DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT AGENCY
NORTHWEST REGION
1 ROCK ISLAND ARSENAL
ROCK ISLAND, IL 61299-6200

REPLY TO
ATTENTION OF

2 8 JUL 2006

IMNW-PWD-M

MEMORANDUM FOR SEE DISTIBUTION

SUBJECT: Requirement to collect Geographic Information System (GIS) Data associated with Construction Projects

1. References:

   a. Memorandum, ACSIM, 20 Apr 05, subject: Data Standards for Geographic Information Systems and Computer Aided Drafting and Design (CADD) and Related Technologies.

   b. Draft Engineering and Construction Bulletin, HQ USACE , 22 May 06, subject: CADD and Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE) Guide for CADD and GIS Deliverables Created as Part of Military Design and Construction Projects.

2. The purpose of this memorandum is to establish the requirement to collect GIS data during construction projects on Northwest Region (NWR) installations. As the Army receives hundreds of new facilities, it is imperative that we collect the additional GIS data needed to update our GIS database. If we do not collect the data during construction, we will never catch up with updating GIS databases and will incur additional costs to our installations. Therefore, installation GIS databases will be updated NLT four months after the Beneficial Occupany Date of the construction project.

3. The intent of this policy is to gather GIS data on the building corner points and information outside the building footprint. It is not intended to require GIS information on interior building components. This does not change instructions for the use of CADD.

4. In order to meet Army requirements, all construction contracts will include the requirement to deliver the GIS data as described in attachment 1 (Spatial Data Standard for Facilities). Installations are to ensure that this requirement is included in the project management plans.

5. Suggested specification language for inclusion in contracts is available upon request. While deviations from this language are authorized, deviation from the requirement to provide data compliant with the latest version of Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) is not authorized.

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6. This memorandum is intended to be interim guidance to installations until Department of the Army provides implementing guidance. The requirements listed are the DA standard.

7. Point of contact is Mr. Brad Bush, Public Works Division, (309) 782-8296 or DSN 793-8296, e-mail: bushb@ria.army.mil; Mr. Tor Brunso, Corps of Engineers Liaison, (309) 782-0686, e-mail: torkild.p.brunso@usace.army.mil; or Mr. Robert Crescenzi, (309) 782-1614, e-mail: crescenzir@ria.army.mil .

Encl
as
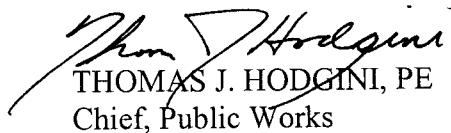
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Chief, Public Works

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Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE) Guide for GIS Deliverables Created as Part of Military Design and Construction Projects

Introduction

This Appendix establishes the requirements for geospatial data deliverables produced as part of the design-build contract. It includes description of the:
- Coordinate System and Datums;
- Data Quality Standard;
- Deliverables;
- SDSFIE-Compliant GIS Deliverable Specification; and
- Metadata.

Coordinate System and Datums

****
NOTE: The coordinate system and datums are determined by the Installation and are based on the Installation's preference in conjunction with the design standard being followed by USACE.
****

All geospatial deliverables (CADD or GIS format), whether obtained via survey or any other data collection process, shall be measured in [feet or meters]. The coordinate system for all geospatial data will be the [State Plane Coordinate System and Zone, or UTM Coordinate System and Zone]. The vertical datum will be North American Vertical Datum 1988 (NAVD 88). The horizontal datum will be WGS84.

****
NOTE: Consider including the following block if a State Plane Coordinate System is specified.
****

[Precise specifications of the State Plane Coordinate System, are as follows:

Coordinate System :	[example: Kansas State Plane Coordinate System]
Zone:	[example: South]
Units:	[Example: Feet]
Projection:	[Example: Lambert Conformal Conic]

