GIS METADATA STANDARDS

Version 1.0

Port of Tacoma

Preface

The main governing body for the definition of metadata in the United States is the Federal Geographic Data Committee (FGDC); they describe metadata as follows:

> "A metadata record is a file of information, usually presented as an XML document, which captures the basic characteristics of a data or information resource. It represents the who, what, when, where, why and how of the resource. Geospatial metadata are used to document geographic digital resources such as Geographic Information System (GIS) files, geospatial databases, and earth imagery. A geospatial metadata record includes core library catalog elements such as Title, Abstract, and Publication Data; geographic elements such as Geographic Extent and Projection Information; and database elements such as Attribute Label Definitions and Attribute Domain Values."

The creation and maintenance of metadata benefits associated agencies not only by providing information on the quality and heritage of the Port's geospatial data, but also serves the same purpose within the Port of Tacoma across multiple departments. Metadata also serves to document historical information concerning each data set and some see it as the mark of maturity of an organization's GIS and data management effort. The Port seeks to protect the investment they have made in their Enterprise GIS.

The document is intended to be used for the creation of metadata for any and all GIS work completed for the Port of Tacoma, internally or by outside contract. Refer to Chapter 1 – Explanation for the full description of the FGDC Content Standard for Digital Geospatial Metadata (CSDGM) employed by the Port of Tacoma.

Contents

Chapter 1 – Explanation

1.0   Purpose

The purpose of this document is to establish the requirement for documenting agency geospatial data through the creation and use of Geospatial Metadata (documentation about the data). Metadata plays a fundamental role in successful spatial data management. The objective of this standard is to protect Port of Tacoma investment in geospatial data holdings through standardized geospatial data documentation, and where appropriate, facilitate data reuse and data discovery.

1.1   Scope

In support of the above objectives, Port of Tacoma adopts the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM) as the standard to follow when documenting geospatial data sets. To facilitate the implementation of this standard, this document stands as the required metadata standard, a subset of the FGDC CSDGM, that is recognized as the approved implementation pathway toward the full-fledged adoption of the FGDC CSDGM.

This standard applies to all existing geospatial datasets utilized by the Port and new geospatial datasets delivered to the Port. The standard described herein represents the minimum level of documentation required for all geospatial datasets. Whenever practical, the use of the complete FGDC CSGDM is encouraged.

Minimum geospatial metadata is required for all geospatial data delivered to the Port. Refer to the related Port of Tacoma Spatial Data standards for more information on what data is defined as geospatial data and for geospatial data requirements.

Exemption requests must be submitted to the Port of Tacoma GIS Coordinator for decision before delivery.

1.2   Standards

 The Port of Tacoma has adopted the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM) as the standard to follow when documenting geospatial datasets. To facilitate the implementation of this standard, the Port of Tacoma has documented this Metadata Standard, a subset of the FGDC CSDGM.

Agencies shall use Esri ArcGIS for Desktop 10.0 and above to create and maintain FGDC CSDGM metadata using the ArcGIS Metadata Style 'FGDC CSDGM Metadata'.

Those agencies without access to Esri ArcGIS for Desktop 10.0 and above to create metadata may instead use the Chapter 3 - Metadata Worksheet.

1.2.1 Metadata Element Exemptions

Many metadata elements are automatically generated and updated when using Esri ArcGIS for Desktop 10.0 and above or may be elements that are difficult to accurately describe for some dataset formats. These elements have been noted in the Metadata Standard for possible Exemption based on the dataset format, agency and/or capturing method with an asterisk next to the Element Number.

Exemption requests from these elements must be submitted to the Port of Tacoma GIS Coordinator for decision before delivery.

Any data supplier, either internal or by outside contract, who uses the Chapter 3 – Metadata Worksheet may forego acquiring Exemption from the Port of Tacoma GIS Coordinator as the Metadata Worksheet has already exempted all possible Exemptions.

Chapter 2 – Metadata Standards

For Elements 16 & 17 (Data Originator & Data Point of Contact), Elements 48 through 58 are required for each.

The Elements 44 & 45 (Attribute Definition and Attribute Definition Source) and one of the following (Elements 47.1a and 47.1b, 47.2a and 47.2b, 47.3a and 47.3b or 47.4) are required for all fields in the data attribute table except the identification number field (e.g., OBJECTID) and SHAPE field(s).

