Invasive Species Survey Areas

DATA STANDARD REPORT

May 4, 2010

Version 1.1

United States Department of Interior
Bureau of Land Management
National Operations Center
Data 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.

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INTRODUCTION

Description of Standard

This data standard refers to the information collected, stored and managed to describe invasive species survey areas (ISSA) on public lands. Invasive Species Survey Areas (currently called weed survey areas) are geographic locations where a survey occurs for the specific reason of searching for and locating invasive species. Surveys shall be conducted based on common and accepted practices for the process of conducting an inventory to determine the presence or absence of invasive species.

Invasive species survey areas are a method to accomplish the mission of the BLM as defined in the following acts:

- According to the Federal Lands Policy Management Act (FLPMA), BLM must manage public lands according to the principles of multiple use and sustained yield. These principles are further qualified in the act by the statutory duty that the BLM prevent unnecessary degradation of the public lands.
- Public Rangelands Improvement Act of 1987 states that the act states the BLM must manage maintain and improve public lands suitable for livestock grazing so that they become as productive as feasible.
- Federal Noxious Weed Act of 1974, as amended by Sec. 15 – Management of Undesirable Plants on Federal Lands, 1990 - Authorizes the Secretary "to cooperate with other federal and state agencies, and others in carrying out operations or measures to eradicate, suppress, control, prevent, or retard the spread of any noxious weed. Each federal agency shall 1) designate an office or person adequately trained to develop and coordinate an undesirable plants management program for control of undesirable plants on federal lands under the agency's jurisdiction, and 2) establish and adequately fund an undesirable plants management program through the agency's budgetary process, 3) complete and implement cooperative agreements with State agencies regarding the management of undesirable plant species on federal lands, and 4) establish integrated management systems to control or contain undesirable plant species targeted under cooperative agreements."

Affected Groups

Include but not limited to: land use planners, GIS specialists, rangeland management specialists, botanists, natural resource specialists, foresters, wildlife and fisheries biologists, and range technicians. This may also include partners that provide survey information to the BLM.

Sponsor

Rob Roudabush, Division Chief Rangeland Resources, LLWO220000	202 912-7222

DATA STEWARD / CONTACT INFORMATION

Office	Role	Name	Contact Information
WO-220	BLM Business Data Steward	Gina Ramos	(202) 912-7226 PH Gina_Ramos@blm.gov

DATA SET CHARACTERISTICS

Overall Security

a.	**Identify Security Level**
	Public. The overall NISIMS data set will contain Privacy Act (PA) information and Personally Identifiable Information (PII), portions of which may be redacted if the data is released in a publicly available forum
b.	**Privacy Information**
	The data will contain Privacy Act and Personally Identifiable information (names and addresses of cooperators and those individuals who have an identified, established and documented Role in the locating, mapping, identifying, treating and monitoring of invasive species). Personally Identifiable Information (PII) data will be entered and stored in the database tables containing name, address and contact information of individuals who may perform assessments or assist in identifying areas thought to be infested.. Only PII data that is already considered to be in a public forum (i.e. Name and contact information listed on a Cooperating agreement) would be available for public viewing. PII for individuals not identified in a public forum may be redacted and held from public release. The BLM is preparing a Department of the Interior Privacy Impact Assessment (DOI-PIA) which may result in a System of Record notification to be filed in the Federal Register, as required.

Data Privileges

Who has create, read, update, and/or delete privileges?
The state Data steward for the weeds program will determine access right. The Field Office staff members that are responsible for the invasive species survey areas will require Create, Read, Update and Delete (CRUD) privileges for their geographic portion of the data set. Where Invasive Species Survey Areas cross Field Office, District or State boundaries, individual access will be dependent on duties assigned. In some cases, individuals will require CRUD privileges to more than one Field Office, District or State portion of the data set depending on assigned work. State Office (SO) GIS specialist and invasive species program leads may require CRUD to the entire state portion of the data set.

Other SO staff will have READ permission. Land use planners, GIS specialists, rangeland management specialists, botanists, natural resource specialists, foresters, wildlife and fisheries biologists, range technicians and invasive species coordinators may require CRUD privileges for specific geographic areas or portions of the data set. Access conditions and terms may be specific to each office and location within the BLM. Some portions of the data set may be reviewed and read by cooperators, contractors, state or county agencies and others as needed to accomplish the BLM mission.

