

Transitioning from FGDC to ArcGIS metadata, FGDC style for ArcGIS Online, Using ArcGIS Pro

Version 3.0

https://geoapps.nj.gov/njgin/documents/MD_Transitioning_FGDC_to_ArcGIS_Pro_for_AGO.pdf

This document is intended to help data and metadata providers who contribute to the New Jersey Geographic Information Network (NJGIN). As of Spring 2023, this site is set to use FGDC style ArcGIS metadata.

The directions assume that the data set already has FGDC-CSDGM metadata. There is a separate document for writers who are starting from scratch:

https://geoapps.nj.gov/njgin/documents/MD_ArcGIS_from_scratch_using_Pro_for_AGO.pdf

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Summary

- ❖ Set up tools: Configure ArcGIS Pro
- ❖ Prepare/back up existing metadata info: Archive xml
- ❖ Upgrade metadata
- ❖ Synchronize metadata with data
- ❖ Edit metadata: re-order process steps, update changed info, other
- ❖ Thumbnail, easy or custom
- ❖ Create file for AGO

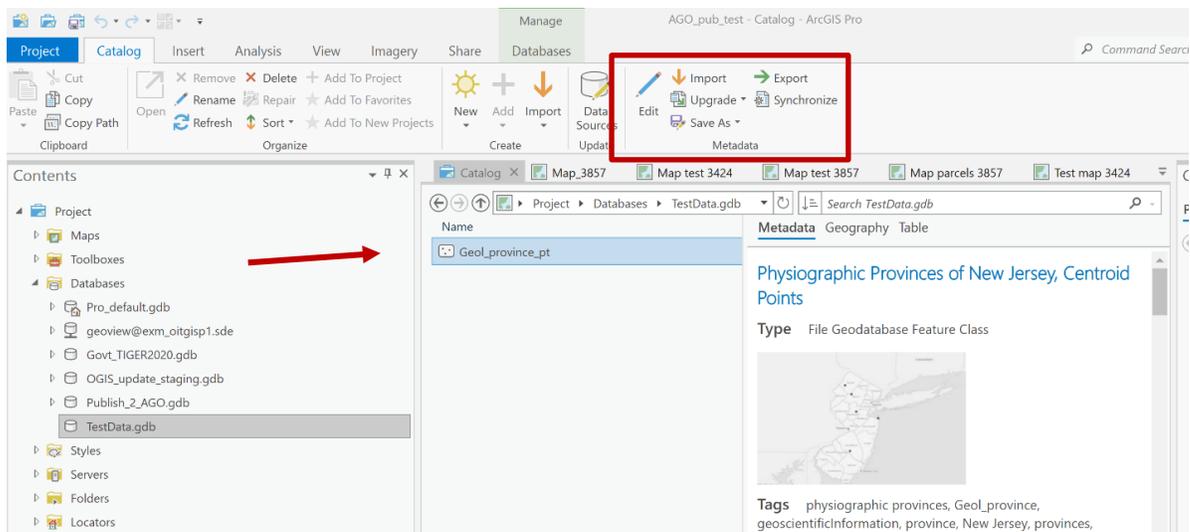
Things to remember

- ❖ If NOT starting with existing FGDC-CSDGM metadata, instead of this document, please refer to *ArcGIS Pro Metadata for ArcGIS Online, FGDC Style, from Scratch*. There are several important differences in workflow.
- ❖ **DO NOT** just start editing an existing FGDC-CSDGM metadata record with the ArcGIS metadata editor in ArcCatalog. This is not a shortcut – it makes more work and may cause the record to become un-editable or even unusable. ArcGIS Pro prevents this mistake.
- ❖ Date formatting: for a date in a free text field, enter in this format; 2018-02-15.
- ❖ **Change Publication Date** for re-release of updated data.
- ❖ Need to transfer metadata with **no changes**? NJOGIS has a downloadable toolbox for Pro. Email to njgin@oit.nj.gov for instructions.
- ❖ For submissions of metadata to ArcGIS Online, a cleaned-up record is important. See Section I, *Producing Metadata for ArcGIS Online*.

