



NRCS National Wetland Conservation (WC) Tool

Lesson Plans/User Guide

Version – 1.0.5

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Overview

Purpose

The Natural Resources Conservation Service (NRCS) makes Certified Wetland Determinations to locate and certify wetlands subject to the Food Security Act's conservation provisions. The Wetland Conservation Tool (WC Tool) was created through an NRCS of the Future initiative to improve the quality, consistency, and timeliness of these determinations. The WC Tool consists of a series of toolboxes in a customized ArcGIS Pro template that guides the user through the wetland determination mapping process and produces required documentation and client products. The WC Tool uploads completed geospatial records for improved management of certified wetland determination geospatial records and workload. This geospatial information is published for use in Conservation Desktop and provides unique but complimentary functionality to the Conservation Desktop HELC/WC Determination Tracking Tool.

State Tool Administrator

The WC Tool is designed to be customized and distributed at the State level by one or more staff members designated by the State Conservationist (e.g., Business Tools Specialist, GIS Specialist, Compliance Specialist, and/or Area staff or Subject Matter Expert positions). This State Tool Administrator is responsible for customizing and deploying the WC Tool to their state, providing access to the WC Tool for their employees in the USDA Portal Groups, and training and supporting the WC Tool within their state.

User Requirements

Wetland Conservation Job Approval Authority (JAA) - The WC Tool is exclusively intended for making Food Security Act Certified Wetland Determinations. Use of the tool assumes knowledge of Food Security Act procedures and State designated JAA for making Wetland Determinations.

GIS Skills – The WC Tool requires use of ArcGIS Pro. Users require basic skills in ArcGIS Pro navigation, digitizing, and map layout creation. Support from the State GIS Specialist and/or State Tool Administrator is required to ensure that users properly install and use the WC Tool.

System Requirements

This WC Tool requires the following software and accounts.

1. *ArcGIS Pro version 2.7.3 or higher.*
2. *R for Windows 4.1.3 and R Studio 2022.02.1 + 461 or higher.*
3. *User account access to USDA GeoPortal, GIS States Portal, and GIS-Testing Portal along with membership in their respective NRCS WC Tool Groups.*

Food Security Act

Resources related to the NRCS Wetland Conservation provisions can be found in the Highly Erodible Land and Wetland Conservation section of the [NRCS Share Point](#), the [Conservation Compliance and USDA Programs](#) webpage, in the [eDirectives](#) under Manuals → Title 180, and in the [Code of Federal Regulations](#).

Production vs Training

The WC Tool is deployed in both a Production and Training version. Each version consists of a unique ArcGIS Pro template project (APRX) in the same install folder. The State Tool Administrator may supply a set of either or both Production and Training templates within their state. This guide is written from the standpoint of using the Production version (template). However, differences for using the Training version are called out, where applicable.

Both the Production and Training templates interact with the USDA ArcGIS Portal web environments – GeoPortal, GIS States Portal, and GIS Testing Portal. The Portals accessed by the Production and Training templates vary slightly, in the following manner:

- **GeoPortal** is accessed by both the Training and Production versions of the WC Tool to download the Common Land Units needed for requests.
- **GIS States Portal** is used by the Production version for screening existing data and uploading results.
- **GIS Testing Portal** is used by the Training version for screening training data and uploading temporary training results.

When users begin a WC Tool project from a template, it is important to start with a clearly labeled template (APRX file) that is designated for production or training. Appropriate templates should be provided by the State Tool Administrator.

Training templates connect to the **GIS Testing Portal**. The results from training are not saved long-term because the data on GIS Testing is reset from time to time as tool updates are developed. These templates are appropriate for training or practice.

Production templates connect to the **GIS States Portal**. The user's work will be saved in the live data after they upload. This is appropriate for official work on determination requests. The standard workflow is to use the production version and connect to **GIS States Portal** for interactions with existing Certified Wetland Determination (CWD) data.

Lesson Order

Generally, the lessons for the WC Tool are presented in numerical order. You need to have completed setup steps or process steps from earlier lessons before attempting procedures in later lessons.

Install Folder Reference

These lessons may refer to <install folder> directory path. This refers to the complete folder path above the *NRCS Wetland Tools Pro* folder. The developers recommend using **C:\GIS_Tools** as the install folder to contain the *NRCS Wetland Tools Pro* folder. Other locations may work, but operation of the tools is less certain at other install locations.

User Guide Sections and Workflows

The basic workflow is to save the WC Tool package on your computer and use the ArcGIS Pro templates provided to set the project extent, create reference layers, and then generate a base map, determination map, client transmittal letter, and form NRCS-CPA-026-WC. Advanced features or workflows are covered in Appendix sections of this guide.

Part 1 – Installation and Configuration

These lessons focus on installing and configuring the tool.

- Lesson 1 – Create Portal Accounts and Join WC Tool Groups
- Lesson 2 – Install Base Software (ArcGIS Pro, R, and RStudio)
- Lesson 3 – Install the WC Tool

Part 2 – Understanding ArcGIS Pro and Toolbox Tools

These lessons focus on the basic customization to templates and ArcGIS Pro tool concepts.

- Lesson 4 – Create Local Template(s)
- Lesson 5 – Overview of ArcGIS Pro Interface
- Lesson 6 – Changing Portals in ArcGIS Pro

Part 3 – Toolbox A: Project Setup

These lessons focus on starting a project and setting the project extent.

- Lesson 7 – Create Wetlands Project
- Lesson 8 – Enter Project Info
- Lesson 9 – Define Request Extent

Part 4 – Toolbox B: Reference Data

These lessons focus on options to create determination reference data from commonly used sources.

- Lesson 10 – Download Soil Data (Optional)
- Lesson 11 – Create Elevation Derivatives (Optional)
- Lesson 12 – Export Reference Maps (Optional)

Part 5 – Base Map

These lessons focus on the process to create a Base Map.

- Lesson 13 – Create Base Map Layers
- Lesson 14 – Edit Base Map Layers
- Lesson 15 – Export Base Map

Part 6 - CWD

These lessons focus on the process to create the Certified Wetland Determination (CWD) map.

- Lesson 16 – Create CWD Layer
- Lesson 17 – Edit CWD Layers
- Lesson 18 – Export Determination Map

Part 7 – Project Finishing

- Lesson 19 – Create Forms and Letters
- Lesson 20 – Update GIS Server Layers

Lesson 1 – Create Portal Accounts and Join WC Tool Groups

Users need accounts on the various USDA ArcGIS Portals to use the WC Tool. In addition, users need to join or be added to the *NRCS WC Tool Group* (GIS States Portal) and the *NRCS WC Tool Training Group* (GIS Testing Portal) as members. The guidance below provides instructions for users to create portal accounts if they don't already have them. State Tool Administrators may adjust the following instructions to be more specific about how to request access to the *NRCS WC Tool Group* and *NRCS WC Tool Training Group* within their state.

GeoPortal Account

This section describes how to create a GeoPortal Account. This is required to be able to access the CLU layer, as well as any other GeoPortal feature classes and image services used in your state's Production and Training templates. You do not need to complete this section if you already have a GeoPortal account.

- Open Chrome or Edge, or a new tab in one of those browsers.
- Navigate to <https://gis.sc.egov.usda.gov/portal/home>
- Click *Sign In* in the top-right corner of the screen to sign-in with your LincPass or Eauth.



After signing-in, the GeoPortal account is setup.

GIS States Portal and the NRCS WC Tool Group

This section describes how to create a GIS States Portal Account and request membership in the *NRCS WC Tool* group. This Portal is required for the Production version of the tool.

- Open Chrome or Edge, or a new tab in one of those browsers.
- Navigate to <https://gis-states.sc.egov.usda.gov/portal/home>. It is suggested to bookmark this site if you haven't already.
- Click *Sign In* in the top-right corner of the screen to sign-in with your LincPass or Eauth.



- After signing-in, click *Groups* from the links across the top of the page.



- Review your Groups for the *NRCS WC Tool* Group.
- If you find the *NRCS WC Tool* Group in your existing Groups:
 - You are a member and are already setup and ready to use the production version of the WC Tool.
- If you do not find the *NRCS WC Tool* Group in your existing Groups:
 - Click the *My Organization's Groups* button.
 - Search for the "NRCS WC Tool" group.
 - Click the link to open the "NRCS WC Tool" group.
 - Click *Join This Group*. If necessary, click *Submit Request*.
 - E-mail your State Tool Administrator that you have requested access to the *NRCS WC Tool Group* on *GIS States*. This alerts them to approve your request.
 - After your State Tool Administrator approves your request, you will be added to the group.

You are now a member of the *NRCS WC Tool* group and are ready to use the production version of the WC Tool.

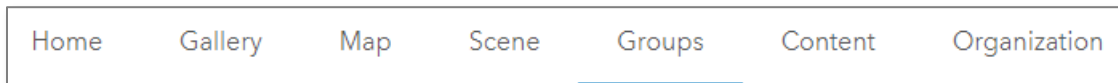
GIS Testing Portal and the NRCS WC Tool Training Group (Optional – Training Only)

This section describes how to create a GIS Testing Portal Account and request membership in the *NRCS WC Tool Training* group. This Portal is used for the Training version of the tool and only needs to be configured if you will be taking part in training or otherwise practicing with the tool and if your State Tool Administrator provides a training template.

- Open Chrome or Edge, or a new tab in one of those browsers.
- Navigate to <https://gis-testing.usda.net/portal/home>. It is suggested to bookmark this site if you haven't already.
- Click *Sign In* in the top-right corner of the screen to sign-in with your LincPass or Eauth.



- After signing-in, click *Groups* from the links across the top of the page.



- Review your Groups for the *NRCS WC Tool Training* Group.
- If you find the *NRCS WC Tool Training* Group in your existing Groups:
 - You are a member and are already setup and ready to use the training version of the WC Tool.
- If you do not find the *NRCS WC Tool* Group in your existing Groups:
 - Click the *My Organization's Groups* button.
 - Search for the "NRCS WC Tool Training" group.
 - Click the link to open the "NRCS WC Tool Training" group.
 - Click *Join This Group*. If necessary, click *Submit Request*.
 - E-mail your State Tool Administrator that you have requested access to the *NRCS WC Tool Training Group on GIS States*. This alerts them to approve your request.
 - After your State Tool Administrator approves your request, you will be added to the group.

You are now a member of the *NRCS WC Tool Training* group and are ready to use the training version of the WC Tool.

Lesson 2 – Install Base Software

This lesson describes how to install and license the base software programs that support the WC Tool. Further configuration steps to these programs are described in later lessons.

Install ArcGIS Pro

The WC Tool is built within ArcGIS Pro. ArcGIS Pro can be installed by users from *Software Center*. As a large program, it is recommended to perform the install while connected to the USDA network via the best available network connection, typically the Service Center or duty station for an employee. As of the release of WC Tool 1.0.4, ArcGIS Pro 2.7.3 or higher is supported, but version 2.9.1 or higher is recommended. If earlier versions of ArcGIS Pro are required by any other tools in your state, the following versions are supported by the WC Tool:

- **ArcGIS Pro 2.7.3** – Install ArcGIS Pro 2.7.26828 followed by ArcGIS Pro Patch 2.7.3

OR

- **ArcGIS Pro 2.8.3** – Install ArcGIS Pro 2.8.29751 followed by ArcGIS Pro Patch 2.8.3

OR

- **ArcGIS Pro 2.9.2** – Install ArcGIS Pro 2.9.32739 followed by ArcGIS Pro Patch 2.9.2

Users can request ArcGIS Pro installation through the CEC Help Desk if they have trouble installing it from *Software Center*.

License ArcGIS Pro

USDA employees are advised to configure *Concurrent Licensing* for ArcGIS Pro from the USDA license servers. Please refer to the licensing instructions provided by your State Tool Administrator, or if none have been provided refer to the *Licensing* section of the [Getting Started with ArcGIS Pro](#) guide from FPAC-GEO. The *Advanced* license option for ArcGIS Pro is required for the WC tool (not *Basic* or *Standard*). If you have licensing questions, contact your State Tool Administrator and/or State GIS Specialist. Please note that the Portal instructions in this User Guide are provided for correct functioning of the WC Tool and may deviate from guidance from the *Getting Started with ArcGIS Pro* guide.

Install R for Windows and RStudio

R for Windows and RStudio can be installed by users from Software Center and are required to use the WC Tool. These two programs are small enough to be installed either onsite at a USDA Service Center, or offsite while using VPN. Installation of new versions of R for Windows or RStudio can be performed from Software Center without uninstalling previous versions.

- Install *R for Windows 4.1.3*, or the latest version available
- Install *RStudio 2022.02.1 + 461*, or the latest version available

Users can request installation assistance through the CEC Help Desk if they have trouble installing any of the above programs from *Software Center*.

Lesson 3 – Install the WC Tool

Delete Existing Install

Old versions of the WC Tool should be archived or deleted prior to installing a new version provided by the State Tool Administrator. This lesson applies only if you have pre-existing versions of the WC Tool, and previously run projects. You should try to complete in-progress Determination projects prior to updating to a new version of the tool.

- Open *File Explorer* and navigate to *C:\GIS_Tools*, or to the location your state has designated for tool installation.
 - At the installation location level (e.g., *C:\GIS_Tools*) select and delete the *NRCS_Wetland_Tools_Pro* folder.
- Navigate to *C:\Determinations*, if it exists.
 - **Existing Projects (Production):** Copy/Paste existing project folders to an external drive or other backup location (such as your OneDrive). Then delete the project folders from *C:\Determinations*. In-progress projects may need to be started over in the new version.
 - **Existing Projects (Training):** Delete these project folders from *C:\Determinations*.

Download the WC Tool

The WC Tool will be provided to users by the State Tool Administrator. The State Tool Administrator will prepare templates customized for use within your state. Please refer to your State's guidance for obtaining the current WC Tool version.

NRCS Wetland Tools Pro Install Location

When you receive the WC Tools, make sure that the *NRCS_Wetland_Tools_Pro* folder is placed in the **C:\GIS_Tools** folder on your system. If this directory does not exist, it may need to be created.

If you receive a zip file containing the WC Tool, it must be unzipped so that it resides in the **C:\GIS_Tools** directory on the computer. If this directory does not exist, it may need to be created prior to unzipping.

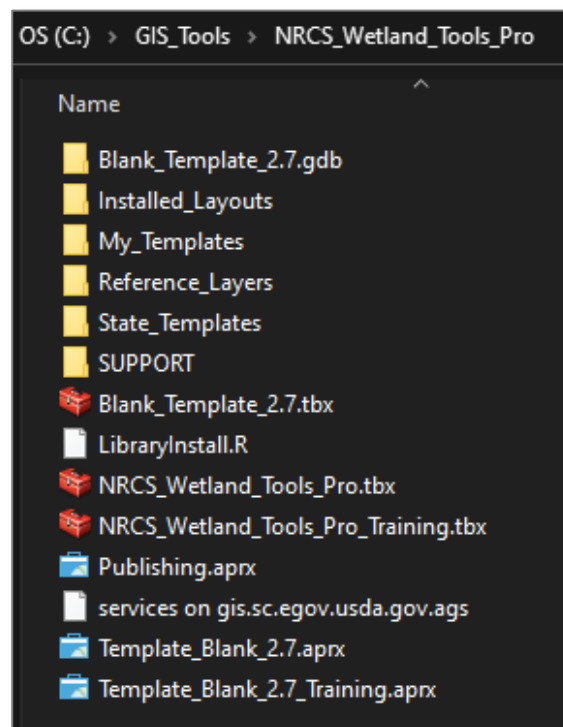
The resulting installation path should be **C:\GIS_Tools\NRCS_Wetland_Tools_Pro** as shown in the screenshot to the right.

Note: Slight variations in individual folders and files may exist, compared to this screenshot.

Please verify that you do *NOT* nest the installed folder into a deeper path such as:

Incorrect: C:\GIS_Tools\GIS_Tools\NRCS_Wetland_Tools_Pro

Incorrect: C:\GIS_Tools\NRCS_Wetland_Tools_Pro\NRCS_Wetland_Tools_Pro.

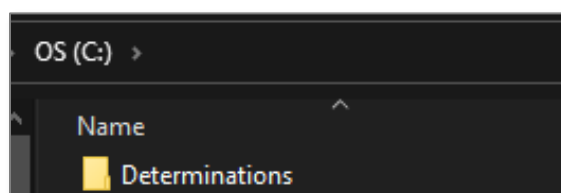


If you install the WC Tool (*NRCS_Wetland_Tools_Pro*) in other locations on your system, unexpected bugs in the tool may result. For best performance to *NOT* use a network location. *Do not place the install folder in locations such as OneDrive, Documents, or Desktop, all of which frequently interact with the network.*

Create Determinations Directory

The **C:\Determinations** folder must be created if it doesn't exist already.

- Open *File Explorer* and navigate to the C:\ drive.
- Confirm that a *Determinations* folder exists.
 - If it does not exist, create a new folder at the C:\ drive level and name it *Determinations*. This should result in a folder of *C:\Determinations* now being present on your system.



Configure R

The WC Tool comes with an R file that must be run in RStudio to setup the packages that will build the letters and forms at the end of the workflow. The user will run these steps after unzipping the WC Tool. These steps are strongly encouraged after any new install or version update to the WC Tool.

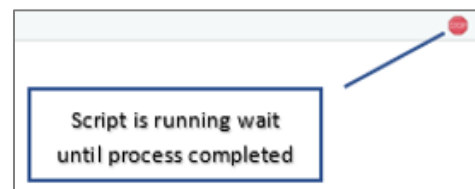
- Close ArcGIS Pro (if it is open).
- Navigate to `C:\GIS_Tools\NRCS_Wetland_Tools_Pro` and double-click **LibraryInstall.R**. This will open the script in R Studio.

Note: The “.R” file name extension may not be visible if your system hides file extensions.

- Manually run the code, below, in the RStudio window.
- **One at a time, highlight the indicated code line(s), below, and then click the *Run* icon.**
 - Highlight line 20. Click Run. Wait for the code to stop running. If there is no package to be removed, the script will indicate an error. It is okay to proceed past the error.
 - Highlight lines 23-24. Click Run. Wait for the code to stop.
 - Highlight line 27. Click Run. Wait for the code to stop.
 - Highlight line 30. Click Run. Wait for the code to stop. This may take some time to complete.
 - Highlight line 33. Click Run. Wait for the code to stop.



```
19 #uninstall arcgisbinding package
20 remove.packages(arcgisbinding)
21
22 # Redirect R profile
23 source('https://raw.githubusercontent.com/ncss-tech/soilReports/master/R/installRprofile.R')
24 installRprofile(overwrite=TRUE)
25
26 #wait a few seconds for the R section to restart
27 .rs.restartR()
28
29 #Install packages needed for the report generator
30 install.packages(c("flextable", "knitr", "rmarkdown", "textreadr", "xlsx", "dbplyr"), depend
31
32 #Install arcgisbinding package
33 install.packages("arcgisbinding", repos = "https://r.esri.com", type = "win.binary")
```

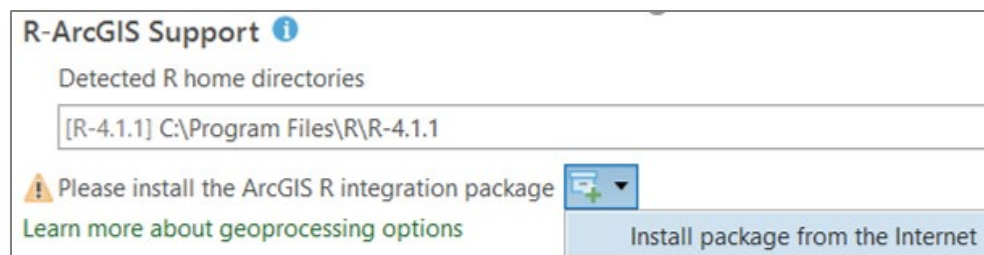


- After running all code blocks is complete, close RStudio:
 - Click *File > Quit Session....*
 - Click Save workspace if prompted.

Configure arcgisbinding in ArcGIS Pro

The WC Tool requires ArcGIS Pro to be linked to R through the arcgisbinding package. Each user performs these steps after running the RStudio steps in the previous section. Repeat these steps after any new install or version update to the WC Tool.

- Open any ArcGIS project (blank or existing).
- Click *Project*, then click *Options*, and then click *Geoprocessing*.
- Under R-ArcGIS Support, review the *Detected R home directories*.
 - Click the dropdown and select the R installation.
Note: If clicking this dropdown causes an error, please make sure your ArcGIS Pro version is 2.7.3 or higher.
 - If an R installation folder isn't listed, make sure you completed all previous R and RStudio installation and setup steps. You may need to manually navigate to and select the standard R installation path which is **C:\Program Files\R\R-<version number>**.
- Beneath the R home directory setting, look for the *arcgisbinding* package installation status.
 - If already installed, it should be at least version 1.0.1.244.
 - If you have an earlier version number, click the drop-down and select *Check Package for Updates* and then install the updates
 - If no version is already installed, select the drop-down and click *Install package from the internet*.



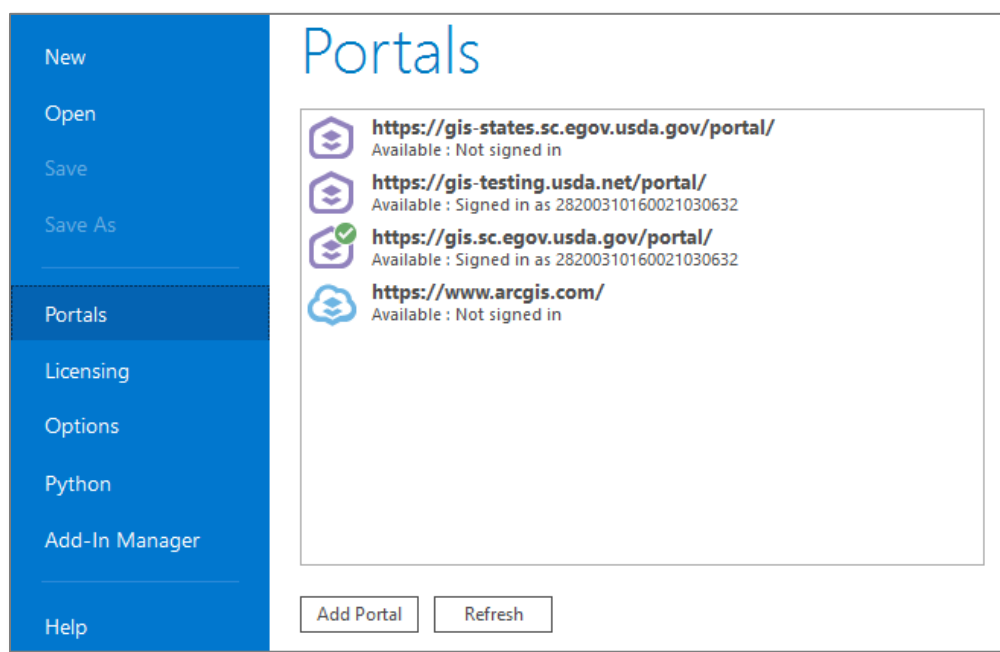
Configure Portals in ArcGIS Pro

The WC Tool connects to various USDA GIS Portals depending on whether you are using the Production or Training version. The steps in this section are specific to configuring access to your previously created Portal Accounts within ArcGIS Pro. The user will add these Portals in ArcGIS Pro after installing or updating ArcGIS Pro.

- Launch ArcGIS Pro (**Start** → **ArcGIS** → **ArcGIS Pro**). In the lower-left corner of the Pro window, click **Settings**. From the list of settings, click **Portals**.

Note: If you are in an active project, click the **Project** tab to access the **Portals** menu.

- A list of portals will be displayed. It will contain ArcGIS Online (www.arcgis.com) by default, and any portals you've previously added. For first time users, only ArcGIS Online will be visible.



- If any of the following portals are missing, click **Add Portal**, type the URL for the portal to add, and then click **OK**. Repeat this step to add each of the following portals not already on your list:

GeoPortal:

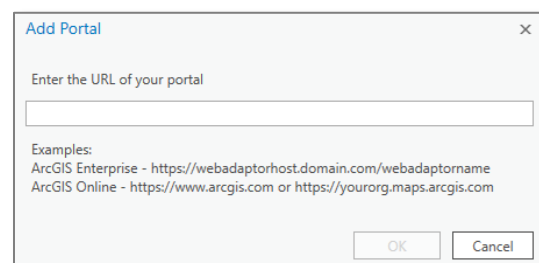
<https://gis.sc.egov.usda.gov/portal>

GIS States Portal:

<https://gis-states.sc.egov.usda.gov/portal>

GIS Testing Portal:

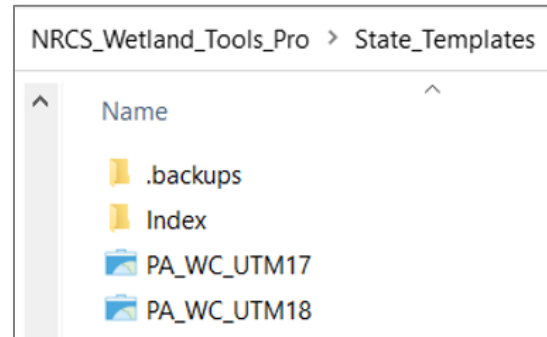
<https://gis-testing.usda.net/portal>



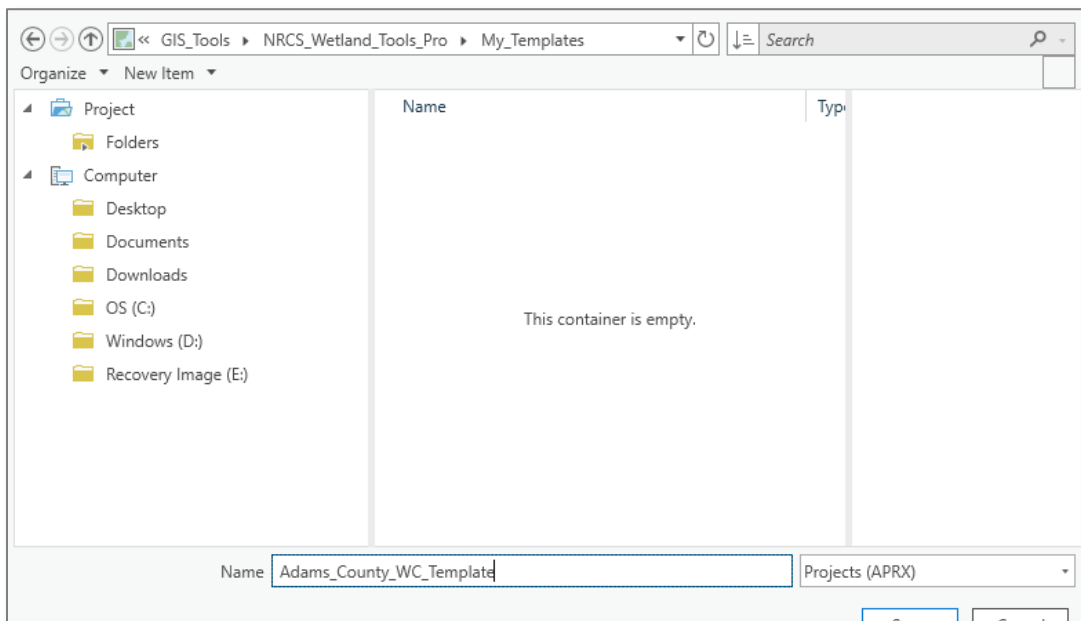
Lesson 4 – Create Local Template(s)

Users have the option to create one or more Local Template(s) as needed for their work. This requires modifying the State Template(s) APRX files provided by the State Tool Administrator. Local Templates may not be necessary if the State Templates already provide enough data. The typical reason to create a Local Template is to add additional geodata to the State Template for use in your work area.

- Navigate to <install folder>\NRCS_Wetland_Tools_Pro\State_Templates folder and open the state customized Template APRX file to be modified.
Note: Open the one with the UTM Zone appropriate to the area you will be covering.
- You may be prompted to sign-in to one of the portals used by the WC Tool. Do so.



- Click **Project** → **Save As...**
- Navigate to: <install folder>\NRCS_Wetland_Tools_Pro\My_Templates.



- Type a name for the template and click **Save**. You can continue to include the UTM Zone number in your project name if it is relevant (e.g., a county split into two UTM zones).
- Add additional data to the template using **Add Data**. Arrange layer order or adjust the symbology or labels as needed, and then click **Save**.
- Close the Template you created. Repeat this lesson to create additional templates, as needed.

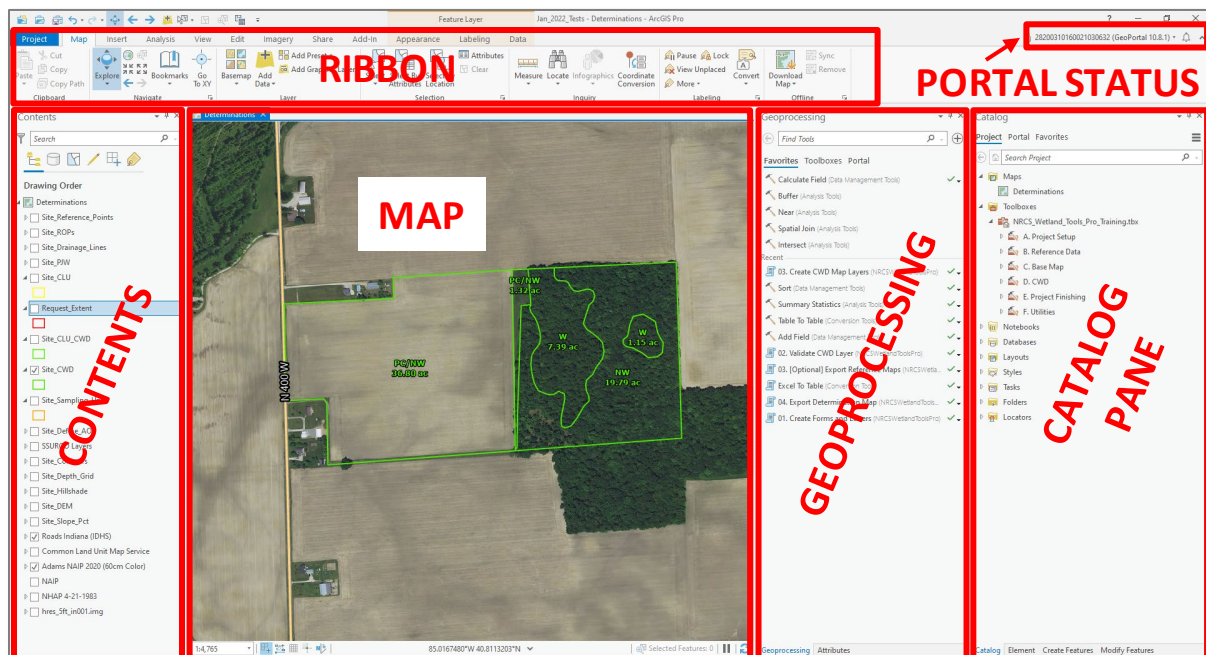
Lesson 5 – Overview of the ArcGIS Pro Interface

This section describes the basics of the ArcGIS Pro interface. Some panels may float or be docked differently than where shown in the following screenshots.