Data Collection & Maintenance Protocols

a.	**Location Accuracy Requirements**
	Spatial Location Accuracy shall be +/- forty (40) feet for all areas of an Invasive Species Survey Area polygon. Sections of the polygon that are coincident with other land or political features (e.g. county boundary) shall be duplicated to this data set to help insure geographic integrity.
b.	**Data Content Accuracy Requirements**
	Expected data content accuracy shall be 90% accurate for initial data entry. After yearly review, data accuracy is expected to be 93%.
c.	**Collection & Input Protocols:**
	While it would seem that most of the time, the collection would not be done in the field and the polygon would be created in the office, the option is available for them to collect the survey area in the field. There is currently no single method for data collection and input for this data set. Data may be collected and input from a variety of sources as long as the data are documented with metadata. BLM has not yet migrated enough of its existing data stores to any specific format to eliminate any methods for digital data collection.
d.	**Update Procedures:**
	Ideally, data for the identification and selection of a Invasive Species Survey Area (ISSA) AND any changes made to the boundary or status of the ISSA shall be input or updated in the system within 2 weeks (10 business days). At a minimum, data will be input and updated prior to the beginning of the field data collection season. This includes geographic changes and changes to attribute data. Field data collection protocols shall be followed.

Data Quality

a.	**Transaction level data quality:**
	Implementation will include domain value edits during data entry. Accepted BLM procedures and protocols shall be followed when establishing a Survey Area.

b.	**Monitoring level data quality:**
	State and National data stewards shall review the data set annually prior to September 30 of each year for end of year reporting. Discrepancies or deficiencies are to be reported to the appropriate Field Office data steward for clarification and update. Cooperating agencies and partners may choose to review any corrections to the data for accuracy of attributes. Field Offices are responsible for insuring that accomplishments are properly reported for identifying and establishing Survey Areas.

Relationship To Other Standards

This data will be in NISIMS, however the information contained in the survey areas is stand alone. There is a relationship to Party (Individual and Organization) Information for personnel who conduct the survey.

Invasive Species Survey Areas may cross multiple field office, district or state boundaries. Where possible, coincidental lines from other data sets shall be used to create the polygon depicting the Survey Area. Survey Areas based upon physical geographic features shall have coincidental arcs duplicated from those data sets. Invasive Species Survey Areas may be coincidental to other monitoring or data gathering locations.

Based on cooperative efforts, invasive species management areas may cross multiple field office, district, county or state boundaries. Where possible, coincidental lines from other data sets shall be used to create the polygon depicting the ISMA.

The National Invasive Species Information Management System (NISIMS) provides tools for data collection and the generation of bureau-wide analysis and statistics for invasive species infestations and treatments through a centralized geodatabase. NISIMS provides the tools to; add treatment proposal location; enter treatment proposal information and location; enter certification information; enter survey information and location; enter seed lot information; enter invasive species management area information and location; capture infestation, treatment and photo location; enter treatment information (chemical, biological, physical; manual/mechanical, revegetation and fire). The invasive species management area has no tie to any other data standard within NISIMS. The only relate exists with the organization table.

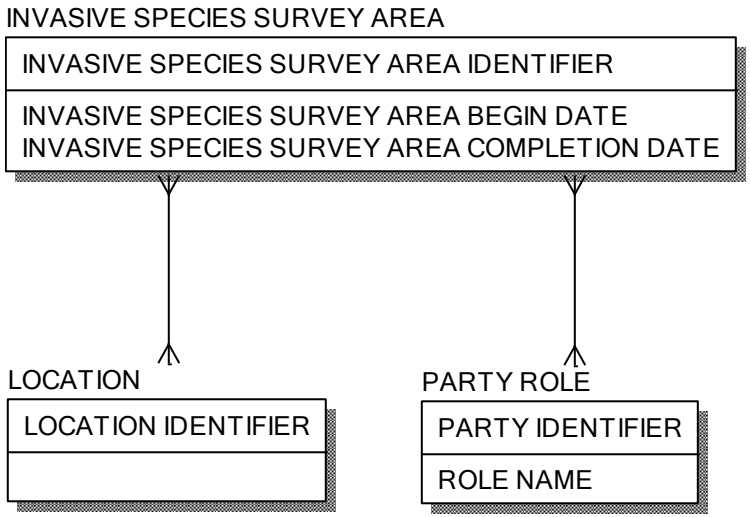
NISIMS provides tools for data collection and the generation of bureau-wide analysis and statistics for invasive species infestations and treatments through a centralized geodatabase. NISIMS provides the tools to; add treatment proposal location; enter treatment proposal information and location; enter certification information; enter survey information and location; enter seed lot information; enter invasive species management area information and location; capture infestation, treatment and photo location; enter treatment information (chemical, biological, physical; manual/mechanical, revegetation and fire). The survey area can be tied to the weed infestation through a field within the weed infestation table (weed survey id) (although not a required field). Otherwise survey area has no tied to any other standard within NISIMS.