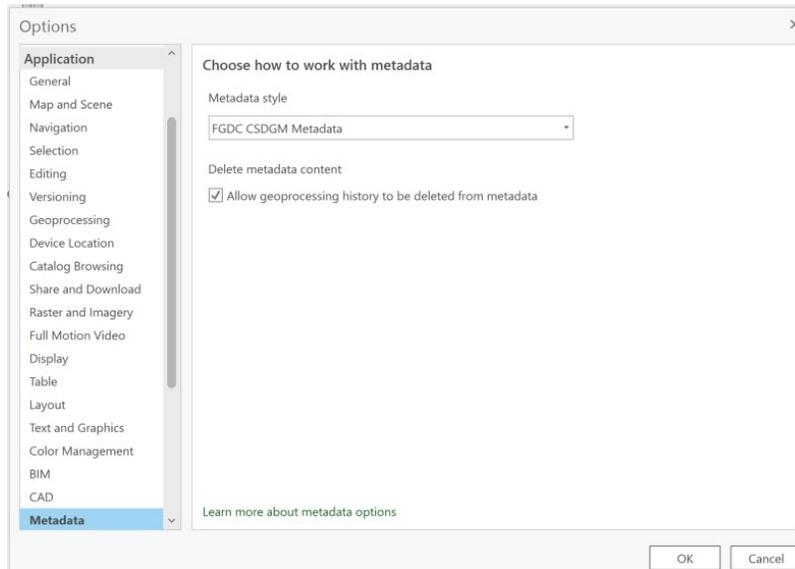
Step by Step Instructions

A. Essential tools - set up in preparation

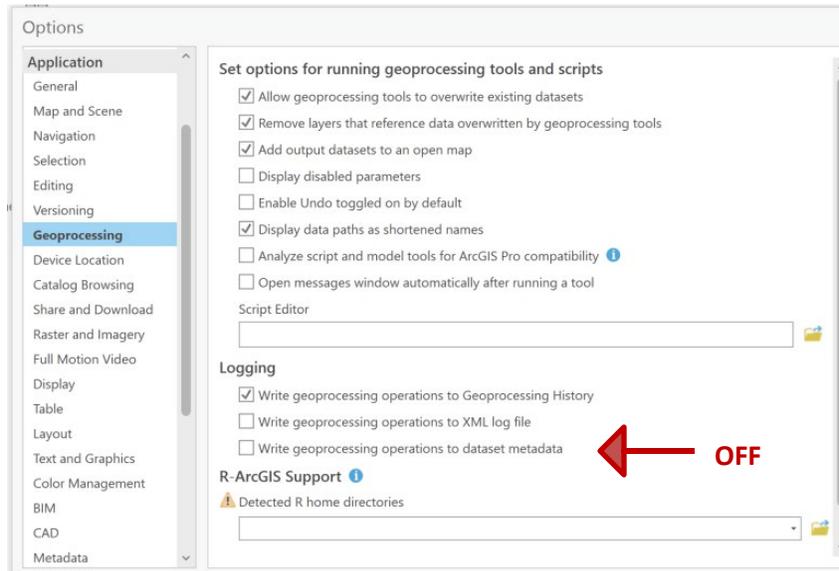
1. **These instructions are written for ArcGIS Pro 2.9.** We have not been able to test yet for ArcGIS Pro 3.
2. **Remember that whatever object is highlighted in the Catalog tab of the Catalog view, will be active, and visible in Details panel.** Its metadata will be visible in Metadata tab and will be opened for editing if you click the Edit button in the ribbon Metadata section.



3. **Set up ArcGIS Pro for FGDC style metadata.** First set the Metadata style at File -> Options -> Application -> Metadata. In the same form, check ON to allow geoprocessing history to be deleted.



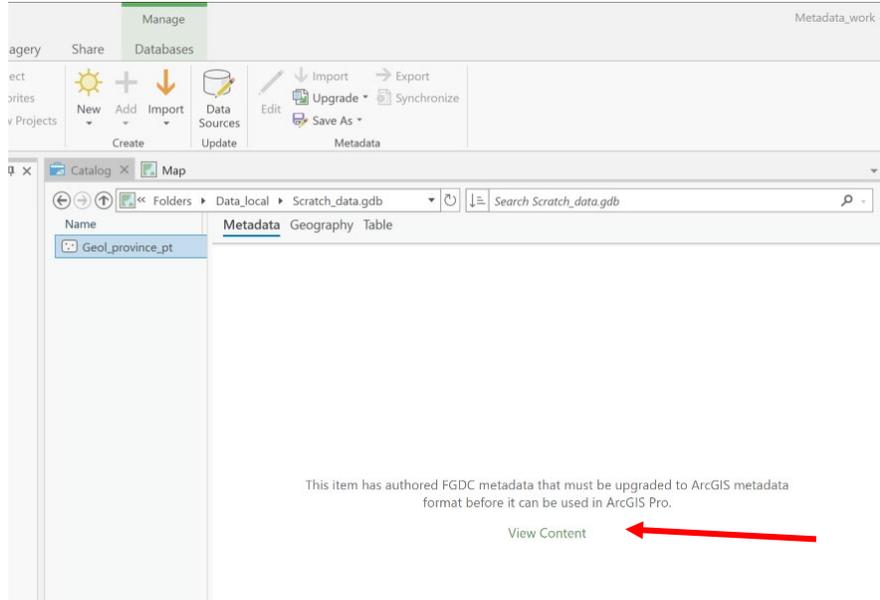
Next, set the application to NOT write geoprocessing steps to the metadata, at File -> Options -> Application -> Geoprocessing:



4. **ArcGIS Pro Help for using the Metadata Editor to produce FGDC CSDGM style metadata:** There are various useful help topics in the web help under Data -> Data -> Metadata. The one you are most likely to need repeatedly is *Create FGDC CSDGM metadata*. You might want to “Favorite” that one. The path from the Pro ? button is a bit different.
5. For advanced work on metadata, there are some optional tools listed in Appendix V.

B. Metadata assessment

1. **Examine the metadata:** In Catalog view, highlight the data set in the Catalog tab and go to the Metadata tab of the Details panel. If only FGDC metadata, a message will display saying that the metadata must be upgraded before it can be used. **DO**



NOT UPGRADE YET. Click on *View Content*. The raw xml will be displayed as if in a web browser with no formatting instructions.

2. Scroll down to find the <lineage> tag, and below that, any <procstep> tags. Each Process Step must have a unique date (tag <procdate>, contents formatted YYYYMMDD, e.g. <procdate>**20020630**</procdate>), or date and time; if not, the order of the process steps will get scrambled during upgrade and edit. If any lack dates, or the dates are not unique, make notes of the order they should be in, and the date or date/time each should be assigned. After the upgrade, edit the missing dates or times in the ArcGIS editor, and the ArcGIS editor will then properly re-order the process steps.