Definitions

The following terms are defined for use in the WC Tool workflow.

- **Map** – A *Map* is an object in ArcGIS Pro in which you display GIS layers or data. The *Map* is synonymous with the *Data Frame* view in ArcMap. The WC Tool templates come with a *Map* named *Determinations*. This is the map that must be used for WC Tool work.
- **Map Frame** - The *Map Frame* is the object within a *Layout* (see below) that shows the contents and extent of a *Map* on the *Layout*. It is synonymous with the *Layout* view from ArcMap.
- **Layout** – A *Layout* is an object in ArcGIS Pro that consists of a preview page on which a *Map* and other elements are formatted for the creation of map products, such as a *Map PDF*.
- **Map PDF** – This refers to an exported PDF map product created using the WC Tools. The term *Map PDF* is used to distinguish it from the ArcGIS Pro *Map* object, defined above.
- **Contents Pane** – While a *Map* in ArcGIS Pro is open, the *Contents* pane is where the layers will be listed and can have their visibility and other properties controlled. This is synonymous with the Table of Contents in ArcMap.
- **Ribbon** – The interface at the top consisting of different tabs (menus), each of which contains different ArcGIS Pro functions. The ribbon is context sensitive, and tools become active when items are selected on other panels.
- **Geoprocessing** – A window in ArcGIS Pro where the WC Tool forms will open and be run.
- **Catalog Pane** – A pane in an ArcGIS Pro project to view the project's contents, including all its *Maps*, *Layouts*, and *Toolboxes*. The *Catalog Pane* is described in more detail later in this section.
- **Portal Status** – This is a menu in the top-right of ArcGIS Pro where you can switch your active Portal and manage your sign-in status for one or more Portals.



Catalog Pane

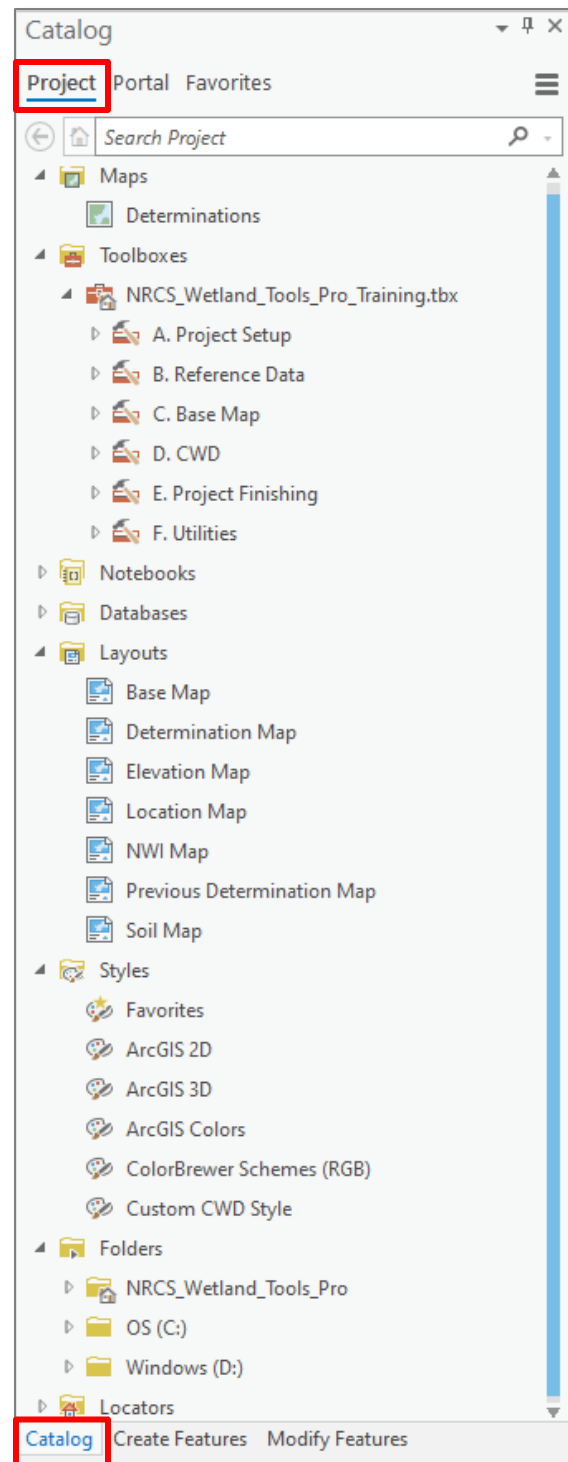
All aspects of the WC Tool can be managed through the *Catalog Pane*. This pane displays all the components of the current project (APRX) file. If a *Map*, *Layout*, or *Toolbox* is closed and you can't find it, go to the *Catalog Pane* and expand the heading for the content type you are seeking, and then double-click an item to expand or open it.

To access the *Catalog Pane* (if it is not visible):

- Click the *View* tab on the *Ribbon* in ArcGIS Pro.
- Click *Catalog Pane*.
- The *Catalog Pane* should open or appear if it's not already open.
- The *Catalog Pane* may be floating on another monitor (if you have multiple) or it may already be docked.
- It is possible to overlap docked panes in Pro, and if so, the different panes are denoted by tabs on the edge of any pane (see the bottom of the accompanying screenshot as an example). Click on the desired tab to bring it to the foreground (such as the one labeled *Catalog* in this example). The active tab has different colored text for its label (blue vs. grey in this example).

Using the *Catalog Pane*:

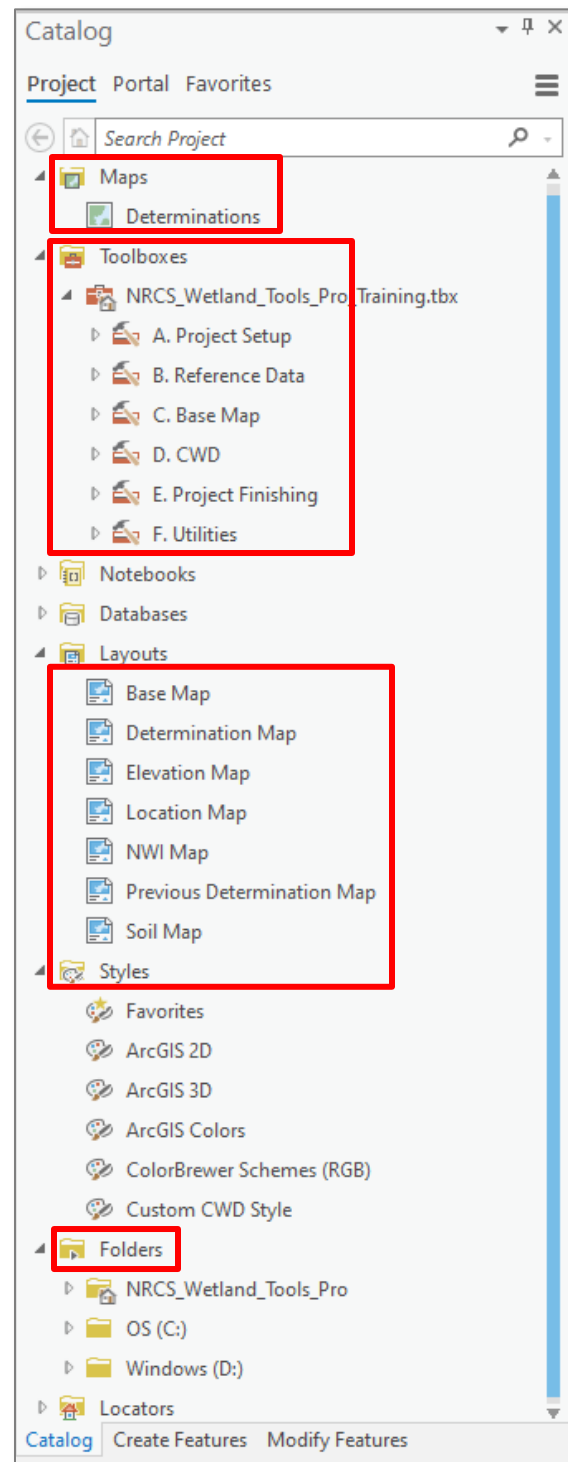
- If the contents of the project are not visible in the *Catalog Pane*, click the **Project** tab at the top-left of the pane so it is underlined (see the top of the accompanying screenshot).
- Expand the carats/arrows in front of an item to explore the contents of the project.
- Double-click an item in the pane to open it (e.g. a *Map*, a *Toolbox*, a *Layout*, etc...).



Explore the Catalog Pane

The following parts of the Catalog Pane are commonly used in the WC Tool workflows:

- **Maps** – Stores the *Determinations* map for the WC Tool templates. If you close the *Determinations* map for any reason, you can expand the *Maps* heading/icon of the *Catalog Pane* and then double-click the *Determinations* map to re-open it.
- **Toolboxes** – Stores the ArcToolbox for the WC Tool, called *NRCS Wetland Tools Pro*. To access the tools, expand the *Toolboxes* section of the *Catalog pane*, expand the *NRCS Wetland Tools Pro* toolbox, then expand the toolset (group of tools) for a desired step, and then double-click a tool to open it.
- **Layouts** – Some tools in the WC Tool workflow will require you to open either the *Location Map*, *Base Map*, or *Determination Map* layouts. These layouts (and others) can be accessed from the *Layouts* section of the *Catalog Pane*.
- **Folders** – This lists the folder connections stored in the project. You can map additional folder connections as needed. To do so:
 - Right-click the **Folders** heading/icon in the *Catalog Pane*.
 - Click **Add Folder Connection**.
 - Use the browse window to navigate to and select a folder.
 - Click **OK**.
- **Styles** – Only used if your state provides custom styles for symbology in the WC Tools.



Map (Map Frame)

A *Map* is an object in ArcGIS Pro in which you display GIS layers or data. The *Map* is synonymous with the *Data Frame* view in ArcMap. When you open templates created from the WC Tool, the *Determinations* map should be open by default. If not, it can be opened from the *Maps* section of the *Catalog Pane* (see previous section). The map should occupy the central viewing area of the ArcGIS Pro interface.

The main tools for interacting with the map are the *Explore* tool, the *Select* tool, the *Measure* tool, and various editing tools (see tab descriptions in the sections below).

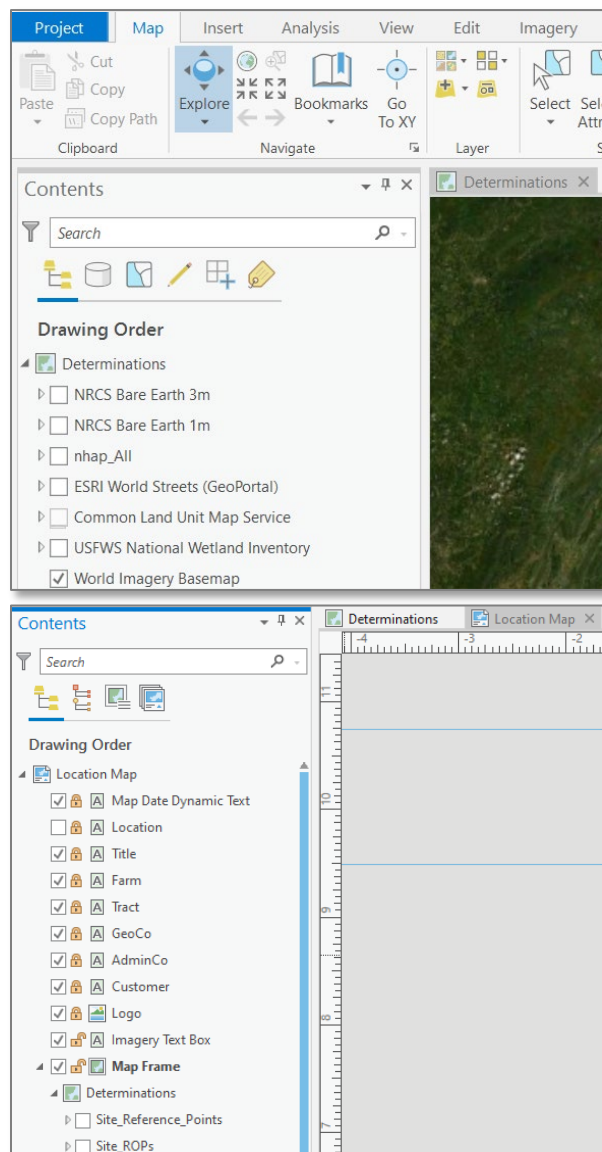
When a map object is viewed on a *Layout* it is referred to as a *Map Frame* by some tools and properties of the *Layout*.

Contents Pane

The *Contents* pane updates contextually based on what type of content you are working with in ArcGIS Pro, however it most frequently contains the list of layers and tables in a map, or the list of page elements in a layout. If the *Contents* pane is closed while you are actively working in a map or a layout, it can be restored by clicking the *View* tab on the *Ribbon* and then clicking *Contents*.

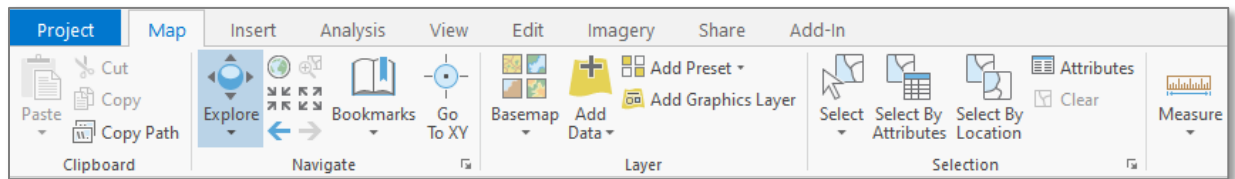
When working in a map, the list of its layers and visibility status is available in the *Contents* pane along with options to view the layers by drawing order, selectable layers, editable layers, snapping properties, or labeling status. In the WC Tool, most of the operational layers generated by the tool are created with specific names that should not be changed to preserve automation.

When working in a layout, the *Contents* pane contains a list of all elements on the layout page, as well as the associated map's contents in a group. Layout elements can be locked in the *Contents* pane so that they cannot be changed. The elements in the *Contents* of the provided layouts have specific names that should not be changed to preserve automation.



Map Tab

Most of the work in the tool involving navigating the map frame or adding data takes place on the *Map* tab of the *Ribbon*.

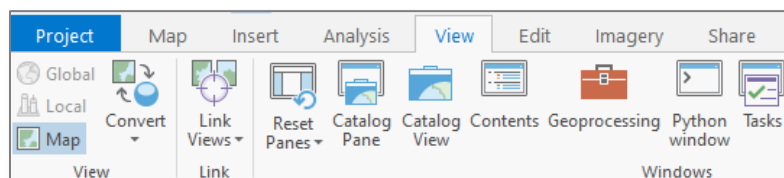


Commonly used ArcGIS Pro tools on the *Map* tab are:

- **Explore** – Used to navigate the map (pan/zoom) and to identify features. A variety of additional zooming options are available to the right of the *Explore* tool.
- **Basemap** – Select from a set of nationally available ESRI basemaps. Note: You may prefer to use local imagery or image services instead of ESRI basemaps for some projects.
- **Add Data** – Used to open a browser to find geodata files on your system, select them, and add them to the *Map*, where they will then appear in the *Contents* pane.
- **Select** – Used to select features in the *Map*.
- **Attributes** – Used to open the *Attributes* pane. Also available on the *Edit* tab.
- **Clear** – Used to clear the currently selected features.
- **Measure** – Opens an interactive measuring widget for temporary, on-the-fly measurements.

View Tab

The *View* tab has buttons that will open various other windows in ArcGIS Pro and is useful for finding or re-opening panes that you've closed either accidentally or on purpose.

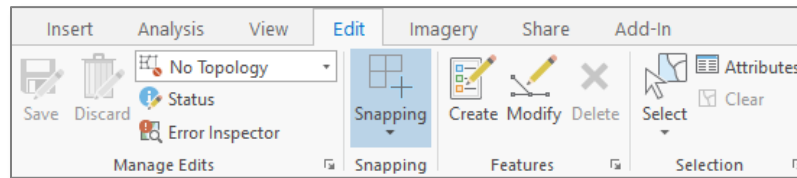


Commonly used tools on the *View* tab are:

- **Catalog Pane** – Used to open the *Catalog* pane.
- **Contents** – Used to open the *Contents* pane.
- **Geoprocessing** – Used to open the *Geoprocessing* pane. As tools are run in the *NRCS Wetland Tools Pro* toolbox they will open within the *Geoprocessing* pane.

Edit Tab

The *Edit* tab has buttons that will be used during the editing steps of the WC Tool workflow.



Commonly used tools on the *Edit* tab are:

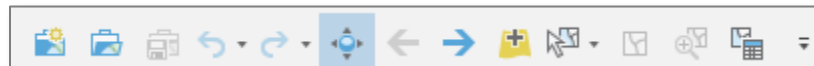
- **Save** – Used to Save Edits. This save icon is denoted by the pencil in front of it.
- **Discard** – Used to Discard Edits without saving them. This icon has the same editing pencil in front of it as the *Save* icon on the *Edit* tab.
- **Create** – Used to open the Create Features pane, commonly used when digitizing new ROPs, Reference Points, Drainage Lines, or PJW points. Should not be used to create Sampling Unit or CWD polygons.
- **Modify** – Used to open the Modify Features pane, which contains frequently used tools such as *Split* or *Merge* for use when editing the Sampling Units or CWD polygons.
- **Snapping** – Controls the active snapping settings while editing.

Project Tab

The *Project* tab has buttons for saving projects, setting *Options*, managing Portals, and Exiting ArcGIS Pro.

Quick Access Toolbar

The *Quick Access Toolbar* is a customizable toolbar that appears above the *Project* tab in the top-left corner of ArcGIS Pro. Tools on it are accessible, regardless of your current tab.



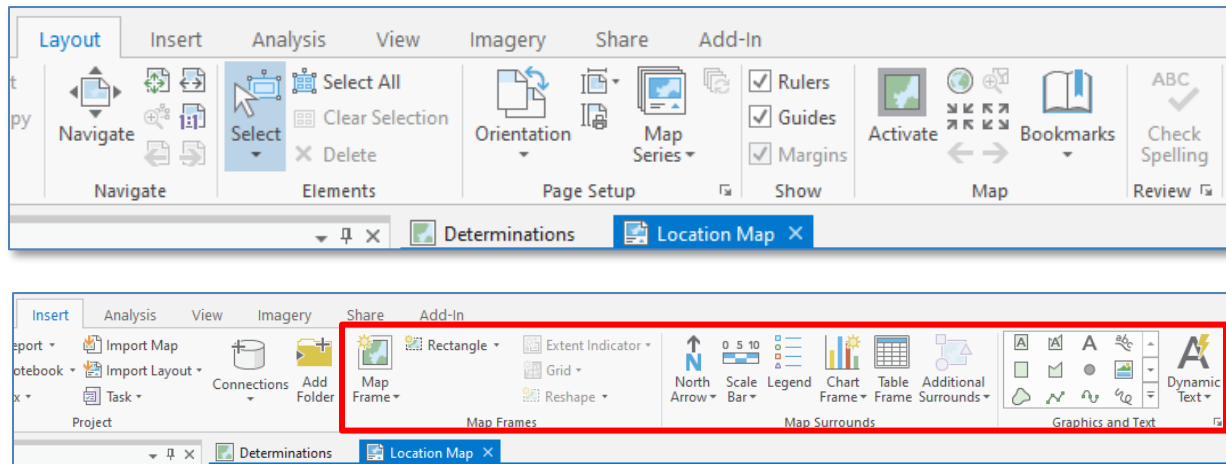
Some suggested tools to add to the *Quick Access Toolbar* are:

- **Explore**
- **Previous Extent**
- **Next Extent**
- **Add Data**
- **Select (Features)**
- **Clear (Selected Features)**
- **Zoom to Selected Features**

Instructions for customizing the *Quick Access Toolbar* are available [here](#) (external link to the ArcGIS Pro Online Help page).

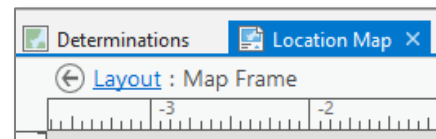
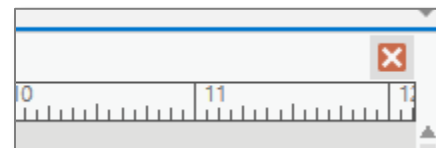
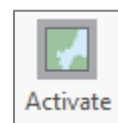
Layout

A *Layout* in ArcGIS Pro is a page view used to arrange and apply settings to map products elements prior to map production. Due to the context-driven menus in ArcGIS Pro, when a *Layout* is active in the view, the *Ribbon* changes to display different tabs and tools and the *Contents* pane changes to show *Layout Elements* in addition to the *Map Frame's* layers. The *Map* tab is replaced by the *Layout* tab, and the *Insert* tab is updated to show several tools for commonly used map making *Elements*. An *Element* is any object created on the *Layout* page, such as a *Map Frame*, *Legend*, *North Arrow*, *Scale Bar*, or *Text Box*.



Commonly used tools on the *Layout* menu include:

- **Select** – Use to select *Elements* on the page. Once selected, an *Element's* properties can be viewed and adjusted.
- **Navigate** – Use to zoom in or out or pan around the Layout page, not the map within the page, if present.
- **Activate** – This function is found in the *Map* section of the *Layout* tab. It is used to activate the selected *Map Frame* on the *Layout* page which changes the *Layout* tab back to the *Map* tab and allows you to use *Map* functions like **Explore** while viewing the *Layout* page. This is used to adjust the extent and scale within the *Map Frame* interactively while the *Layout* page is visible. Activation of a *Map Frame* must be closed to change back to the *Layout* tab and tools and work with *Layout Elements* again. This can be done by clicking the red "x" at the top-right of the ruler bars while a *Map Frame* is activated, or by clicking the *Back* button or *Layout* link at the top left of the *Layout View*.



Note: The *Map Frame* and *Legend Elements* in the *Contents* pane expand and behave like a group layer.



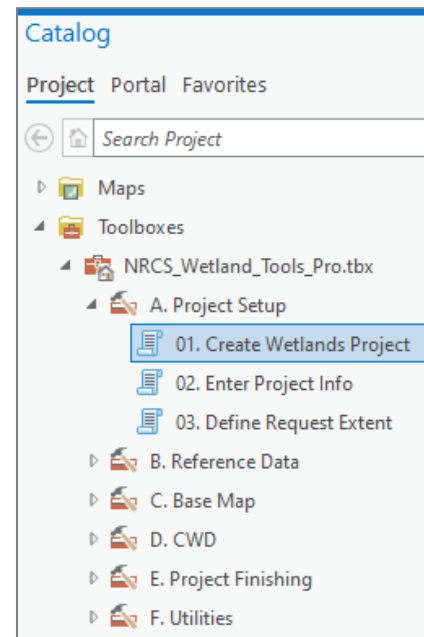
Running a Toolbox Tool

This section describes how to run a tool in a toolbox within ArcGIS Pro. The WC Tool is a custom toolbox, with groups of tools. The individual tools contain required parameters users must complete, optional parameters for users to complete, and auto filled or pre-filled parameters that users should not change.

Opening a Tool

To open a tool from the *NRCS Wetland Tools Pro* toolbox –

- Open the *Catalog Pane* (from the *View* tab of the *Ribbon*)
- Make sure the contents of the *Project* are displayed in the *Catalog Pane* by clicking *Project* at the top of the window.
- Expand *Toolboxes*.
- Expand the *NRCS Wetland Tools Pro* toolbox.
- Expand the tool group(s).
- Double-click the desired tool.
- The tool will open in the *Geoprocessing* pane or window. This window may be floating, docked, or hidden. Adjust the geoprocessing window to view and enter the required parameters and run the tool.



Completing Tool Parameters

Tools from the WC Tool could have required parameters, optional parameters, or auto filled parameters. All required parameters must be filled out before a tool can be run. Specific methods for populating the parameters are covered in more detail in their respective lessons. The following general tips are provided when filling out tool parameters:

- Required parameters will usually have a red asterisk in front of them if they are not yet completed. They must be filled out before a tool can be run.
- Optional parameters will usually be labeled as (Optional).
- Several parameters have picklists. Click the dropdown arrows to review and select choices.
- If a parameter instructs you to select a layer from the provided dropdown, then do so. Do not try to add a layer from the file system using the browse folder when *from dropdown* is present.
- Sometimes Optional parameters will be available when you expand the carat/arrow at the heading of a group of parameters. Tool lessons will call this out where needed.
- Anything marked (Auto-populated) or (Do not change) should not be altered manually by users.
- When parameters auto-populate, wait for the blue progress bar at the top of the geoprocessing window to finish cycling and the parameter to be auto-populated before running the tool.
- Some parameter selections will hide or show new parameter options.
- Review all parameters before clicking *Run* in any tool.
- If a parameter has a red “x” or yellow triangle, hover over the icon for a descriptive message.

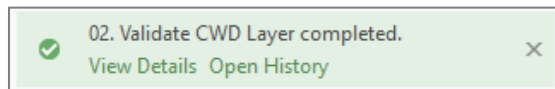
Running a Tool

After completing entries for tool parameters, click the *Run* button at the bottom of the form for the tool.

While the tool is running, a status message will appear at the bottom of the *Geoprocessing* tool window. The progress bar will cycle while the tool runs. The red-square button acts as a stop or cancel function and will end the operation of the tool. The *View Details* text is a link to open another window that will show more detailed status messages of the tool as it runs.

The 'Geoprocessing' window title is at the top. Below it is '01. Create Wetlands Project'. There are tabs for 'Parameters' and 'Environments'. Under 'Parameters', there are dropdowns for 'Specify New or Existing Project' (set to 'New'), 'Select Administrative State for CLU' (set to 'Indiana'), and 'Select Administrative County for CLU' (set to 'Adams'). There is a text field for 'Enter a single CLU Tract Number' with the value '12345'. A checkbox for '(Optional) Overwrite Existing CLU (Resets Project)' is unchecked. A 'Run' button is at the bottom right.

When a tool is finished running, it will show a status color and a message. Green indicates the tool ran successfully with no errors or warnings. Yellow indicates the tool ran but had warnings that you may want to review. Red indicates the tool failed. When a tool fails, read the error messages and review the tool instructions. This may help you to re-run the tool successfully.



Reviewing Tool Error Messages

After running a tool, you can click the *View Details* link in the status message at the bottom of the tool window for more information. This is useful if there are warnings (yellow status message) or errors (red status message).

After clicking *View Details*, another window will open that contains sections for *Errors and warnings*, *Parameters*, *Environments*, and *Messages*. By default, *Parameters* will be expanded and displayed, but you can collapse that section and expand the *Messages* section for useful tips or hints. For example, if a Sampling Unit is missing a required label, a tool may have a red error message that the required label is missing. You should go back and complete any instructions provided in the *Messages* before rerunning a tool or continuing the mapping workflow.

The window title is '02. Validate CWD Layer (NRCSWetlandToolsPro)'. It shows a green checkmark and 'Completed.'. Below are timestamps: 'Started: Today at 1:27:30 PM', 'Completed: Today at 1:27:46 PM', and 'Elapsed Time: 16 Seconds'. There are expandable sections for 'Errors and warnings', 'Parameters', 'Environments', and 'Messages'. The 'Messages' section is expanded, showing a list of steps: 'Commence logging...', 'Creating backup of the CWD layer...', 'Collecting request info...', 'Updating CWD request info...', 'Validating CWDs...', 'Checking Evaluation Status...', 'Checking Wetland Labels...', 'Checking CWD 3-Factors...', 'Checking Determination Method...', 'Checking Determination Staff...', and 'All checks passed!'.

Lesson 6 – Changing Portals in ArcGIS Pro

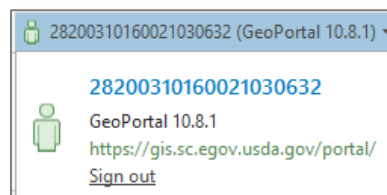
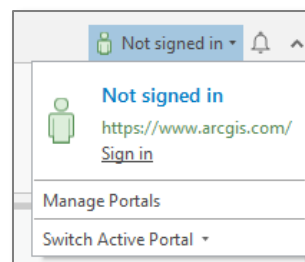
The WC Tool relies on two Portals to complete the workflow. The first is the *GeoPortal*, from which starting CLU data is downloaded. The second is *GIS-States Portal*, which stores digitized data from the WC Tool. During the WC Tool workflow, you will be directed to switch your connection to a particular Portal before running certain tools. This lesson is a basic overview of how to switch between Portals.

In an active ArcGIS Pro project, the *Portal Status* information and menu appear in the top-right corner of ArcGIS Pro. It may show you as not signed in, or as already signed-in to one of several Portals that are configured in your ArcGIS Pro Options during setup.

If you click the dropdown arrow next to your current sign-in status, a menu appears which shows the current Portal connection and your sign-in status for it. Also available are options to *Manage Portals* or to *Switch* your active Portal.

Sign-in to a Portal

- Click the *Not signed in* dropdown.
- Click *Switch Active Portal*.
- From the list of available Portals, select the desired Portal.
Note. The required Portal name and the URL are displayed at the bottom of the individual WC Tool:
 - GeoPortal (Tool A.01): <https://gis.sc.egov.usda.gov/portal>
 - GIS-States Portal (Tool A.03., C.01., and E.02): <https://gis-states.sc.egov.usda.gov/portal>
- If prompted, complete the sign-in process. USDA Portals require PIV/CAC sign-in or E-authentication to complete sign-in. In some cases, Single-Sign On (SSO) may sign you in. If you've signed-in to the selected Portal recently, your token may still exist, and you will be automatically signed in without needing to authenticate.
- After sign-in, you can click the Portal status dropdown again to see your status as well as the *Sign out* option (usually not needed).



Switch Active Portal

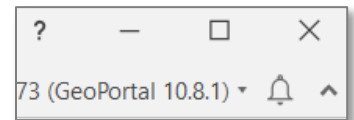
The process to switch Portals is the same as the sign-in process, above, except you would click your existing sign-in status dropdown and proceed straight to the *Switch Active Portal* choice. Then select your desired Portal and complete sign-in for that portal. If you are already signed into multiple Portals, you may not be prompted to sign-in again and your active Portal status will be updated.

Lesson 7 – Create Wetlands Project (A.01.)

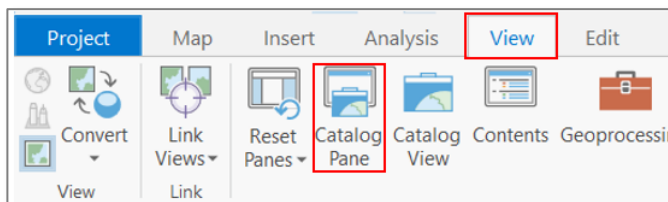
Use this tool to start a determination project and download CLU data for a specified tract.

- Open the customized state or local template APRX file that covers the location of the request.
 - If using a local file: *C:\GIS_Tools\NRCS_Wetland_Tools_Pro\My_Templates*
 - If using a state file: *C:\GIS_Tools\NRCS_Wetland_Tools_Pro\State_Templates*

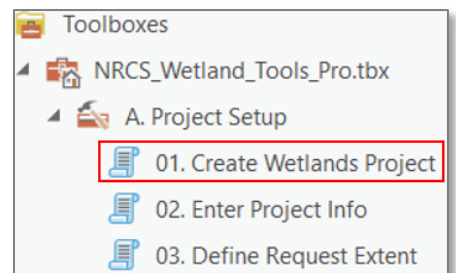
- Sign-in or switch the active portal to *GeoPortal* (top-right corner). Sign-in if prompted.



