used as a unique identifier for relationships between feature classes/tables.

APPENDIX A: DOMAIN VALUES

Domain values are maintained separately from the data standard. This is due to values being more likely to have an addition or change that would not affect the data standard. Domain values cannot be added to attributes specific to the standard (except thru the data standardization maintenance step). A state can extend the data standard with a new attribute which can have a state specific domain list. However, all attributes that are required as part of the standard must have a value from the data standard domain list. Any additional attributes and their associated domain values must be documented with metadata by that office.

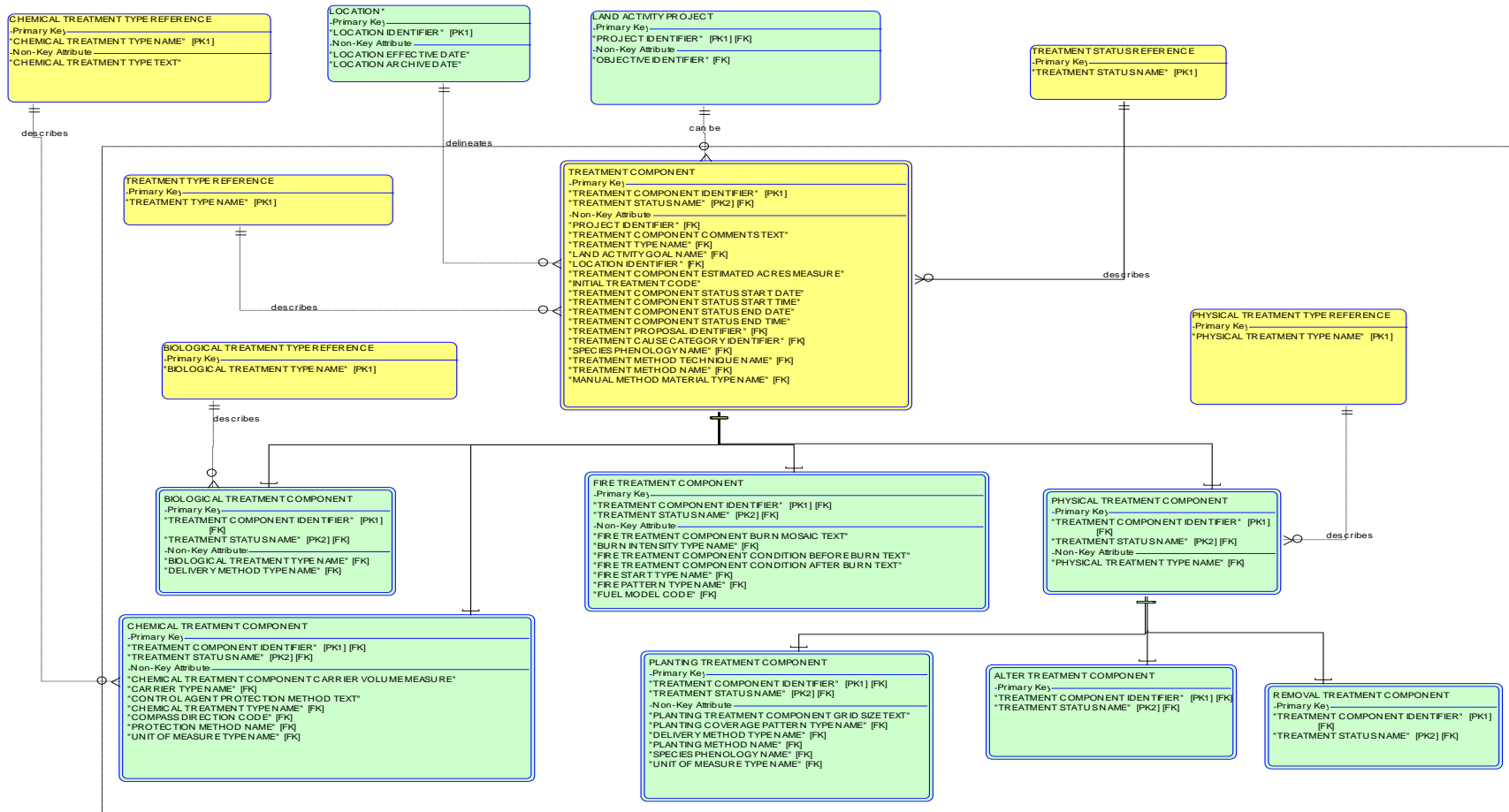**For domain values specific to Vegetation Treatment Areas, please go to:**
http://teamspace/sites/blmnds/est2010/default.aspx

For Feature Level Metadata Domains, please see the <u>Domain Information</u> Section, located at
http://web.blm.gov/data_mgt/std_proc.htm.

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."