NISIMS provides tools for data collection and the generation of bureau-wide analysis and statistics for invasive species infestations and treatments through a centralized geodatabase. NISIMS provides the tools to; add treatment proposal location; enter treatment proposal information and location; enter certification information; enter survey information and location; enter seed lot information; enter invasive species management area information and location; capture infestation, treatment and photo location; enter treatment information (chemical, biological, physical; manual/mechanical, revegetation and fire). The invasive species location is tied to treatment component location (required), photo point location (required) and survey (not required) standards within NISIMS.

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.

Invasive Species Survey Area Conceptual Data Model



Legend: See Appendix C

Invasive Species Survey 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.

INVASIVE SPECIES SURVEY AREA DRAFT ENTITY A geographic area delineated for the purpose of conducting investigations to detect the presence or absence of invasive species.					
Data Element Name	**Type**	**Size**	**Required?**	**Definition**	**Comments**
INVASIVE SPECIES SURVEY AREA IDENTIFIER	integer		Yes	The designed primary key that will uniquely identify a single occurrence of the entity.	
SURVEY TYPE NAME	character	12	Yes	The name of the method for how the survey was conducted.	

INVASIVE SPECIES SURVEY LOCATION DRAFT ENTITY A specific location associated with an invasive species survey area.					
INVASIVE SPECIES SURVEY LOCATION COMPLETION DATE	date		Yes	The date the survey of invasive species in the area was finished.	
INVASIVE SPECIES SURVEY LOCATION BEGIN DATE	date		Yes	The date the survey of invasive species in the area was started.	
PARTY IDENTIFIER	integer		Yes	The designed primary key that will uniquely identify a single occurrence of the entity.	The person or organization that has a role in the survey area. This is the Legal_Entity_ID (LE_ID) in NISIMS and is linked to their name and contact information in NISIMS
LOCATION IDENTIFIER	Character	12	Yes	The designed primary key that will uniquely identify a single occurrence of the entity.	The area/location that is covered by the Invasive Species Survey Area. The number of acres for this area will also be captured.

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. Spatial Data Projection

All data collected and input into the GIS shall be stored with a data conforming to the current BLM state policy for datum.	
Business Rule Source and Description	
Guidance Best Management Practice; Program lead guidance	
Type of Business Rule	Current Implementation
Standard (Required)	Manual Process and Computer Application

2. Invasive Species Survey Area Acres

All invasive species surveys include the number of acres systemically checked for the presence or absence of non-native invasive species.	
Business Rule Source and Description	
Guidance Program lead & Best Management Practice guidance	
Type of Business Rule	Current Implementation
Guideline (Optional)	Not Applicable

3. Survey Boundary Rule

Survey Boundaries will be collected as polygons. These will not be collected as multi-part polygons.	
Business Rule Source and Description	
Guidance Program lead & Best Management Practice guidance	
Type of Business Rule	Current Implementation
Guideline (Optional)	Not Applicable

OTHER MATERIAL

Other supporting material that aids in the understanding or use of the data standard

Federal Laws, Regulations, and Policies that apply to weeds and invasive species (includes pesticides use):

BLM Manual 9011 and Handbook H-9011-1 – Provides policy for conducting chemical pest control program under an integrated pest management approach.
BLM Manual 9014 - Provides guidance and procedures for planning and implementing biological control in integrated pest management programs.
BLM Manual 9015 – Provides policy relating to the management and coordination of noxious weeds activities among BLM, organizations, and individuals.
Carlson-Foley Act of 1968 – Directs agency heads to enter upon lands under their jurisdiction with noxious plants and destroy noxious plants growing on such land.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulates how to clean up spills of hazardous materials and when to notify agencies in case of spills
Departmental Manual 209 – Prescribes policy to control undesirable or noxious weeds on the lands, waters, or facilities under its jurisdiction to the extent economically practicable, and as needed for resource protection and accomplishment of resource management objectives.
Departmental Manual 517 – Prescribes policy for the use of pesticides on the lands and waters under its jurisdiction, and for compliance with the Federal Insecticide, Fungicide, and Rodenticide Act, as amended.
Executive Order 13112 of February 3, 1999 directs federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.
Federal Food, Drug, and Cosmetic Act the USEPA establishes tolerances (maximum) legally permissible levels) for pesticide residues in food
Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) establishes procedures for the registration, classification, and regulation of all pesticides.
FLPMA – Directs the BLM to "take any action necessary to prevent unnecessary and or undue degradation of the public lands."
Food Quality Protect Act of 1996 mandates a single, health-based standard for all pesticides in all foods: provides special protections for infants and children
Noxious Weed Control Act of 2004 established a program to provide assistance through states to eligible weed management entities to control or eradicate harmful, nonnative weeds on public and private lands.
Plant Protection Act of 2000 (PL 106-224 includes management of undesirable plants on federal lands) authorize the BLM to manage noxious weeds and to coordinate with other federal and state agencies in activities to eradicate, suppress, control, prevent, or retard the spread f any noxious weeds on federal lands
Public Rangelands Improvement Act (PRIA) – Requires that BLM will manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible.
Resources Conservation and Recovery Act (RCRA) regulates the disposal of toxic wastes, including the disposal of used herbicides, and provides authority for toxic waste cleanup actions when there is a known operator.