- If necessary, open the Catalog Pane (View tab>Catalog Pane)



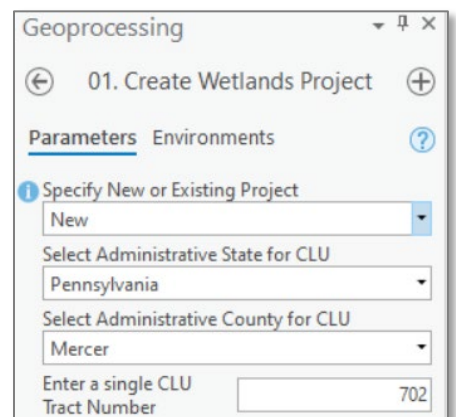
- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.



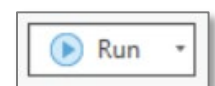
- Expand **A. Project Setup**.

- Double-click to open tool A.01.

- Complete the following entries:
 - New or Existing – Typically select *New*
 - Admin State – Select the Administrative State for the Tract/CLUs of the request.
 - Admin County – Select the Administrative County for the Tract/CLUs of the request. This list updates based on the selection for Administrative State.
 - Enter a single Tract number for the request.



- When all parameters are set, click **Run**.

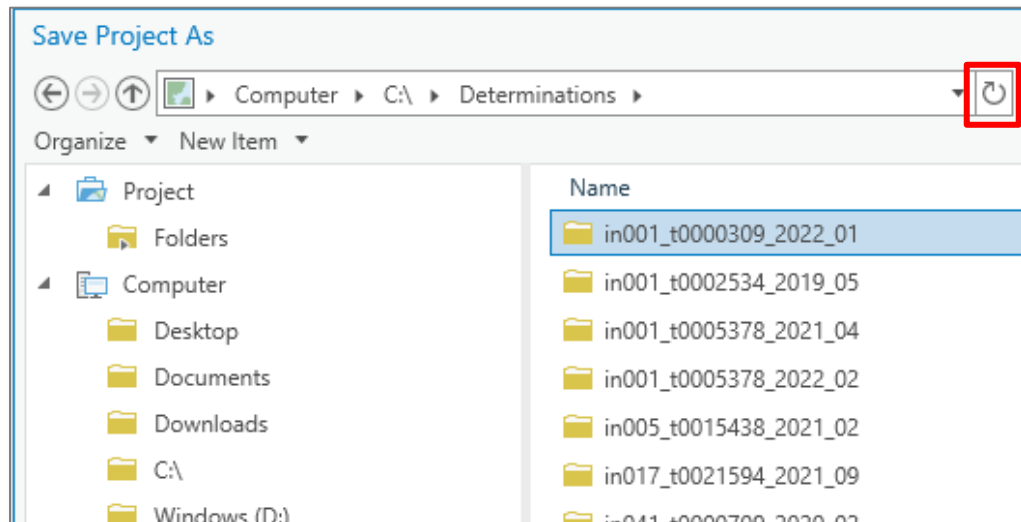


- Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.

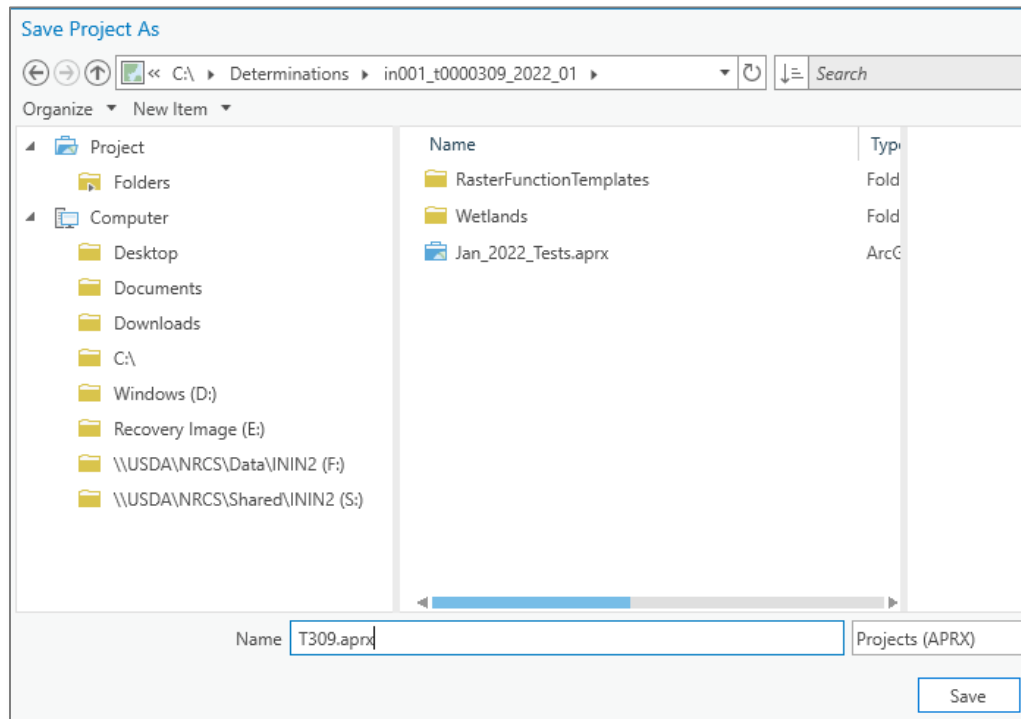
- After running tool A.01., click the **Project** tab in the top-left corner of ArcGIS Pro and then click **Save As**.

- Navigate to **C:\Determinations**, under the *Computer* entry.
- Find the project folder that was created for the current site by tool A.01. It will be named *stfips_t#_year_month* (example: *in001_t0000309_2022_01*).

Hint: If the **Determinations** folder is not visible, click the *Refresh* button at the C: drive level. If the project folder is visible, click the *Refresh* button at the C:\Determinations level. The *Refresh* button is to the right of the address bar in the navigation window.



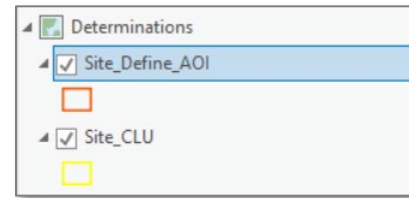
- Double-click the project folder to open it. Give the project a name (example: *T#*, where # is the tract number of the current request) and then click **Save**.



- After running tool A.01., the *Site CLU* layer, *Site Define AOI* layer, and *Site NWI* layer are added to the *Determinations* map.

Note: The *Site Define AOI* layer is a copy of the *Site CLU* layer that will be used to define the request extent in subsequent steps.

- Adjust the visibility and ordering of the layers (*Site Define AOI* above *Site CLU* above *Site NWI*) as needed. Only the *Site Define AOI* layer is needed for the next few steps.
- Right-click on the *Site Define AOI* layer and select *Zoom to Layer*.
- Review the Tract/CLUs of the *Site Define AOI* layer to determine if the correct tract downloaded. If not, refer to the sidebar *Rerunning Create Wetlands Project*. If the tract is correct, continue.



- Click **Project → Save** to save the project with the updated extent and layer visibility.

The project and its folder for the current request have been created. **Going forward, be sure to use the *T#.aprx* file** that you created in this Lesson to complete the subsequent WC Tool steps for the current request/site. *Do not use the Blank, State, or Local templates from the install folder again until you start a new job/request.*

Rerunning Create Wetlands Project (A.01.)

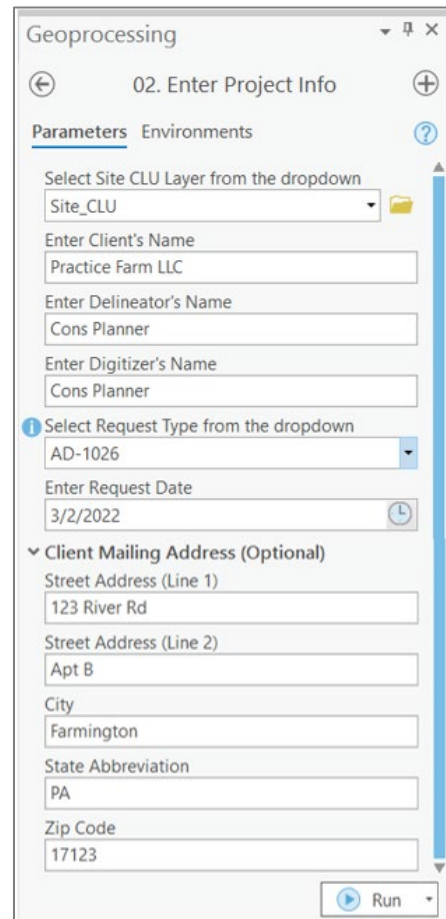
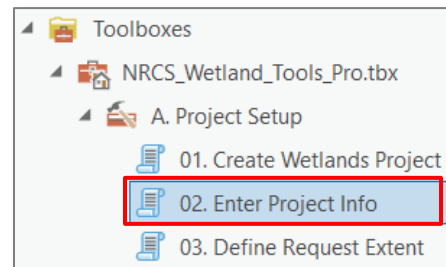
If the downloaded Tract/CLUs appear incorrect, you can rerun tool A.01. in different ways depending on the circumstances:

- If the correct tract downloaded but it appears outdated, ask FSA to update their digitizing and then rerun tool A.01. with the following changes –
 - New or Existing: Select Existing
 - In the existing folder parameter, navigate to and select the existing project folder.
 - Complete the other entries as normal.
 - Check the box to overwrite the existing CLU.
- If the incorrect tract downloaded either due to an incorrect county or tract number entry, rerun tool A.01. with the following changes –
 - Complete all entries as normal and run the tool again.
 - After running, use **Project → Save As** to save the project to the newly created folder with the correct county code or tract number.
 - In *File Explorer*, on the computer, navigate to and delete the incorrectly created project folder from C:\Determinations.

Lesson 8 – Enter Project Info (A.02.)

Use the tool to enter information from the referral form (e.g., AD-1026) and the Producer Data Report. This information is used by the WC Tool throughout the workflow to auto-fill map headers, forms, and letters.

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **A. Project Setup**.
- Double-click to open tool A.02.
- Complete the following entries:
 - Select the *Site CLU* from the dropdown,
 - Enter the *Client's Name*
 - Enter the *Request Date*
 - Update the *Delineator's* name (if it is someone other than yourself).
 - The *Digitizer's* name should default to your name, as the person running the tools and might be the same as the *Delineator's* name.
 - Select the *Request Type* from the list of choices.
- (Optional) If you can include the client's address, click to expand the *Client Mailing Address* section and complete the following entries:
 - Type out the *Street Address* (1st line)
 - (Optional) Add a 2nd line for the *Street Address*, if applicable
 - Enter the *City* to be used in the mailing address
 - Enter the state's postal abbreviation (AL, AK, AR, AZ, etc...)
 - Enter the zip code
- Once parameters have been set, click **Run**.
- Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.

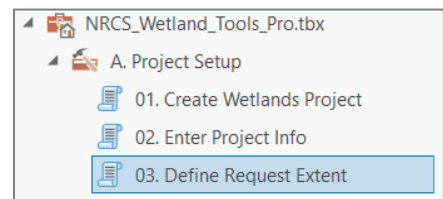


If you made a mistake or need to rerun this tool for any reason, just open it and rerun it. The updated parameter entries will overwrite the previously run entries for the project.

Lesson 9 – Define Request Extent (A.03.)

Use this tool and the *Site Define AOI* layer to select or delineate the request extent indicated the referral form, corresponding Farm Service Agency map, and/or attachments. There are four possible scenarios available when running this tool to accommodate various request extents.

- **IMPORTANT** – Prior to running this tool, use the *Portal Status* menu in the top-right corner of ArcGIS Pro to switch from *GeoPortal* to one of the WC data Portals. Sign-in if prompted –
 - For actual production, make determinations using a production template (NRCS Wetland Tools Pro toolbox). Switch to *GIS-States Portal*:
<https://gis-states.sc.egov.usda.gov/portal>
 - For testing or training exercises, use the training template (NRCS Wetland Tools Pro Training toolbox). Switch to *GIS-Testing Portal*:
<https://gis-testing.usda.net/portal>
- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **A. Project Setup**.
- Double-click to open tool A.03.
- Complete one of the scenarios on the following pages to run tool A.03.
- After completing one of the scenarios, save the project (APRX) by clicking **Project** → **Save**.

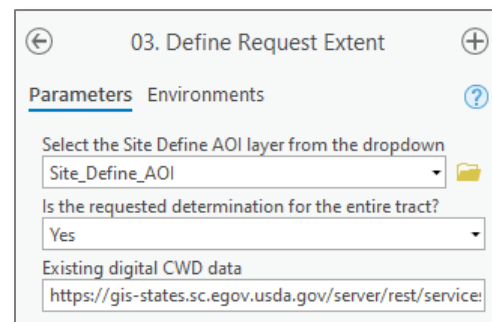


This tool adds a *Request Extent* layer to the map for the area specified in one of the following scenarios after it runs. Adjacent fields dissolve to form one contiguous polygon. The layer will be multi-part for any non-contiguous fields. If any previously digitized determinations exist within the defined request extent, they will be displayed in a *Site Previous CLU CWD* layer that is added to the map (see the *Previously Determined Areas* or *Revision Workflows* section(s) for more details about this layer).

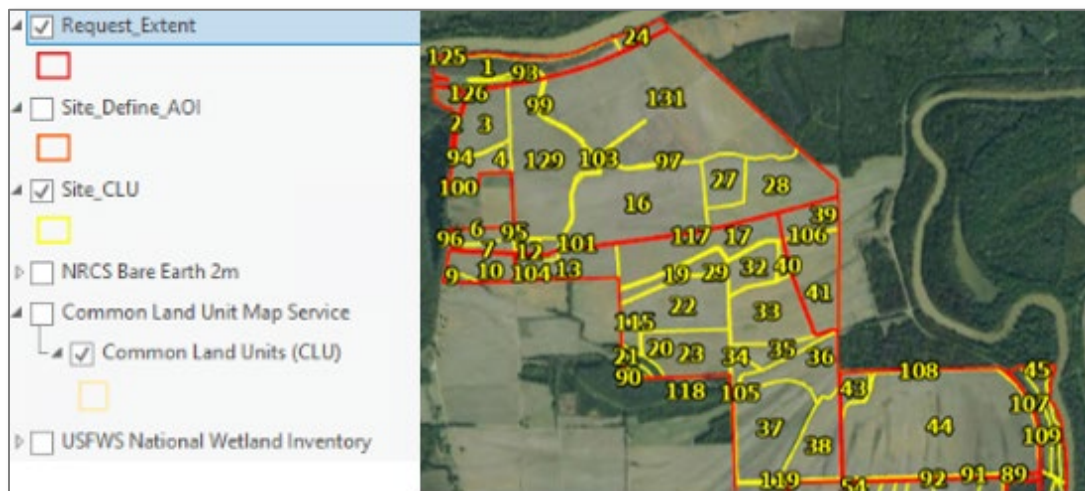
Scenario 1 – Whole Tract Determination

In this scenario, all fields in the tract have been requested for determination.

- Complete the following entries in tool A.03.:
 - Select the *Site Define AOI* layer from the dropdown
 - Is the request for the entire tract? Select *Yes* from the list.
 - Do not change the *Existing digital CWD data* entry.
- Click **Run**.
- Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.
- If the results are not as expected, make corrections, and rerun the tool.



The tool adds a *Request Extent* layer for the entire tract to the map.



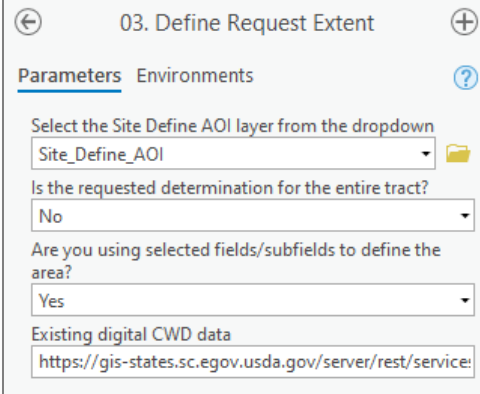
Scenario 2 – Partial Tract, Select Existing Field(s)

In this scenario, one or more fields in the tract have been requested for determination and no adjustments to the existing extents are required.

- Use the *Select* tool to select existing fields in the *Site Define AOI* layer in the *Determinations* map prior to running this tool.

Hint: Deactivate visibility of the *Site CLU* layer and activate the visibility of the *Site Define AOI* layer, if not done already. Use SHIFT + click to select multiple fields, if needed.

- Complete the following entries in tool A.03.:
 - Select the *Site Define AOI* layer from the dropdown.
 - Is the request for the entire tract? Select *No* from the list.
 - Are you using selected fields? Select *Yes* from the list.
 - Do not change the *Existing digital CWD data* entry.
- Click **Run**.



- Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.
- If the results are not as expected, rerun the tool and the results will be overwritten.

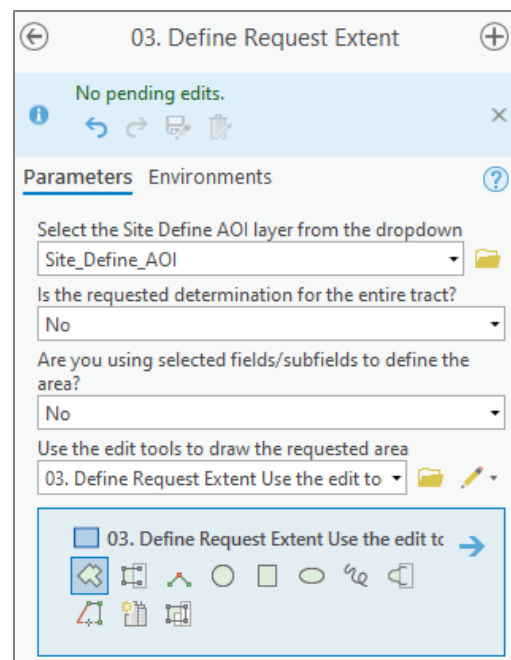
The tool adds a *Request Extent* layer for the selected fields to the map.



Scenario 3 – Partial Tracts, Delineate Requested Area

In this scenario, delineate an area for the request extent that does not correspond to an existing field.

- Complete the following entries in tool A.03.:
 - Select the *Site Define AOI* layer from the dropdown.
 - Is the request for the entire tract? Select *No* from the list.
 - Are you using selected fields? Select *No* from the list.
 - Click the *Edit* pencil and select *Polygons* to get a polygon digitizing cursor.
 - Digitize a polygon in the map for the request extent (shown in blue, below). Double-click to finish the sketch.



- If available, click the *Save [Edits]* button at the top of the tool window.
 - Do not change the *Existing digital CWD data* entry.
- Click **Run**.
- Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.
- If the results are not as expected, rerun the tool and the results will be overwritten.

The tool adds a *Request Extent* layer to the map (not pictured here) that corresponds to the area you drew in the tool (the blue area in the example, above).

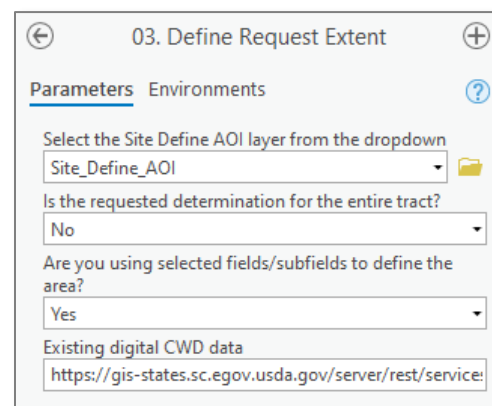
Scenario 4 – Partial Tract, Existing and Custom Fields

In this scenario one or more existing fields have been requested, as well as a custom extent that consists of subfields. Edit the *Site Define AOI* layer to create selectable extents prior to running the tool.

- Deactivate visibility of the *Site CLU* layer, if visible, and activate the visibility of the *Site Define AOI* layer, if not visible.
- Click the *Edit* tab and then click the *Modify Features* button. From the *Modify Features* window, select the *Split* tool.
- Use the *Select* tool to select one or more fields in the *Site Define AOI* layer that overlap the area that will be defined.
- Use the *Split* tool to cut out areas in the *Site Define AOI* layer that will correspond to the requested area as indicated by attachments to the referral form. Repeat *Splits* as necessary. Use *Undo* or *Merge* to correct mistakes.
- On the *Edit* tab, click *Save [Edits]* and click *Yes* to save results.
- After saving edits, use the *Select* tool to select any fields and sub-field areas needed for the request extent.



- Complete the following entries in tool A.03.:
 - Select the *Site Define AOI* layer from the dropdown.
 - Is the request for the entire tract? Select *No* from the list.
 - Are you using selected fields? Select *Yes* from the list.
 - Do not change the *Existing digital CWD data* entry.



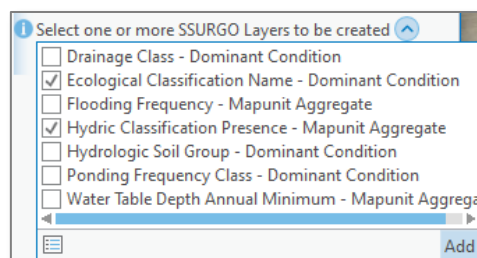
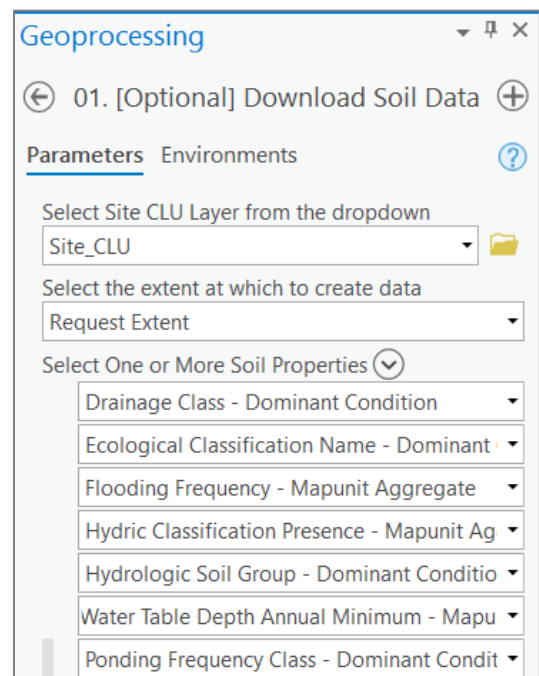
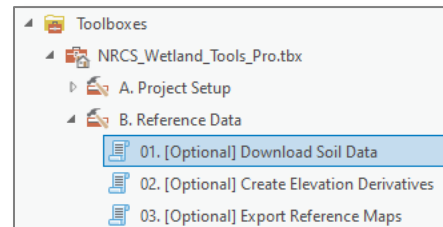
- Click **Run**.
- Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors. Make corrections and rerun the tool.
- If the results are not as expected, rerun the tool and the results will be overwritten.

The tool adds a *Request Extent* layer to the map (not pictured here) that corresponds to the areas that you selected in the *Site Define AOI* layer.

Lesson 10 – Download Soil Data (Optional) (B.01.)

Use this tool to download SSURGO data and an optional selection of properties or interpretations for the request extent or tract. Data is downloaded from current SSURGO on Soil Data Access (SDA). Use of this tool is optional but recommended for preliminary data gathering and other documentation.

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **B. Reference Data**.
- Double-click to open tool B.01.
- Complete the following entries in tool B.01.:
 - Select the *Site CLU* layer from the dropdown.
 - Specify either the *Request Extent* or *Full Tract* as the area to be downloaded, as preferred.
 - Select one or more soil properties or interpretations from the dropdowns. For each one you select an additional dropdown will be made available to select another one.
[Hint: Click the drop-down arrow. Use the checkboxes to select interpretations, and then click *Add* to select multiple interpretations at once.](#)



[Note: To remove a property from the list, click to the left of the property name and then click the red “x”.](#)

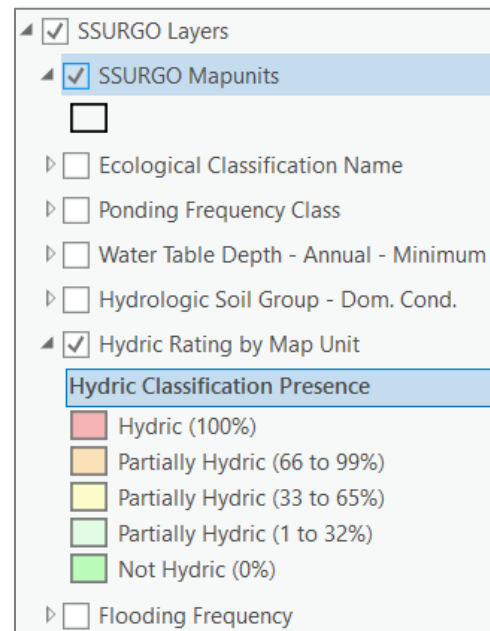


- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.
- If the results are not as expected, rerun the tool to overwrite the results.

Soil Data Products

Download Soil Data creates thematic layers that are added to the Contents pane. It also generates an extent shapefile and soils table that are saved in the project directory.

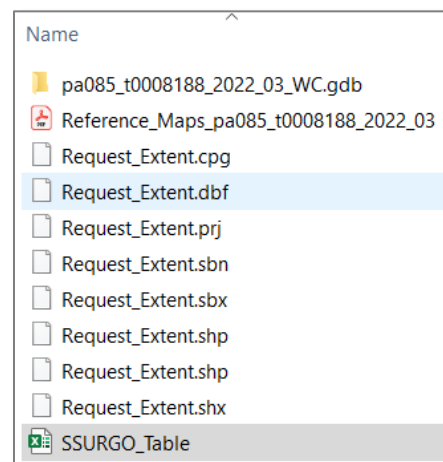
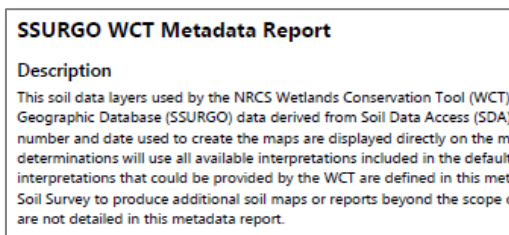
- The *SSURGO Layers* group is added to *Contents pane*. Expand it to view and activate the various property or interpretation layers within it.



- A SSURGO spreadsheet is added to the *Wetlands* folder within the project folder. It is a record of soils within the extent you specified in the tool. It includes map unit name, map unit symbol, and the selected soil interpretations or properties.

areasynt	musym	muname	mukey	saversion	surveyar	spatialve	spatialda	tabularve	tabulard	Drainage	Flooding	Hydric Cl	Hydrolog
PA085	BrC2	Braceville	296212	19	2021-08-3	6	2019-09-1	19	2021-08-3	Moderate	None	3	C/D
PA085	FeA	Frenchtown	296235	19	2021-08-3	6	2019-09-1	19	2021-08-3	Poorly dra	None	90	D
PA085	Ha	Halsey silt	296240	19	2021-08-3	6	2019-09-1	19	2021-08-3	Very poor	None	93	B/D
PA085	LoC	Lordstown	296241	19	2021-08-3	6	2019-09-1	19	2021-08-3	Well drain	None	0	C
PA085	LrD	Lordstown	296243	19	2021-08-3	6	2019-09-1	19	2021-08-3	Well drain	None	0	C
PA085	LrE	Lordstown	296244	19	2021-08-3	6	2019-09-1	19	2021-08-3	Well drain	None	0	C
PA085	RaA	Ravenna s	296249	19	2021-08-3	6	2019-09-1	19	2021-08-3	Somewhat	None	6	D
PA085	RaB2	Ravenna s	296250	19	2021-08-3	6	2019-09-1	19	2021-08-3	Somewhat	None	5	D
PA085	RaC2	Ravenna s	296251	19	2021-08-3	6	2019-09-1	19	2021-08-3	Somewhat	None	4	D
PA085	ReC	Ravenna s	296254	19	2021-08-3	6	2019-09-1	19	2021-08-3	Somewhat	None	5	D
PA085	Rh	Red Hook	296256	19	2021-08-3	6	2019-09-1	19	2021-08-3	Somewhat	Rare	5	B/D
PA085	Wa	Wayland s	296264	19	2021-08-3	6	2019-09-1	19	2021-08-3	Poorly dra	Frequent	60	C/D

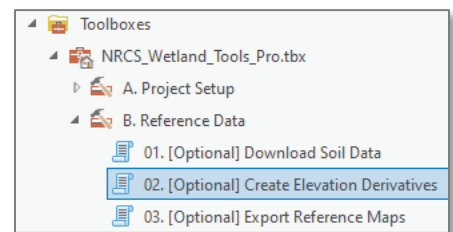
- A request extent shapefile is created and saved in the project folder. The shapefile can be used for optional import to Web Soil Survey to create additional soil reports and interpretations.
- SSURGO Metadata Report – This is generated when you run Tool B.03 – *Generate Reference Maps*.



Lesson 11 – Create Elevation Derivatives (Optional) (B.02.)

Use this tool to create a Digital Elevation Model (DEM), Hillshade, Slope Layer, Depth Grid, and Contour Layer for the request site. This tool has two input scenarios – local DEM files or NRCS Image Services. Please refer to your State Tool Administrator and/or State GIS Specialist regarding options for input elevation data sources and their coverage extents. If high-resolution elevation data is not available for your site's location, skip to Lesson 12.

- Make sure to load the local DEM file(s) or NRCS elevation data service to your project before continuing. All DEMs input into the tool should share a common coordinate system and vertical units.
- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **B. Reference Data**.
- Double-click to open tool B.02.
- Complete one of the two scenarios on the following pages, based on your input data type.
- After completing one of the scenarios, save the project (APRX) by clicking **Project** → **Save**.



Scenario 1 – Input Local DEM Files

Use this scenario when you have one or more local DEM files available that cover the tract. It is recommended that local DEM files be present on local hard disks (not pulling from the network) and already loaded in the project before opening tool B.02.

- Complete the following entries in tool B.02.:
 - Select the *Site CLU* layer from the dropdown.
 - Select the *Full Tract* or *Request Extent* from the choice list, as preferred.
 - Select a format of *Local File*.
 - Use the new dropdown(s) to select a local file. If you have multiple files (such as DEM tiles), use each new line to add an additional file until you have specified as many files as needed to cover the tract or request extent.
 - Use the Elevation Units entry to specify the **vertical** units of the input DEM file(s).
 - Specify the output contour interval (in feet) for the contour layer that will be generated. Use low values in low-relief areas and high values in high-relief areas.
 - Do not change the input and output coordinate system values.
 - If the Transformation line populates, review it to be sure the correct transformation is selected.

[Hint: Consult your State GIS Specialist regarding the correct selection for Transformations between coordinate systems.](#)

02. [Optional] Create Elevation Deriva... (+)

Parameters Environments (?)