CHEMICAL TREATMENT TYPE REFERENCE
-Primary Key-
"CHEMICAL TREATMENT TYPE NAME" [PK1]
-Non-Key Attribute-
"CHEMICAL TREATMENT TYPE TEXT"

LOCATION*
-Primary Key-
"LOCATION IDENTIFIER" [PK1]
-Non-Key Attribute-
"LOCATION EFFECTIVE DATE"
"LOCATION ARCHIVE DATE"

LAND ACTIVITY PROJECT
-Primary Key-
"PROJECT IDENTIFIER" [PK1] [FK]
-Non-Key Attribute-
"OBJECTIVE IDENTIFIER" [FK]

TREATMENT STATUS REFERENCE
-Primary Key-
"TREATMENT STATUS NAME" [PK1]

TREATMENT TYPE REFERENCE
-Primary Key-
"TREATMENT TYPE NAME" [PK1]

TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1]
"TREATMENT STATUS NAME" [PK2] [FK]
-Non-Key Attribute-
"PROJECT IDENTIFIER" [FK]
"TREATMENT COMPONENT COMMENTS TEXT"
"TREATMENT TYPE NAME" [FK]
"LAND ACTIVITY GOAL NAME" [FK]
"LOCATION IDENTIFIER" [FK]
"TREATMENT COMPONENT ESTIMATED ACRES MEASURE"
"INITIAL TREATMENT CODE"
"TREATMENT COMPONENT STATUS START DATE"
"TREATMENT COMPONENT STATUS START TIME"
"TREATMENT COMPONENT STATUS END DATE"
"TREATMENT COMPONENT STATUS END TIME"
"TREATMENT PROPOSAL IDENTIFIER" [FK]
"TREATMENT CAUSE CATEGORY IDENTIFIER" [FK]
"SPECIES PHENOLOGY NAME" [FK]
"TREATMENT METHOD TECHNIQUE NAME" [FK]
"TREATMENT METHOD NAME" [FK]
"MANUAL METHOD MATERIAL TYPE NAME" [FK]

PHYSICAL TREATMENT TYPE REFERENCE
-Primary Key-
"PHYSICAL TREATMENT TYPE NAME" [PK1]

BIOLOGICAL TREATMENT TYPE REFERENCE
-Primary Key-
"BIOLOGICAL TREATMENT TYPE NAME" [PK1]

BIOLOGICAL TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1] [FK]
"TREATMENT STATUS NAME" [PK2] [FK]
-Non-Key Attribute-
"BIOLOGICAL TREATMENT TYPE NAME" [FK]
"DELIVERY METHOD TYPE NAME" [FK]

FIRE TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1] [FK]
"TREATMENT STATUS NAME" [PK2] [FK]
-Non-Key Attribute-
"FIRE TREATMENT COMPONENT BURN MOSAIC TEXT"
"BURN INTENSITY TYPE NAME" [FK]
"FIRE TREATMENT COMPONENT CONDITION BEFORE BURN TEXT"
"FIRE TREATMENT COMPONENT CONDITION AFTER BURN TEXT"
"FIRE START TYPE NAME" [FK]
"FIRE PATTERN TYPE NAME" [FK]
"FUEL MODEL CODE" [FK]

PHYSICAL TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1]
"TREATMENT STATUS NAME" [PK2] [FK]
-Non-Key Attribute-
"PHYSICAL TREATMENT TYPE NAME" [FK]

CHEMICAL TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1] [FK]
"TREATMENT STATUS NAME" [PK2] [FK]
-Non-Key Attribute-
"CHEMICAL TREATMENT COMPONENT CARRIER VOLUME MEASURE"
"CARRIER TYPE NAME" [FK]
"CONTROL AGENT PROTECTION METHOD TEXT"
"CHEMICAL TREATMENT TYPE NAME" [FK]
"COMPASS DIRECTION CODE" [FK]
"PROTECTION METHOD NAME" [FK]
"UNIT OF MEASURE TYPE NAME" [FK]

PLANTING TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1] [FK]
"TREATMENT STATUS NAME" [PK2] [FK]
-Non-Key Attribute-
"PLANTING TREATMENT COMPONENT GRID SIZE TEXT"
"PLANTING COVERAGE PATTERN TYPE NAME" [FK]
"DELIVERY METHOD TYPE NAME" [FK]
"PLANTING METHOD NAME" [FK]
"SPECIES PHENOLOGY NAME" [FK]
"UNIT OF MEASURE TYPE NAME" [FK]

ALTER TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1] [FK]
"TREATMENT STATUS NAME" [PK2] [FK]

REMOVAL TREATMENT COMPONENT
-Primary Key-
"TREATMENT COMPONENT IDENTIFIER" [PK1] [FK]
"TREATMENT STATUS NAME" [PK2] [FK]

describes / *delineates* / *can be*

Legend: See Appendix C

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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.*

ASSOCIATI VE ENTITY
- *resolves the many to many*
- *with the diamond symbol*

APPENDIX D: ATTRIBUTE METADATA TERMINOLOGY

The following matrix describes the metadata for the Data Standards Implementation Details.

Attribute Metadata Field	Metadata Definition	Example
GIS Name	The abbreviated name of the field as it appears in the database	RCVR_TYPE
Alias	An alternative name that is more descriptive and user-friendly than the Logical or GIS Field Name	GPS RECEIVER TYPE
Data Format	Specific type of data allowed/# of characters or numbers/Precision & Scale	Char(15)
Required?	If an attribute does or does not have to have a value. If "YES", the attribute is required, if "NO", the attribute is optional.	NO
Default Value	Value that will apply if no other value is specified; included in domain value list.	N/A
Domain Name	Name of the table for that attribute, containing the Code, Description, and Definition for each value in the table	DOM_RCVR_TYPE
Derived?	If the attribute value is derived from the value of one or more other attribute values (YES) otherwise, (NO) the value is not derived. The description of how the attribute is derived will be included in the Definition/Design Consideration.	NO
Logical Attribute Name	The business name of the attribute which includes the entity name, and representation term	Global Positioning System Receiver Type Name