Spheroid:	[Example: Geodetic Reference System 1980 (GRS80)]
Origin Latitude:	[Example: 36° 40 min, 0.00 sec (36.66666667°)]
Origin Longitude:	[Example: 98° 30 min, 0.00 sec N Longitude (-98.50°)]
Northern Standard Parallel:	[Example: 37° 55min, 0.00 sec (37.9166667)]
Southern Standard Parallel:	[Example: 36° 40 min, 0.00 sec (47.666667)]
False Easting :	[Example: 1312333.333333 feet]
False Northing :	[Example: 1312333.333333 feet]
Horizontal Datum :	[Example: WGS84]
Vertical Datum :	[Example: North American Vertical Datum 1988 (NAVD 88)]

Data Quality Standard

****
NOTE: Coordinate with the Installation to choose the acceptable geospatial data quality requirement. **Expect the preference to be for accurate geospatial information collected through and as-built survey.** Select which block is most appropriate, either "As Built Survey" or "Conventional Data Collection Procedures". Do not include both blocks.
****

As Built Survey

[
An as-built condition survey should be performed to capture the information listed in this Appendix. All relevant features shall be identified on as-built drawings and shall be GPS or conventional surveyed to the level of accuracy specified below.

Coordinate Accuracy

The Contractor shall use conventional surveying and other methods, such as a total station or GPS for field data collection at an accuracy level in accordance with "Geospatial Positioning Accuracy Standards, Part 4: Architecture, Engineering Construction, and Facilities Management. Published by the FGDC and available at http://www.fgdc.gov/standards/standards_publications/index html.

Horizontal and vertical accuracy of features, where
vertical coordinates are collected, shall be +/- 2cm.

Surveyor Certification Requirement

The surveyor shall verify the survey for accuracy and a
statement will be provided to the government stating the
level of accuracy for the data being reported (in metric
units). In addition to the accuracy statement, the
following information should be provided in a survey
report:
- Coordinate system & datum used;
- Projection;
- Units of measure (vertical and horizontal);
- Attribute description (GPS data dictionary—features,
  attributes and attribute values);
- Source - Receiver type, antenna type, receiver
  settings, number of positions per point feature,
  correction method and any field other relevant field
  procedures utilized;
- Survey method;
- Equipment list;
- Calibration documentation;
- Description of control points and control diagrams;
- Field notes; and
- Field-collected data (in addition to the post-
  processed final data used to prepare the geospatial
  data deliverable).

Utilities

Underground and aboveground utility lines shall be surveyed
at a minimum of two points along every straight run, at
every change of direction, at every tie in point, and at
any change in line size.
]

Conventional Data Collection Procedures

[
The government has determined that the Contractor may use
industry-accepted standard procedures for preparing
drawings showing the location of site features as
constructed. The Contractor must include in the metadata a

discussion of the methods used and the resulting horizontal and vertical accuracy of the data.

Government preference is for the contractor to certify that all features as mapped are accurate within [+/- 0.5 meters] as determined through procedures in accordance with "Geospatial Positioning Accuracy Standards, Part 4: Architecture, Engineering Construction, and Facilities Management. Published by the FGDC and available at http://www.fgdc.gov/standards/standards_publications/index_html.
]

Deliverables

The intent of the deliverable set is to provide the Installation with comprehensive geospatial information about the facility footprint and site features that exist outside the building(s). The electronic deliverables must be in the file format and data standard used by the Installation's Operations and Maintenance System.

The Installation requires deliverables in the following software formats:

- CADD Files
    - [Microstation DGN Or AutoCAD, version 'X']
    - The coordinate system, projection, datum(s) and units will be documented in the metadata.
- GIS Files
    - [ESRI shp/personal geodatabase OR Intergraph, version 'X']
    - The coordinate system, projection, datum(s) and units will be defined for the layer and will be documented in the metadata.
    - Where captured, vertical coordinate information will be stored as a feature attribute. Polygon-z, polyline-z, and point-z formatted files are not requested.