Select Site CLU Layer from the dropdown
Site_CLU

Select the extent at which to create data
Full Tract

Select format of input DEM
Local File

Select one or more local DEM layer(s) from the dropdown
hres_5ft_in001.img

Select Elevation Units of Input DEM(s)
Feet

Specify output contour interval (in feet)
1

Input DEM Coordinate System
NAD_1983_HARN_StatePlane_Indiana_East_FIPS

Output DEM Coordinate System
WGS_1984_UTM_Zone_16N

Geographic Transformation to WGS84
WGS_1984_(ITRF00)_To_NAD_1983_HARN

- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details*. Make corrections and rerun the tool.
- If the results are not as expected, rerun the tool to overwrite the results.

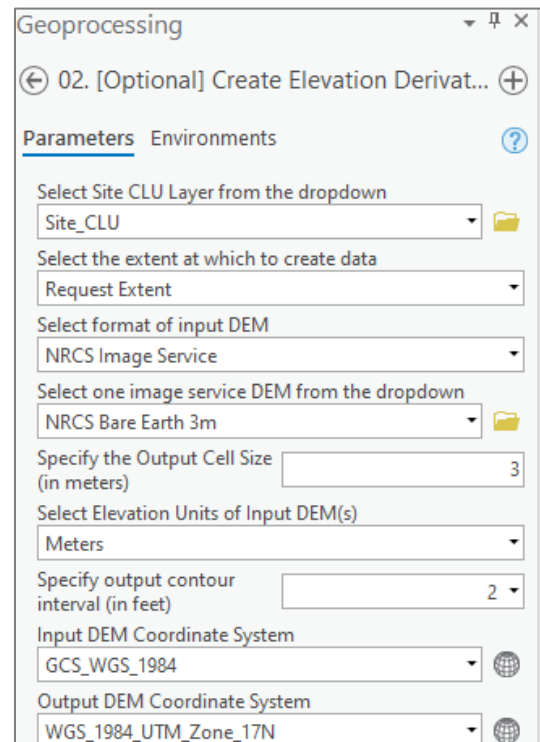
Scenario 2 – Input NRCS Elevation Data Service

Use this scenario when you don't have local DEM files available or when the extent area is covered by data in one of the NRCS Elevation Data Services. If your template does not already include the NRCS Elevation Web Service, you will need to load it to the project before running tool B.02.

Hint: Layer files of the NRCS Elevation Services are available to be added from [<install folder>/NRCS_Wetland_Tools_Pro/Reference_Layers](#).

Warning: The NRCS elevation services do not have complete coverage of the U.S. Also, the different NRCS Elevation services do not necessarily cover the same geographic extent.

- Complete the following entries in tool B.02.:
 - Select the *Site CLU* layer from the dropdown.
 - Select the *Full Tract* or *Request Extent* from the choice list, as preferred.
 - Select a format of *NRCS Image Service*.
 - Select an NRCS elevation image service from the dropdown.
Hint: The NRCS elevation image service must display in the map Contents pane to be available in the dropdown.
 - Use the Elevation Units entry to specify **Meters**.
Hint: All NRCS Elevation services use Meters as vertical units.
 - Specify the output contour interval (in feet) for the contour layer that will be generated. *Tip: Use lower values in low-relief areas and higher values in high-relief areas.*
 - Do not change the input and output coordinate system values.

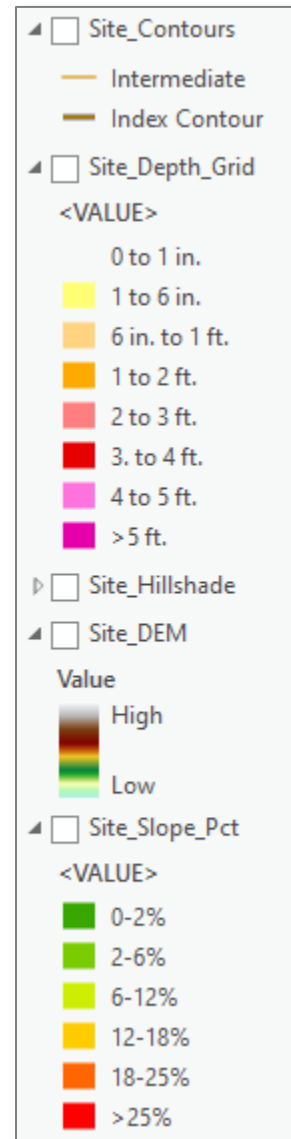


- Click **Run**. Wait for the tool to complete successfully.
- If you encounter errors (red status), click *View Details* to review the errors. Make corrections and rerun the tool.

Elevation Products

The following products are created by the *Create Elevation Derivatives* tool and will be added to the *Determinations* map. Drag & drop the layers in the *Contents* pane to re-order them as needed for best display.

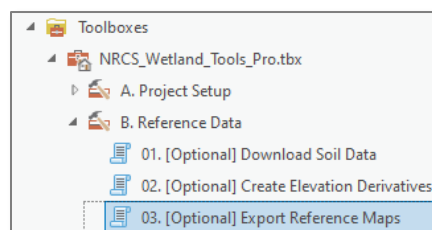
- *Site Contours* – A contour layer from your DEM with the specified contour interval. It is recommended to arrange this layer above any imagery layers and any of the other elevation derivative layers.
- *Site Depth Grid* – A layer showing closed depressions and their depth range. Areas that are not truly closed depressions can show up in this layer where the input DEM has not been hydro enforced to allow outlet flow. Examples include, but are not limited to, ditches and culverts along roadways, driveways, and other small bridges. Like many reference datasets, this layer is to be used as supporting reference and shall not be the sole basis for making decisions. It is recommended to arrange this layer above the *Site Hillshade* layer.
- *Site Hillshade* – A standard shaded relief overlay layer of the site. It is recommended to arrange this layer above the *Site Slope Pct* and *Site DEM* layers, but below the *Site Depth Grid* layer. It is helpful to display this layer at the same time as the *Site DEM*.
- *Site DEM* – A digital elevation model of for the area of the tract or request extent, as you specified. Viewing this layer should be alternated with the *Site Slope Pct* layer (both layers cannot be viewed, as is, at the same time).
- *Site Slope Pct* – A layer showing slope by percentage for the DEM area. It is recommended to arrange this layer below the *Site Hillshade* and/or *Site DEM*. Viewing this layer should be alternated with the *Site DEM* layer (both layers cannot be viewed, as is, at the same time).



Lesson 12 – Export Reference Maps (Optional) (B.03)

Use this tool to export PDF map product reference data, including a Site Map, SSURGO thematic maps, elevation derivative maps, and an NWI map. The maps are exported to the *Wetlands* directory within the project folder. There are two scenarios to set the map extent, as well as an option to set a PLSS reference point.

- Activate and arrange the order of any supplemental layers to be displayed on the maps (e.g., roads). De-activate any supplemental layers that are not to be displayed on the maps (e.g., extra imagery layers). Save the project (APRX) by clicking **Project → Save**.
- In the Catalog Pane, expand **Toolboxes → NRCS Wetland Tools Pro.tbx**.
- Expand **B. Reference Data**.
- Double-click to open tool B.03.
- Follow one of the scenarios to specify the map extent.
- After completing one of the scenarios, save the project (APRX) by clicking **Project → Save**.



Map Making Considerations

The WC Tool only controls the display of these required layers in the reference maps:

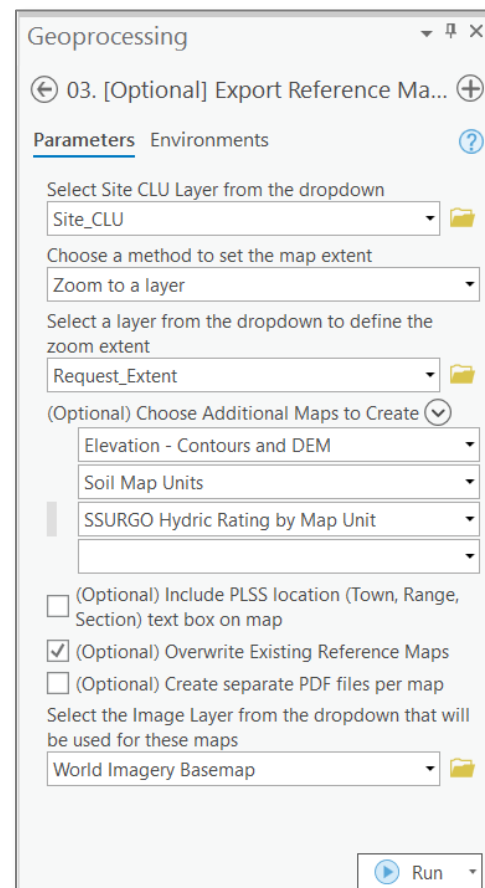
- “Site” layers – Any layer beginning with “Site” is a *WC Tool business layer* and will be automatically activated for display in the appropriate export tool.
- Specified Image – The image specified in the export tool will always be displayed and listed by name on the layouts and map products.
- Optional Reference Data Layers – If you created optional reference layers from the SSURGO or elevation derivative tools AND if you select the corresponding map PDF to be created in the Export Reference Maps tool, the associated layers will be displayed on the appropriate output map PDF.

Users can change the symbology or labels of the *business layers* and those changes will not be reverted by the WC Tools unless one of these layers is regenerated by the tool that creates it. All other layers are managed by the user manually. Any supplemental layers (e.g., transportation) that you activate will appear on all maps in the drawing order that you have set. Also, when you specify an image layer in an export tool, make sure that it is arranged below the operational layers AND above any other active image layers. If the desired image layer is below other active image layers, then turn those layers off BEFORE running an export maps tool.

Scenario 1 – Automatically Set Map Extent

Use this scenario for the tool to automatically set a layout extent around a selected layer.

- Complete the following entries in the tool while the *Determinations* maptab is open and actively selected:
 - Select *Site CLU* from the dropdown.
 - Select *Zoom to a layer* for the method.
 - Select the *Site CLU* or *Request Extent* layer from the dropdown to define the extent.
 - Use the dropdown(s) to select additional maps to create. By default, only the basic *Location (Site)* map is created.
Hint: Click the drop-down arrow next to the header to select and add multiple choices at once.
Warning: Only select SSURGO, Elevation, or NWI data products that have corresponding layers in the *Contents* pane of the *Determinations* map.
 - Activate supplemental map layers in the *Contents* pane as needed.
 - Select the Image Layer to be used on the output maps.
- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (red status), click *View Details* to review the errors. Make corrections and rerun the tool.



Export Maps Options

The export map tools may have up to three special options – *Include PLSS* (see the *Include PLSS Text Option* sidebar), *Overwrite Existing Maps*, and *Create Separate PDF files per map*.

Overwrite Existing Maps will always replace the existing PDF file(s) created by the current export tool in the *Wetlands* directory if active. For most scenarios, only one set of maps for a site is needed. However, if you need to make multiple maps for a site, such as if a request has two distinct locations at opposite ends of a very large tract or if you want to make different sets of maps at different scales, you can turn this option OFF and rerun the tool to create multiple sets of maps. If this option is off, existing map products from the tool will not be overwritten.

Create Separate PDF files per map (Reference Maps only) creates a separate PDF file for each map. It is not generally recommended unless you have a particular business case for it.

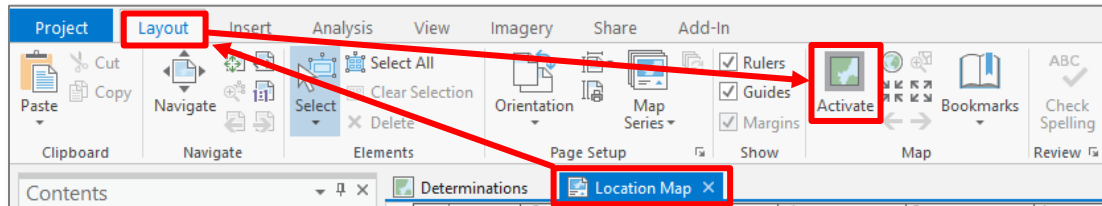
Scenario 2 – Manually Set Map Extent

Use this scenario to manually set the map extent that will be used on the layout.

- In the *Catalog* pane, expand *Layouts* and double-click *Location Map*. The *Location Map* layout will open and become the active tab.

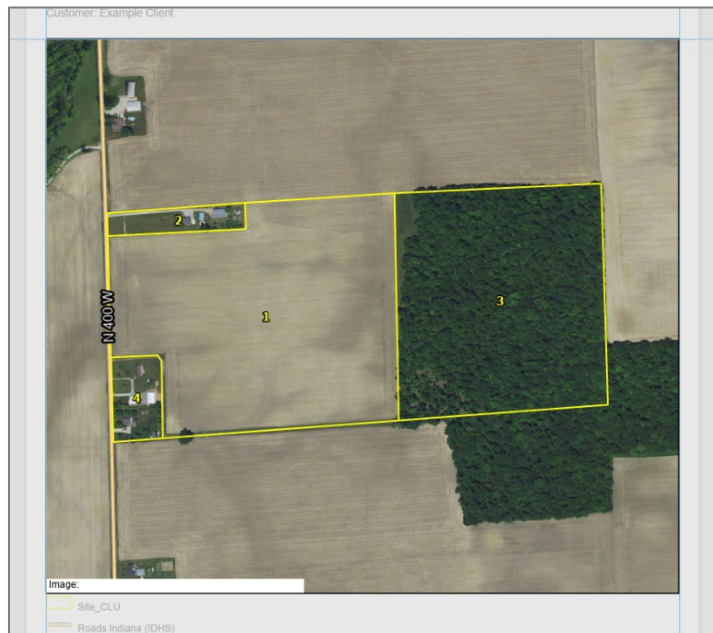
Note: The extent of the *Location* map will be used to manage the extent in any additional maps you export with this tool. You do not need to manually set the same extent for all layouts.

- Click the *Layout* tab on the *Ribbon* and then click *Activate*. The map frame on the layout page will become active and the rest of the page will grey out.

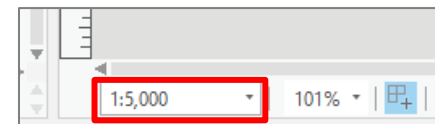


- While the *Map Frame* is active in the layout, the *Map* tab will become active on the *Ribbon*. Use the *Explore* tool to pan and zoom the map to the desired extent.

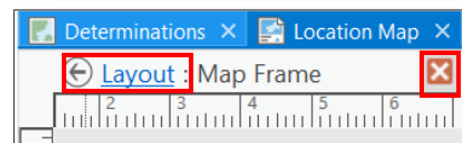
Hint: Right-click the *Site CLU* layer in the *Contents* pane, and then click *Zoom to layer* to quickly navigate to your site within the map frame on the layout.



Hint: A specific scale can be set by typing a value in the scale box in the lower left corner of the layout view.



- Once satisfied with the map extent, click the back arrow or blue *Layout* hyperlink in the top left corner of the layout view to close the activation of the map frame and return to the full layout. Optionally, click the red "x" to close the Activation.

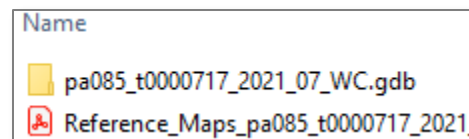


- Close the *Location Map* layout and return to the *Determinations* map tab.

- Complete the following entries in the tool while the *Determinations* map tab is open and actively selected:
 - Select *Site CLU* from the dropdown.
 - Select *Manual Pan and Zoom* for the method.
 - Use the dropdown(s) to select additional maps to create. By default, only the basic *Location (Site)* map is created.
 Hint: Use the pop-out menu next to the header for this option to select and add multiple choices at once.
 Warning: Only select SSURGO, Elevation, or NWI data products that have corresponding layers in the *Contents* pane of the *Determinations* map.
 - Activate additional map output options as preferred
 - Select the Image Layer to be used on the output maps.
- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (red status), click *View Details* to review the errors and try to rerun the tool.

Review Export Reference Maps Results

In *File Explorer* navigate to the *Wetlands* directory within the project folder. One or more PDFs should now exist, either named *Reference Maps* or named by map title for separate files.



Open the map PDF(s) and review the content. If you need to make adjustments and create the maps again, close any open map PDF(s) and rerun the *Export Reference Maps* tool in ArcGIS Pro. Close any map product PDF(s) that may be open to prevent file locks when re-running the tool.

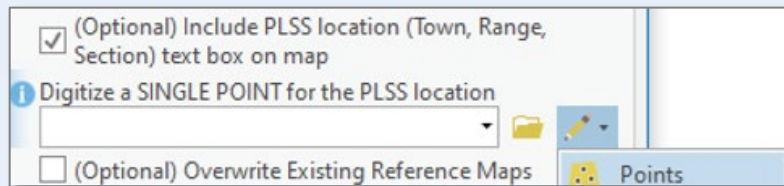
Include PLSS Text Option

The various Export Map tools within the WC Tool all have an optional parameter to include a *PLSS text box* on the output map(s). If this option is enabled, a text box may be created on the output map(s) that lists the Town, Range, and Section of a user-specified point on the site. This sidebar describes the procedure to utilize this option in any Export Map tool in the WC Tools.

Note: You must be online for the *Include PLSS...* option to function.

The following steps should be completed while the *Determinations* map is active. They should *not* be completed while in any layout view.

- On the *Determinations* map, pan and zoom to a working extent for the site.
- Complete the parameters of the export map tool in the WC Tools as normal.
- Before clicking *Run*, activate the parameter *(Optional) Include PLSS location (Town, Range, Section) text box on map*.
- Enabling the optional *PLSS* parameter will add another parameter to the current tool that instructs you to *Digitize a SINGLE POINT* for the *PLSS* location.



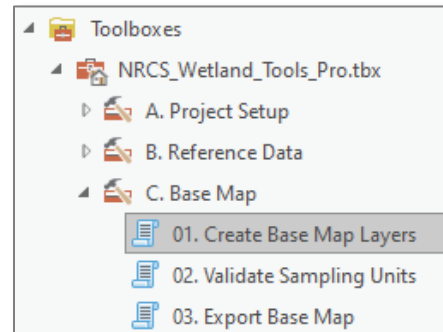
- Click the pencil dropdown next to the new parameter and click *Points* from the list of feature types.
- A temporary point layer will be added to the map and your cursor will automatically be changed to an editing tool to add points.
- In the *Determinations* map, **single-click** a representative location on the site. **DO NOT DOUBLE-CLICK!**
- A digitized point will be added to the map. This point will be used to query the Bureau of Land Management (BLM) *PLSS* layers on the internet and return a descriptive Town, Range, and Section text string for use on the map header.
- Do not digitize multiple points.
- Complete the remaining parameters of the export tool, if any.
- Run the tool as normal.

The resulting maps may not include a *PLSS* description in the top-right header area of the PDF for several reasons. The BLM *PLSS* layers may be offline or may have data errors, your site might be in a part of the country that does not use the *PLSS*, or you might be offline. If you need to show a *PLSS* location and the tool is not generating the correct description, you may rerun the Export Reference Maps tool with this option off and supplemental *PLSS* layers loaded, active, and labeled in the map. You can also manually edit the PDF to add a *PLSS* text box.

Lesson 13 – Create Base Map Layers (C.01.)

This tool creates the *Sampling Units*, *Representative Observation Points (ROPs)*, *Drainage Lines*, and *Reference Points* layers used in Base Map development. This tool can also be used to regenerate any of the four layers to start over from this point, if needed. If any previously digitized determinations are within the *Request Extent*, the previously digitized sampling units will be integrated into the new *Site Sampling Units* layer created by this tool (see the *Previously Determined Areas* or *Revision Workflows* lessons, as needed).

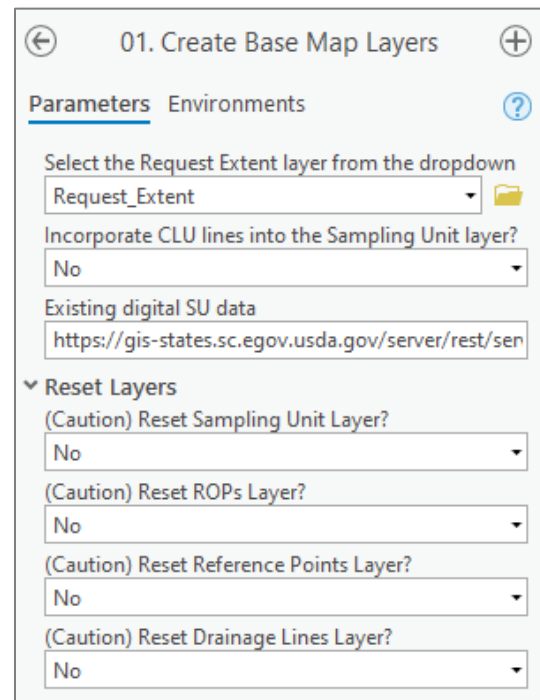
- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.



- Expand **C. Base Map**.

- Double-click to open tool C.01.

- Complete the following entries in tool C.01.:
 - Select the *Request Extent* layer in the first dropdown.
 - Choose the *Yes* or *No* option for incorporating CLU lines as preferred. If the existing CLU field boundaries are helpful in delineating land uses, it is better to incorporate them (*Yes*) rather than trying to manually re-digitize them. If the existing CLU field boundaries would clutter the determination products (e.g., contour crop strips), it is usually better to not incorporate them (*No*).
 - Do not change the *Existing SU data* entry.
 - *Reset Layers* entries should not be changed for the first run on a project.



- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors. Make corrections and rerun the tool.

- Review the results and rerun the tool if the results are unsatisfactory. To replace/overwrite an existing layer on a rerun, expand the *Reset Layers* section of the tool and change the reset option for the desired layer from *No* to *Yes*. The specified layer(s) will be regenerated.

Warning: Resetting a layer will reset it to a default state and any existing edits in the layer will be lost.

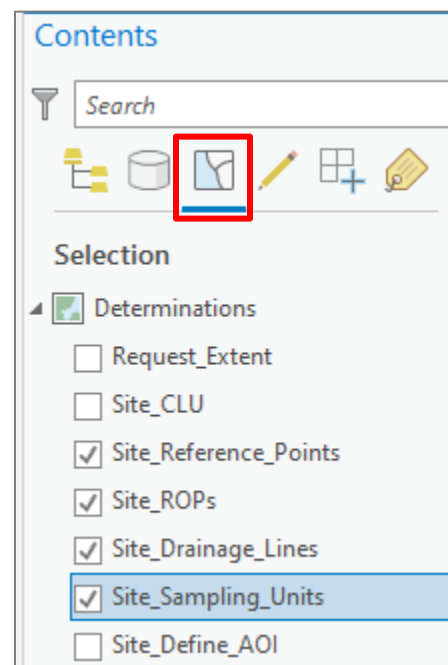
Lesson 14 – Edit Base Map Layers

Use editing tools in ArcGIS Pro to edit and attribute the *Site Sampling Units* and *Site ROPs* layers. Optional edits can be made to the *Site Drainage Lines* and *Site Reference Points* layers as needed. Refer to *Appendix B – Base Map Development* for detailed information regarding development of Sampling Units and Representative Observation Points for a Base Map. Refer to *Appendix C – Basic Editing in ArcGIS Pro* for more detailed editing information. Complete the process by running tool *C.02. Validate Sampling Units*.

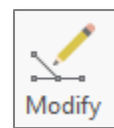
Edit the Site Sampling Units Layer

Use these general steps to perform edits on the Site Sampling Units layer. Typically, the Site Sampling Units layer will be modified using the *Split* and/or *Merge* editing tools. Do not use the *Create* tools for editing this layer, otherwise stacked or “pancaked” polygons will result.

- In the *Contents* pane, make sure the *Site Sampling Units*, *Site ROPs*, *Site Drainage Lines*, and *Site Reference Points* layers are visible. Adjust visibility of other layers, as needed.
- In the *Contents* pane, click the *List by Selection* button and uncheck all selectable layers except the *Site Sampling Units*, *Site ROPs*, *Site Drainage Lines*, and *Site Reference Points* layers.
- In the *Contents* pane, click the *List by Drawing Order* button to return to the normal view of listed and visible layers.



- On the ArcGIS Pro *Ribbon*, click the *Edit* tab.
- On the *Edit* tab, click the *Modify Features* button to open the *Modify Features* pane. Click the *Split* or *Merge* tool from the list of *Modify Features* tools.
*Alternately: Click the *Split* or *Merge* tool from your set of favorite tools on the *Edit* tab.*
- Use the interactive *Select* features tool from the *Split* or *Merge* tool panel and perform as many edits as needed. Refer to *Appendix C – Basic Editing in ArcGIS Pro* for details on editing.
- Click *Save [Edits]* to save regularly while working. You must Click *Save [Edits]* when finished editing.



Attribute the Site Sampling Units Layer

This section describes the basics of attributing the *Site Sampling Units* layer.

- Use the *Select [Features]* tool to select a sampling unit (SU) feature.
 - Click the *Attributes* button on the *Edit* tab of the ArcGIS Pro *Ribbon*.
 - Populate the required attributes (highlighted in yellow) in the *Attributes* window for each feature.
 - *Evaluation Status* – The default is *New Request*. Use *Revision* if changing a *Certified-Digital* SU. Only SUs marked as *New Request* or *Revision* get carried forward through the remaining workflow.
 - *Sampling Unit Number* – Enter a number to uniquely identify the selected SU. *Sampling Unit Numbers* do not correspond to CLU field numbers and should be unique for each SU unless they will share the same *Associated ROP*. If two SUs will have the same *Sampling Unit Number*, differentiate them by assigning them a different *Sampling Unit Letter*.
 - *Sampling Unit Letter (optional)* – Optional attribute to distinguish SUs that share the same *Sampling Unit Number* and *Associated ROP*. Use only if all SUs do not have a unique number.
 - *Associated ROP* – Enter the ROP number that is or will be associated with the currently selected sampling unit.
 - *3-Factors?* – Assign a “Y” status for the sampling unit if all three wetland criteria under normal circumstances are present. Otherwise, assign a “N” status.
 - *Determination Method* – Select the method being used for the sampling unit.
 - *Determination Staff* – Name of staff member who is performing the determination. Update this field if you are digitizing a determination performed by another staff member.
- Click **Apply** and then click *Save [Edits]*.
Hint: Check the *Auto Apply* box so that attribute changes are automatically applied as soon as they are entered.
- Continue populating the required attributes for each of the Site Sampling Unit features.
 - Click *Save [Edits]* when you finish editing.

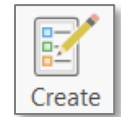


Attributes	
Tract Number	717
Evaluation Status	New Request
Sampling Unit Number	4
Sampling Unit Letter	<Null>
Acres	10.401721
Associated ROP	4
Associated Reference Points	<Null>
3-Factors?	N
Request Date	9/22/2021
Request Type	AD-1026
Determination Method	Level 1 - Offsite
Determination Staff	Haley Bales
Digitizing Staff	Haley Bales

Edit the Site ROPs Layer

Use these steps to create or move Representative Observation Points. Digitize a ROP for each Sampling Unit or set of Sampling Units.

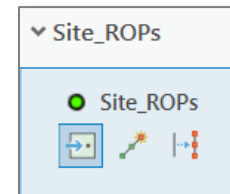
- In the *Contents* pane, make sure the *Site ROPs* layer is visible.
- On the *Edit* tab of the ArcGIS Pro *Ribbon* click *Create Features*. In the *Create Features* pane, click the *Site ROPs* layer and then click the *Point* tool.



- Use the *Point* tool to digitize a Representative Observation Point. Use only a single-click to digitize a point (double-click will create two, possibly overlapping, points).

*Hint: To move an existing point, select a point and use the *Modify Features* menu to access the *Move* tool and then move the feature.*

Alternately, you could select the existing point, delete it, and digitize a new point.



- Click *Save [Edits]* regularly while working and when you are finished editing.

Attribute the Site ROPs Layer

Use these steps to attribute the Representative Observation Points that have been digitized.

- Use the *Select [Features]* tool to select a Site ROPs feature.
- Click the *Attributes* button on the *Edit* tab of the ArcGIS Pro *Ribbon*.
- Populate the required attribute (highlighted in yellow) in the *Attributes* window for each feature.

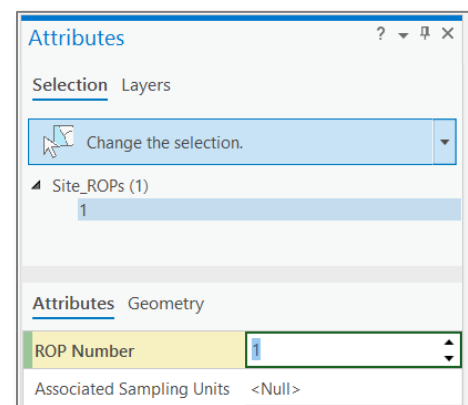


- *ROP Number* – Assign a number to the selected ROP. It is helpful if it can be the same as the *Sampling Unit Number* in which the ROP falls but isn't required. Each ROP number must be unique. If necessary, a ROP can support multiple sampling units.

*Note: Ignore the *Associated Sampling Units* attribute. It will be populated automatically during validation.*

- Click **Apply** and then click *Save [Edits]*.

*Hint: Check the *Auto Apply* box so that attribute changes are automatically applied as soon as they are entered*



- Continue attributing until all ROPs are attributed. Click *Save [Edits]* when finished.
*Note: You may need to update the *Associated ROP* attribute in the *Site Sampling Units* layer after making edits to the *Site ROPs* layer.*

Edit and Attribute the Site Drainage Lines Layer

Drainage Lines may be digitized at a site, where needed.

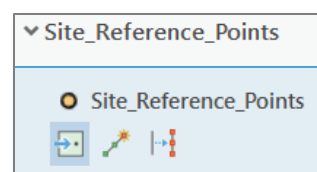
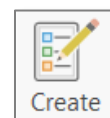
- In the *Contents* pane, make sure the *Site Drainage Lines* layer is visible.
- On the *Edit* tab of the ArcGIS Pro *Ribbon* click *Create Features*. In the *Create Features* pane, click the *Site Drainage Lines* layer and then click a particular symbol for a line type to digitize.
- Use the *Line* digitizing tool to draw a line. Use single-clicks to start and shape the line. Double-click to finish. Digitize in the direction of flow, starting upstream and moving downstream.
- Click the *Attributes* button on the *Edit* tab of the ArcGIS Pro *Ribbon*. The *Line Type* and *Era* attributes will auto-populate based on the type of line you selected to digitize but can be changed.
- Review and update the attributes of the digitized and selected line, as needed.
- Click *Save [Edits]* when you are finished.



Edit and Attribute the Reference Points Layer

Reference Points may be created to digitize a location where particular wetland criteria are evaluated outside of the Sampling Unit.