DOMAINS SPECIFIC TO THIS DATA STANDARD

To see Domains specific to Invasive Species Survey Areas, please see the file named 2_Invasive_Species_Survey_Area_Domains.doc

APPENDIX A: DOI DATA CATEGORIES

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

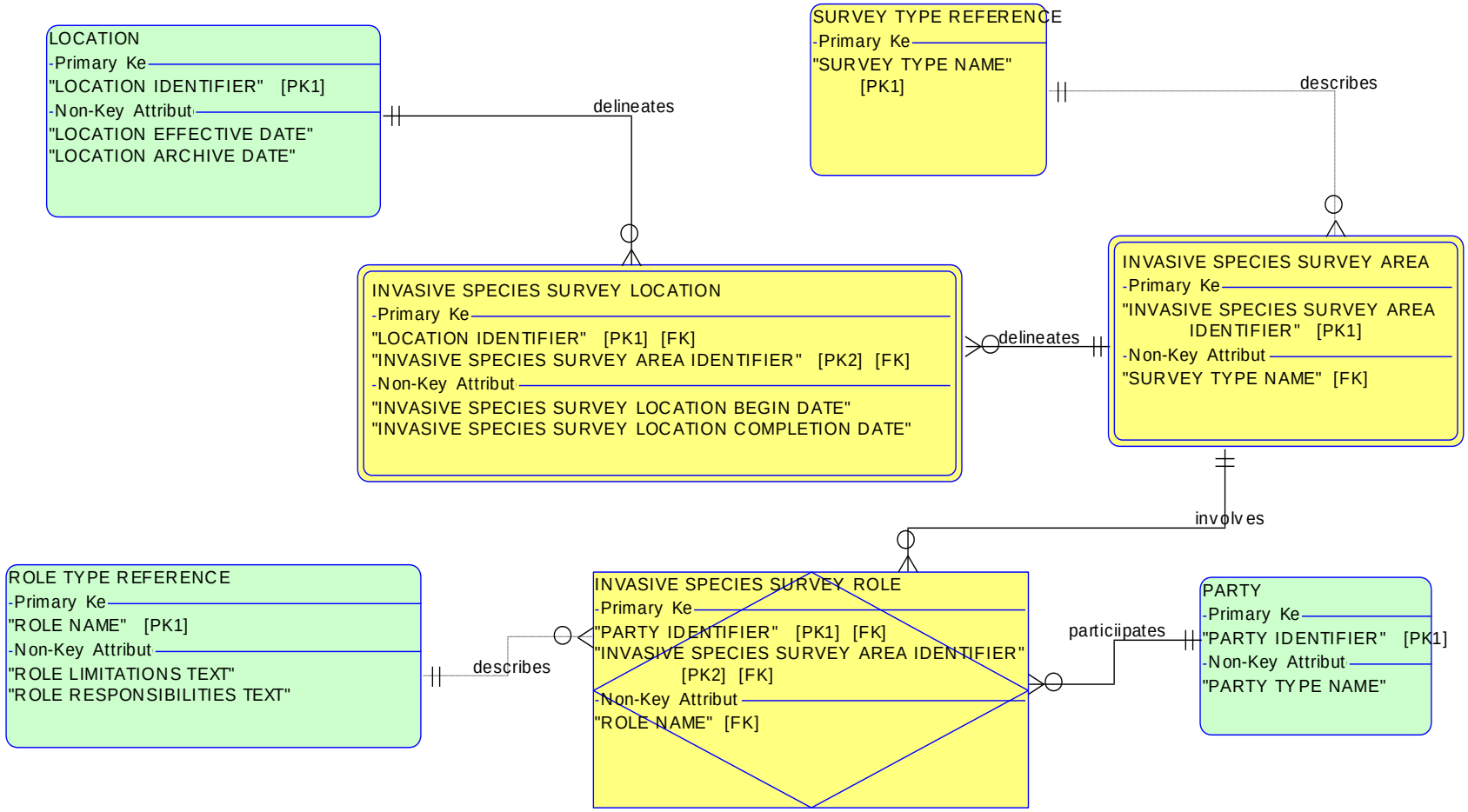
Subject Area: A collection of data classifications representing broad categories of information that support a line of business.
Information Class: A logical grouping of entities that are subcategories of the subject areas.