<u>100% Design (Design Complete)</u>

Final design deliverables for each design package shall consist of:

- 100% complete drawings, specifications, calculations/design analysis, and a list of all comments and their resolution for that work package. All final design drawings will be in the A/E/C CADD Standard format, current version as agreed upon by the government and the contractor. The A/E/C CADD Standard is available at https://tsc.wes.army.mil/products/standards/aec/aecstd web.asp. Metadata shall be delivered with each CADD file, and with meet the standard specified in this Appendix.
- A corresponding SDSFIE-compliant GIS deliverable for the feature layers listed in Table [M-1]. For each listed layer the contractor will provide either a GIS deliverable or a statement that no features in that layer will be constructed, be modified, or pose a design constraint for the project. The SDSFIE standard is available at https://tsc.wes.army.mil/products/TSSDS-TSFMS/tssds/html/. Metadata shall be delivered with each GIS data layer and will meet the standard specified in this Appendix.

<u>As-Built (Construction Complete)</u>

The contractor will provide a submittal of the CADD and GIS files that depict the as built condition of the site. The data layers to be delivered, the coordinate accuracy of the features, the required attribution, and the metadata will meet the standards specified in this Appendix.

For each layer listed in Table M-1, the contractor will provide either a GIS deliverable or a statement that no features in that layer were constructed or modified. The tie in to a utility main line is considered a modification of the utility main line, and the portions of main lines that were exposed should therefore be included in the deliverable.

SDSFIE-Compliant Deliverable Specification

Geodatabase Template

Upon request the government will provide the contractor with an SDSFIE-compliant GIS layer template to be used for populating the GIS deliverables required under the contract. The contractor shall populate the layers without modifying the template. The contractor shall ensure that layers to be delivered but not included in the template are fully compliant with the current SDSFIE standard.

There may be circumstances in which SDSFIE compliance cannot be maintained. In such circumstances, proposed deviations with the standard must be communicated by the contractor and reviewed by the government.

Data Integrity Check

The contractor shall utilize a topology build and clean routine and assure the following:
- No erroneous overshoots, undershoots, dangles or intersections in the line work;
- Lines should all be continuous, i.e. do not create dashed lines with many small line segments;
- Point features should be digitized as points, not graticules, cells, symbols or icons;
- No sliver polygons;
- All polygons completely close and have a single unique centroid; and
- Digital representation of the common boundaries for all graphic features must be coincident, regardless of feature layer.

Required GIS Data Layers and Required Attributes

****
NOTE: Coordinate with the Installation to complete the list of layers. Understand that although this list is intended to be comprehensive, the Installation may require/desire additional layers. If the request is appropriate, the layers should be added to the list. Layers should be removed from the list if they are not expected to be utilized or are not desired by the Installation.

Coordinate with the Installation to determine which layers
require elevations (i.e., Z-coordinates) to be collected,
such as inverts, pipe junctions, etc.
****

Table M-1 lists the SDSFIE-compliant GIS data layers that
are to be delivered as part of this contract. The list is
based on a review of the type(s) of facility(s) being
constructed. However, it is possible that some layers in
the list will not be used.

Table M-1. SDSFIE Layer Names and Required Attributes.

Note: Required attributes, where specified, are listed
following the SDSFIE layer name. Vertical coordinate
information is required for layers where "coord_z" is
listed as a required attribute.

airfield_light_point
airfield_surface_centerline
airfield_surface_edge_line
airfield_surface_marking_area
airfield_surface_marking_line
airfield_surface_site
    area_size (acres); area_u_d (area unit of measure,
    acres); perim (meters); perim_u_d (perimeter unit of
    measure, meters); coord_x (centroid, WGS84 UTM);
    coord_y (centroid, WGS84 UTM); paved_d (paved code,
    Yes/No); feat_name (airfield name)
athletic_court_area
athletic_field_area
athletic_miscellaneous_area
borrow_area
breakline
building_floor_area
building_room_area
building_space_area
canopy_pavilion_site
communications_amplifier_point
communications_antenna_site
    coord_X (WGS84 UTM), coord_y (WGS84 UTM),
    area_size(acres), area_u_d(area unit of measure),
    perim(perimeter dimension, meters),
    perim_u_d(perimeter unit of measure, meters)
communications_coaxial_line

communications_device_point
communications_equip_point
communications_fiberoptic_line
communications_handhole_point
communications_manhole_site
communications_pedestal_site
communications_splitter_point
communications_telephone_point
communications_terminator_point
communications_twisted_pair_line
communications_vault_site
compressed_air_pipe_line
control_point
culvert_centerline
curb_line
digital_elevation_model_point
easement_right_of_way_area
electrical_cable_line