Element Number	Element Name	Element Definition	FGDC Hierarchy	FGDC sgml tag name
1	Title	The name by which the cited resource is known. Data type: Text. From: ISO 19115:2003.	8.4	title
2	Tags	A set of terms that can be used by GIS to search for the resource. Terms should be provided as a comma-separated list. Data type: Text. From: ArcGIS metadata.	1.6.1.2	
3	Summary (Purpose)	A summary of the intentions with which the resource was developed. Data type: Text. From: ISO 19115.	1.2.2	purpose
4	Description (Abstract)	A brief narrative summary of the resource's content. Data type: Text. From: ISO 19115.	1.2.1	abstract
5	Credits	A recognition of those who created or contributed to the resource. Data type: Text. From: ISO 19115	1.1.1	
6	Use Limitation	Describes limitations affecting	1.8	15

		the fitness of use of the resource. Data type: Text. From: ISO 19115:2003.			
7*	West Bounding Coordinate	Western-most coordinate of the limit of coverage expressed in longitude. Domain: -180.0 <= West Bounding Coordinate < 180.0		1.5.1.1	8
8*	East Bounding Coordinate	Eastern-most coordinate of the limit of coverage expressed in longitude. Domain: -180.0 <= East Bounding Coordinate < 180.0		1.5.1.2	9
9*	North Bounding Coordinate	Northern-most coordinate of the limit of coverage expressed in latitude. Domain: -90.0 <= North Bounding Coordinate <= 90.0; North Bounding Coordinate >= South Bounding Coordinate		1.5.1.3	10
10*	South Bounding Coordinate	Southern-most coordinate of the limit of coverage expressed in latitude. Domain: -90.0 <= South Bounding Coordinate <= 90.0: South Bounding Coordinate <= North Bounding Coordinate		1.5.1.4	11
11	Topic Categories	Identifies the primary themes associated with the resource's content. Data type: Code. From: ISO 19115:2003		1.6.1.2	
12	Theme Keywords	Keywords that associate the resource with a particular subject or topic. Date type: Text. From: ISO		1.6.1.1	12

		19115:2003.		
13	Place Keywords	Keywords that associate the resource with a location. Data type: Text. From: ISO 19115:2003.	1.6.2.1	13
14*	Stratum Keywords *Only required for bathymetric data	Keywords that associate the resource with a layer or level, for example in atmospheric, geologic, and oceanographic data, e.g., ionosphere, surface, seafloor. Data type: Text. From: ISO 19115:2003.	1.6.3.2	
15	Dates	The dates when the cited resource was created and published; note if they are different. Data type: Date. From: ISO 19115:2003.	8.2	51
16	Data Originator	The name of organization or individual that developed the dataset. Data type: Text. From: ISO 19115:2003.	8.1	50
17	Data Point of Contact	The name of organization or individual that is the current point of contact. Data type: Text. From: ISO 19115:2003.	1.9	
18*	Metadata Point of Contact	The name of individual who is the point of contact for the metadata. Data type: Text. From: ISO 19115:2003.	7.4	
19*	Metadata Update	The frequency with which the metadata is updated. Data type: Text. From: ISO	1.4.2	

		Frequency	19115.2003.		
20	Status		The status of the resource. Data type: domain ("Complete" "In Work" "Planned") From: ISO 19115.	1.4.1	6
21	Credit		A recognition of those who created or contributed to the resource. Data type: Text. From: ISO 19115.	1.11	
22	Language		The languages of information used within the data. Data type: Code. From: ISO 19115:2003.		
23	Data Update Frequency		The frequency with which the resource is updated. Data type: Code. From: ISO 19115.2003.	1.4.2	7
24*	Next Update *Only required if the Update Frequency is set to a specific time frame.		The scheduled revision date. Data type: Date. From: ISO 19115.2003.		
25	Access Constraints		Restrictions and legal prerequisites for using the dataset after access is granted. Data type: Text. From: ISO 19115:2003.	1.7	15
26	Supplemental Information *Only add if data includes Z information		Information regarding the vertical datum.		
27*	State Plane		A plane-rectangular coordinate	4.1.2.2.4	

	Coordinate System	system established for each state in the United States by the National Geodetic Survey.		
28*	SPCS Zone Identifier	Identifier for the SPCS zone. Domain: Four-digit numeric code for the State Plane Coordinate Systems based on the North American Datum of 1983 are found in Department of Commerce, 1986, Representation of geographic point locations for information interchange	4.1.2.2.4.1	28
29*	Horizontal Datum Name	The identification given to the reference system used for defining the coordinates of points. Domain: "North American Datum of 1927" "North American Datum of 1983" free text	4.1.4.1	30
30	Completeness Omission Report	Identifies the characteristics of the data whose quality was measured. Domain: free text		
31	Attribute Accuracy Report	An explanation of the accuracy of the identification of the entities and assignments of values in the data set and a description of the texts used. Domain: free text	2.1.1	18
32	Lineage	Information about the events, parameters, and source data which constructed the dataset, and information about the responsible parties.	2.5	lineage
33	Data Source Description	A detailed description of the source. Domain: free text		