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

This standard proposal covers the following DOI Subject Areas and Information Classes:	
GEOSPATIAL AND GEOGRAPHY	*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 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*
• Map	*A graphic depiction on a flat surface of the physical features of the whole or a part of the earth or other body, or of the heavens, using shapes to represent objects and symbols to describe their nature. Maps generally use a specified projection and indicate the direction of orientation.*
• Spatial Data Set	*A collection of spatial data and its related descriptive data, organized for efficient storage and retrieval. A simple data set might be a single file with many records, each of which references the same set of fields. A more robust spatial data set includes data about the spatial locations and shapes of geographic features, recorded as points, lines, areas, pixels, grid cells, or TIN (Triangulated Irregular Network) sample points, as well as their attributes*
NATURAL AND CULTURAL RESOURCE	*Information about the natural and ecological resources, cultural resources, cultural resources, archaeological, and paleontology resources, and national heritage resources of the nation*
• Biological Resource	*Information about genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity*
PROTECTION	*Information about activities that protect something or someone from exposure, injury, damage, or destruction.*
• Endangered Species Protection	*Information about all activities performed to protect plants and animals that are in danger of extinction throughout all or a significant portion of its range, in accordance with the Endangered Species Act of 1973*
• Habitat Protection	*Information about all activities performed to protect the environment in which an organism or biological population lives and grows.*
SCIENCE AND INNOVATION	*Information about any domain of knowledge accumulated by scientific study and organized by general principles; includes scientific research and innovation when goal is the creation of new scientific and/or technological knowledge*
• Agricultural Science	*Information about the science, art and business of cultivating the soil, producing crops and raising livestock.*
• Biological Science	*Information related to the branch of science that deals with the science of life and life processes, including the study of structure, origin, evolution, and distribution of living organisms*

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
INVASIVE SPECIES SURVEY AREA							DRAFT ENTITY
	A geographic area delineated for the purpose of conducting investigations to detect the presence or absence of invasive species.						
		INVASIVE SPECIES SURVEY AREA IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		SURVEY TYPE NAME	character	12	Yes	PK	The name of the method for how the survey was conducted.
INVASIVE SPECIES SURVEY LOCATION							DRAFT ENTITY
	A specific location associated with an invasive species survey area.						
		INVASIVE SPECIES SURVEY LOCATION COMPLETION DATE	date		Yes		The date the survey of invasive species in the area was finished.
		INVASIVE SPECIES SURVEY LOCATION BEGIN DATE	date		Yes		The date the survey of invasive species in the area was started.
		LOCATION IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		INVASIVE SPECIES SURVEY AREA IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
INVASIVE SPECIES SURVEY ROLE							DRAFT ENTITY
	The individual or organization that participates in some manner with an Invasive Species Survey Area.						
		PARTY IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		INVASIVE SPECIES SURVEY AREA IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		ROLE NAME	character	20	Yes	PK, FK	The name of the role that the individual or organization plays in relationship to another entity or function.
SURVEY TYPE REFERENCE							DRAFT ENTITY
	The domain of valid values for the name of how the survey was conducted.						
		SURVEY TYPE NAME	character	12	Yes	PK	The name of the method for how the survey was conducted.