      dispostn_d (disposition code, domain); instl_ty_d
      (installation type code, domain)

electrical_capacitor_point
electrical_ductbank_line
electrical_generator_point
electrical_junction_site
electrical_meter_point
electrical_motor_point
electrical_pedestal_point
electrical_regulator_point

electrical_substation_site

    dispostn_d (disposition code, domain); sst_ty_d (type
    of service label, domain)

electrical_switch_point
electrical_transformer_bank_point
electrical_transformer_vault_point
elevation_contour_line
fence_line
fuel_fitting_point
fuel_flow_direction_arrow
fuel_hydrant_point
fuel_junction_site

Table M-1. Continued

```
fuel_line
fuel_meter_point
fuel_pump_booster_station_point
fuel_source_point
fuel_tank_site
gate_line
gate_point
hazardous_materiels_storage_area
      hsb_cat_d (the general nature of hazardous waste,
      domain); area_size (acres); area_u_d(area unit of
      measure, acres); perim (perimeter dimension),
      perim_u_d (meters); coord_x (WGS84 UTM); coord_y
      (WGS84 UTM);
hazardous_materiels_storage_location_site
heat_cool_anchor_point
heat_cool_flow_direction_arrow
heat_cool_junction_site
heat_cool_line
heat_cool_marker_point
heat_cool_meter_point
heat_cool_plant_area
heat_cool_pump_point
heat_cool_rectifier_point
heat_cool_regulator_point
heat_cool_valve_point
hospital_structure_site
industrial_waste_fitting_point
industrial_waste_flow_direction_arrow
industrial_waste_grit_chamber_point
industrial_waste_junction_point
industrial_waste_lagoon_area
industrial_waste_line
industrial_waste_meter_point
industrial_waste_neutralizer_point
industrial_waste_oil_water_separator_site
industrial_waste_tank_point
industrial_waste_treatment_plant_area
industrial_waste_valve_point
natural_gas_fitting_point
natural_gas_flow_direction_arrow
```

Table M-1. Continued

natural_gas_junction_point
natural_gas_light_point
natural_gas_line
natural_gas_marker_point
natural_gas_meter_point
natural_gas_rectifier_point
natural_gas_regulator_reducer_point
natural_gas_valve_point
pedestrian_sidewalk_centerline
pipeline_line
    piprod_d (pipeline product code, domain); oper_nm
    (operator name, mixed case)
radar_site
railroad_bridge_centerline
railroad_centerline
    tot_len (total length of track, meters); length_u_d
    (length unit of measure, meters); feat_name (name of
    railroad, mixed case); cond_d (condition code,
    domain); traf_vol_d (traffic volume code, domain)
railroad_feature_point
railroad_station_site
railroad_yard_area
recreation_park_area
recreation_trail_centerline
regulated_aboveground_storage_tank_site
regulated_storage_tank_farm_area
regulated_underground_storage_tank_site
road_bridge_area
road_bridge_centerline
road_centerline
    category_d; num_lanes; feat_len; length_u_d;
    feat_name; road_name; alt_name; rou1_typ_d; rou1_name;
    rou2_typ_d; rou2_name; rou3_typ_d; rou3_name
road_feature_point
road_guardrail_line
road_site
slab_area
solid_waste_compactor_point
solid_waste_dump_area
solid_waste_incinerator_point
solid_waste_landfill_area

solid_waste_material_recovery_facility_point
solid_waste_stockpile_area
solid_waste_transfer_station_point
spill_containment_feature_area
spill_containment_tank_point
spot_elevation_point
storm_culvert_site
storm_sewer_armor_point
storm_sewer_culvert_line
storm_sewer_downspout_point
storm_sewer_fitting_point
storm_sewer_flood_area

storm_sewer_flow_direction_arrow
storm_sewer_headwall_line
storm_sewer_inlet_point
storm_sewer_junction_point
storm_sewer_line
storm_sewer_oil_water_seperator_site
storm_sewer_open_drainage_area
storm_sewer_open_drainage_line
storm_sewer_pump_point
storm_sewer_reservoir_point
structure_existing_site
structure_future_site
tower_site
tunnel_centerline
utility_electric_utility_site
utility_pole_guy_point
utility_pole_tower_point
utility_pole_tower_site
vehicle_parking_area
wastewater_discharge_point
wastewater_filtration_bed_area
wastewater_fitting_point
wastewater_flow_direction_arrow
wastewater_grease_trap_point
wastewater_grit_chamber_point
wastewater_junction_point
wastewater_lagoon_area
wastewater_line