34	Data Source Citation Title	The name by which the cited resource is known. Domain: free text		
35	Data Source Date	The date when the cited resource was created. Domain: date		
36	Data Source Contact	The name of a person associated with the resource. Domain: free text		
37	Process Step Description	Describes the event, transformation, or process that occurred while maintaining the resource, including any parameters or tolerances that were used. Domain: free text		
38	Process Step Date	Identifies the date and time when the process step occurred. Domain: free text		
39	Process Step Contact	The name of a person associated with the resource. Domain: free text		
40*	Entity Type Label	The name of the entity type. Domain: free text	5.1.1.1	38
41	Entity Type Definition	The definition of the entity type. Domain: free text	5.1.1.2	39
42	Entity Type Definition Source	The authority that provided the definition. Domain: free text	5.1.1.3	
43*	Attribute Label	The name of the attribute. Domain: free text	5.1.2.1	40
44	Attribute Definition	The description of the attribute. Domain: free text	5.1.2.2	41
45	Attribute Definition	The authority that provided the definition.	5.1.2.3	

	Source	Domain: free text		
46	Attribute Domain Value	One of the following (47.1a and 47.1b, 47.2a and 47.2b, 47.3a and 47.3b or 47.4) is required for each attribute field.	5.1.2.4.1	
47.1a	Enumerated Domain Value	A name or label of a member of the set. If this is a published standard codeset, such as USGS Digital Line Graph codes or FIPS codes, use the 'Codeset Domain' instead.	5.1.2.4.1.1	42
47.1b	Enumerated Domain Value Definition	The description of the value. Domain: free text	5.1.2.4.1.2	43
47.2a	Range Domain Minimum	The least value that the attribute can be assigned. Domain: free text	5.1.2.4.2.1	44
47.2b	Range Domain Maximum	The greatest value that the attribute can be assigned. Domain: free text	5.1.2.4.2.2	45
47.3a	Codeset Domain Name	Any published codeset, such as USGS Digital Line Graph codes or FIPS codes. Domain: free text	5.1.2.4.3.1	46
47.3b	Codeset Domain Source	Source of published codeset. Domain: free text	5.1.2.4.3.2	47
47.4	Unrepresentable Domain	Any value that is not or cannot be prescribed. For example, names. Domain: free text	5.1.2.4.4.1	
48	Contact Person	The name of the individual to which the contact type applies. Domain: free text	10.1.1	cntper
49	Contact Organization	The name of the organization to which the contact type applies. Domain: free text	10.1.2	cntorg

50	Contact Position	The title of the individual. Domain: free text	10.3	cntpos
51	Contact Address	The address for the organization or individual. Domain: free text	10.4	cntaddr
52	Address Type	The information provided by the address. Domain: "Mailing Address" "Physical Address" "Mailing and Physical Address"	10.4.1	addrtype
53	City	The city of the address. Domain: free text	10.4.3	city
54	State or Province	The state or province of the address. Domain: free text	10.4.4	state
55	Postal Code	The ZIP or other postal code of the address. Domain: free text	10.4.5	postal
56	Contact Telephone	The telephone number by which individuals can speak to the organization or the individual. Domain: free text	10.5	cntvoice
57	Contact Fax	The telephone number of a facsimile machine of the organization or individual. Domain: free text	10.7	cntfax
58	Contact Email	The address of the electronic mailbox of the organization or individual. Domain: free text	10.8	contemail

Chapter 3 – Metadata Worksheet

Make a separate copy of this worksheet for each thematic layer submitted to the Port of Tacoma. Enter information for each row in the blue column.