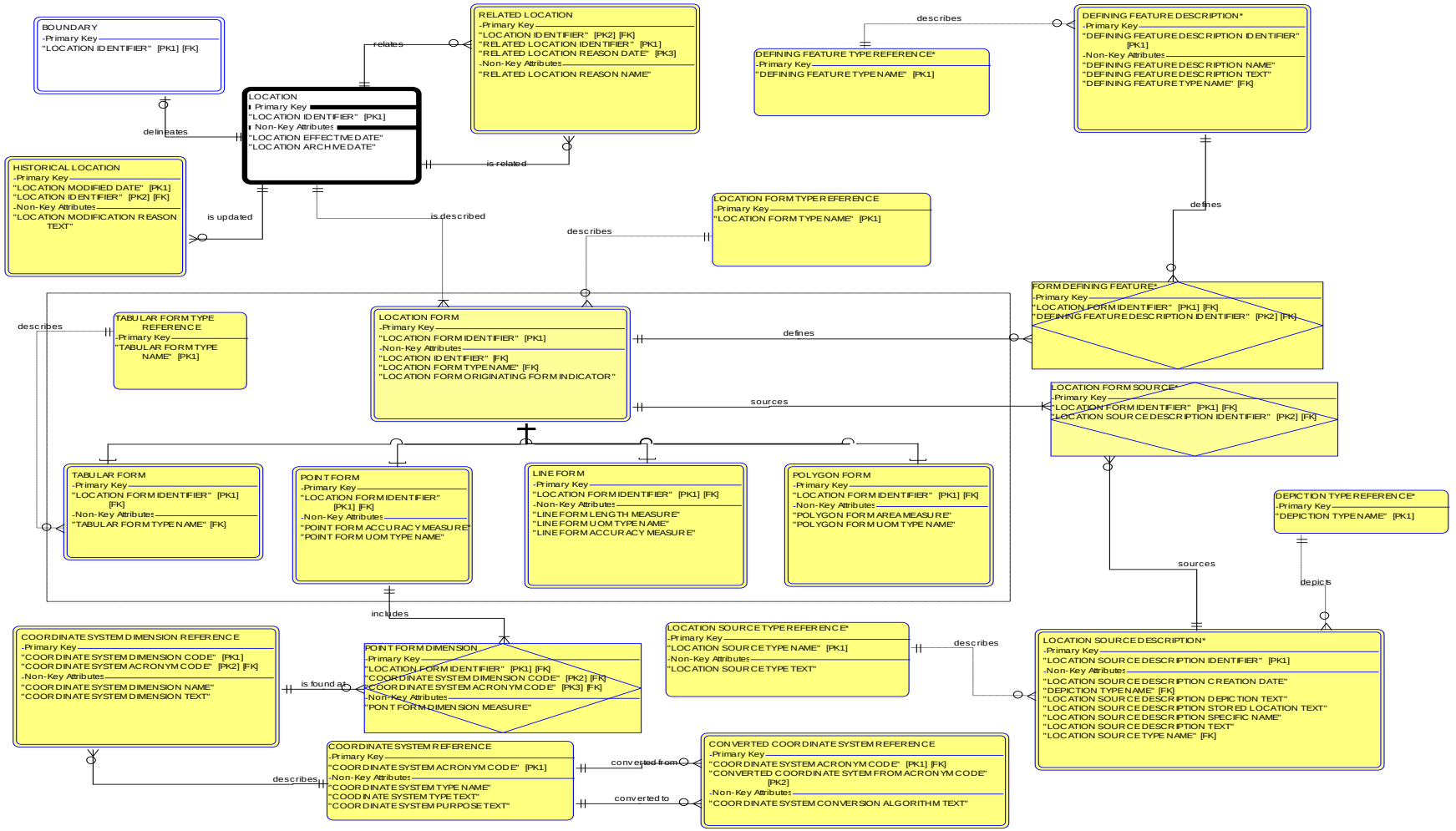
*Key (PK: Primary Key) (FK: Foreign Key which is PK of related entity) (PK, FK: Foreign Key part of PK)

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
LOCATION							DRAFT ENTITY
	A defined place that requires a way to locate it by some means. Note: Entities linked to Location have the potential for a geospatial aspect.						
		LOCATION ARCHIVE DATE	date		Opt		The date which is the calendar year, month, and day when the position of the Location is considered no longer valid but has historical value.
		LOCATION EFFECTIVE DATE	date		Yes		The date which is the calendar year, month, and day when the position of the Location was produced.
		LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
PARTY							DRAFT ENTITY
	General information (the name) about the individuals and organizations (agencies, companies, etc.) which interact with the BLM.						
		PARTY IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		PARTY TYPE NAME	character	12	Yes		The name that categorizes whether this is a subtype of individual or organization.
ROLE TYPE REFERENCE							CONCEPTUAL ENTITY
	The domain of valid values of roles for an individual or organization.						
		ROLE NAME	character	20	Yes	PK	The name of the role that the individual or organization plays in relationship to another entity or function.
		ROLE LIMITATIONS TEXT	character	200	Yes		A description of any limitations imposed on the responsibilities.
		ROLE RESPONSIBILITIES TEXT	character	200	Yes		A general description of responsibilities of this role.
						*Key	(PK: Primary Key) (FK: Foreign Key which is PK of related entity) (PK, FK: Foreign Key part of PK)