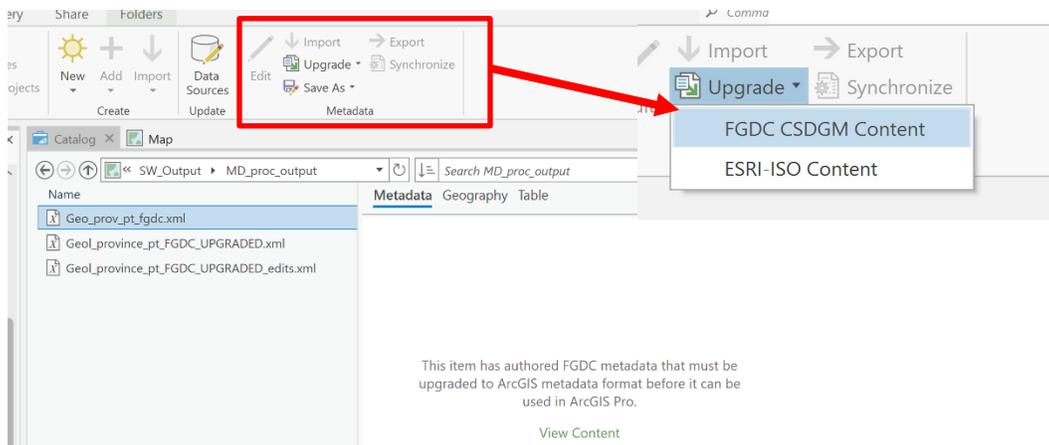
Transitioning FGDC to ArcGIS MD AGO

```
-<lineage>
-<srcinfo>
  -<srccite>
    -<citeinfo>
      <origin>NJDEP/NJGS, Ron Pristas</origin>
      <pubdate>20020630</pubdate>
      <title>Physiographic Provinces of New Jersey, Series DGS02-1 Edition 20020630</title>
      <geofom>vector digital data</geofom>
    -<serinfo>
      <sername>DGS02</sername>
      <issue>1</issue>
    -<pubinfo>
      <pubplace>Trenton, New Jersey 08825</pubplace>
      <publish>New Jersey Department of Environmental Protection, New Jersey Geological
    -<srctime>
      -<timeinfo>
        -<sngdate>
          <caldate>20020630</caldate>
        -<srccurr>publication date</srccurr>
      -<procstep>
        <procdesc>The ArcGIS Pro (2.9) Feature to Point tool was run, with the inside option check
        <procdate>20221128</procdate>
      -<cntorgp>
        <cntorg>NJ Office of Information Technology, Office of GIS (NJOGIS)</cntorg>
        <cntper>Edith Konopka, Ph.D., GISP</cntper>
        <cntpos>Spatial Database Manager</cntpos>
```

C. Back up the original metadata.

1. Select all the material in the metadata display of the raw xml and copy it.
2. Paste it into a new word processing document, or into Notepad ++. Save the file.

D. Perform the upgrade. This will draw information from the FGDC metadata and put it in ArcGIS format xml (different elements and organization.)

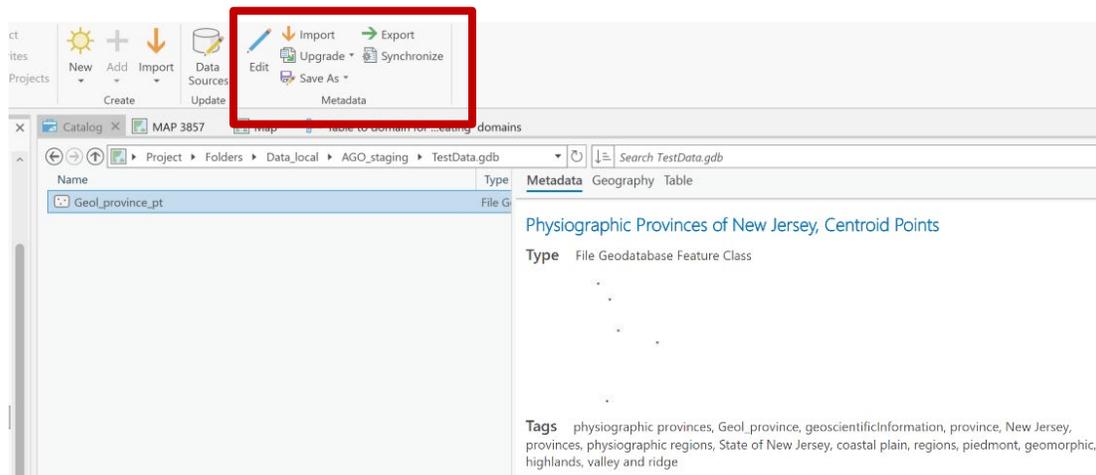


1. Close the metadata view window and make sure the correct object is still highlighted in the Catalog Tab.
2. The ribbon should display the Metadata section, with the Upgrade button active. Choose to upgrade FGDC CSDGM Content.
3. Be patient – hands off until it finishes.