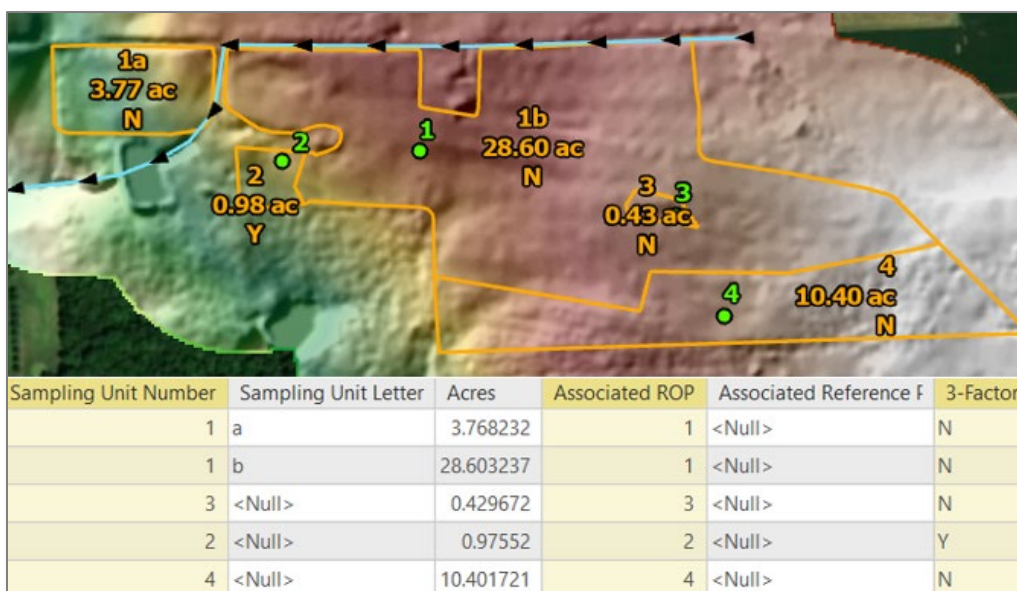
- In the *Contents* pane, make sure the *Site Reference Points* layer is visible.
- On the *Edit* tab of the ArcGIS Pro *Ribbon* click *Create Features*. In the *Create Features* pane, click the *Site Reference Points* layer and then click the *Point* tool.
- Use the *Point* tool to digitize a Reference Point. Use only a single-click to digitize a point (double-click will create two, possibly overlapping, points).
- Click *Save [Edits]* to save regularly while working.
- Click the *Attributes* button on the *Edit* tab of the ArcGIS Pro *Ribbon*. Update attributes for the digitized or selected Reference Point, as needed.
- Click *Save [Edits]* when you are finished editing.



Base Map Digitizing Results Example

In the following example, several sampling units have been created and uniquely named with either Sampling Unit Numbers or Sampling Unit Number and Letter combinations. Also, Representative Observation Points have been digitized to support all the Sampling Units. In this example, ROP #1 is associated with Sampling Units 1a and 1b, while the remaining ROPs are associated with sampling units on a one-to-one basis (ROP #2 with SU #2, ROP #3 with SU #3, and ROP #4 with SU #4).

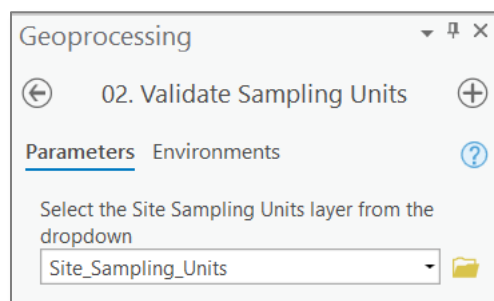
Also, a drainage line has been digitized through the site, showing the direction of flow.



Validate Sampling Units (C.02.)

Run this tool to validate that the required attributes were assigned to the base map features created in the previous steps. The *Site Sampling Units* and *Site ROPs* layers must contain fully attributed data to successfully run this tool.

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **C. Base Map**.
- Double-click to open tool C.02.
- Select the *Site Sampling Units* layer in the dropdown and then click **Run**.
- Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors. For this tool, the error messages often contain specific notes about what attributes are missing from what layer. Edit the missing attributes in the indicated feature and re-run the tool. You cannot proceed in the tool until the required attributes are populated and the tool runs without errors.



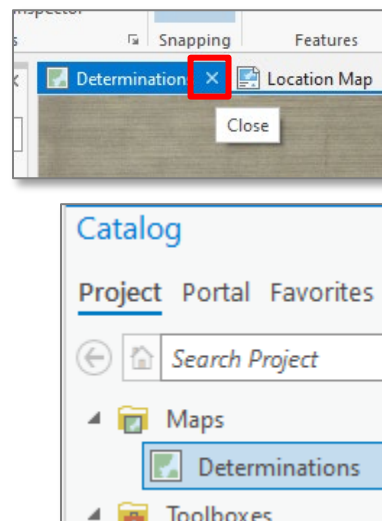
Performing Corrective Edits to the Base Map Layers

If validating the sampling units and associated layers encounters a problem that can be corrected through edits (e.g., one or more Sampling Units is missing a *Sampling Unit Number*), you can activate the necessary layers and edit them to make corrections. After making and saving edits, you can validate again until the validation comes up as successful.

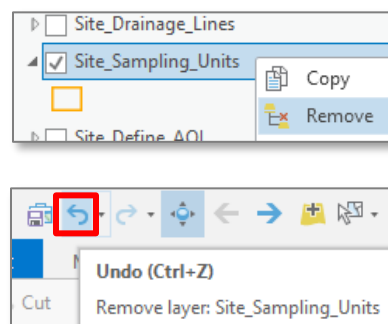
Troubleshooting Edit Locks

When attempting to make edit corrections to existing layers after validations, the layers can sometimes become locked by ArcGIS Pro. To work around this, perform the following actions to break the lock.

- Option 1: Close the Determinations map and re-open it –
 - In the ArcGIS Pro central viewing area, find the *Determinations* map tab and close it.
 - Open the *Catalog Pane* and then expand the *Maps* section.
 - Double-click the *Determinations* map name in the *Catalog Pane* to re-open it.
 - Attempt edits again. If layers are still locked, proceed to Option 2, below.



- Option 2: Remove the locked layer and then Undo the remove –
 - Right-click the layer that is locked for editing and click **Remove** from the pop-up menu.
 - At the top-left of the ArcGIS Pro window, click **Undo**. The layer will be restored to the map.
*Hint: If Undo is greyed out, click the *Determinations* map tab name in the view area.*
 - Repeat this for any layers affected by editing locks.
 - Attempt edits again. If layers are still locked, proceed to Option 3, below.



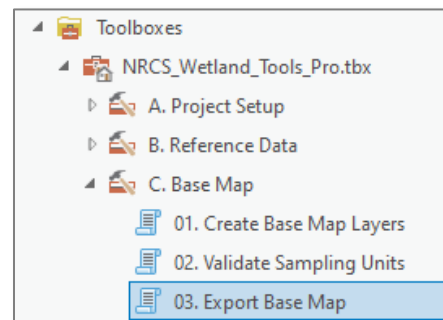
- Option 3: Close and re-open the project –
 - Save the project (click **Project** → **Save**).
 - Close the project (click **Project** → **Exit**).
 - Go to the project folder and double-click the project name to re-open it.
- Option 4: Remove layers and run *Reload Project Layers* from *F. Utilities*.
 - Remove locked layers from the map.
 - Open and run **NRCS Wetland Tools Pro** → **F. Utilities** → **Reload Project Layers**

Lesson 15 – Export Base Map (C.03.)

Use this tool to export a map PDF of the Base Map. The map is exported to the *Wetlands* directory within the project folder. There are two scenarios to set the map extent, as well as an option to set a PLSS reference point.

Warning: If altering the symbology or creating/using annotation labels for the *Site Sampling Units*, *Site ROPs*, *Site Reference Points*, or *Site Drainage Lines* layers, you should wait to run this step until after completing all mapping and after running *Create CWD Map Layers (D.03.)*, later in the process.

- Activate and arrange the order of any supplemental layers to be displayed on the maps (e.g., roads). De-activate any supplemental layers that are not to be displayed on the maps (e.g., extra imagery layers). Save the project (APRX) by clicking **Project** → **Save**.
- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **C. Base Map**.
- Double-click to open tool C.03.
- Follow Scenario 1 or Scenario 2 below to specify the map extent.
- After completing one of the scenarios, save the project (APRX) by clicking **Project** → **Save**.



Note: Review the blue feature boxes for *Map Making Considerations*, *Export Map Options*, and *Include PLSS Text Option*, found in Lesson 12, *Export Reference Maps*.

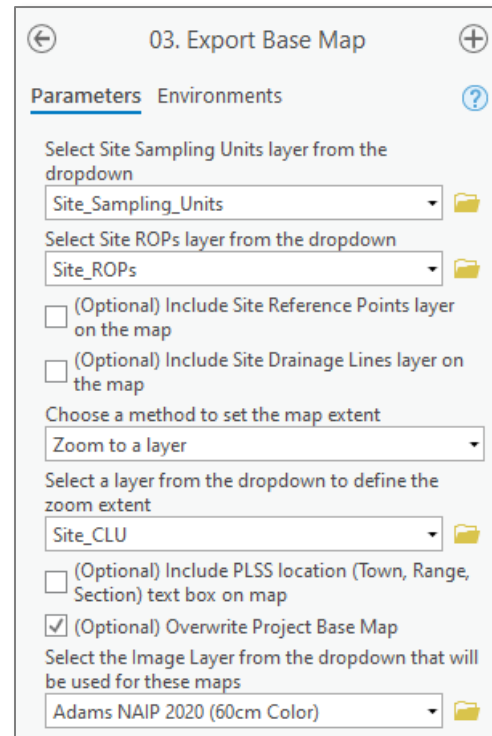
Scenario 1 – Automatically Set Map Extent

Use this scenario for the tool to automatically set a layout extent around a selected layer.

- Complete the following entries in the tool while the *Determinations* map tab is open and actively selected:
 - Select *Site Sampling Units* in the first dropdown.
 - Select *Site ROPs* in the second dropdown.
 - Choose options for whether to include the *Site Reference Points* and/or *Site Drainage Lines* layers on the map. If you activate either of these options, you will be prompted to select the respective layer.

Note: Only activate the additional layers if you digitized content for them. Otherwise, leave those options blank.

 - Select *Zoom to a layer* for the method.
 - Select the *Site CLU* or *Request Extent* layer from the dropdown to define the extent.
 - Activate additional map output options as preferred
 - Select the Image Layer to be used on the output map.
- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red status*), click *View Details* to review the errors and try to rerun the tool.

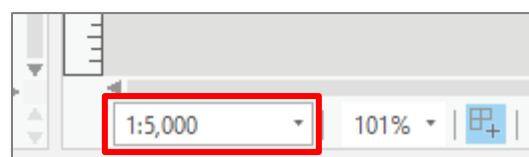


Scenario 2 – Manually Set Map Extent

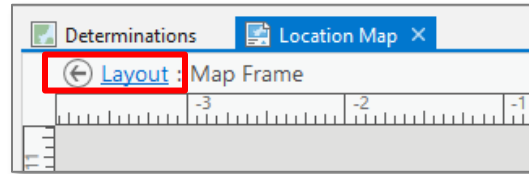
Use this scenario to manually set the map extent that will be used on the layout.

- In the *Catalog* pane, expand *Layouts* and double-click *Base Map*. The *Base Map* layout will open and become the active tab.
- Click the *Layout* tab on the *Ribbon* and then click *Activate*. The map frame on the layout page will become active and the rest of the page will grey out.
- While the *Map Frame* is active in the layout, the *Map* tab will become active on the *Ribbon*. Use the *Explore* tool to pan and zoom the map to the desired extent.
Hint: Right-click the *Site Sampling Units* layer in the *Contents* pane, and then click *Zoom to layer* to quickly navigate to your site within the map frame on the layout.

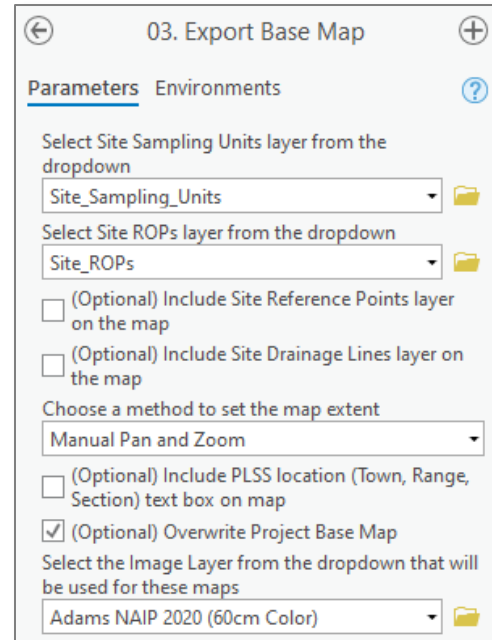
Hint: A specific scale can be set by typing a value in the scale box in the lower left corner of the layout view.



- Once satisfied with the map extent, click the back arrow or blue *Layout* hyperlink in the top left corner of the layout view to close the activation of the map frame and return to the full layout.



- Close the *Base Map* layout and return to the *Determinations* map tab.
- Complete the following entries in the tool while the *Determinations* map tab is open and actively selected:
 - Select *Site Sampling Units* in the first dropdown.
 - Select *Site ROPs* in the second dropdown.
 - Choose options for whether to include the *Site Reference Points* and/or *Site Drainage Lines* layers on the map. If you activate either of these options, you will be prompted to select the respective layer.
Note: Only activate the additional layers if you digitized content for them. Otherwise, leave those options blank.
 - Select *Manual Pan and Zoom* for the map extent method.
 - Activate additional map output options as preferred.
 - Select the Image Layer to be used on the output map.

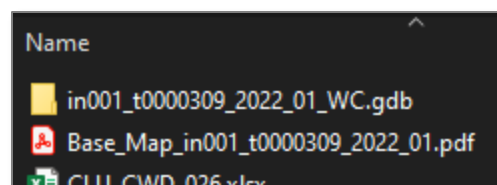


- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.

Review Export Base Maps Results

In *File Explorer* navigate to the *Wetlands* directory within the project folder. A Base Map PDF should now exist.

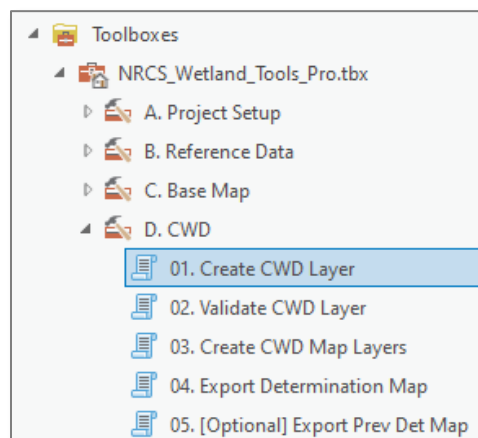
Open the Base Map PDF and review the content. If you need to make adjustments and create the Base Map again, close any open map PDF(s) and rerun the *Export Base Map* tool in ArcGIS Pro. Map PDF(s) must be closed to prevent file locks when replacing the PDF files with a new run.



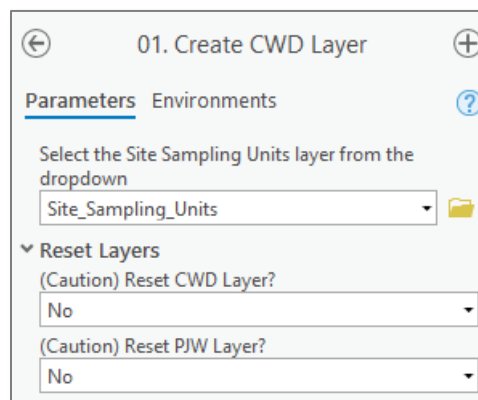
Lesson 16 – Create CWD Layers (D.01.)

This tool converts the *Site Sampling Units* layer into a Certified Wetland Determination (CWD) layer and creates an empty Potential Jurisdictional Waters (PJW) layer for use in Determination Map development. This tool can also be used to regenerate either of these layers, if needed.

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **D. CWD**.
- Double-click to open tool D.01.



- Complete the following entries in tool D.01.:
 - Select the *Site Sampling Units* layer in the first dropdown.
 - Accept the default entries in the *Reset Layers* section for the first run on a project.



- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details*. Make corrections and rerun the tool.

Review the results and rerun the tool if the results are unsatisfactory. To replace/overwrite an existing layer on a rerun, expand the *Reset Layers* section of the tool and change the reset option for the desired layer from *No* to *Yes*. The specified layer(s) will be regenerated.

Warning: Resetting a layer will reset it to a default state and any existing edits in the layer will be lost.

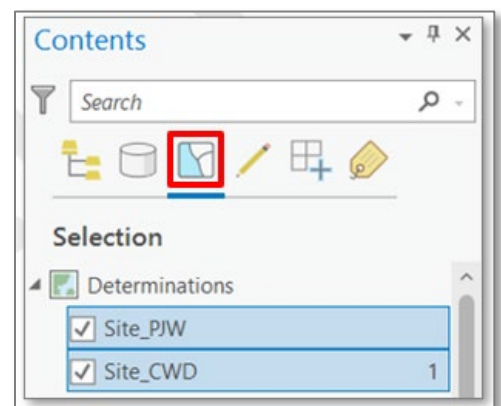
Lesson 17 – Edit CWD Layers

In this step you will edit CWD features and populate the wetland label attributes. You will also create PJW features, as needed. Review the CWD Digitizing Results examples at the end of this section. Also, refer to *Appendix C – Basic Editing in ArcGIS Pro* for more detailed editing information. After completing edits to the CWD layers, run tool *D.02. Validate CWD Layer* and tool *D.03. Create CWD Mapping Layers*.

Edit the CWD Layer

Use these general steps to perform edits on the CWD layer. Typically, the CWD layer will be modified using the *Merge* editing tool, if at all. It starts as a copy of the *Site Sampling Units* layer. Do **NOT** use the *Create* tools, otherwise stacked or “pancaked” polygons will result.

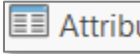
- In the *Contents* pane, make sure the *Site CWD* and *Site PJW* layers are visible. Adjust visibility of other layers, as needed.
- In the *Contents* pane, click the *List by Selection* button and uncheck all selectable layers except the *Site CWD* and *Site PJW* layers.
- In the *Contents* pane, click the *List by Drawing Order* button to return to the normal view of listed and visible layers.

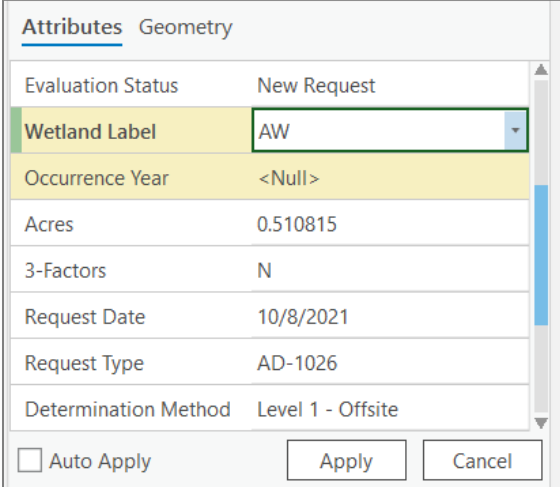


- On the ArcGIS Pro *Ribbon*, click the *Edit* tab.
- (Optional) On the *Edit* tab, click the *Modify Features* button to open the *Modify Features* pane. Click the *Split* or *Merge* tool from the list of *Modify Features* tools.
*Alternately: Click the *Split* or *Merge* tool from your set of favorite tools on the *Edit* tab.*
- (Optional) Use the interactive *Select* features tool from the active tool panel and perform as many edits as needed. Refer to *Appendix C – Basic Editing in ArcGIS Pro* for details on editing.
Warning: You should only merge features that have the same 3-Factors criteria on the *Site Sampling Units* layer, and they will have the same Food Security Act label.
- Click *Save [Edits]* to save regularly while working. Click *Save [Edits]* when finished editing.

Attribute the CWD Layer

This section describes the basics of attributing the *Site CWD* layer.

- Use the *Select [Features]* tool to select a CWD feature.
- Click the *Attributes* button on the *Edit* tab of the ArcGIS Pro *Ribbon*. 
- Populate the required attributes (highlighted in yellow) in the *Attributes* window for each feature.
 - *Wetland Label* – Use the dropdown list to assign a Food Security Act label for the selected and determined polygon.
 - *Occurrence Year* – If the selected *Wetland Label* requires the inclusion of an occurrence year, type the 4-digit year in this box.
- Click **Apply** and then click *Save [Edits]*.
Hint: Check the Auto Apply box so that attribute changes are automatically applied as soon as they are entered. Please note that the changes are still not saved until clicking Save [Edits].
- Continue attributing until all CWD polygons are attributed and edits are saved.

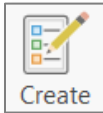


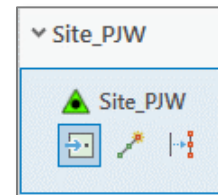
Attributes Geometry	
Evaluation Status	New Request
Wetland Label	AW
Occurrence Year	<Null>
Acres	0.510815
3-Factors	N
Request Date	10/8/2021
Request Type	AD-1026
Determination Method	Level 1 - Offsite

☐ Auto Apply **Apply** **Cancel**

Edit the PJW Layer

Use these steps to create or move PJW. The Potential Jurisdictional Water (P JW) symbol is a cautionary symbol that denotes a water or wetland feature that may fall under Clean Water Act jurisdiction but may not correspond with a Food Security Act wetland label. Digitize a PJW point only where needed.

- In the *Contents* pane, make sure the *Site PJW* layer is visible.
- On the *Edit* tab of the ArcGIS Pro *Ribbon* click *Create Features*. In the *Create Features* pane, click the *Site PJW* layer and then click the *Point* tool. 
- Use the *Point* tool to digitize a PJW point. Use only a single-click to digitize a point (double-click will create two, possibly overlapping, points).
Hint: To move an existing point, select a point and use the Modify Features menu to access the Move tool and then move the feature. Alternately, you could select the existing point, delete it, and digitize a new point.
- Click *Save [Edits]* to save regularly while working. Click *Save [Edits]* when finished editing.



Site CWD Digitizing Results Examples

In the following example, the CWD features have been labeled with Food Security Act labels and a nearby PJW point has been digitized on a pond. Areas that are not contiguous are not merged and have their own label and acres total (i.e., do not create multi-part features in the *Site CWD* layer by merging non-adjacent features).



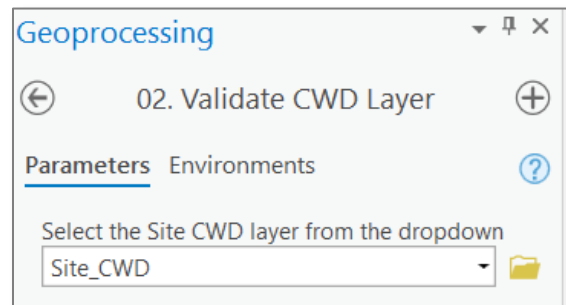
In the example below, features that have the same 3-Factors criteria on the *Site Sampling Units* layer (and *Site CWD* layer) and the same Food Security Act label in the *Site CWD* layer are merged.



Validate CWD Layer (D.02.)

Use this tool to validate that the required attributes are assigned to the CWD features. The *Site CWD* layer must contain fully attributed data to successfully run this tool.

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx.**
- Expand **D. CWD.**
- Double-click to open tool D.02.
- Select the *Site CWD* layer in the dropdown and then click **Run**.
- Wait for the tool to complete successfully. If you encounter errors (*red* status), click **View Details** to review the errors. Make any corrections and rerun the tool. For this tool, the error messages often contain specific notes about what attributes are missing from what layer. Rerun this tool until it completes without errors before continuing.



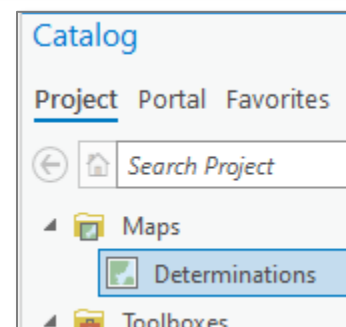
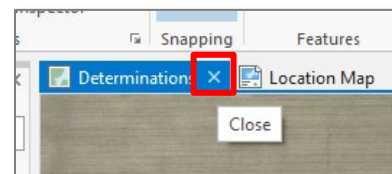
Performing Corrective Edits to the CWD or PJW Layers

If validating the CWD and associated layers encounters a problem that can be corrected through edits (e.g., one or more CWD polygons is missing a *Wetland Label*), you can activate the necessary layers and edit them to make corrections. After making and saving edits, you can validate again until the validation comes up as successful.

Troubleshooting Edit Locks

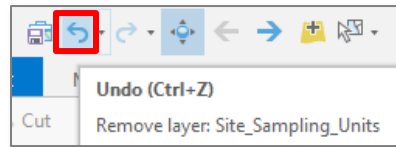
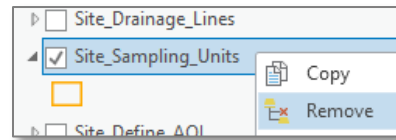
When attempting to make edit corrections to existing layers after validations, the layers can sometimes become locked by ArcGIS Pro. To work around this, perform the following actions to break the lock.

- Option 1: Close the Determinations map and re-open it –
 - In the ArcGIS Pro central viewing area, find the *Determinations* map tab and close it.
 - Open the *Catalog Pane* and then expand the *Maps* section.
 - Double-click the *Determinations* map name in the *Catalog Pane* to re-open it.
 - Attempt edits again. If layers are still locked, proceed to Option 2, below.



- Option 2: Remove the locked layer and then Undo the remove –

- Right-click the layer that is locked for editing and click **Remove** from the pop-up menu.
- At the top-left of the ArcGIS Pro window, click **Undo**. The layer will be restored to the map.
- Hint: If Undo is greyed out, click the **Determinations** maptab name in the view area.
- Repeat this for any layers affected by editing locks.
- Attempt edits again. If layers are still locked, proceed to Option 3, below.



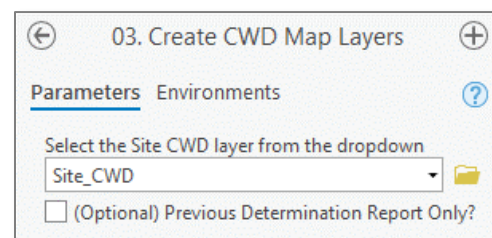
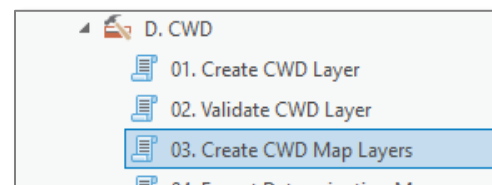
- Option 3: Close and re-open the project –
 - Save the project (click **Project** → **Save**).
 - Close the project (click **Project** → **Exit**).
 - Go to the project folder and double-click the project name to re-open it.
- Option 4: Remove layers and run *Reload Project Layers* from *F. Utilities*.
 - Remove locked layers from the map.
 - Open and run **NRCS Wetland Tools Pro** → **F. Utilities** → **Reload Project Layers**

Create CWD Map Layers (D.03.)

Use this tool after completing edits and validation for the CWD layer. This tool creates the *Site CLU CWD* layer and prepares the tables needed for creating letters and forms in later steps. If you change anything in steps prior to tool D.03., resume the workflow from that step *and* then run this tool to update final tables and products.

To run the *Create CWD Map Layers (D.03.) Tool* –

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **D. CWD**.
- Double-click to open tool D.03.
- Complete the following entries in tool D.03.:
 - Select the *Site CWD* layer from the dropdown.
 - Do not enable the optional parameter unless running a previous determination report only (see the *Previous Determinations Report without a New Determination Request* section).

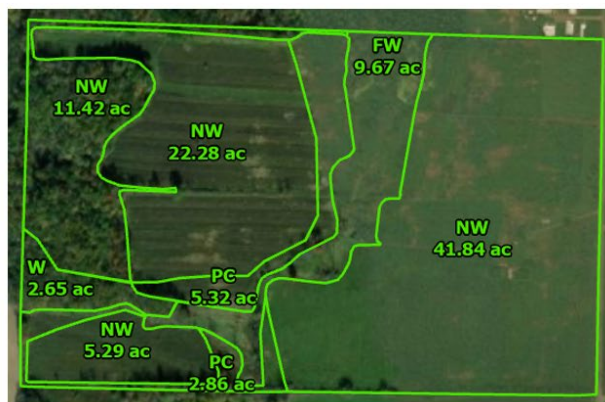


- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click **View Details** to review the errors and try to rerun the tool

The *Site CLU CWD* layer will be added to the *Determinations* map in the project. The *Site CLU CWD* layer is a layer that integrates the CLU layer with the CWD layer. This layer is provided as an option for creating the Determination map. Depending on your digitizing, this may subdivide your CWD polygons by CLU field boundaries. This can result in a high number of additional labels or fields. Later map layout export steps will provide options to use with the *Site CWD* layer or *Site CLU CWD* layer to create the official determination map, as needed.

The following screenshots show examples of the changes this process can introduce. In the example on the top row, the *Site CWD* was derived from Sampling Units that only used some field lines. Then, all the CLU field lines were reintroduced and created in a new layer when this tool was run, and the results are shown in the *Site CLU CWD* layer.

In the example for the bottom row, the same field lines were already used to map areas in the *Site CWD* layer and therefore, no change in shape is apparent in the *Site CLU CWD* layer other than the addition of the CLU field numbers.



Site CWD



Site CLU CWD



Site CWD

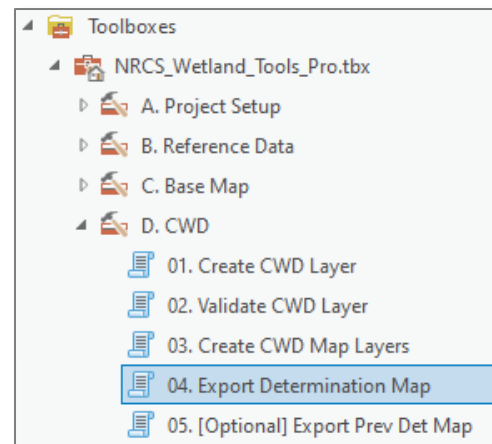


Site CLU CWD

Lesson 18 – Export Determination Map (D.04.)

Use this tool to export a map PDF of the Determination Map. The map is exported to the *Wetlands* directory within the project folder. There are two scenarios to set the map extent, as well as an option to set a PLSS reference point.

- Activate and arrange the order of any supplemental layers to be displayed on the maps (e.g., roads). De-activate any supplemental layers that are not to be displayed on the maps (e.g., extra imagery layers). Save the project (APRX) by clicking **Project** → **Save**.
- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **D. CWD**.
- Double-click to open tool D.04.
- Complete one of the following scenarios per your desired method to specify the map extent.
- After completing one of the scenarios, save the project (APRX) by clicking **Project** → **Save**.



Note: Refer to the feature boxes regarding Map Making Considerations, Export Map Options, and Include PLSS Text Option in Lesson 12, *Export Reference Maps*.

Scenario 1 – Automatically Set Map Extent

Use this scenario for the tool to automatically set a layout extent around a selected layer.

- Complete the following entries in the tool while the *Determinations* map tab is open and actively selected:

- Select *Site CWD* OR the *Site CLU CWD* choice in the first dropdown. Select the layer as dictated by guidance in your state or choose the option that will produce the most legible map.
- Select the *Site CWD* OR the *Site CLU CWD* layer in the second dropdown.
- [Hint: Match the layer in the 2nd dropdown to the choice in the 1st dropdown.](#)
- If you have digitized PJWs for the site, select *Site PJW* in the next dropdown.
- Choose options for whether to include the *Site Drainage Lines* layers on the map and select that layer.