Table M-1. Continued

wastewater_neutralizer_point
wastewater_oil_water_separator_site
wastewater_pump_ejector_station_site
wastewater_pump_point
wastewater_septic_tank_point
wastewater_treatment_plant_site
wastewater_valve_point
water_fire_connection_point
water_fitting_point
water_hydrant_point
water_junction_point
water_line
water_marker_point
water_meter_point
water_pump_point
water_regulator_reducer_point
water_reservoir_area
water_tank_site

water_valve_point
water_vent_point

Metadata

The contractor shall prepare metadata conforming to Federal
Geographic Data Committee (FGDC) Content Standards for
Digital Geospatial Metadata (CSDGM) most current version
(http://www.fgdc.gov/metadata/contstan.html). Metadata
content will accompany all electronic geospatial data
submissions. This includes both CADD and GIS formats. A
metadata file shall accompany, at minimum, each CADD file
and each GIS-format geospatial data layer delivered by the
contractor. Metadata should be prepared to FGDC standards
and delivered in XML format readable by software
applications that use the FGDC XML format standard (such as
ESRI ArcMap v9.x XML-format metadata files). The digital
metadata files shall be provided to the Government along
with each product deliverable.

Army Metadata Standard

In addition to the requirements described above, the guidance provided in Table [M-2] shall be followed when preparing metadata. This metadata minimum requirements profile has been compiled by the Department of the Army. These minimum required components must be supplied by the contractor with each CADD file and each GIS-format geospatial data layer. This metadata requirements profile is the baseline standard for all Army Garrisons and for all Military Construction projects.

Table [M-2]. Required Metadata Information

Section 1 – Identification

1.1 Citation

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.1 (Citation 8.1)	Identification (Data Set Originator)	The name of an organization that provided the data set. This will contain the name of the service, a single space, followed by the installation or organization name.	*Service names:* "USA" "USAR"? "USANG"? *Example values:* "USA Fort Bliss" "USA Environmental Center" "USA Center for Health Promotion and Preventive Medicine"
1.1 (Citation 8.2)	Identification (Data Set FDP Publication Date)	The date of release or current version of the file. This represents the date that a given overlay layer and associated metadata file were "locked" for approval by the base-level command authority (as described in Section 8.2).	*Format:* yyyymmdd *Example values:* "20031128" (representing 28 Nov 03)
1.1 (Citation 8.4)	Identification (Data Set Title)	The name by which the data set is referred. For all army installation data the SDSFIE Entity Type name will be used. (To enhance searchability all underscores will be replaced with spaces.)	*Valid values:* SDSFIE Entity Type *Example Values* firing line military range area noise contour line

1.2 Description

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.2.1	Description, Abstract	A brief narrative of the data set. For all army installation data the SDSFIE Entity Type Definition will be used.	*Valid values:* SDSFIE Entity Type Definition *Example value:* The designated hazard area that follows the projected trajectory of a munition.
1.2.2	Description, Purpose	A summary of the intentions with which the data set was developed.	*Valid value:* Free Text *Example Value:*

1.3 Time Period of Content

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.3 (Citation 9.1.1)	Time Period of Content (Single Calendar Date)	The latest date the data represented the actual conditions on the ground. This field is used to capture neither the publication date of a study or of a hardcopy map nor the date the hardcopy was converted to digital format, but rather the latest date the conditions at the location were measured or derived. If only the month and year are known, but not specific day within the given month, enter zeros ("0") in the place of "dd" as shown.	*Valid Values:* Date Unknown *Format:* yyyymmdd *Example values:* "20020101" (representing 01 Jan 02) "20031128" (representing 28 Nov 03) "19980100" (representing Jan 98)
1.3.1	Time Period of Content, Currentness Reference	Reference for the Time Period of Content. For all Army Installation data this value will be "Ground Condition."	*Valid Values:* Ground Condition