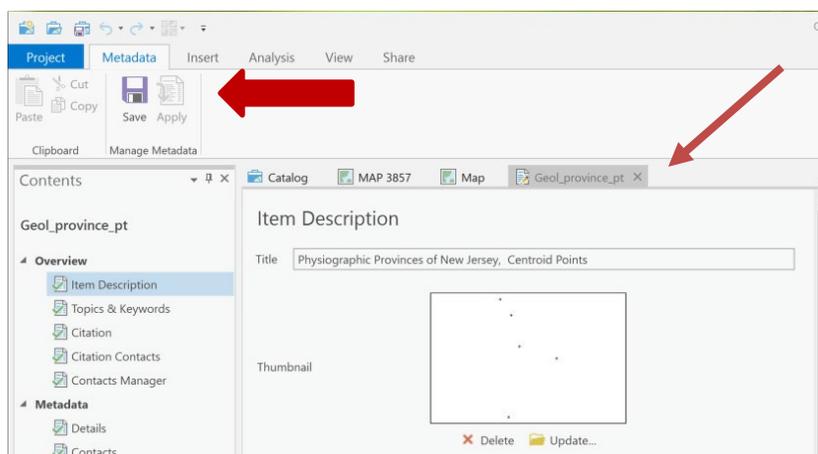
E. Synchronize This process will draw information from the data and put it in the ArcGIS format xml. Warning: synchronizing in Pro will obliterate the metadata Title entry. Save the contents of Title somewhere else first if you intend to re-use them.

1. Highlight the correct data set in the Catalog tab
2. In the ribbon section Metadata, use the Synchronize button.

F. Metadata Editing in ArcGIS Pro In Catalog view, highlight the data set in the Catalog tab. The metadata should be visible in the Metadata tab of the Details panel, and the ribbon should show the Metadata section. Start the Metadata Editor by clicking the Edit button on the ribbon. The Editor opens in a new tab in the Details panel.



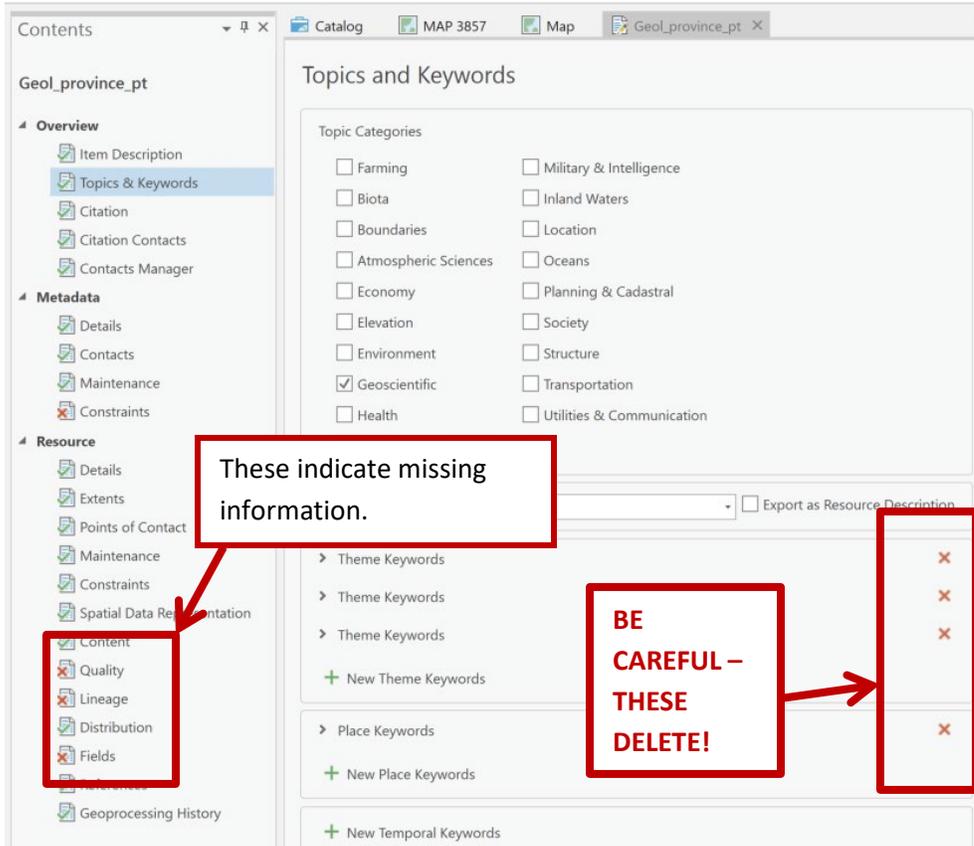
The ArcGIS Metadata Editor in Pro works much like that in ArcCatalog but with a slightly different appearance. One important difference is that you can save your work without



closing the Editor. Do so often to avoid losing work. To exit the Editor, close the tab in the Details panel.

To cancel bad edits, close the Editor tab without saving, to revert to the way the metadata record was the last time it was saved.

IMPORTANT: Be careful which red x you click on!