Name of field	Description	Examples	Your Information
Item Description			
Title	The informal name of the dataset. E.g., the data file may be called something like 'PARC13A', but the title should be easy to understand.	`Port Parcels`	

Tags	A set of terms that can be used by the GIS to search for the resource. Enter each term on a new line.	`Port parcels`
		`tax parcels`
		`port ownership`
		`port properties`	

Summary (Purpose)	A simple summary of the intentions with which the resource was developed.	`This data was created for the purpose of easily identifying port-owned properties.`	
Description (Abstract)	A brief narrative summary of the resource's content.	`Port parcels have been created from port-owned tax parcels by encompassing one or more contiguous tax parcels. Some tax parcels are divided into more than one port parcel. New port parcels are assigned a consecutive number from the first port parcel number one (1). Port parcels that are divided maintain their original number followed by consecutive letters`	

		beginning with "A". Numbers assigned to port parcels that have been sold or folded into other existing port parcels are no longer used. Port-owned tax parcels stranded by right-of-way, or otherwise have no use and/or value are not assigned a port parcel number. However, these tax parcels are reflected in the shapefile. Port parcels adjacent to water bodies typically follow the upland boundary rather than the tax parcel boundary. Port-owned tax parcels covered by water are typically captured in separate port parcels.	
Credits	Recognition of those who created or contributed to the resource. This can be fairly general (e.g., 'Port of Tacoma', or 'CalWater') and gives a quick identification to the source of the data.	Port of Tacoma Planning Department	
Use Limitation	Describes limitations affecting the fitness of use of the resource; for example, "Not to be used for navigation."	Not to be used to determine ownership or lease boundaries	
Topics & Keywords			

| Topic Categories | Identifies the primary themes associated with the resource's content. Pick all that apply.

See 3.1 for a description of each topic category. | ☐ Farming

☐ Biota

☐ Boundaries

☐ Atmospheric Sciences

☐ Economy

☐ Elevation

☐ Environment

☐ Geoscientific

☐ Health

☐ Imagery & Base Maps

☐ Military & Intelligence

☐ Inland Waters

☐ Location

☐ Oceans

☒ Planning & Cadastral

☐ Society

☐ Structure

☐ Transportation

☐ Utilities & Communication | ☐ Farming

☐ Biota

☐ Boundaries

☐ Atmospheric Sciences

☐ Economy

☐ Elevation

☐ Environment

☐ Geoscientific

☐ Health

☐ Imagery & Base Maps

☐ Military & Intelligence

☐ Inland Waters

☐ Location

☐ Oceans

☐ Planning & Cadastral

☐ Society

☐ Structure

☐ Transportation

☐ Utilities & Communication |
| Theme Keywords | Keywords that associate the resource with a particular subject or topic. Include additional descriptive keywords to help quality the selected Topic Categories.
📒 *'Port of Tacoma' is not* | `parcels`
`port property`
`port parcels` | |

	a Theme Keyword; it is a Place Keyword.		

Place Keywords	Keywords that associate the resource with a location.	`Port of Tacoma`
		`City of Tacoma`
		`Tacoma Tideflats`
		`City of Fife`
		`Frederickson`
		`Pierce County`	

Stratum Keywords* *Only required for bathymetry or other seafloor data.	Keywords that associate the resource with a layer or level, for example in atmospheric, geologic, and oceanographic data, e.g., ionosphere, surface, seafloor.	`seafloor`	
Citation			

Dates	The date when the cited resource was created, published and/or revised. In most cases for the Port of Tacoma eGIS, the Date Created and the Date Published are the same. Revision date should only be updated when broad changes are made, such as a fresh version of assessor parcels is received and replaces the existing data.	`Created: 2012-04-20`
		
		`Published: 2012-04-20`
		
		`Revised: <null>`
			Created: Click here to enter a date.
			
			Published: Click here to enter a date.
			
			Revised: Click here to enter a date.

Resource Citation Contacts			
Contact (originator)	All data must have a contact for the originator. See Chapter 3.2 to complete the contact information for each unique contact.	`Bob Cadguy`	

Contact (point of contact)	All data must have a point of contact indicated, even if it is same person as the originator. See Chapter 3.2 to complete the contact information for each unique contact.	`Jane Contactlady`	
Metadata			
Contact (point of contact)	All data must have a metadata point of contact indicated, even if it is same person as the originator. See Chapter 3.2 to complete the contact information for each unique contact.	`Jane Contactlady`	
Update Frequency	The frequency with which the metadata is updated. If other, enter custom frequency. E.g., 45 days.	☐ Continual ☐ Daily ☐ Weekly ☐ Fortnightly ☐ Monthly ☐ Quarterly ☐ Biannually ☐ Annually ☒ As Needed ☐ Irregular ☐ Other:_____	☐ Continual ☐ Daily ☐ Weekly ☐ Fortnightly ☐ Monthly ☐ Quarterly ☐ Biannually ☐ Annually ☐ As Needed ☐ Irregular ☐ Other:_____
Details			
Status	The status of the resource. In general, this should be set to 'Completed', unless the data is truly in a state of development, archived, etc.	☒ Completed ☐ Historical Archive ☐ Obsolete ☐ On Going ☐ Planned ☐ Required ☐ Under Development	☐ Completed ☐ Historical Archive ☐ Obsolete ☐ On Going ☐ Planned ☐ Required ☐ Under Development
Credit	A recognition of those who created or contributed to	`Port of Tacoma`	