1.9 Point of Contact

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
		The Point of Contact (POC) should be the mission knowledge expert who identified the data source, and *shall not* be the base-level GIS/mapping POC (unless the POC authoring the metadata file is the same person as the mission knowledge expert responsible for source selection). In the event the mission knowledge expert is a contractor, the organizational information should reflect the government office for which the contractor works, *not the* contractor company information. The name of the individual/organization responsible for creating the metadata file is recorded in CSDGM element 7.4, Metadata Contact.	
1.9 (Citation 10.1.1)	Point of Contact (Contact Person)	Name of mission knowledge expert responsible for selecting the source for the given FDP layer	*Example Values:* "John Smith" "Joe Q Public"
1.9 (Citation 10.1.2)	Point of Contact (Contact Organization)	Organization name (or office symbol for military organizations) of the mission knowledge expert.	*Example Values:* "Fort Drum Public Works" "Fort Monmouth Directorate of Public Safety"
1.9 (Citation 10.3)	Point of Contact (Contact Position/Title)	Title of the mission knowledge expert.	*Example Values:* "Civ" – Civilian "Contr" – Contractor *Military titles including:* "Capt" "MSgt" "Lt Col"
1.9 (Citation 10.4.1)	Point of Contact (Address Type)	The type of address provided. Must be one of the following valid values:	*Valid Values:* "mailing" "physical" "mailing and physical" "po box" Other (describe)
1.9 (Citation 10.4.2)	Point of Contact (Address)	Address line for the mission knowledge expert.	*Example Values:* "1240 Main Street" "100 Rickenbacker Avenue" "P.O. Box 100"
1.9	Point of Contact	The address city for the mission knowledge expert.	*Example Values:*

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
(Citation 10.4.3)	(City)		"Washington" (for Washington DC) "Honolulu" "San Diego"
1.9 (Citation 10.4.4)	Point of Contact (State or Territory)	The address state or territory for the mission knowledge expert. Use accepted two-letter Postal state/territory codes for this field.	*Example Values:* "DC" – Washington, DC "VA" – Virginia "PR" – Puerto Rico "GU" – Guam
1.9 (Citation 10.4.5)	Point of Contact (Postal/ZIP Code)	The ZIP code for the mission knowledge expert. Nine digit ZIP codes, with dashes, preferred, but five digit zip codes will be accepted.	*Example Values:* "22030-1260" "80330"
1.9 (Citation 10.4.6)	Point of Contact (Country)	Mission knowledge expert address country.	*Example Value:* "USA"
1.9 (Citation 10.5)	Point of Contact (Telephone Number)	Mission knowledge expert Telephone number, including all applicable area codes and extensions. Commercial numbers are preferred, and should be preceded with "COMM" as shown. However, if only DSN numbers are available, enter that number here and precede the number with "DSN" as shown:	*Example Values:* COMM 123-456-7890 COMM 123-456-7890 ext: 345 DSN 123-456-7890 DSN 123-4567
1.9 (Citation 10.8)	Point of Contact (EMAIL address)	The email address for the mission knowledge expert.	*Example Values:* "john.smith@basename.af.mil" "john.smith@navy.mil"

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Section 2 – Data Quality Information

2.3 Completeness Report

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
2.3	**Completeness Report**	Information about omissions, selection criteria, generalizations, definitions used, and other rules to derive the data set. Use this field to record if any features (e.g., wetland polygon, floodplain polygon, APZ or ESQD clear zone, noise contour, or installation boundary element) were excluded from the data set for any reason.	*If no omissions are present – Valid Value:* "Complete data set" *If omissions are present – Valid Value:* Free text, describing any map features/elements that exist on the ground but have been omitted from the FDP data set due to classification constraints. *Example Values:* "Wetlands from 1999 restoration study not included because {provide justification}" "New boundary from 2003 land transfer to {jurisdiction} not shown as the boundary re-survey has not yet been performed."