G. Editing Details

1. Fix the Process Step order:

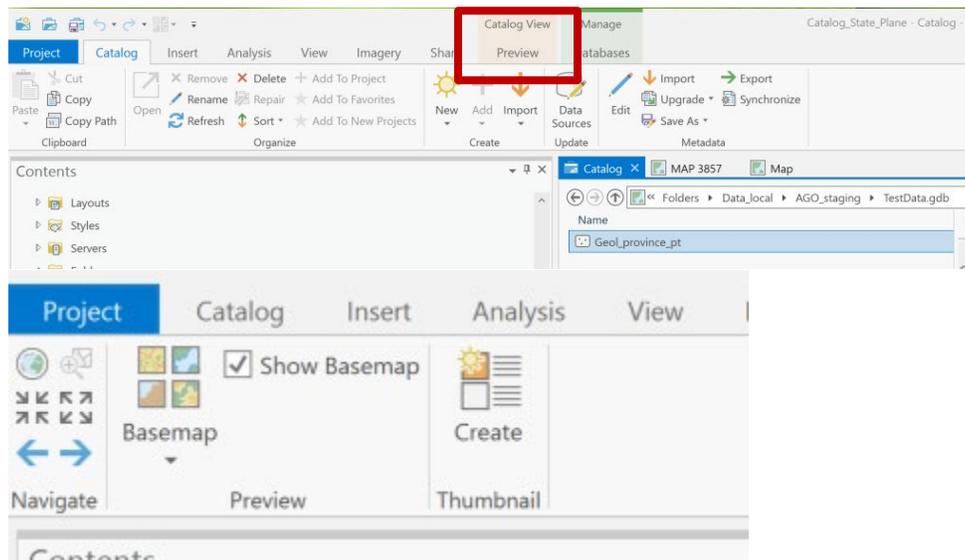
- Make sure the correct object is active, then open the metadata for editing by clicking the Metadata Edit button.
- Edit any process step dates and/or times as required (refer back to your notes and/or the old archived FGDC metadata to review the correct order.)
- Save the metadata. Wait a few beats to make sure the process finishes.
- Make some other object active, switch to the Preview tab, then make the object you are working on active again and switch back to the metadata tab. Open the Editor, Save again. Close the Editor.

- e) The process steps should now be in order. Review them in the Metadata tab stylesheet to make sure.
2. Next edit the rest of the metadata. Start with the checklist for NJGIN Core (Appendix II,) updating any outdated information in those elements. Then review the full metadata element list (Appendix III) and add/update those as needed for your purposes. Also review and fix any wonky results from the upgrade. Common trouble spots are Content Type (commonly gets duplicated,) and several of the Data Quality reports.
3. If you need detailed help with element contents, refer to Section F of [MD_ArcGIS_from_scratch_using_Pro_for_AGO.pdf](#).
4. When done, proofread the entire metadata record in the ArcGIS Pro stylesheet (not the Editor), particularly looking for any stale entries that were missed during editing. Rinse and repeat until the metadata are completely updated.

H. Create thumbnail

1. **Automatic via Pro (easy):** Open Pro in Catalog View, select the data set in the Catalog View, Catalog tab. Preview the Geography in the Details panel. The *Catalog View Preview* supertab should appear above the ribbon.

Click on it to change the ribbon and expose the *Thumbnail* group.



Navigate the Geography map to a suitable scale. Add/change/remove basemap as seems best.

Click the Thumbnail *Create* button. Then click on the *Catalog* tab (next to the active Project tab) to get back to Catalog view. In the Details panel switch to the Metadata tab; the new thumbnail should be visible.

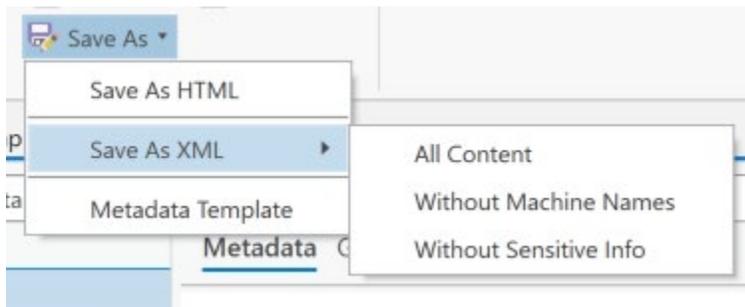
A branded, custom thumbnail is strongly recommended for vetted, authoritative data for ArcGIS Online. Further help if needed is available from NJGIN.

Any image can be used as a thumbnail; it need not be a map. Just use the correct shape (3:2 rectangle).

2. **Custom map:** Create a customized view of the data in a Pro map, and a custom image.
 - a) Set the layout Data Frame Properties to Size that will produce a 600 pixel wide by 400 pixel high image. The actual “paper” dimensions will depend on what resolution you plan to export. If you use 96 dpi, you’ll need a map layout that is just over 6 inches wide. However, keep in mind that it is going to be displayed much smaller than that in most cases. Working in a smaller dimension may help you produce a suitable thumbnail.
 - b) Add a base map or layer. Symbolize data and zoom to a pleasing scale. Check in layout view. Add a branding banner image if desired.
 - c) Choose File -> Export Map, with options as follows:
 - d) *Save as* type PNG
 - e) *Resolution* 96 dpi (or what you need)
 - f) *Clip output to graphics extent* ON
 - g) Once the PNG file has been created, switch to Catalog view, invoke the Pro Metadata Editor, then import the image by using the *Update* button under the thumbnail or placeholder. If further info is needed, see Pro Help instructions *Create a thumbnail*.