	the resource.	Planning Department	
Language	The languages of information used within the data.	English	
Supplemental Information (Vertical Datum*) *Only add if data includes Z information	Information regarding the vertical datum. Note that this section may be used to include other information, but if the data contains Z values, it must include information about the vertical datum. Refer to the Vertical Datum Standards document for more information.		

Resource Maintenance

Update Frequency	The frequency with which the data is updated. If other, enter custom frequency. E.g., 45 days.	☐ Continual ☐ Daily ☐ Weekly ☐ Fortnightly ☐ Monthly ☐ Quarterly ☐ Biannually ☐ Annually ☒ As Needed ☐ Irregular ☐ Other:_____	☐ Continual ☐ Daily ☐ Weekly ☐ Fortnightly ☐ Monthly ☐ Quarterly ☐ Biannually ☐ Annually ☐ As Needed ☐ Irregular ☐ Other:_____

Constraints

Legal Constraints	Describes legal limitations affecting the use of the resource.	This digital data and metadata, (hereinafter collectively referred to as the "information"), are provided on an "AS IS", "AS AVAILABLE" and "WITH ALL FAULTS" basis.	

Quality			
Completeness Omission Report (Measure Description)	Identifies the characteristics of the data whose quality was measured.	`Port parcels were created using port-owned tax parcel information from Pierce County, which is the authority on parcels for the county.`	
Attribute Accuracy Report	An explanation of the accuracy of the identification of the entities and assignments of values in the data set and a description of the texts used.	`Pierce County tax assessment is the authority on taxes assessed on parcels and therefore, the attributes are assumed to be as accurate as possible.`	
Lineage			
For each process that occurred to build, update and/or maintain the data, the Data Source and Process Step values must be created. Copy and paste the following Lineage rows for each process and then enter the information.			
Data Source Description	A detailed description of the source.	`Port of Tacoma Real Estate Department's "Port Ownership Log": Excel spreadsheet listing the port parcel number and common name of each port parcel.`	
Data Source Citation Title	The name by which the cited resource is known.	`Port Ownership Log`	
Data Source Date	The date when the cited resource was created.	`Date: 2012-04-20`	Date: Click here to enter a date.
Data Source Contact	The name of a person associated with the resource. See Chapter 3.2 to complete the contact	`Jane Contactlady`	

	information for each unique contact.		
Process Step Description	Describes the event, transformation, or process that occurred while maintaining the resource, including any parameters or tolerances that were used.	`Combined port parcels with multiple pieces into multipart polygons. Fixed a few minor topology errors. Imported shapefile into SDE Geodatabase and created a relationship class to the PortParcelNames table.`	
Process Step Date	Identifies the date and time when the process step occurred.	`Date: 2012-04-20`	Date: Click here to enter a date.
Process Step Contact	The name of a person associated with the resource. See Chapter 3.2 to complete the contact information for each unique contact.	`Jane Contactlady`	
Entity and Attribute Information			
Entity Type Definition	A description of the features, objects, or cells contained by the dataset.	`Each parcel has a parcel identification value.`	
Entity Type Definition Source	The authority that provided the definition.	`Jane Contactlady`	
Note: Attribute Definition and Attribute Definition Source are required for all fields in the data attribute table except the identification number field (e.g., OBJECTID) and SHAPE field(s). Copy and paste those two rows for each required attribute field and then enter the information.			
Attribute Definition	The description of the attribute.	`Port parcel number`	