[Note: Only activate the additional layers if you digitized content for them. Otherwise, leave those options blank.](#)

- Select *Zoom to a layer* for the method.
- Select the *Site CLU* or *Request Extent* layer from the dropdown to define the extent, if applicable.
- Activate additional map output options as preferred.
- Select the Image Layer to be used on the output map.

04. Export Determination Map

Parameters Environments

Choose which layer to display on the Determination Map

Site CWD layer

Select Site CWD layer from the dropdown

Site_CWD

(Optional) Select Site PJW layer from the dropdown

Site_PJW

☒ (Optional) Include Site Drainage Lines layer on the map

Select Site Drainage Lines layer from the dropdown

Site_Drainage_Lines

Choose a method to set the map extent

Zoom to a layer

Select a layer from the dropdown to define the zoom extent

Site_CLU

☐ (Optional) Include PLSS location (Town, Range, Section) text box on Determination Map

☒ (Optional) Overwrite Project Determination Map

Select the Image Layer from the dropdown that will be used for these maps

Adams NAIP 2020 (60cm Color)

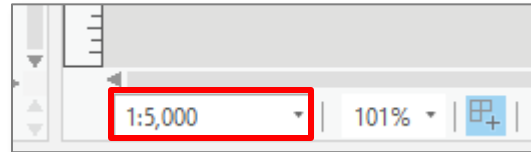
- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors. Make any corrections and rerun the tool.

Scenario 2 – Manually Set Map Extent

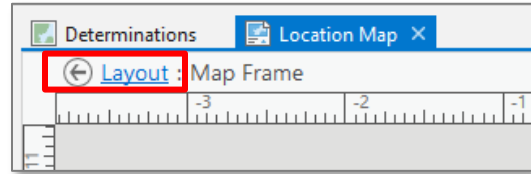
Use this scenario to manually set the map extent that will be used on the layout.

- In the *Catalog* pane, expand *Layouts* and double-click *Determination Map*. The *Determination Map* layout will open and become the active tab.
- Click the *Layout* tab on the *Ribbon* and then click *Activate*. The map frame on the layout page will become active and the rest of the page will grey out.
- While the *Map Frame* is active in the layout, the *Map* tab will become active on the *Ribbon*. Use the *Explore* tool to pan and zoom the map to the desired extent.
[Hint: Right-click the *Site CWD* layer in the *Contents* pane, and then click *Zoom to layer* to quickly navigate to your site within the map frame on the layout.](#)

Hint: A specific scale can be set by typing a value in the scale box in the lower left corner of the layout view.

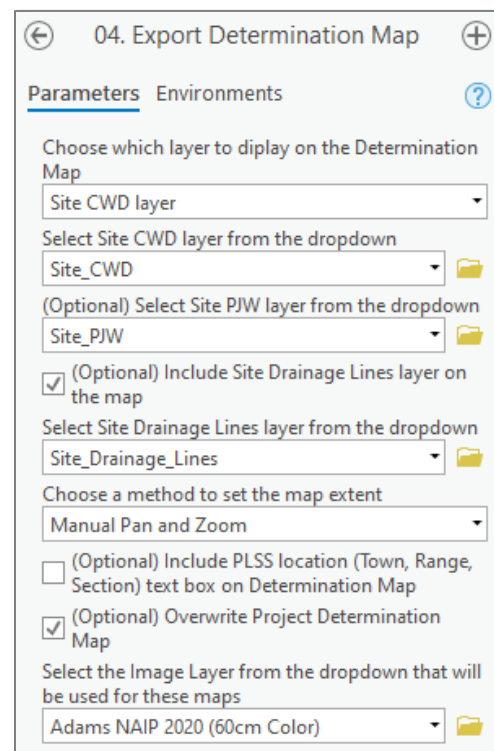


- Once satisfied with the map extent, click the back arrow or blue *Layout* hyperlink in the top left corner of the layout view to close the activation of the map frame and return to the full layout.



- Close the *Determination Map* layout and return to the *Determinations* map tab.
- Complete the following entries in the tool while the *Determinations* map tab is open and actively selected:

- Select *Site CWD* OR the *Site CLU CWD* choice in the first dropdown. Select the layer as dictated by guidance in your state or choose the option you believe will provide the best clarity.
- Select the *Site CWD* OR the *Site CLU CWD* layer in the second dropdown.
Hint: Match the layer in the 2nd dropdown to the choice in the 1st dropdown.
- If you have digitized PJWs for the site, select *Site PJW* in the next dropdown.
- Choose options for whether to include the *Site Drainage Lines* layers on the map and select that layer if so.
Note: Only activate the additional layers if you digitized content for them. Otherwise, leave those options blank.
- Select *Manual Pan and Zoom* for the method.
- Activate additional map output options as preferred
- Select the Image Layer to be used on the output map.



- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.

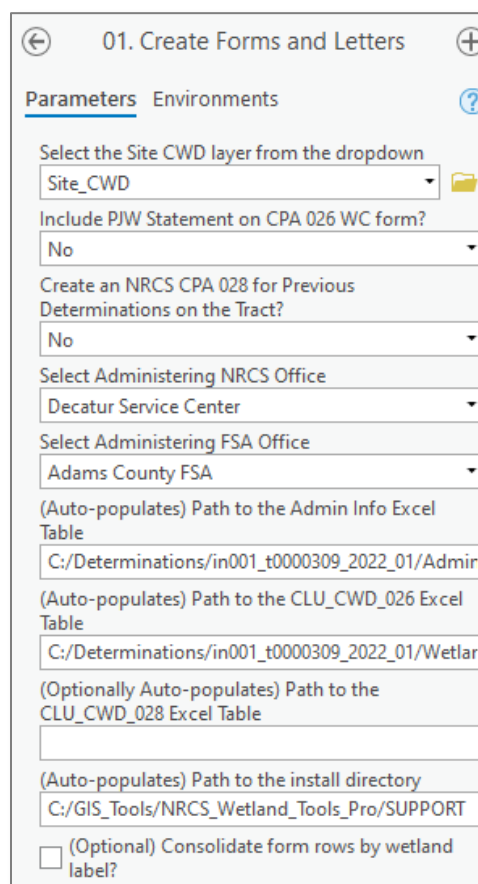
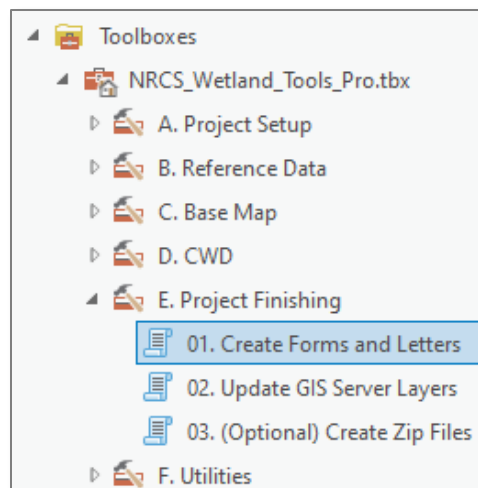
Review Export Base Maps Results

In *File Explorer* navigate to the *Wetlands* directory within the project folder. A *Determination Map* PDF should now exist. Open the *Determination Map* PDF and review the content. If you need to make adjustments and create the *Determination Map* again, close any open PDF(s) and rerun the *Export Determination Map* tool in ArcGIS Pro. Map PDF(s) must be closed to prevent file locks when replacing PDF files with a new run.

Lesson 19 – Tool E.01 Create Forms and Letters

Use this tool to generate an NRCS-CPA-026-WC form and client transmittal letter for the current project.

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **E. Project Finishing**.
- Double-click to open tool E.01.
- Complete the following entries in the E.01. tool:
 - Select the *Site CWD* layer in the first dropdown.
 - Select *Yes* or *No* to include the PJW statement in the remarks on the output 026 form (only set *Yes* if your map includes PJW points).
 - Select *Yes* or *No* for whether to create an NRCS-CPA-028 form summarizing previous determinations on the tract (only set *Yes* if the *Site Previous CLU CWD* layer exists in the project).
 - Select the NRCS office that will be sending out the letter.
 - Select the FSA office associated with the NRCS office that will be sending out the letter.
Hint: If the NRCS or FSA office lists are missing offices, refer to [Appendix F – Update and Import Office Addresses](#).
 - Wait for the *Admin Info Excel Table* and *CLU_CWD_026 Excel Table* paths to auto-populate before continuing.
 - (Optional) Select the option to consolidate form rows by wetland label, if desired.



01. Create Forms and Letters

Parameters Environments ?

Select the Site CWD layer from the dropdown
Site_CWD

Include PJW Statement on CPA 026 WC form?
No

Create an NRCS CPA 028 for Previous Determinations on the Tract?
No

Select Administering NRCS Office
Decatur Service Center

Select Administering FSA Office
Adams County FSA

(Auto-populates) Path to the Admin Info Excel Table
C:/Determinations/in001_t0000309_2022_01/Adminir

(Auto-populates) Path to the CLU_CWD_026 Excel Table
C:/Determinations/in001_t0000309_2022_01/Wetlar

(Optionally Auto-populates) Path to the CLU_CWD_028 Excel Table

(Auto-populates) Path to the install directory
C:/GIS_Tools/NRCS_Wetland_Tools_Pro/SUPPORT

☐ (Optional) Consolidate form rows by wetland label?

- Click **Run**. The tool will run to create the output form(s) and client letter in separate Word documents that are stored in the *Wetlands* directory of the project folder. You may encounter warnings when running these tools, but the warnings are not critical if the documents generate and open. If you encounter errors (red status), click *View Details* to review the errors. Make corrections and rerun the tool.

United States Department of Agriculture
Natural Resources Conservation Service

NRCS-CPA-026-WC
August 2020

CERTIFIED W

1. Name:	Example Client
3. Address:	4352 Test St, Suite 200, Indianapolis
5. Request Form:	AD-1026
7. Request Date:	01/25/2022

This certified wetland determination identifies areas of wetlands under the Food Security Act, as amended. See the attached **Definition** currently authorized activities under the Act.

Field	Label
1	PC/NW
3	NW
3	PC/NW
3	W

9. Remarks

I certify that the above determinations are sufficient for program benefits and were conducted in accordance with the Food Security Act Manual.

10. Signature Designated Conservationist:

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United States
Department of
Agriculture

Natural Resources Conservation Service

Wednesday, March 16, 2022

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

975 S. 11th St
Decatur, IN 46733
Phone: (260) 724-4124
Fax: (855) 391-1916

Example Client
4352 Test St, Suite 200
Indianapolis, IN 99999

SUBJECT: Wetland Preliminary Technical Determination

TRACT: 309
Administrative County: Adams, Indiana

This is to notify you the Natural Resources Conservation Service (NRCS) has made a certified wetland determination on the tract listed above. This preliminary technical determination (PTD) is made in accordance with the wetland conservation provisions of the Food Security Act of 1985, as amended, and was made in response to the completion of form AD-1026 dated on January 25, 2022.

In order to maintain USDA program eligibility, program participants must not produce an agricultural commodity on wetlands converted after December 23, 1985 and must not convert a wetland after November 28, 1990 for the purpose or to have the effect of making the production of an agricultural commodity possible.

The results of the PTD are shown on the enclosed NRCS-CPA-026-WC "Certified Wetland Determination" form. The determination was conducted in accordance with the National Food Security Act Manual, 1987 US Army Corps of Engineers (USACE) Wetland Delineation Manual, corresponding USACE Regional Supplements, and/or State Offsite Methods for Wetland Identification.

Wetlands are identified through the confirmation of three factors:

Presence of Hydrophytic Vegetation:
Hydrophytic vegetation means plants growing in water or in a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content (7 CFR § 12.31(b)).

Presence of Hydric Soils:
Hydric soil means soil that, in its undrained condition, is saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation (7 CFR § 12.31(a)).

Presence of Wetland Hydrology:
Wetland hydrology means inundation or saturation by surface or groundwater during a growing season at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation (7 CFR § 12.31(c)).

The 2014 Farm Bill connected producer eligibility for Federal crop insurance premium subsidy to compliance with the wetland conservation provisions. Eligibility for most USDA programs is lost for any wetland conversions that have occurred after December 23, 1985. However, only wetland conversions that occur after February 7, 2014 result in ineligibility for the Federal crop insurance premium subsidy.

If you agree with this PTD, it will become final 30 calendar days after you receive this notification, and no further action is required.

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USDA is an equal opportunity provider, employer, and lender.

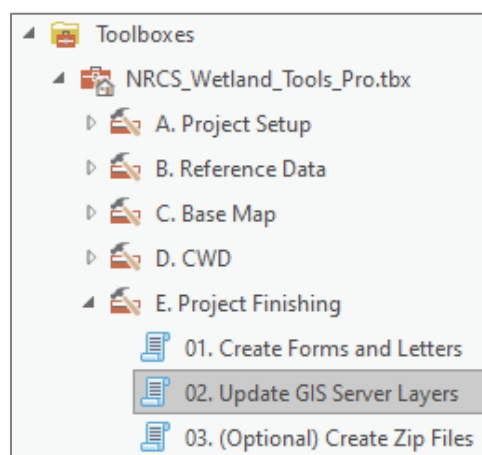
- Review the outputs. If you need to rerun tool E.01. for any reason, close the documents prior to rerunning to avoid file locks.
- Adjust the documents as needed, performing edits in Word.
- Save the documents as PDFs and digitally sign them, if needed. Then close the documents.

Lesson 20 – Update GIS Server Layers (E.02.)

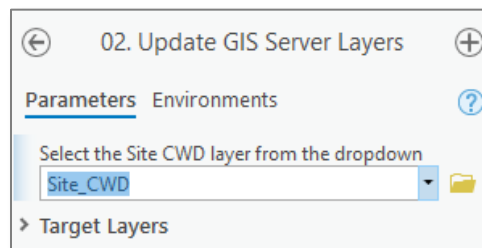
Use this tool to upload data to the GIS Servers. This can be done as soon as the preliminary determination is complete and ready to issue. You do not have to wait until appeal rights have been exhausted prior to upload. If corrections or appeals result in changes, a workflow to revise and update the data on the servers can be followed. Uploads to the GIS Servers do not include documentation attachments. Documentation should be uploaded separately in the Document Management System as part of a case in Conservation Desktop or HELC/WC Tracker. Rerunning this tool is safe to do and will not post data for the current project twice, but it will post revisions as needed (see the lesson on *Revision Workflows*).

IMPORTANT: If you are working in the training template with the training toolbox, data will upload to the *GIS Testing Portal*. Work saved on the *GIS Testing Portal* is not permanent and is subject to replacement or erasure when new versions are tested. If you are working with actual cases in the production (non-training) template and toolbox, data will upload to the *GIS-States Portal*. Work saved on *GIS-States Portal* is legacy data that is preserved and will require revisions or interventions to adjust further, if needed.

- Use the *Portal Status* menu in the top-right corner of ArcGIS Pro to verify you are connected to the correct server (*GIS-States* for production; *GIS Testing* for training). You may need to sign-out and sign-in again to refresh your authentication prior to running this tool.
- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **E. Project Finishing**.
- Double-click to open tool E.02.
- Complete the following entries in tool E.02.:
 - Select the *Site CWD* layer from the dropdown.



Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool. A common error for this tool is that you are not signed into the server, or you have a bad token. If you get this error, use the *Portal Status* menu in the top-right corner of ArcGIS Pro to sign-out and then sign-in to the specified portal again and rerun tool E.02.



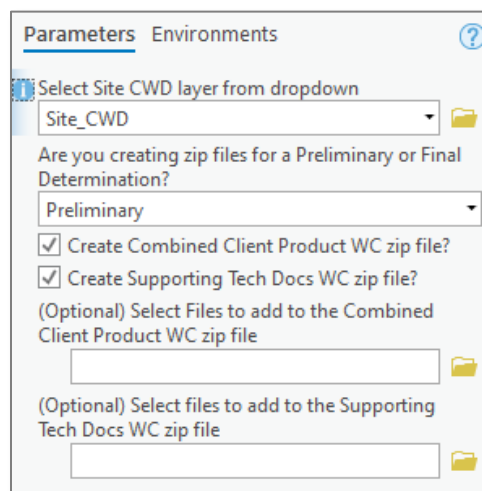
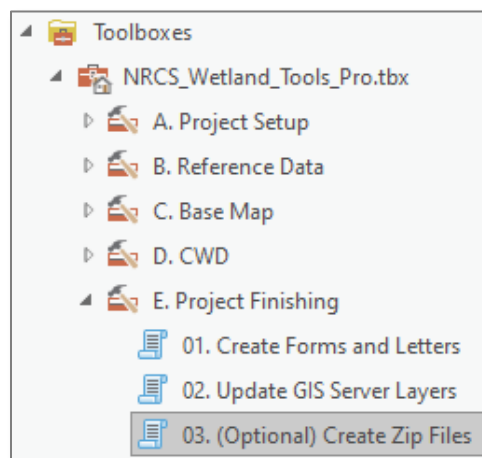
Lesson 21 – Create Local Zip Files (Optional) (E.03.)

Use this optional tool to create a zip file in the *Wetlands* directory of the project folder that can be used to store the products and documentation to go with the project. The zip file can be used for manual upload to the DMS or CD systems, as needed. Use of this tool is not required if you'd prefer to manually manage project related files or zip files (manual file management is recommended).

Special: This tool also exports a shapefile copy of the *Site CWD* layer stored in the coordinate system of your template to the *Wetlands* directory of the project folder but does not place it in the zip file(s).

WARNING: Rerunning this tool will delete zip files of the same names. Only add content to zip files as copies; do not add content to zip files and then remove the files from their source locations to avoid accidental deletion.

- In the Catalog Pane, expand **Toolboxes** → **NRCS Wetland Tools Pro.tbx**.
- Expand **E. Project Finishing**.
- Double-click to open tool E.03.
- Complete the following entries in tool E.03.:
 - Select the *Site CWD* layer from the dropdown.
 - Specify whether the zip file being created is for a preliminary or final determination. The preliminary or final status will be created as part of the zip file name(s), per this choice.
 - Check either the *Combined Client Product* option, the *Supporting Tech Docs* option, or both options. If you don't check at least one option, no zip files will be created.
 - Additional optional parameters will be added to allow you to select files to be added to either zip file that you selected. Use the browse folder to navigate to and select additional file(s) to add to the zip file that will be created. Each time you use the browse folder, additional lines will be added to allow you to select more files.
- Click **Run**. Wait for the tool to complete successfully. If you encounter errors (*red* status), click *View Details* to review the errors and try to rerun the tool.



Lesson 22 – Previously Determined Areas (No Revisions)

This lesson describes how to follow the WC Tool workflow without changing previously determined areas to create a Previous Determinations Map and an NRCS-CPA-028 report, but only for areas that were previously digitized in the WC Tool for ArcGIS Pro. The NRCS-CPA-028 and associated documents do not replace the original determination documents and do not alter any existing determinations or decisions. Overlaying the extent of updated CLU data, if changed since the original determination(s), or aggregating summaries of labels from multiple previous determinations may alter the CLU field framework and acreage totals on Previous Determination Map and NRCS-CPA-028 form compared to original products but does not represent any change to previous determinations.

Note: Previous determinations can only be generated by the WC Tool if digitizing for those locations exists within the national layer(s) associated with the WC Tool. Previous determinations that are not digitized can be provided according to current policy without the tool

New Request with Previous Determinations Present

In this scenario, you have a new request for a part of a tract that has not yet been determined, another part of the tract has been previously determined, and the previous determined area is not being revised. You have two options for working with this data – 1) New Request Only or 2) New Request and Previous Determinations Report.

New Request Only

In this option, conduct the normal workflow for a new determination request, with the following changes to produce only new determination products without previous determination products:

- Define only the newly requested area for determination without overlap of previous determinations, in which case, disregard the rest of the bullet points under this option and complete the new request normally.
OR
- Define the request extent to cover the previous determination and new request area, or for the entire tract, and note the remaining bullet points in this option as process adjustments.
- If the defined request extent covers a previously determined (and digitized) area, then a *Site Previous CLU CWD* layer will load in the project. You can simply deactivate its visibility and ignore it throughout the process while also skipping any tools that involve or reference previous determinations or the *Site Previous CLU CWD* layer.
- *Create Base Map* layers will download previously mapped sampling units and integrate them in the *Site Sampling Units* layer (if the request extent covered the previously determined areas), but they will have a status of *Certified-Digital*. This status should not be changed (this scenario is not a *Revision*) and it will automatically mask them from being shown on the new base map during *Export Base Map*. The previous sampling unit shapes could be useful for snapping if your new request extent is immediately adjacent to the existing determination(s).
- *Create CWD Layers* will not carry forward any previously determined (*Certified-Digital* status) sampling units and you can complete the remaining process as normal.

New Request and Previous Determinations Report

In this option, conduct the normal workflow for a new determination request, with the following changes to additionally produce a previous determinations map and report (NRCS-CPA-028):

- Define the request extent to cover the previous determination and new request area OR for the entire tract.
- If the defined request extent covers a previously determined (and digitized) area, then a *Site Previous CLU CWD* layer will load in the project.
- *Create Base Map* layers will download previously mapped sampling units and integrate them in the *Site Sampling Units* layer (if the request extent covered the previously determined areas), but they will have a status of *Certified-Digital*. This status should not be changed (this scenario is not a *Revision*) and it will mask them from being included on the base map for the new request. The previous sampling unit shapes could be useful for snapping if your new request extent is immediately adjacent to the existing determination(s).
- *Create CWD Layers* will not carry forward any previously determined (*Certified-Digital* status) sampling units.
- *Create CWD Map Layers* will automatically create tables needed for an NRCS-CPA-028, but you do not need to use any different parameters than normal. Select the *Site CWD* layer as normal and the tool will automatically find any downloaded previous determination data in the project and process it.
- After creating the normal determination map, run the optional *Export Prev Det Map (D.05.)*. This tool is very similar to the *Export Determination Map* tool, except it uses the *Site Previous CLU CWD* in its parameters and it outputs a *Previous Determination Map* in the *Wetlands* directory of the project folder.
- When running the *Create Forms and Letters* tool (E.01.), set the option to *Create an NRCS CPA 028 for Previous Determinations on the Tract?* to “Yes”. This will automatically generate the 028 in addition to the normal form and letter for the new request with only the new request data on the 026 form and only the previously determined data on the 028 form. There is no output letter for the 028 form.
 - If you enable the optional *Consolidate form rows by wetland label?* parameter, only the 026 gets consolidated. Due to complications presented by label and certification date combinations, the 028 form is not covered by this option.
- Run *Update GIS Server Layers*, as normal. Only the new request data will upload.

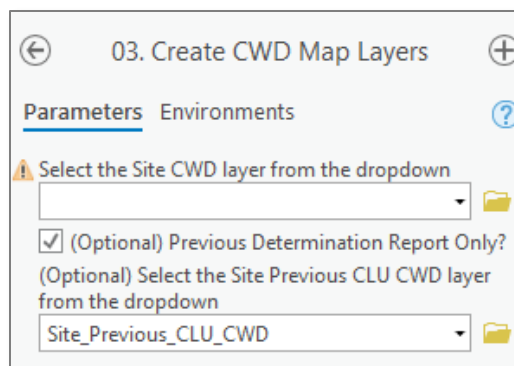
Create an NRCS CPA 028 for Previous Determinations on the Tract?

Yes

Previous Determinations Report Without a New Determination Request

In this scenario, you have a request for an NRCS-CPA-028 report for a site and there is no request for new or additional determinations on any other part of the same tract. Also, digitized determinations must exist in the national layers for this process to work and they are not being revised (otherwise see the lesson on *Revision Workflows*). Conduct the following steps to produce a previous determinations map and NRCS-CPA-028 report without doing any new determinations on the tract.

- Start a new project as normal.
- Run *Create Wetlands Project (A.01.)*
- Run *Enter Project Info (A.02.)*
- Run *Define Request Extent (A.03.)* setting the *whole tract* parameter as “Yes”. If previous determinations are found, a *Site Previous CLU CWD* layer will be downloaded and added to the map, and you can continue. If not, no previous determinations have been digitized at the site and you cannot create a previous determinations report with this tool.
- After the request extent is created and *Site Previous CLU CWD* has been added to the map, skip the normal workflow, and proceed directly to the *Create CWD Map Layers (D.03.)* step.
- Run *Create CWD Map Layers (D.03.)* and set the parameters as follows:
 - Do not select a *Site CWD* layer
 - Enable the option for *Previous Determination Report Only?*
 - Select the *Site Previous CLU CWD* layer in the new dropdown parameter that appears. DO NOT use the browse folder.
- Run *Export Prev Det Map*. This tool is very similar to the *Export Determination Map* tool, except it uses the *Site Previous CLU CWD* in its parameters and it outputs a *Previous Determination Map* in the *Wetlands* directory of the project folder.
- DO NOT run *Create Forms and Letters*.
- Run *Create 028 Form Only (E.01a.)*. This tool is very similar to the *Create Forms and Letters* tool when completing its parameters, except it does not require selection of offices to define return addresses because it does not create a letter. It only creates an NRCS-CPA-028 form.
- DO NOT run *Update GIS Server Layers*.



Lesson 23 – Revision Workflows

This lesson describes the procedures to conduct revisions to digitized determinations in the WC Tool both for current requests that are in progress and for previously determined areas. The scenarios in this lesson highlight changes to the normal workflows where needed to successfully make revisions, complete new products, and upload new data.

Correction, Before Upload, From Original Project Folder

This scenario describes how to make a correction to a step you've already completed in the standard WC Tool workflow for a new (current) request AND you have not yet uploaded the results of this project to the national layers. This scenario implies that the current project is still in progress and no changes are being made to any previous determinations that may incidentally be present on the site.

- Backtrack in the workflow to the lesson or step where you need to make a correction, and either rerun the appropriate tool or make editing corrections. Then continue forward in the normal workflow from that point. Any steps you previously completed after that step are subject to possibly being erased and redone. Only backtrack as far as needed to make your correction or revision (e.g., you don't have to start completely over just to correct a label).
- Continue forward through the process as normal from the point to which you backtrack, completing all subsequent steps, with the following exceptions:
 - Changes to the reference maps are completely self-contained to the reference maps toolset.
- The *Evaluation Status* for the sampling units and/or CWD polygons within the request extent for the new request (current request) should remain set as *New Request*. The *Revision* status is not needed for this kind of correction.
- If you need to take the drastic step of regenerating any of the layers created by the *Create Base Map Layers* or *Create CWD Layers* tools, any subsequent work or layers generated later in the process will be lost and need to be redone. Symbology and labels will also reset to default for those layers. To reset any of those layers, expand the *Reset Layers* section of the given tool and set the related prompt for whether to reset a given layer to "Yes". If you reset the *Site Sampling Units* layer in *Create Base Map Layers*, be sure to also reset the *Site CWD* layer later in *Create CWD Layers*.
- If you make mapping changes, be sure to run new versions of the related export maps tool(s).
- If you are making corrective edits to a layer due to validation error messages, make and save edits and then redo the validation until it passes. Then continue forward from that point.

Correction, After Upload, From Original Project Folder

This scenario describes how to make a correction to a step you've already completed in the standard WC Tool workflow to a new (current) request AND you *have* already uploaded the results of the current project to the national layers at least once. It also assumes that you still have the original project folder on your system (you do not need to create a new project folder). This scenario implies that the current project is still in progress and no changes are being made to any previous determinations that may incidentally be present on the site. An example of this scenario is noticing and correcting a typographic or labeling error after creating products but before issuing them to the client(s).

- Follow the same process as the *Correct New Request Only, Before Upload* scenario. Any changes you make will automatically be reflected when you run the *Update GIS Server Layers* tool because you still have the original project and its Job ID (identifier), which is used to replace features from the same job in the national layers.
- No special action is necessary to account for any possible reduction in the mapped extent of the determination and its polygons. Feature replacement in the national layers is automatic in this scenario.

Correction, After Upload, From New Project Folder

This scenario describes how to make a correction to an uploaded determination from a project folder that is created by a different user than the original digitizer. In this scenario, either the original digitizer no longer has the local project folder they used to create the determination, or a different user is making a correction for some reason. This is intended as a very short-term correction scenario, and not an official revision over the long term. There are two options for this scenario – 1) Correction Without Reduced Area or 2) Correction with Reduced Area.

Correction Without Reduced Area

In this option, the correction does not involve a reduction in the total determined area (no uploaded areas were part of an incorrect extent which would be considered Not Inventoried) and therefore no deletion of extraneous features from the national layers is needed. Uploading corrected data will overwrite the national layers with the corrections, where applicable.

- Start a new project folder as normal.
- When defining the request extent, define enough extent to be sure to download the existing features to be corrected. Match the original extent, if possible. If uncertain, overestimate the extent, up to the extent of the full tract and then trim any unneeded excess later while editing the *Site Sampling Units* layer.
- While digitizing the *Site Sampling Units* layer, change the *Evaluation Status* of any previously determined sampling units in need of correction from *New Request/Certified-Digital* to *Revision*. For any geometry changes to shared edges between such sampling units, be sure to change polygons on both sides. Also be sure to cover enough area to fully update the subsequent *Site CWD* shapes as well (such as if many sampling units were merged into a larger CWD polygon).
- Complete the remaining process as normal. Data marked as *Revision* will overwrite the data in the same area on the national layers during *Update GIS Server Layers*.

Correction with Reduced Area

In this option, the correction does involve a reduction in the total determined area (some uploaded areas were part of an incorrect extent which would be considered Not Inventoried) and therefore deletion of extraneous features from the national layers might be needed. Uploading corrected data will overwrite the national layers with the corrections, where applicable, but the State Tool Administrator is required to delete any extraneous features that were incorrectly uploaded.

- Complete the same steps as the *Correction Without Reduced Area* option.
- After completing upload of the new features, contact your State Tool Administrator and work with them to identify extraneous features in the national layers to be deleted. The State Tool Administrator has access to directly edit the national layers and has tips in the *State Tool Administrator Guide* for what data elements to delete, but they are repeated here for their convenience and your mutual understanding:
 - Work with the data service layers in ArcGISPro to delete only the specifically selected data from the national layers (to have Undo/Discard capability).
 - Select only specific features from the national layer(s) to delete (not all features).
 - Never Select All features.
 - Search for the original/old Job ID(s) in the national layers to find extra features or tiny features that may need to be deleted.
 - Delete excess features in the national *Sampling Units*, *ROPs*, *CWD*, and *CLU CWD* layers. Data may also need to be deleted from the *Reference Points*, *Drainage Lines*, or *PJW* layers, if applicable.
 - Data related to the removed areas from the correction may need to be deleted in the *CWD Summary Points* and *CWD Summary Areas* layers if remnant points and areas exist that would be considered not inventoried (e.g., do not delete the summary data for the corrected request; only the remnant summary data trimmed off from the corrected request and then only if the remainder would be considered Not Inventoried).
 - Data does not need to be deleted from any of the Archive or Master versions of the above national layers. Those layers act as a legacy recovery data copy in case of problems.

Revisions, After Upload, From New Project Folder

This scenario describes how to revise existing determination data that has been updated to the national layers, after the data has been uploaded, and assuming a new project folder must be created. If the original folder is available, use that folder and follow the *Correction, After Upload, From Original Project Folder* scenario. This scenario assumes no reduction in determined area(s), and only revisions to determined areas. If a determination is being reduced or rescinded, see the *Rescind* process.