I. Producing metadata for ArcGIS Online:

1. **Incorporate a custom thumbnail or create an automatic thumbnail using Pro** (instructions for both above).
2. **Consider adding keywords/tags:** any keywords put in keywords fields and copied into Tags in the metadata will be written into the AGO item Tags (aka searchKeys), the first time you upload a metadata file. If you update existing metadata on AGO by submitting a new, edited xml, any additional Tags may have to be copied in manually.
3. **Check that Originator and Publisher are included in Credits:** This will enable them to show up in the AGO Item front page.
4. **Consider cleaning out “private” information:** several classes of information can be removed from the metadata record using the Metadata -> Save As -> Save As XML



function. Pick your preferred choice by reading the pop-up tool tips.

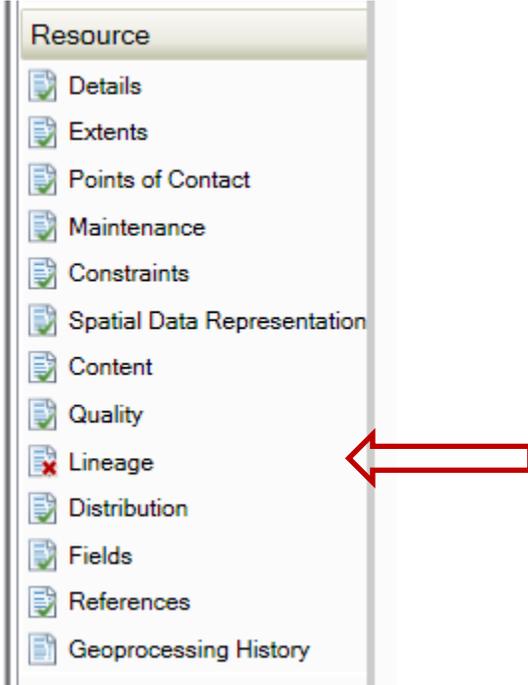
This produces a standalone ArcGIS xml that can be imported into association with the data set, and/or uploaded to AGO.



Appendix I: A few nifty features and quirks of the ArcGIS Editor

- ❖ **Contact Information** – The ArcGIS Metadata Editor includes a Contacts Manager, which can be used to save and re-use Contact Information packages. If you select a feature class in the Catalog Tree and open the Editor, then the Contacts Manager (section), it will list all the Contacts you have saved (first), and then all the additional ones in the current metadata record. You can save new ones or un-save old ones in this view. Un-checking will not delete an entry from the current metadata, just from the saved ones. When you re-use a contact by loading it somewhere in the ArcGIS Editor, don't forget to change the role for the new instance of use. If you are comfortable editing xml files in an xml editor, you can edit directly the file where the saved contacts are stored: at ArcGIS Pro 2.9, this file is located here:
<user documents>/ArcGIS/Descriptions/contacts.xml .
- ❖ **Synchronization** – we are done struggling with manually entering Spatial Reference information. If there is a proper spatial reference on the data, ArcGIS Pro will read it into the metadata. A bunch of other information also gets read in this way; the full list of what can get synchronized for a feature class or shapefile is below:
 - Title – gets file or feature class name
 - Bounding Coordinates in decimal degrees
 - Content Type as Downloadable Data
 - Presentation Format e.g. digital map
 - Dataset language as English (United States)
 - Spatial representation as vector (if it is polygons)
 - Processing environment (Windows build version etc)
 - ArcGIS Item properties, including file location (these are non-editable, but don't get exported in the FGDC xml)
 - Extents, both geographic coordinates and native coordinate system units
 - Spatial Reference, both EPSG reference and full instantiated elements
 - Spatial Data Properties (roughly equivalent to Spatial Data Organization)
 - Field names, aliases, and types
 - Metadata date stamps and scope
- ❖ **Date formats:** In the ArcGIS Editor, the date convention for ISO metadata is followed. Dates are YYYY-MM-DD. Times are hh:mm:ss . Most date fields are restricted in the Editor to using the calendar date picker. If you do not know the month or day, you will have to establish a convention for yourself (e.g. use 2002-01-01 or 2002-12-31 if all you know is the year). When putting a date and/or time in a free text field, it makes sense to format it properly. When exporting to FGDC-CSDGM xml, the contents of date/time fields will be translated to FGDC-CSDGM format (YYYYMMDD) and stored that way in the output xml. Contents of free text fields will remain as entered. The ArcGIS stylesheets **display** almost all dates in the ISO format if the date has been properly-formatted in an FGDC xml date field.
- ❖ **Error flags** (little red x in editor section list): A few of these may persist, even after completion of all the information necessary to produce FGDC compliant metadata. The Quality and Lineage sections of the editor are the most frequent culprits. If you are

pretty sure the information is complete but want to check, export an FGDC-CSDGM xml and run it through the MP validation service to identify any missing info.



Appendix II: Required Cataloging Elements for NJGIN

List below is in ArcGIS Pro Metadata Editor order. This is the minimum list of elements that will work well for cataloging.. Fields marked # are filled during ArcGIS Pro metadata synchronization or automatically by the Editor but can be changed. Fields marked * are commonly the same for many records and are candidates for template.

Warning: the following list does **not** include all the fields that may have outdated information in them if metadata were upgraded from an existing FGDC-CSDGM record.