Attribute Definition Source	The authority that provided the definition. See Chapter 3.2 to complete the contact information for each unique contact.	`Jane Contactlady`	
Note: One of the following: - Enumerated Domain Value and Enumerated Domain Value Definition - Range Domain Minimum and Range Domain Maximum - Codeset Domain Name and Codeset Domain Source - Unrepresentable Domain is required for all fields in the data attribute table except the identification number field (e.g., OBJECTID) and SHAPE field(s). Copy and paste the appropriate rows for each required attribute field and then enter the information.			
Enumerated Domain Value	An example value or code of a member of the set. Note: If this is a published standard codeset, such as USGS Digital Line Graph codes or FIPS codes, use the 'Codeset Domain' instead.	`VCP`	
Enumerated Domain Value Definition	A description of the value or code stored in this field.	`Vitreous clay pipe`	
Range Domain Minimum	The least value that can be stored in the field.	`-15`	
Range Domain Maximum	The greatest value that can be stored in the field.	`100`	
Codeset Domain Name	If the enumerated or coded values stored in the field are specified by an authority, provide the title for this set of values.	`USGS Digital Line Graph`	

Codeset Domain Source	The authority that defined the set of values stored in this field.	`USGS`	
Unrepresentable Domain	Characterizes the values stored in this field in a manner that illustrates why they can't be described as an enumerated, codeset, or range domain. For example, explain how the field's unique values are calculated.	`Port Parcel IDs are unique values based on proprietary information.`	

3.1   Topic Categories

Topic categories are designed to organize data into general topics. For example, if the data is related to business districts, appropriate topic categories could be 'Boundaries' and 'Economy', whereas data related to toxic release inventory could be in topic categories 'Environment' and 'Health'. Select all those that are pertinent to the data.

Category	Description	Data Example
Farming	rearing of animals and/or cultivation of plants	agriculture, crops, livestock
Biota	flora and/or fauna in natural environments	flora and fauna, ecology, wetlands, habitat
Boundaries	legal land descriptions	political and administrative boundaries
Atmospheric Sciences	processes and phenomena of the atmosphere	weather, historic temperature
Economy	economic activities, conditions, and employment	business and economics
Elevation	height above or below the earth's surface	altitude, bathymetry, digital elevation models (DEMs), slope, derived products
Environment	environmental resources, protection, and conservation	natural resources, pollution, impact assessment, monitoring, land analysis
Geoscientific	information pertaining to the earth sciences	geology, minerals, earthquakes, landslides, volcanoes, soils, gravity, permafrost, hydrogeology, erosion
Health	health, health services, human ecology, and safety	disease, illness, factors affecting health, hygiene, substance abuse
Imagery & Base Maps	base maps	land cover, topographic maps, imagery, annotations

Military & Intelligence	military bases, structures, activities	military bases, structures, activities
Inland Waters	inland water features, drainage systems and characteristics	rivers, glaciers, lakes, water use plans, dams, currents, floods, water quality, hydrographic charts
Location	positional information and services	addresses, geodetic networks, control points, postal zones, place names
Oceans	features and characteristics of salt water bodies	tides, tidal waves, coastal information, reefs
Planning & Cadastre	information used for appropriate actions for future use of the land	land use maps, zoning maps, cadastral surveys, land ownership
Society	characteristics of society and culture	anthropology, archaeology, religion, demographics, crime and justice
Structure	man-made construction	architecture, buildings, museums, churches, factories, housing, monuments, shops, towers
Transportation	means and aids for conveying persons and/or goods	roads, airports, airstrips, shipping routes, tunnels, nautical charts, vehicle and vessel locations, aeronautical charts, railways, trails
Utilities & Communication	energy, water and waste systems, and communications infrastructure	hydroelectricity, geothermal, solar, and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electrical and gas distribution, data communication, telecommunication, radio, communication networks

3.2   Contact Information

Each contact referenced in the metadata needs to full contact information included within the metadata. See the example below and then fill out the information for each metadata contact referenced in the worksheet above.

Example:

Name	*Bob Cadguy*
Organization	*Port of Tacoma*
Position	*CAD Specialist*
Email	*bobcadguy@portoftacoma.com*
Address Type	☒ *Postal* ☐ *Physical* ☐ *Both*
Address	*PO Box 1234* *Tacoma WA* *98401*
Phone	*253.383.1234*
Fax	*253.383.4321*

Contact 1:

Name	
Organization	
Position	
Email	
Address Type	☐ Postal ☐ Physical ☐ Both
Address	
Phone	
Fax	

Contact 2:

Name	
Organization	
Position	
Email	
Address Type	☐ Postal ☐ Physical ☐ Both
Address	
Phone	
Fax	

Contact 3:

Name	
Organization	
Position	
Email	
Address Type	☐ Postal ☐ Physical ☐ Both
Address	
Phone	
Fax	

Contact 4:

Name	
Organization	
Position	
Email	
Address Type	☐ Postal ☐ Physical ☐ Both
Address	
Phone	
Fax	