- Start a new project folder as normal.
- When defining request extent, define enough extent to be sure to download the existing features to be revised. Match at least the original extent, if possible. If uncertain, overestimate the extent, up to the extent of the full tract and then trim any unneeded excess later while editing the *Site Sampling Units* layer.

- While digitizing the *Site Sampling Units* layer, change the *Evaluation Status* of any previously determined sampling units in need of correction from *New Request/Certified-Digital* to *Revision*. For any geometry changes to shared edges between such sampling units, be sure to change polygons on both sides. Also be sure to cover enough area to fully update the subsequent *Site CWD* shapes as well (such as if many sampling units were merged into a larger CWD polygon).
- Complete the remaining process as normal. Data marked as *Revision* will overwrite the data in the same area on the national layers during *Update GIS Server Layers*.

Rescind, After Upload

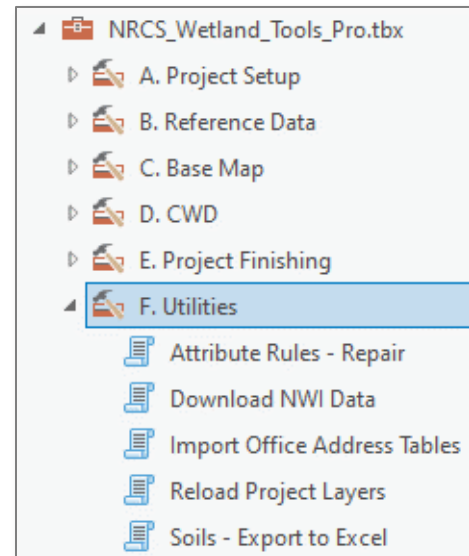
This scenario describes how to rescind determination data in the national layers for the WC Tool after it has been uploaded. It requires the support of the State Tool Administrator. This process only describes the steps necessary to remove data from the national layers.

- Contact the State Tool Administrator and provide the necessary information for the location (tract, specific features, etc...) to be deleted. The State Tool Administrator will need to delete data from the national layers with the following considerations:
 - Work with the data service layers in ArcGIS Pro to delete only the specifically selected data from the national layers (to have Undo/Discard capability).
 - Select only specific features from the national layer(s) to delete (not all features).
 - Never Select All features.
 - Search for the original/old Job ID(s) in the national layers to find extra features or tiny features that may need to be deleted.
 - Delete rescinded features and their related data in the national *Sampling Units*, *ROPs*, *CWD*, and *CLU CWD* layers. Data may also need to be deleted from the *Reference Points*, *Drainage Lines*, or *PJW* layers, if applicable.
 - Data features corresponding to the removed areas should also be deleted in the *CWD Summary Points* and *CWD Summary Areas* layers.
 - The corresponding data features should also be deleted from the Archive or Master versions of the above national layers. Those layers act as a legacy recovery data copy in case of problems, and rescinded data should be removed to not be confused with lost official data.

Appendix A – Utilities (Toolset F.)

This appendix details the various utilities provided in the *NRCS Wetland Tools Pro* toolbox and their basic uses. The tools in this toolset are typically administrative or extraneous. Access the *Utilities* toolset by expanding the *NRCS Wetland Tools Pro* toolbox in the *Catalog Pane* and then expanding *F. Utilities*. To use any of the tools in this section, as needed, open one and follow the prompts in the tool.

- **Attribute Rules – Repair:** This tool is used as a troubleshooting option to unlock errors with the various base map and CWD editable layers if other editing lock troubleshooting options have been exhausted. It restores the links between those layers and the administrative table created by the *Enter Admin Info* tool to facilitate behind the scenes auto-population as well as automated measurement updates (acres and lengths).
- **Download NWI Data:** This tool is used to download NWI data from the GeoPortal web service for the current project. It is used if the automatic download of NWI during *Create Wetlands Project* fails for some reason (such as if the NWI data service was not responding when the project was created).
- **Import Office Address Tables:** This tool is used to import a revised list of NRCS and FSA offices from the *NRCS Address* spreadsheet for use in tool E.01. More details on its use are covered in *Appendix F*.
- **Reload Project Layers:** Use this tool to reload any business or operational layers from the WC Tool that have been removed from the project for any reason WITHOUT losing edits from the layer. This is the method to use to reload accidentally removed layers so that all attribute rules and other schema settings are properly maintained for the layers.
- **Soils – Export to Excel:** Use this tool to export an excel table of the SSURGO data at any time. This process is now automated as part of the SSURGO download tool but is still provided here in case of any manual change to the SSURGO table for any reason (not advised).



Appendix B – Base Map Development

The WC Tool requires development of a base map for determinations. The technical expert in charge of delineations should have knowledge of project area identification and sampling unit delineation concepts described in the 1987 Corps Manual and the Food Security Act Wetland Identification Procedures (FSA Procedures). The information below addresses the application of the policy within the context of the WC Tool. Users should follow agency policy and State-specific instructions.

Background

The wetland base map is a critical component of the agency administrative record, as the findings documented on the base map inform the eventual decision on the wetland type (Food Security Act label) and will be used to make the Certified Wetland Determination Map. The base map should include the following:

- Delineation and size of the project area
- Delineation and numeration of unique sampling unit(s)
- Location and year of drainage features/manipulations (if present)
- Location of representative observation point(s) (ROP)
- Denotation on each sampling unit, “y” or “n” (yes or no) indicating whether the area is a wetland under normal circumstances.

The imagery year selected for the base map should reflect normal environmental conditions (the wet portion of a growing season during a normal climatic year). Refer to FSA Procedures, paragraph (2-11). If such an image is not readily available, the user may select an image year according to best professional judgment, or per their respective State’s guidance. A note should be recorded in the case file of the conditions reflected on the base map (e.g., wetter or drier than normal, or image reflects recent (post-1985) activity, etc.).

Identification of the Project Area

The project area corresponds to the terms *Request Extent* and *Request Extent Layer* in the WC Tool. This area should correspond to the area identified by the referral document and its attachments, if any. The WC Tool uses tool A.03. *Define Request Extent* to identify the project area. Refer to the *Define Request Extent* lesson for full documentation of how to identify the project area with the WC Tool. Please note the following considerations when using this tool:

- **Considerations when using Tool A. 03. – Define Request Extent:**
 - Select or create and select an area using the *Site Define AOI* layer that matches the area identified by the referral document(s).
 - Fields or parts of fields not requested for determination by the referral document(s) and areas that were previously determined should not be selected. If a previously determined area is selected *and if* that determination is stored in the national layer for this tool, the previously determined area will be trimmed from the *Request Extent* layer produced by this tool and handled separately, for reference.
 - The resulting *Request Extent* will be the basis for the scope of the base map to be produced. All areas within the *Request Extent* will need to be determined, so keep this in mind as you identify the scope of the request.

Create Base Map Features

The *Request Extent* layer created by the *Define Request Extent* tool (A.03.) is used to establish the scope of the minimum area to map on the base map. The *Create Base Map Features* tool (C.01.) is used to convert the *Request Extent* layer into a starting *Sampling Units* layer. It also generates blank *Site ROPs*, *Site Drainage Lines*, and *Site Reference Points* with template symbology and labels for digitizing those elements on the base map, as needed. Prior to running the *Create Base Map Features* tool, confirm that the *Request Extent* layer contains the correctly defined scope for the determination request. If not, adjust the *Site Define AOI* layer and rerun the *Define Request Extent* tool before running this tool. Refer to the *Create Base Map Features* lesson for full documentation of how to run this tool.

Divide Project Area into Sampling Units

Sampling Units (SU) are identified as having a unique “vegetative unit” or “landscape unit” and are selected based on having (or would have) similar plant communities resulting from similar soil properties, hydrologic regimes, and landscape positions. Refer to FSA Procedures, paragraph (2-12). When determining the number and location of SU, the agency expert may utilize:

- Prior wetland inventories or non-certified determinations
- Vegetation patterns and hydrology signatures observed in aerial imagery representative of normal circumstances
- USFWS National Wetland Inventory (NWI) maps or data
- Data from the soil map or Hydric Soil List
- LiDAR contours and hillshade
- Topographic data or other data that may be useful in identifying unique plant communities resulting from similar soil properties, hydrologic regimes, and landscape positions.

Look for changes from convex, upland landscape positions to broad flat toeslopes, concave depressions, and drainageway positions. Each feature from the above resources may indicate a unique SU. Use the GIS editing tools in ArcGIS Pro to edit the *Sampling Units* layer and define any needed SU. Refer to the *Editing Base Map Layers* lesson for full documentation of editing procedures.

- **Considerations when editing the *Sampling Units* layer:**
 - Use the *Split* and *Merge* tools to edit the *Sampling Units* layer. Do not use any *Create* features tools to create new polygons within the requested determination extent.
 - Sampling Unit Numbers do not need to have any correlation to CLU field numbers.
 - When attributing the *Sampling Units* once they are defined, consult your technical support chain for conservation compliance regarding any questions on assigning an appropriate *Determination Method* to each sampling unit.
 - When attributing identical SU that are non-adjacent, you can either:
 - Assign a unique Sampling Unit Number and ROP per delineation
 - OR
 - Assign a single Sampling Unit Number to all applicable SU and assign each applicable SU a unique Sampling Unit Letter. Then set one primary ROP for the linked SU and assign that ROP number to all applicable SU's *Associated ROP* attribute.

Describe Representative Observation Points

The Representative Observation Point (ROP) is the location where a Data Form will be completed to describe the SU and whether the three wetland criteria are met. Typically, the ROP will be annotated approximately halfway between the edge of the SU and the center of the SU and will not be located within a surface ditch or pit, if present. However, unique site characteristics or remote data set quality (e.g., cloud cover) may require flexibility in the location of any ROP. Factor indicators (remote or field) must be identified in the approximate ROP location and Flexibility (1987 Corps Manual, page 8, paragraph 23) may be invoked.

The WC Tool provides functions to digitize the location of a Representative Observation Point (ROP) and an identifying number for it, but no Data Forms are integrated in the tool. Data Forms are implemented by states and can refer to the digitized ROP by its number. Please consult with your conservation compliance support chain regarding questions about Data Forms.

The WC Tool also provides an attribute in the *Sampling Units* layer to answer the basic question for whether the site is a wetland under normal circumstances (“Y” or “N”) for each SU based on the data gathered at the ROP and documented on the external Data Form. A Data Form, whether it be a State-specific data sheet or one from the appropriate Regional Supplement, is necessary for each ROP. The Data Form for a given ROP represents the entire SU to which it corresponds. Once a determination is made as to whether the criteria for wetland are met at the ROP, enter a corresponding “Y” for yes or “N” for no in the *3-Factors?* attribute for each SU in the *Sampling Units* layer.

Use the GIS editing tools in ArcGIS Pro to edit the *ROPs* layer and create any needed ROP locations. Refer to the *Editing Base Map Layers* lesson for full documentation of editing procedures.

- **Considerations when editing the ROPs layer**
 - Use the Create tool to place ROPs.
 - Enter a unique ROP number in the attributes for each created ROP.
 - Ignore the *Associated Sampling Unit* attribute. This will be auto-populated when subsequent validation tools are run in the WC Tool workflow.
 - If needed, update the *Associated ROP* attributes in the *Site Sampling Units* layer. All *Site Sampling Units* must have an *Associated ROP Number*. Non-adjacent SU tied to the same ROP can be assigned the same *Associated ROP Number*.

Describe Drainage Features, if present

NRCS evaluates the effects of drainage on agricultural lands within the drain’s zone of influence (which has unique hydrology under normal circumstances), and not the physical drain itself. Record the location and year of drainage features/manipulations, if present, on the base map. Refer to your conservation compliance support chain for guidance related to types of Pre- and Post-1985 drainage features that should be expected and described. Examples include ditches, manipulated natural water courses, underground tile, etc.

The WC Tool provides a *Drainage Lines* layer to digitize any needed drainage features and a basic set of attributes. Refer to the *Editing Base Map Layers* lesson for full documentation of editing procedures.

Describe Site Reference Points, if present

When one or more of the 3 wetland factors cannot be evaluated within a SU, NRCS may identify reference location(s) outside the SU that describe the factor.

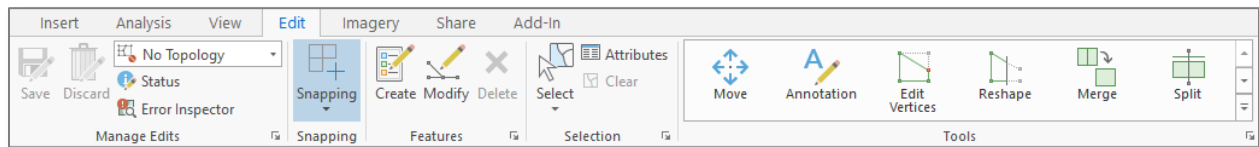
The WC Tool provides a *Reference Points* layer to digitize any needed reference point features and a basic set of attributes. Refer to the *Editing Base Map Layers* lesson for full documentation of editing procedures. For each reference point, enter the *Parent ROP* value as the *ROP Number* that goes with the current *Reference Point*. Also indicate whether the current *Reference Point* documents *Hydrology*, *Vegetation*, or *Soil*. The attributes for these factors default to No, but at least one should be switched to Yes, as applicable for the digitized reference point.

Appendix C – Basic Editing in ArcGIS Pro

This appendix provides basic details for how to edit in ArcGIS Pro. It is not comprehensive and if you need further assistance, you should request it from your State Tool Administrator and/or State GIS Specialist, as well as request options for possible ArcGIS Pro training courses from ESRI.

Edit Tab

Most functions and tools needed for editing will be found on the *Edit* tab of the ArcGIS Pro *Ribbon* when a map view is active. The buttons on the *Edit* tab will often be used to open additional panes with more tools and functions used for the actual edits. The *Edit* tab also has a *Tool Gallery* area (right-side of the below screenshot) that you can customize to show your favorite tools.



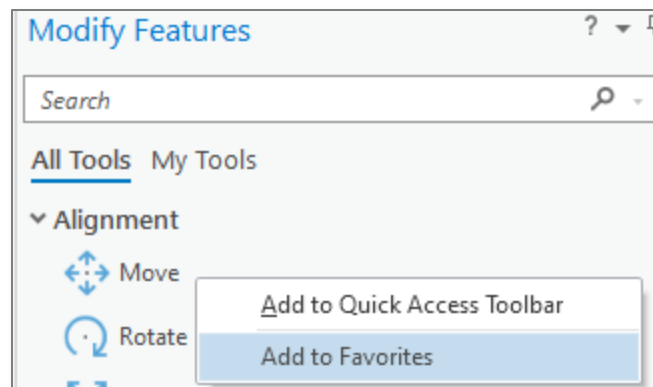
Create/Modify Features (General)

The edit tab contains a *Create* button and a *Modify* button. These buttons open additional panes that contain different tools for creating new features or modifying existing features, respectively.

You can add tools from the *Create* or *Modify* features panes to your Favorites tools list, which will in turn update the *Tool Gallery* on the *Edit* tab of the ribbon. To do so:

- Find a tool that you want to add (e.g., the *Move* tool in the *Modify Features* pane, shown below).
- Right-click the desired tool.
- Click *Add to Favorites* from the pop-up menu.

Note: if the tool is already in your *Favorites*, the option will be *Remove from Favorites* instead, which you should not click unless you want to actually remove it.

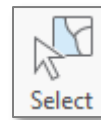


The *Create* and *Modify* features panes have a variety of features organized by thematic groupings for their functions. If you can't find a desired tool, use the *Search* bar at the top of the pane to find it. Once you find it, it's recommended that you add it to your *Favorites*, so that it's readily available.

Another way to access *Favorites*, besides the *Tool Gallery* on the *Edit* tab, is to click the *My Tools* link at the top of the *Modify* features pane or the *Favorites* link at the top of the *Create* features pane. Remember to switch back to the *All Tools* or *Templates* links at the top of the *Modify* or *Create* panes, respectively, to find tools that aren't in your *Favorites*, as needed.

Select Features

Many editing tools in ArcGIS Pro involve the step of selecting features. Often a select tool will be included directly in a given tool's pane, if necessary. Otherwise, the standard select features tool from the *Edit* tab or *Map* tab can suffice.

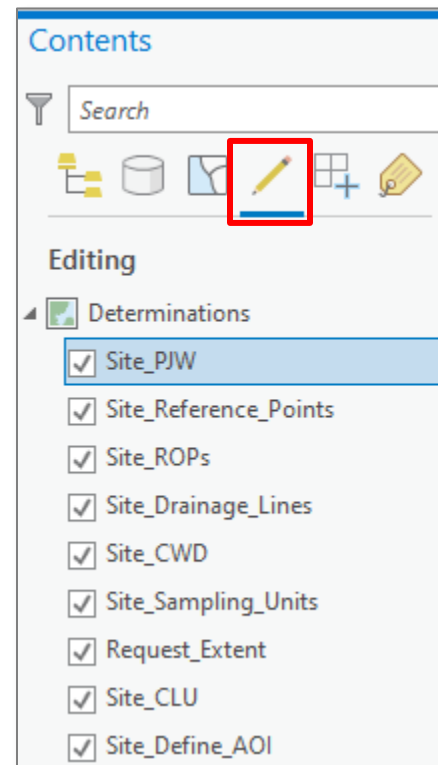


Start/Stop/Save/Discard Edits

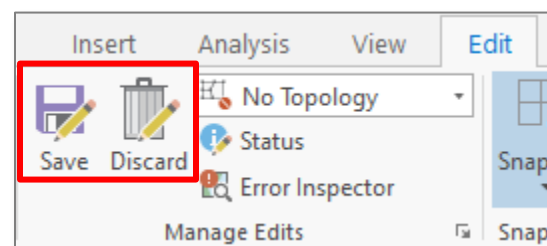
ArcGIS Pro does not use *Start Editing* or *Stop Editing* functions by default to open and close an edit session. However, ArcGIS Pro does include options to enable such settings. If your state has directed you to implement these optional settings in your projects, use them as directed. They will not interfere with the normal WC Tool workflow other than to start or stop editing, as needed. If these optional settings are not enabled, then any editable layer can be edited in a project at any time.

For normal ArcGIS Pro use, editing is possible on any editable layer in a map. You can control whether a layer is editable by clicking the *List By Editing* button at the top of the *Contents* pane for an active map. The checked layers will be editable. By default, the WC Tool sets the editable status as active for its operational or business layers when they are loaded. It is not recommended to disable the editable status of any of the business layers for the WC Tool, and instead to manage your edits by turning off the selectable or visible status of any given layer when it is not the focus of current edits.

If any layer has status problems regarding its ability to be edited, a warning or error icon will be displayed to the right of the layer in this list. The icon can be clicked or hovered for more details.



ArcGIS Pro does include a *Save [Edits]* button on the ribbon of the *Edit* tab. It is the icon of the save diskette with a pencil over it. This icon is labeled *Save*, but this should not be confused with saving the project. To clarify this difference, this user guide and its lessons refer to this button as *Save [Edits]*.



The *Discard* button is next to the *Save [Edits]* button and can be used to discard all currently pending edits and return your edited data to the state it was in prior to beginning edits or the state it was in the last time you used *Save [Edits]*. This is an undo for all pending edits.

Undo/Redo

ArcGIS Pro has *Undo* and *Redo* buttons on the *Quick Access Toolbar*. These can be used to undo or redo recent edits, until you click the *Save [Edits]* or *Discard* button. Once edits are saved or lost, the only recourse for more corrections is to perform additional edits.



Create Features (Points/Lines)

In the WC Tool workflow, the *Create* features tools should only be used to create points (Representative Observation Points, Reference Points, Potential Jurisdictional Water points) and lines (Drainage Lines). The *Create* tools should never be used to create polygons in any of the WC Tool polygon business layers.

To access the *Create Features* pane click the *Edit* tab, and then click the *Create* button.



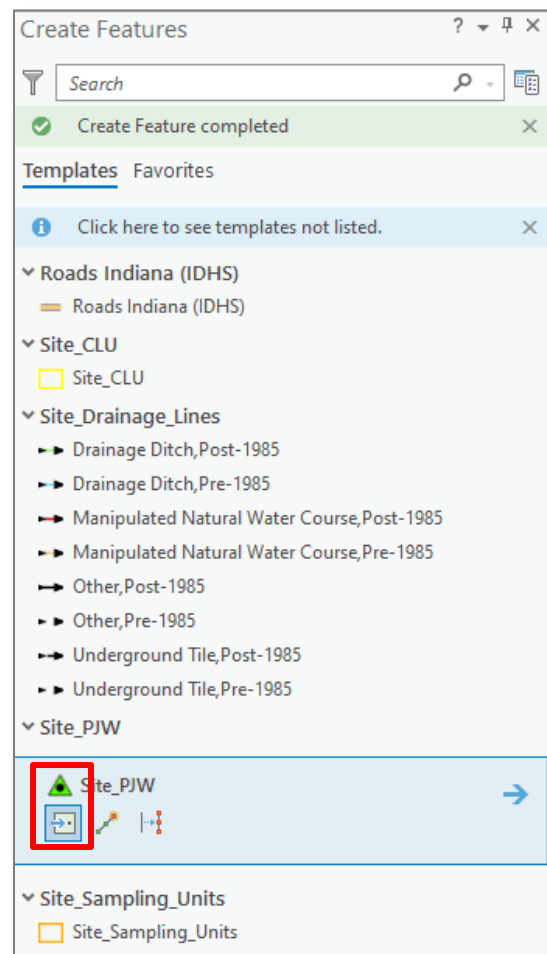
This will open the *Create Features* pane which will display a list of layers under the *Templates* tab for which you can create features. If a layer that you are expecting is not in the list of available layers, make sure the layer is set as visible in the *Contents* pane.

Warning: Even though operational polygon layers for the WC Tools are shown in this list, you should NOT create new features for those layers. You may also see incidental reference data that you added in this list. Do NOT create new features in your authoritative reference data layers.

Find the layer for which you want to create features and expand it to see its features (if not already expanded). Click a symbol of a feature to be created. For single symbol layers, it will be only that symbol. For unique (multiple) symbol layers, it will be a list of the available values used to symbolize that layer.

Next, click the *Point* or *Line* digitizing tool (typically the top-leftmost tool) beneath the selected symbol.

You can now digitize on the map with the active tool. The active symbology (and possibly related attributes to define that symbology) will be created for new features that you digitize.



When digitizing points, **single-click** at the desired location for a point. The point is immediately created and there is no need to press F2 or click the *Finish Sketch* button. Do not double-click, or else you risk creating two stacked points at the same location.

When digitizing lines, start and shape the line by using **single-clicks** to digitize. When finished, either double-click at the last point, right-click and choose *Finish*, press F2 on the keyboard, or click the *Finish Sketch* button from the editing toolbar that appeared over the map view. The latter options are useful if you cannot double-click at the last point for some reason. When digitizing drainage, start at the upstream end and digitize downstream in the direction of flow.



If needed, use *Undo* to undo a digitized point, or use *Cancel Sketch* to stop digitizing a line.

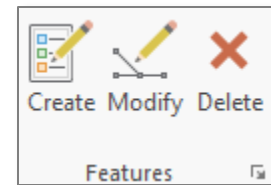
Delete Features (Points/Lines)

In the WC Tools workflow, the *Delete* features button should only be used to delete Site ROPs, Reference Points, Drainage Lines, or PJW points that are not needed for the current project, possibly as part of correcting or changing these features.

Warning: Never use delete to remove a polygon area from a WC Tool operational layer. Use the *Merge* tool under *Modify Features* instead.

To delete a feature:

- Click *Clear [selected features]* to clear any current selections.
- Use the *Select [Features]* tool to select the feature(s) to be deleted. Take extreme care through layer selectable status, editable status, or visible status to avoid inadvertently selecting unintended features from other layers, especially reference layers.
- Click the *Delete* button from the *Edit* tab.
- Review the results before clicking *Save [Edits]*. You do not want to save edits of deletions for critical data layers that cannot be easily recovered or recreated.

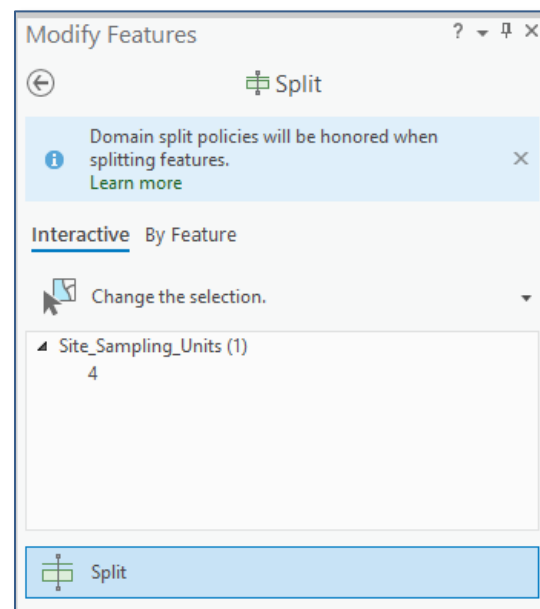


Split Features (Polygons)

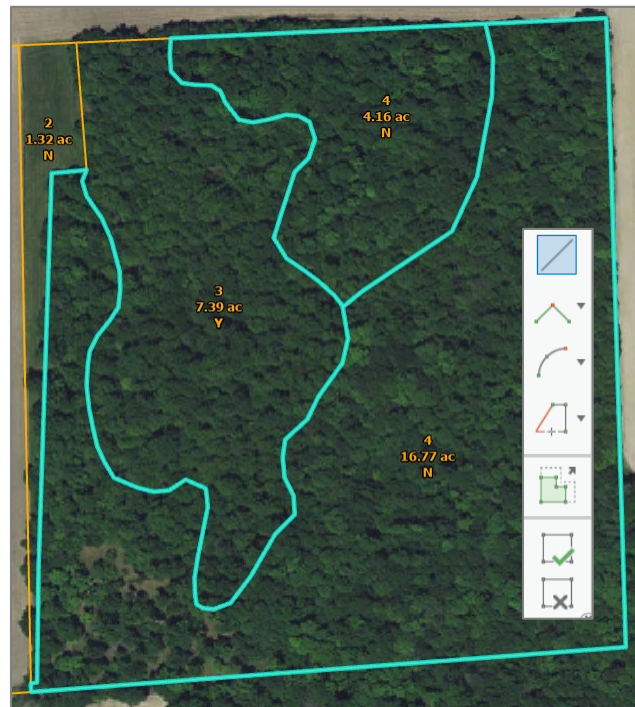
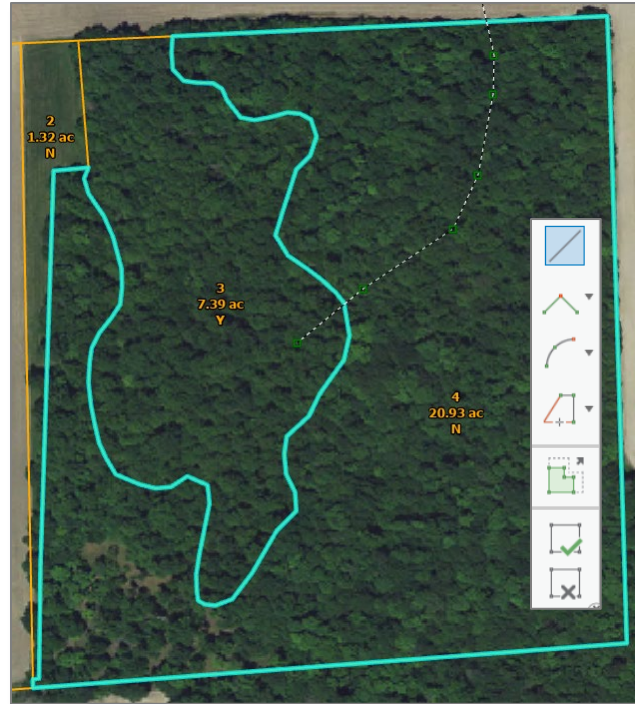
The *Split* tool is the primary tool for delineating extents within the WC Tool's business layers to sub-divide areas into different sampling units or determination areas. *Create* features should *NOT* be used to delineate polygon features in the WC Tool.

To split a feature:

- Click *Clear [selected features]* to clear any current selections.
- Access the *Split* tool from the *Tool Gallery* or your *Favorites* list. If *Split* is not available in those places, click the *Modify* features button on the *Edit* tab of the ArcGIS Pro *Ribbon*. Expand the *Divide* section, and then click the *Split* tool.
- In the *Split* tool pane, use the *Change the selection* tool to select the feature(s) to be split. Take extreme care through layer selectable status, editable status, or visible status to avoid inadvertently selecting unintended features from other layers.
- Click the *Split* digitizing tool in the bottom half of the *Split* tool pane.
- Use the *Split* digitizing tool to digitize a split through a polygon.
 - Use single-clicks to start and shape the split.
 - If splitting from edge to edge, start outside of the selected polygon(s) and digitize across or around to an edge and then finish outside the starting edge.



- If splitting inside one polygon without touching the edges (create “island” polygon), start inside the polygon and cross back over the starting sketch (dotted line) extent.
- Double-click, press F2, click *Finish Sketch*, or right-click and select *Finish* to complete the split. Split features will appear and have duplicate attributes. Acres will update. All features from the split will be selected by default.
- Update attributes of the split features and save edits, as needed.



Merge Features (Polygons)

The *Merge* tool is used to combine adjacent extents of polygons into a single extent (“dissolves” or “erases” separating lines between adjacent features). It can also be used to create multi-part features by merging non-adjacent polygons. It is used to combine features within the same layer, not between separate layers. In the WC Tool, it is typically used to correct or adjust delineations of Sampling Units, in conjunction with the *Split* tool, or to combine adjacent CWD areas of matching labels and methods.

To merge features:

- Click *Clear [selected features]* to clear any current selections.
- Access the *Merge* tool from the *Tool Gallery* or your *Favorites* list. If *Merge* is not available in those places, click the *Modify* features button on the *Edit* tab of the ArcGIS Pro *Ribbon*. Expand the *Construct* section, and then click the *Merge* tool.
- In the *Merge* tool pane, use the *Change the selection* tool to select two or more features, typically adjacent features, that will be merged together.
- The layer dropdown can be used to specify the layer for the selections.
- Once selected, the features to be merged will be listed in a table in the pane. You can click either row to see its attributes, and the selected row will be marked “(preserve)”.
- Choose and review one of the selected features for which the attributes will be preserved.
- Click ***Merge*** at the bottom-right of the pane.

Modify Features

Merge

Existing Feature New Feature

Change the selection.