❖ Overview section

Item Description subsection

- Title
- Summary (Purpose)
- Description (Abstract)
- Use Limitation (Use Constraints) *
- Bounding Box (4 coordinates) #

Topics & Keywords subsection

- Topic Category (check box)
- Content Type
- New Theme Keyword section, Theme Keywords (separate with comma or line break)
- *Theme Keyword Thesaurus* (only if above keywords are from a published vocabulary)
- Place Keyword

(Resource) Citation subsection

- Title (same as above, edit only if necessary)
- FGDC Geospatial Presentation Form
- Dates -> Published (please be sure to change for each discrete data release)

(Resource) Citation Contacts subsection

- Citation Contact (name and/or organization) and Role = Originator *
- Citation Contact (name and/or organization, plus at least City and State), and Role = Publisher *

❖ Metadata section

(Metadata) Details subsection

- Date Stamp #

(Metadata) Contacts subsection

- Metadata Contact (name and/or organization) plus full contact information including email, and Role = Point of Contact *

[more]

❖ **Resource** section

(Resource) Details subsection

- Status (Progress)
 - (Resource) Extents** subsection, ADD A NEW EXTENT SUBSECTION
- Temporal Instant Extent Date or Temporal Period Extent Dates (Time Period of Content Date(s))
- Temporal ... Extent Description: Ground Condition, Publication Date, or free text (Currentness Reference)

(Resource) Maintenance subsection

- Update Frequency (Maintenance and Update Frequency)

(Resource) Constraints subsection

- Legal Constraints -> Use Limitation (Distribution Liability) *
- Legal Constraints -> Other Constraints (Access Constraints); leave out if none. *
- (Resource) Distribution** subsection -> Digital Transfer Options -> Online Resource
- Linkage (Online Linkage) Not required for ArcGIS Online access points. Required for other download and/or service points.

Appendix III: Required Full Metadata Elements, Editor field list

This list includes all the fields, in Editor order, that must be filled in or edited **manually** in the ArcGIS Pro Metadata Editor, to produce full metadata per NJDEP/NJGIN required list. **Warning:** the following list does **not** include all the fields that may have outdated information in them if metadata were upgraded from an existing FGDC-CSDGM record. It also does not include fields that normally are filled in automatically by synchronization with the data, and do not need to be changed manually.

A similar listing in other formats is available from NJGIN.

❖ Overview section

Item Description subsection

- Title
- Summary (Purpose)
- Description (Abstract)
- Use Limitation

Topics & Keywords subsection

- Topic Category (check box)
- Content Type
- Place Keyword

(Resource) Citation subsection

- Title (same as above, edit only if necessary)
- FGDC Geospatial Presentation Form
- Dates > Published

(Resource) Citation Contacts subsection

- Citation Contact (name and/or organization) and Role = Originator
- Citation Contact (name and/or organization, plus at least City and State), and Role = Publisher

❖ Metadata section

(Metadata) Contacts subsection

- Metadata Contact (name and/or organization) plus full contact information including email, and Role = Point of Contact

❖ Resource section

(Resource) Details subsection

- Status
- Supplemental Information

(Resource) Extents subsection

- Temporal Instant Extent or Temporal Period Extent, including date or dates and Description. The latter may be Ground Condition, Publication Date, or free text. This information must be in a separate Extent entry, **not** in the same one as the Bounding Box Extent.

(Resource) Maintenance subsection

- Update Frequency

(Resource) Constraints subsection

- Legal Constraints -> Use Limitation (Distribution Liability)

- Legal Constraints -> Other Constraints (Access Constraints); leave out if none.
- **(Data) Quality** subsection
 - Report Type -> Conceptual Consistency AND Measure -> Description [Logical Consistency Report]
 - Report Type -> Completeness Omission AND Measure -> Description [Completeness Report]
 - Report Type -> Quantitative Attribute Accuracy AND Measure -> Description [Attribute Accuracy Report]
 - Report Type -> Absolute External Positional Accuracy AND Dimension -> horizontal AND Measure -> Description [Horizontal Positional Accuracy Report]
 - A second set of Absolute External Positional Accuracy report elements if Vertical Accuracy is pertinent.
- **(Resource) Lineage** subsection
 - If published or archived source data or documents were used, for each one:
 - Source Description
 - Scale Denominator (only for paper maps, or data of known nominal scale)
 - Source Citation Title
 - Alternate Title [Source Citation Abbreviation] e.g. file name
 - FGDC Geospatial Data Presentation Form
 - Date Published for the **Source**
 - Edition (only if referenced by source documentation)
 - Source Citation Contact name and/or organization and Role = Originator
 - Source Citation Contact name and/or organization, City, State, and Role = Publisher
 - Source Temporal Instant Extent or Temporal Period Extent, including date or dates and Description.
 - If detailed processing information is available, for each process step:
 - Process Description
 - Process Step Date (and time if relevant)
 - Processor Name
 - Processor contact information if not cited earlier in metadata.
- **(Resource) Distribution** subsection
 - **Distributor** sub-subsection (Be careful to choose this correctly - it is the second one of three.)
 - Distributor Contact organization and/or name, Role = Distributor, and full contact information
 - Ordering Process Fees
 - Available Date or Date Period
 - Ordering Instructions
 - Distribution Format -> Format Name
 - Distribution Format -> Format Version
 - Distribution Format -> Specification URL to format spec
 - Digital Transfer Options -> Online Resource -> Linkage (direct access URL for service consumption or download)
 - **Digital Transfer Options** sub-subsection (Be careful to choose this correctly - it is the third one of three.)