Location Logical Data Model

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



Legend: See Appendix C

Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
BOUNDARY	The edge of a location that demarks the change from one location to another location.						DRAFT ENTITY
		LOCATION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
CONVERTED COORDINATE SYSTEM REFERENCE	The domain of values for the algorithm used to convert from one coordinate system to another.						DRAFT ENTITY
		COORDINATE SYSTEM CONVERSION ALGORITHM TEXT	character	60	Yes		The text that contains the algorithm used to convert from one coordinate system to another.
		COORDINATE SYSTEM ACRONYM CODE	character	10	Yes	PK, FK	The code that is considered the acronym for the coordinate system type.
		CONVERTED COORDINATE SYSTEM FROM ACRONYM CODE	character	10	Yes	PK	The code for the coordinate system that is being converted from (to another coordinate system).
COORDINATE SYSTEM DIMENSION REFERENCE	The dimensions that are part of given coordinate system type.						DRAFT ENTITY
		COORDINATE SYSTEM DIMENSION TEXT	character	100	Yes		The text that further describes the dimension for a given coordinate system type.
		COORDINATE SYSTEM DIMENSION CODE	character	10	Yes	PK	The code that is used to designate a dimension for a coordinate system type.
		COORDINATE SYSTEM DIMENSION NAME	character	10	Yes		The name associated with a code that is used to designate a dimension for a coordinate system type.
		COORDINATE SYSTEM ACRONYM CODE	character	10	Yes	PK, FK	The code that is considered the acronym for the coordinate system type.
COORDINATE SYSTEM REFERENCE	A reference framework consisting of a set of points, lines and/or surfaces; including a set of rules used to define the positions of points in space in either two or three dimensions.						DRAFT ENTITY
		COODINATE SYSTEM TYPE TEXT	character	100	Yes		The text that describes the particular coordinate system type.
		COORDINATE SYSTEM TYPE NAME	character	40	Yes		The name given to a particular coordinate system type.
		COORDINATE SYSTEM ACRONYM CODE	character	10	Yes	PK	The code that is considered the acronym for the coordinate system type.
		COORDINATE SYSTEM PURPOSE TEXT	character	100	Yes		The text that describes the purpose or purposes of a given coordinate system type.
DEFINING FEATURE DESCRIPTION*	The values associated with second level of detail that can be used to define / create the location, based on the Defining Feature Type Name. There is not a finite set of values for this.						APPROVED ENTITY: BLM
		DEFINING FEATURE DESCRIPTION NAME	character	40	Opt		The name that identifies a more specific description of the feature from which the arcs are derived to create polygon boundaries. This information further describes the physical or mapping feature that makes up the polygon boundary.
		DEFINING FEATURE DESCRIPTION TEXT	character	200	Yes		The text that provides further details on the Defining Feature Description.

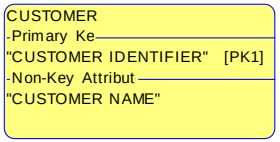
Entity Name	Entity Description	Logical Data Element Name	Type	Size	Req'd?	Key*	Definition
		DEFINING FEATURE DESCRIPTION IDENTIFIER	integer		Yes	PK	The designed primary key that will uniquely identify a single occurrence of the entity.
		DEFINING FEATURE TYPE NAME	character	30	Yes		The name that identifies the high-level category for the actual physical or mapping characteristics (features) from which the arcs are derived.
DEFINING FEATURE TYPE REFERENCE*							APPROVED ENTITY: BLM
A domain for the description of the characteristic (feature) constructed from a geographic feature that was used to create the location boundary.							
		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*							APPROVED ENTITY: BLM
The domain of values for the way a location is depicted either in scale or resolution.							
		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*							APPROVED ENTITY: BLM
The defining features associated with a specific location form.							
		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							DRAFT ENTITY
The date and reason why a location's information has changed. Business Rule: this is for administrative changes, not necessarily for corrections to data.							
		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							DRAFT ENTITY
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.							
		LOCATION FORM IDENTIFIER	integer		Yes	PK, FK	The designed primary key that will uniquely identify a single occurrence of the entity.
		LINE FORM LENGTH MEASURE	decimal		Yes		The measure of the length of the line described in the Line Form UOM Type Name.
		LINE FORM UOM TYPE NAME	character	20	Yes		The domain value associated with the Unit of Measure used for the Line Form Length Measure.
		LINE FORM ACCURACY MEASURE	decimal		Yes		The measure that describes how close, in Line Form UOM Type Name the actual location is to the spatial depiction.
LOCATION							DRAFT ENTITY