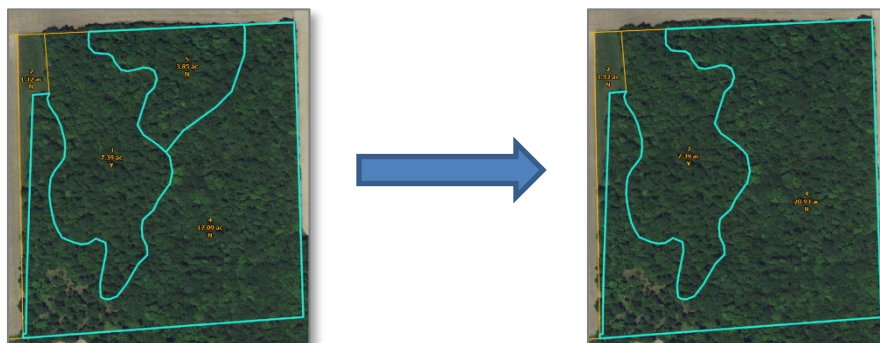
Layer
Site_Sampling_Units

Features to merge

4	(preserve)	X
5		X

Merged Feature Attributes

Admin State Name	Indiana
Admin County Name	Adams
State Name	Indiana
County Name	Adams
Farm Number	8930
Tract Number	309
Evaluation Status	New Request
Sampling Unit Number	4
Sampling Unit Letter	<Null>
Acres	17.09
Associated ROP	4
Associated Reference Points	<Null>
3-Factors?	N
Request_Date	1/25/2022
Request Type	AD-1026
Determination Method	Level 1 - SOSM
Determination Staff	Chris Morse
Digitizing Staff	Chris Morse
Digitizing Date	1/25/2022
Comments	<Null>



Attributes

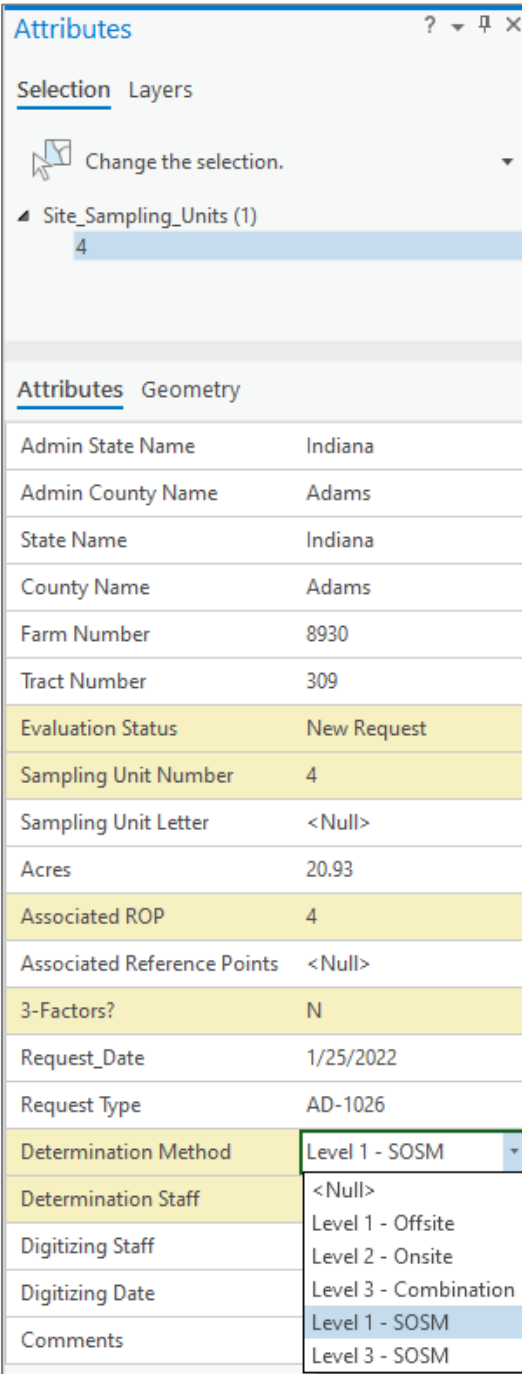
The *Attributes* tool opens the *Attributes* pane and is used to update attributes for selected features. In the WC Tool, the attributes of the business layers for the tool may include required fields, which are highlighted. Also, where choice lists are provided in dropdown menus, you must select a value from the list and cannot type in a custom value.

In the *Attributes* pane, you can use the *Change the selection* tool to select one or more features on the map. The selected features will appear beneath the layer name that contains the feature, along with a count of how many features are selected.

In the list of selected features in the *Attributes* pane, the attributes in the bottom half of the pane are associated with the highlighted feature in the top half of the pane.

If multiple features are selected in the layer, only the highlighted feature in the list of the top half of the pane has its attributes displayed in the bottom half.

If multiple features are selected in the layer, you can change an attribute for all selected features at the same time (e.g., if all features use the same *Determination Method*), but selecting the layer name in the top half of the pane before updating a particular attribute.



The screenshot shows the *Attributes* pane with two tabs: *Selection* and *Layers*. The *Selection* tab is active, showing a map icon and the text "Change the selection." Below this, a list of selected features is shown: "Site_Sampling_Units (1)" with a count of "4".

The *Attributes* tab is also active, showing a table of attributes for the selected feature. The table has two columns: the attribute name and its value. The attributes are listed in a table with alternating yellow and white rows.

Attributes	Geometry
Admin State Name	Indiana
Admin County Name	Adams
State Name	Indiana
County Name	Adams
Farm Number	8930
Tract Number	309
Evaluation Status	New Request
Sampling Unit Number	4
Sampling Unit Letter	<Null>
Acres	20.93
Associated ROP	4
Associated Reference Points	<Null>
3-Factors?	N
Request_Date	1/25/2022
Request Type	AD-1026
Determination Method	Level 1 - SOSM
Determination Staff	<Null>
Digitizing Staff	Level 1 - Offsite
Digitizing Date	Level 2 - Onsite
Comments	Level 3 - Combination
	Level 1 - SOSM
	Level 3 - SOSM

Snapping

Snapping is a feature of ArcGIS Pro where new vertex edits can be matched exactly to existing geometry features in the map to connect geometry. ArcGIS Pro has snap settings active by default and they can be modified or disabled as needed. Also, while digitizing, you can hold spacebar to temporarily override and suspend any active snap settings.

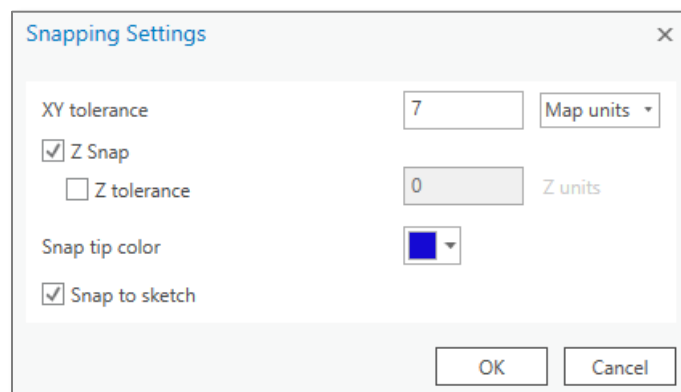
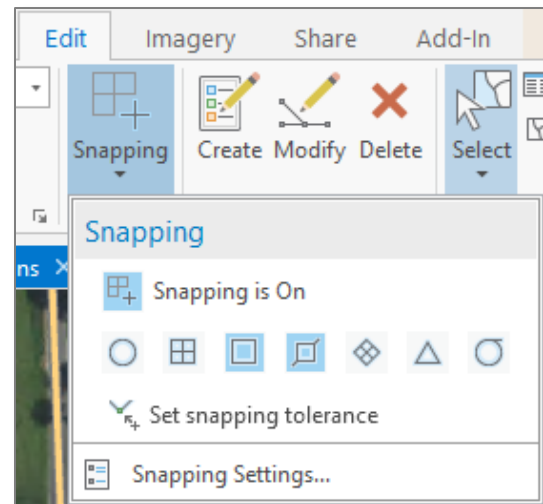
The *Snapping* tool and its settings is available on the *Edit* tab of the ArcGIS Pro *Ribbon*. When clicking this tool, you can enable or disable snapping by clicking the top left button in the snapping tool menu. The current status of snapping is always displayed when opening this tool.

Below the Snapping status button is a row of the types of features to which the edit cursor while currently snap. The most commonly used types are *vertex* and *edge* (shown highlighted in blue in the accompanying screenshot).

The next tool below the row of feature types for snapping will activate an interactive cursor on the map that you can use to draw a distance that will be used for snapping. It will be labeled with the map units used by the coordinate system of the current *Map* or *Map Frame* or by pixels, depending on your *Snapping Settings*.

Additional settings can be adjusted under the *Snapping Settings...* button. This will open the *Snapping Settings* window where you can manually adjust a snapping tolerance and specify whether it uses pixels or map unit distances.

Note: The *Snap to sketch* option needs to be enabled if you need to use the *Split* tool while editing to cut out an “island” polygon from within a single selected feature.



Appendix D – Working with Annotation

ArcGIS Pro can create annotation layers from existing labels. Annotation layers are useful for allowing a user to edit all aspects of a label to override the automated labeling engine placement. In the WC Tool, creating an annotation layer from existing labels may be useful for any of the operational layers created by the tool to improve map product clarity.

Note: When using annotation layers, they will need to be manually enabled as visible prior to running an export map tool. For example, activate *Sampling Units* and *ROPs* annotation layer visibility before running *Export Base Map*; then disable visibility for *Sampling Units* and *ROPs* annotation layers before running *Export Determination Map* later in the process.

Warning: An annotation layer should only be created when final map making is taking place. Scenarios which may lead to further edits or starting over with an operational layer may result in loss of links between the operational layer and the created annotation layer. In that scenario, a new annotation layer will need to be created.

To create an annotation layer:

- Pan and zoom to the desired scope for your labels. The scale will drive the size of the labels in the annotation layer.
- Right-click a layer in the *Contents* pane of a map that has labels displayed, then click **Convert Labels**, and then click **Convert Labels to Annotation**. The *Convert Labels To Annotation* tool opens. Complete the following entries:
 - The input map should be *Determinations*.
 - A conversion scale has been set automatically. You can adjust it, but this could change the size of the labels in unexpected ways.
 - Convert a *Single layer*.
 - The layer that was right-clicked should appear automatically in *Feature Layer*.
 - Click the folder and navigate to **C:\Determinations\<project folder>\Wetlands** to select the *WC.gdb*.
 - Check on *Convert unplaced labels...*
 - Check on *Create feature-linked anno..., create when new features added, and update anno...*
 - Rename the output layer to a name relevant to the input layer (“SU_Anno” in this example of the *Sampling Units Layer*).

Convert Labels To Annotation

Parameters Environments

Input Map
Determinations

Conversion Scale
1:3,960

Convert
Single layer

Feature Layer
Site_Sampling_Units

Output Geodatabase
in001_t0000309_2022_01_WC.gdb

Annotation Suffix
Anno

Extent
As Specified Below

667079.512009333 668805.159710628
4518614.52752716 4519860.30476871

☒ Convert unplaced labels to unplaced annotation

☐ Require symbols to be selected from the symbol table

☒ Create feature-linked annotation

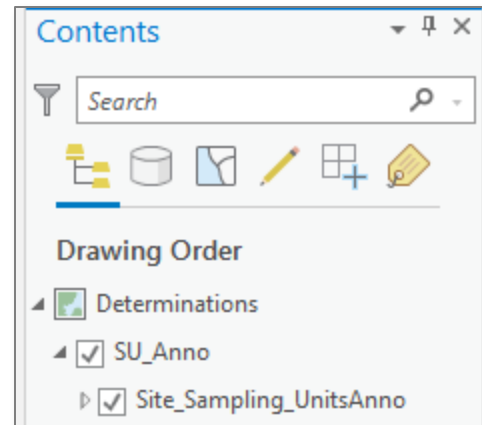
☒ Create annotation when new features are added

☒ Update annotation when feature's shape is modified

Output Layer
SU_Anno

- Click **Run**. An annotation layer will be created and added to the *Contents* pane for the map. The label activation of the input layer will be deactivated. You may need to make the newly added annotation layer visible in the *Contents* pane, if not already visible. As a group layer, make sure to expand it and that both the group and its contained annotation layer are set to visible.

Note: The layer listed within the group can also be expanded to control specific label classes if the source layer had multiple label classes.



If label density is high, some labels may have been generated in the annotation layer but are not placed on the map. These are called “Unplaced” labels. To show unplaced labels:

- Expand the annotation group layer heading, right-click the annotation layer name within the annotation group, and then click **Attribute Table**.
- In the attribute table, find the status column and look for any *Unplaced* labels. Click the box where it says *Unplaced* and change it to *Placed*. Press enter on the keyboard after changing the selection. This is an edit, so to save it you need to click the *Edit* tab in ArcGIS Pro and then click *Save [Edits]*. The label should now appear on the map.
- Close the attribute table of the sampling unit layer.

Element	SymbolID	Status	TextSt
Blob	0	Unplaced	4
Blob	0	<Null>	1
Blob	0	Placed	2
Blob	0	Unplaced	3

To move an annotation label without showing a leader line:

- Click the *Clear* tool to clear selected features, if any.
- Click the *Edit* tab on the ArcGIS Pro *Ribbon* and then click *Modify*. In the *Modify Features* pane, under the *Alignment* section, click *Move*.
- Use the *Select one or more features* tool in the *Move* pane to select an annotation label to move. Once selected, click the *Move* tool.
- Drag and drop the selected annotation feature to move it. *Save [Edits]* after moving a label.



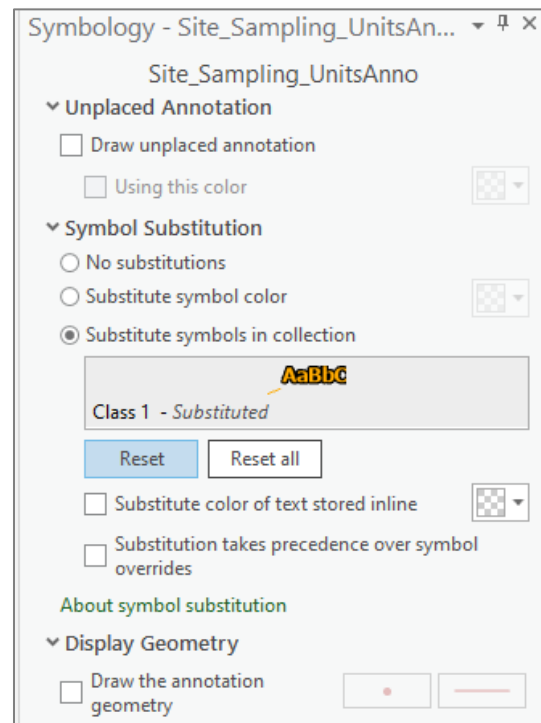
To move an annotation label and show a leader line:

- Click the *Clear* tool to clear selected features, if any.
- Click the *Edit* tab on the ArcGISPro *Ribbon* and then click *Modify*. In the *Modify Features* pane, under the *Alignment* section, click *Annotation*.
- Use the *Change the selection* tool in the Annotation pane to select an annotation label to move. Once selected, click the *Annotation* tool.
- Drag and drop the selected annotation feature to move it. A leader line will appear if the label style initially included leader lines (if not, right-click the label and click *Add Leader* before moving the label).
- You can also select the anchor point for the annotation leader that appears and drag and drop it to move it.
- *Save [Edits]* after moving a label.



To change symbology for an annotation layer, it is usually best to do it via the *Labeling* appearance properties on the source layer BEFORE converting the labels to an annotation layer. If you need to adjust afterwards:

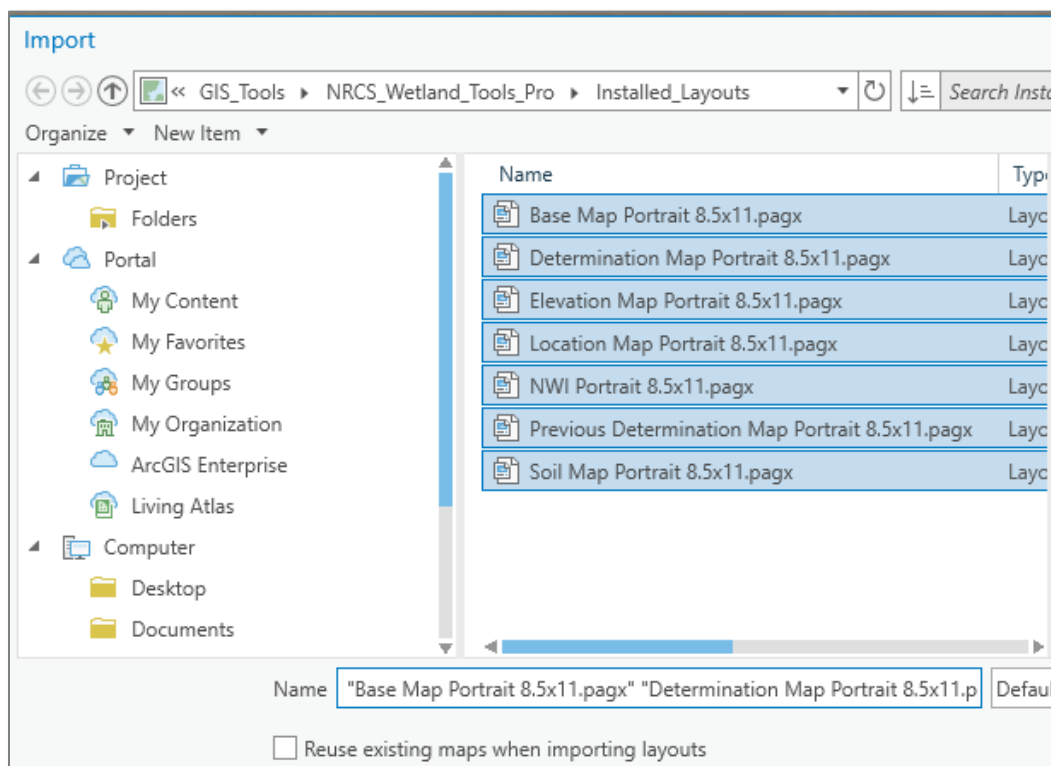
- Click the annotation layer in the *Contents* pane, click the *Appearance* tab that gets added to the *Ribbon*, and then click the *Symbology* button.
- In the *Symbology* pane under the *Symbol Substitution* section, select the *Substitute symbols in collection* option. Then double-click the symbol box beneath that option to open the symbol editor. Edit the symbol and its callout leader as desired in the subsequent panes. Changes will be applied to all labels in the annotation layer.



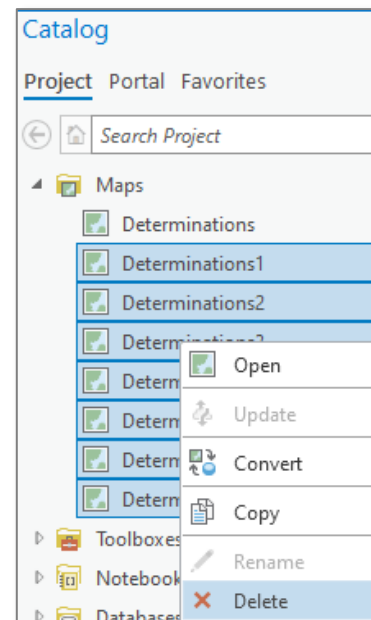
Appendix E – Recovering Installed Layouts

The default *Layouts* deployed with the WC Tool contain a set of required *Elements* that support and may be invoked by the automation steps in the tool's workflow. If you delete or rename an existing layout *Element*, one of the export map tools may generate an error in which it states a particular map element cannot be found. You can use this procedure to restore the installed WC Tool *Layouts* if you encounter this problem. If you have corrupted a template project, you may need to complete these steps in the affected template so that you don't have to repeat this procedure in each subsequent project created from the template.

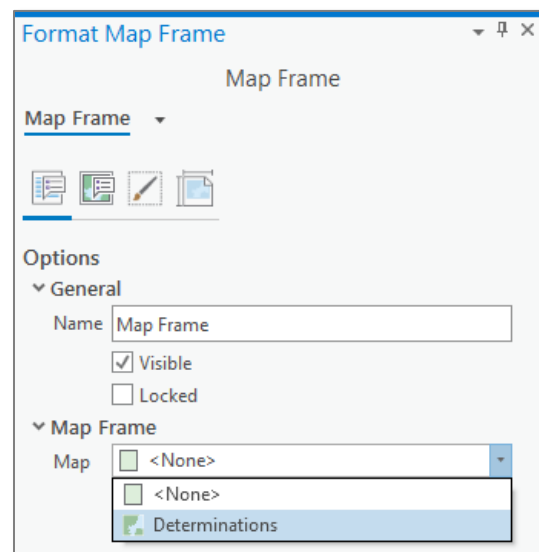
- Open the *Catalog Pane* and expand the *Layouts* section.
- Select, right-click, and delete the existing default *Layouts* (*Base Map*, *Determination Map*, *Elevation Map*, *Location Map*, *NWI Map*, *Previous Determination Map*, and *Soil Map*).
Warning: Do not delete the *Determinations* map object from the *Maps* section of the *Catalog Pane*.
- Click the *Insert* tab on the ArcGIS Pro *Ribbon* and then click *Import Layout*. Then at the bottom of the menu that appears, click *Import Layout File...*
- Navigate to `<install folder>\NRCS_Wetland_Tools_Pro\Installed Layouts`. Select all the layout files present in that folder and then click **OK**.



- A new set of layouts will be added to the *Layouts* section in the *Catalog Pane*. Also, a series of additional maps will be added to the *Maps* section of the *Catalog Pane*.
- In the *Maps* section of the *Catalog Pane*, select *Determinations* maps #1 through #7, right-click them, and delete them. You will receive eight confirmation prompts to confirm deleting the extra maps. Click **Yes** for each one.
Warning: DO NOT select and delete the *Determinations* map without a number.



- All the new *Layouts* will have opened in the central viewing area of ArcGIS Pro when they were imported. You will now go to the *Map Frame Properties* of each open layout, associate the *Map Frame* element to the *Determinations* map, and then close the *Layout*.
 - Click the *Base Map* tab in the central viewing area to go to the *Base Map* layout.
 - In the *Contents* pane, right-click **Map Frame** and then click **Properties**.
 - In the *Format Map Frame* pane that opens, click the dropdown under *Map Frame*, and select *Determinations*.
 - Close the *Base Map*.
- Repeat the previous step for all the remaining *Layouts* that were imported, replacing their layout name wherever you see *Base Map*.
- Close the *Format Map Frame* pane.
- Save the project (**Project → Save**) when finished associating the *Determinations* map to each layout's map frame object.



Appendix F – Update and Import Office Lists

This appendix describes the process to update the service center office pick lists in the *Create Forms and Letterstool*. Typically, State Tool Administrators should have provided a version of the WC Tools with a full list of NRCS and FSA offices and their corresponding addresses loaded for you. If not, or if you need to modify or correct a list and its related addresses for any reason, you can perform the steps in this appendix to update the lists in your local copy of the WC Tool. If you update to a new version of the WC Tool at any point, you may need to repeat these steps to update your address lists.

Note: The *NRCS_Address* spreadsheet from version 1.0.3 or earlier is not compatible with the spreadsheet in version 1.0.4 and later. Spreadsheets from version 1.0.3 or earlier should **not** be used to overwrite the spreadsheet in 1.0.4 and later.

- Navigate to `<install folder>\GIS_Tools\NRCS_Wetland_Tools_Pro\SUPPORT\Templates` in *File Explorer* and open the *NRCS_Address.xlsx* file.
- Populate the **NRCS_Offices** tab with one row per NRCS Service Center. Use the first row as an example of what to enter. Once you have established data rows for your state, you can delete the example row.

	A	B	C	D	E	F	G	H
1	NRCSOffice	NRCSAddress	NRCSCity	NRCSSTATE	NRCSZIP	NRCSPHONE	NRCSFAX	NRCSCounty
2	Decatur Service Center	975 S. 11th St	Decatur	IN	46733	(260) 724-4124	(855) 391-1916	Adams
3	Fort Wayne Service Center	9602 Coldwater Road, Suite 104	Fort Wayne	IN	46825	(260) 484-5848	(855) 373-6988	Allen

- The NRCSOffice column should have the NRCS service center location or city and its rows should contain its address and a county that it covers.
 - If an NRCS service center covers multiple counties, you should create a duplicate row for each county it covers and only list each county once in column H, respectively.
 - If a county has multiple service centers, simply continue to list each service center on its own row.
- Populate the **FSA_Offices** tab with one row per FSA Service Center. Use the first row as an example of what to enter. Once you have established data rows for your state, you can delete the example row.
 - The FSA Office column should have the FSA service center location or city and its rows should contain its address and a county that it covers.
 - If an FSA service center covers multiple counties, you should create a duplicate row for each county it covers and only list each county once in column H, respectively.
 - If a county has multiple service centers, simply continue to list each service center on its own row.
- When finished populating the *NRCS_Offices* and *FSA_Offices* tabs of the spreadsheet, click **Save** and then close the spreadsheet.
- Open any Template or Project (APRX) for the WC Tool and then open the *Catalog Pane*.
- Expand *Toolboxes*, expand the *NRCS Wetland Tools Pro* toolbox. Expand section *F. Utilities*.
- Run the *Import Office Address Tables* tool. This tool has no parameters. Close Pro when finished.

Appendix G – Troubleshooting

To begin troubleshooting, always refer to the specific tool instruction in the User Guide or the tips in this section. After exhausting troubleshooting items listed below, contact your State Tool Administrator for direct assistance. If errors persist, the State Tool Administrator will post errors in the MS Teams Site for the National Wetland Tool, and lastly submit a ticket in Github, as described in the *Issue Reporting* section, below.

Common Tool Errors (red status)

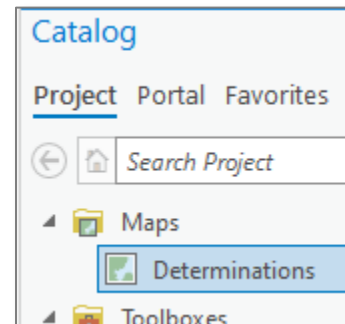
The errors in this section appear when a tool has an error message (results status is red). The following are common things to verify before requesting assistance or reporting a problem.

- **Tool parameters were not correctly populated**— Review the entered parameters and the documentation in the Lessons and User Guide, or in the pop-up Help tips in the tool for information to assist you in correctly completing the parameters. Also verify that the requested layer or data in any given parameter is correct (e.g., select *Site_CLU* from the dropdown when *Site_CLU* is requested; don't select a NAIP layer as a DEM input in the elevation tool, etc...). After correcting parameter entries try to rerun the tool.
- **Incorrect Portal Connection**— Review the active portal in the *Portal Status* area at the top-right corner of ArcGIS Pro. Confirm the correct portal is selected. If necessary, switch the active portal to the appropriate portal and run the tool again. As a reminder, the following tools require the following portals:
 - Production:
 - *Create Wetlands Project (A.01.)*— GeoPortal
 - *Define Request Extent (A.03.)*— GIS States Portal
 - *Create Base Map Layers (C.01.)*— GIS States Portal
 - *Update GIS Server Layers (E.02.)*— GIS States Portal
 - Training:
 - *Create Wetlands Project (A.01.)*— GeoPortal
 - *Define Request Extent (A.03.)*— GIS Testing Portal
 - *Create Base Map Layers (C.01.)*— GIS Testing Portal
 - *Update GIS Server Layers (E.02.)*— GIS Testing Portal
- **Required feature attributes are not populated**— Validation tools will not run correctly until all required attributes are populated. Click *View Details* on the output status message, expand the *Messages* section, and review the messages to see if any instructions are provided about the missing data (e.g., *One or more sampling units is missing a sampling unit number*). Return to the relevant editing section of the lessons or user guide and perform corrective edits or attribute entries. It can be helpful to look in a layer's attribute table to find null values in required (highlighted) columns. Once edits are performed and saved, rerun the relevant validation tool.
- **Forms and Letters will not generate**— The tool will not execute if the RStudio scripts did not run correctly after a version update. Review RStudio Setup Instructions. The tool will not execute correctly if a properly customized NRCS address spreadsheet is not prepared for the WC Tools. Review Appendix F and/or contact your State Tool Administrator for assistance.

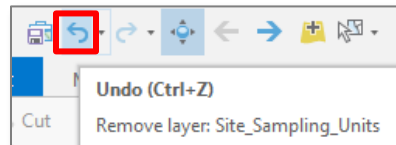
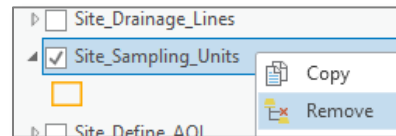
Troubleshooting Edit Locks

When attempting to make edit corrections to existing layers after validations, the layers can sometimes become locked by ArcGIS Pro. To work around this, perform the following actions to break the lock.

- Option 1 – Close and re-open the Determinations map:
 - In the ArcGIS Pro central viewing area, find the *Determinations* map tab and close it.
 - Open the *Catalog Pane* and then expand the *Maps* section.
 - Double-click the *Determinations* map name in the *Catalog Pane* to re-open it.
 - Attempt edits again. If layers are still locked, proceed to Option 2, below.



- Option 2: Remove the locked layer and then Undo the remove –
 - Right-click the layer that is locked for editing and click **Remove** from the pop-up menu.
 - At the top-left of the ArcGIS Pro window, click **Undo**. The layer will be restored to the map.
*Hint: If Undo is greyed out, click the *Determinations* map tab name in the view area.*
 - Repeat this for any layers affected by editing locks.
 - Attempt edits again. If layers are still locked, proceed to Option 3, below.



- Option 3: Close and re-open the project –
 - Save the project (click **Project** → **Save**).
 - Close the project (click **Project** → **Exit**).
 - Go to the project folder and double-click the project name to re-open it.
- Option 4: Remove layers and run *Reload Project Layers* from *F. Utilities*.
 - Remove locked layers from the map.
 - Open and run **NRCS Wetland Tools Pro** → **F. Utilities** → **Reload**

Other Known Issues

This section covers other issues that you may encounter and how to try troubleshooting them.

- **Map Product Layout (PDF) does not appear as expected –**

This scenario occurs if you find the appearance of a PDF map product is not as expected, (e.g., the view extent of a layout product shows the world extent instead of the site extent, the wrong image layer is selected or listed, layers are arranged in the incorrect order, etc...).

Solution – Close the PDF map that has errors to remove file locks. Return to the lesson to export the relevant map. Adjust layers, steps, or parameters as needed. Complete the relevant lesson to export the desired map(s) again.

- **The Define Request Extent tool returns an error of “NameError: The attribute ‘name’ is not supported on this instance of Layer.”**

Solution – One of the layers in the map is of an unknown type, probably something from a web service. Remove layers from your map, or remove and reset your Basemap in the map, and try the tool again.

Issue Reporting

Review existing issues and report new issues on GitHub at:

<https://github.com/USDA-NRCS/Wetland-Tools---ArcGIS-Pro/issues>

Note: You will need to create a GitHub account to report issues. Review open issues to see if the error or problem was already reported by a different user. Update or add further information to existing issues or re-open closed issues, if needed.

When you report or create a new issue, please provide a description, screenshots, and/or logs (if relevant). Please include your USDA e-mail address in either your issue description or your GitHub profile so that developers can contact you.

Note: Text logs for any given project can be found at

C:\Determinations\<project_folder>\<project_name>.txt.

Sometimes developers can resolve an issue that your report without directly contacting you. If an issue can be resolved without further contact, comments may be added directly to the issue posts on GitHub and you can always check there for the latest changes. If you have disabled e-mail notifications for issue updates on GitHub, you may not see any communication that an issue was acknowledged or resolved and directly reviewing your issues may be the only way that you see that it is being reviewed or has been addressed.

Note: Not all resolved issues will be immediately deployed in the current fix or build.