- Online Resource -> Linkage General reference URL for informational Web page, organization main Web page, etc.
- Online Resource -> Name Descriptive name of resource
- Online Resource -> Function pick from list or *Empty*
- Add Online Resource sections for additional URLs (element is repeatable)

(Resource) Fields subsection – Entity and Attribute Information

- Label (change the synchronized default to something more descriptive of the Entity)
- Entity Type -> Definition
- Entity Type -> Definition Source
- For each field (Attribute)
 - Label
 - Definition
 - Definition Source
 - ONE of Range Domain -> Minimum AND -> Maximum

Codeset Domain -> Name AND -> Source

Unrepresentable Domain

OR

One or more Enumerated Domain, including for each

-> Value, ->Definition, ->Definition Source

Appendix IV: Pick lists for NJGIN

- A. ISO 19115 Topic Category codes¹:** For all metadata records, include one of the following ISO Topic Category codes (text), which expresses the Primary Theme of the data set, map, service, or application. In the ArcGIS Pro Metadata Editor, this entry is a check box; necessary entries in the xml are made automatically by the Editor and exporter. Numeric (three digit numbers as text) codes are provided for reference only.

The following list describes the intended use for each keyword.

- **biota 002** for naturally-occurring flora and fauna, such as wildlife, biological sciences, ecology, wilderness, sea life, wetlands, habitats
- **boundaries 003** for administrative and political boundaries, i.e. legal land descriptions
- **climatologyMeteorologyAtmosphere 004** for atmospheric processes and phenomena, such as cloud cover, weather, atmospheric conditions, climate change, precipitation
- **economy 005** for economic activities or employment, such as labor, revenue, commerce, industry, tourism, ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of minerals, oil, gas
- **elevation 006** for height above or below sea level, such as altitude, bathymetry, digital elevation models, slope, and products derived from the preceding
- **environment 007** for environmental resources, protection, and conservation, such as pollution, waste storage and treatment, environmental impact assessment, environmental risk, and nature reserves
- **farming 001** for agriculture and farming, including the rearing of animals or cultivation of plants. For example, irrigation, aquaculture, herding, pests and diseases affecting crops and livestock
- **geoscientificInformation 008** for geological, geophysical, and other earth science information, such as minerals, rock structure, rock composition, rock origin, earthquakes, volcanic activity, landslides, gravity, soils, permafrost, hydrogeology, erosion
- **health 009** for human health and disease, health services, human ecology, and safety, such as human disease, human illness, factors affecting health, hygiene, mental and physical health, substance abuse
- **imageryBaseMapsEarthCover 010** for base maps, such as land cover, topographic maps, classified and unclassified images.
- **intelligenceMilitary 011** for military bases, structures, and activities, such as barracks, training grounds, military transportation, military information collection

¹ Derived from *ISO Draft International Standard: Geographic information -- Metadata (ISO/DIS 19115), 2001, Section B.5.27 MD_TopicCategoryCode<<CodeList>> (pp. 85-86) and Creating and Using Metadata Services, 2002, ESRI, Chapter 4 - Publishing metadata in ArcCatalog*. Numeric domain codes are from https://geo-ide.noaa.gov/wiki/index.php?title=ISO_Topic_Categories.

- **inlandWaters 012** for inland water features and drainage systems, such as rivers, glaciers, salt lakes, water use plans, dams, currents, floods, water quality, hydrographic charts
- **location 013** for positional information and services, such as addresses, geodetic networks, postal zones and services, control points, place names
- **oceans 014** for features and characteristics of salt water bodies excluding inland waters, such as tides, tidal waves, coastal information, reefs
- **planningCadastre 015** for land use, such as zoning maps, cadastral surveys, land ownership
- **society 016** for characteristics of societies and cultures, such as natural settlements, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, crime and justice, recreational areas and activities, social impact assessments, census information
- **structure 017** for man-made construction, such as buildings, museums, churches, factories, housing, monuments, and towers
- **transportation 018** for transportation networks, the means and aids for conveying people and goods, such as roads, airports, airstrips, shipping routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, railways
- **utilitiesCommunication 019** for energy, water, and waste systems, and communications infrastructure and services, such as hydroelectricity, geothermal, solar, and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas distribution, data communication, telecommunication, radio, and communication networks.

The following two are not in the Editor Topic Categories but can be added as keywords.

- **extraTerrestrial** for region more than 100 km above the surface of the Earth
- **disaster** for information related to disasters. Examples: site of the disaster, evacuation zone, disaster-prevention facility, disaster relief activities.

B. Content Type codes

Use one of the following entries. In the ArcGIS Pro Metadata Editor, this is a drop-down pick list.

- Live Data and Maps
- Downloadable Data
- Offline Data
- Static Map Images
- Other Documents
- Applications
- Geographic Services
- Clearinghouses
- Geographic Activities

C. Tags for Federal Project Open Data (POD) (enter in Theme Keywords)

- **public** data are available or could be made available to the public
- **restricted public** available under certain use restrictions
- **non-public** data not available to the public



Questions may be directed to:

NJGIN administrator njgin@oit.nj.gov

Change History

Version 3.0 released January 2023 – Extensive re-write, instructions for ArcGIS Pro Metadata Editor

Version 2.3 release 8 June 2018 – Minor editorial changes.

Version 2.2 released 15 May 2018 – Added use of XSLT Transformation tool; edits to Appendix information.

Version 2.1 released 10 May 2018 – Minor editorial changes.

Version 2.0 released 16 April 2018 – Extensive re-write from original *Transitioning...* document.