2.5 Lineage

The following section may be repeated numerous times in the event that multiple sources were selected and used to develop any given overlay layer. Most metadata management applications (including ESRI ArcCatalog and the USACE CorpsMet application) can accommodate numerous source citations.

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
2.5.1.1 (Citation 8.1)	**Lineage, Source Citation** (Source Originator)	The name of the individual or organization that developed the source of the data set. Must be one of the following valid values:	*Valid Values:* {Source originator name}
2.5.1.1 (Citation 8.2)	**Lineage, Source Citation** (Source Publication Date)	The date when the source was published or otherwise made available for release. If only the month and year are known, but not specific day within the given month, enter zeros	*Valid Values:* "Unknown" "Unpublished material" {date}

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
		("0") in the place of "dd" as shown. Must be one of the following valid values:	*Date Format:* *yyyymmdd* *Example date values:* "20020101" (representing 01 Jan 02) "20031128" (representing 28 Nov 03) "19980100" (representing Jan 98, where the specific day is not provided)
2.5.1.1 (Citation 8.4)	Lineage, Source Citation (Source Title)	The name by which the source of the FDP Layer is known. This could be the name of a local study, a national data set, a standard business process by which the data are generated, etc.	*Valid Values:* {source name} *Example values:* "Short-Range Component", "Long-Range Component", "Summary Development Plan" (Mead Sams)
2.5.2.1	Lineage, Process Description	General description of the process used to convert the source identified in CSDGM metadata elements 2.5.1.1 and 2.5.1.6 to new format and delivery specifications as per Section 5.5.2. The purpose of this value is to help auditors understand the method used to convert the source and any potential error introduced, as per Sections 6.5 and 6.6. This field is free text. Metadata authors are encouraged to use one or more of the following statements when describing the source conversion process:	Recommended Values: "Scanned and vectorized source map using ESRI ArcScan." "Converted georeferenced GIS file to SDSFIE specifications" "Converted georeferenced CADD file to SDSFIE specifications" "Georeferenced unregistered GIS file and converted to SDSFIE specifications" "Georeferenced unregistered CADD file and converted to SDSFIE specifications" "Registered digitization of hardcopy source" "Heads-up digitization of hardcopy source at scale of 1:50,000" "COGO data entry from source" "Scanned and vectorized source map" Other (specify)

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Section 4 – Spatial Reference Information

4.1 Horizontal Coordinate System Definition

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
4.1.1.3	Geographic Coordinate Units	Measurement units for horizontal coordinates. Must be the following value:	*Valid Value:* **"Degrees, minutes, and decimal seconds"**
4.1.2.2.1	Grid Coordinate System, Coordinate System Name	The name of the coordinate system for data. Must be the following value:	*Valid Value:* "Universal Transverse Mercator" "State Plane Coordinate System 1927" "State Plane Coordinate System 1983"
4.1.2.2.2	UTM Zone Number	Identifier of the UTM Zone the data set falls within. Must be the following value:	*Valid Value:* 1 <= UTM Zone Number <= 60
4.1.2.2.4.1	SPCS Zone Identifier	Identifier for the State Plane Coordinate System zone.	*Valid Value:* See Note Below.
4.1.4.1	Horizontal Datum Name	Name of the reference system used for defining horizontal coordinates. Must be the following value:	*Valid Value:* "World Geodetic System of 1984 (WGS 84)"

Note: Four-digit numeric codes for the State Plane Coordinate Systems based on the North American Datum of 1927 are found in Department of Commerce, 1986, Representation of geographic point locations for information interchange (Federal Information Processing Standard 70-1): Washington: Department of Commerce, National Institute of Standards and Technology.
Codes for the State Plane Coordinate Systems based on the North American Datum of 1983 are found in Department of Commerce, 1989 (January), State Plane Coordinate System of 1983 (National Oceanic and Atmospheric Administration Manual NOS NGS 5): Silver Spring, Maryland, National Oceanic and Atmospheric Administration, National Ocean Service, Coast and Geodetic Survey.

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