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

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

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

APPENDIX C: READING A LOGICAL DATA MODEL

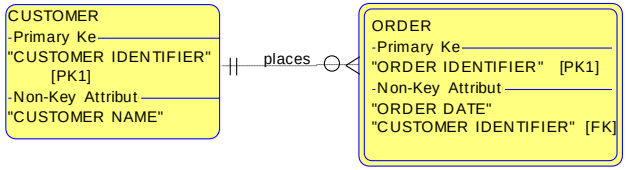


ENTITY

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

ATTRIBUTES

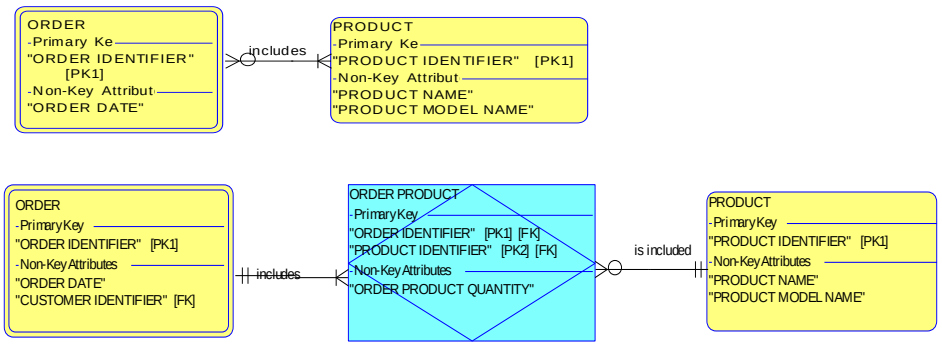
- *The adjective which is the data or information about an entity; describes an entity (ORDER NUMBER, ORDER DATE)*
- *Has **only one** valid value for an occurrence of an entity at any given time The same value of an attribute may describe more than one entity occurrence*
- *PK = Primary Key – uniquely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



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

RELATIONSHIP

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



Many to Many:

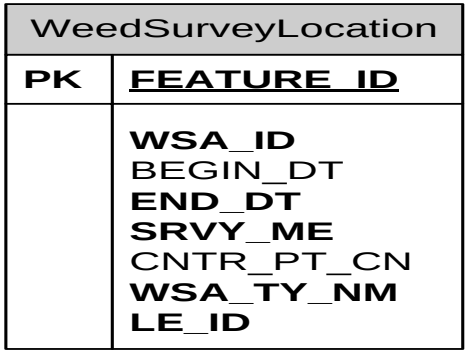
- *In a logical data model, many to many relationships are resolved. In the example to the left an ORDER includes one to many PRODUCTs and a PRODUCT can be in zero or many ORDERs.*

Associative Entity:

- resolves the many to many
- with the diamond symbol

APPENDIX D: NISIMS SURVEY AREA PHYSICAL DESIGN

The National Invasive Species Information Management System (NISIMS) is a collection of modules which provide tools for data collection and the generation of analysis and statistics for invasive species infestations and treatments through a centralized, national geodatabase. The Invasive Species Survey Area feature class component of NISIMS is the information collected, stored and managed to describe invasive species survey areas (ISSA) on public lands. The physical design for Invasive Species Survey Areas is depicted as:



Attribute Name	Logical Data Element	Data Type	Size	Required?	Required for Hand Held	Domain	Alias
FEATURE_ID	Location Identifier	integer		Yes_gen*	No		
WSA_ID	Invasive Species Survey Area Identifier	integer		Yes_gen*	No		
SRVY_ME	Polygon Form Acre Measure	decimal		Yes	Yes		Surveyed Area Measurement **Acres**
BEGIN_DT	Invasive Species Survey Begin Date	date		No			
END_DT	Invasive Species Survey Completion Date	date		Yes	Yes		
CNTR_PT_CN	Survey Location Center Point	character	50	YesCalc*	No		
WSA_TY_NM	Survey Type Name	character	10	Yes	Yes	Weed_Survey_Type_Name	
LE_ID	Party Identifier	integer		Yes	Yes		

YesGen*: Unique identifier Generated programmatically
YesCalc *: Calculated based on centroid of the polygon