NISIMS 2.5 USER GUIDE

INSTRUCTIONAL GUIDANCE FOR THE NATIONAL INVASIVE SPECIES
INFORMATION MANAGEMENT SYSTEM (NISIMS) WORKFLOW

TABLE OF CONTENTS

INTRODUCTION

HOW TO USE THIS GUIDE

Before you jump into this user manual, read some tips below on how to use it.

DIFFERENT AUDIENCES

NISIMS is a complex system whose user base grows every year, as does the diversity of its user roles and backgrounds.

VARYING ROLES

The NISIMS workflow involves a variety of users- field data collectors, crew leads, GIS specialists, SDE administrators, and there often exists an overlap of roles. Therefore, depending on your responsibilities, certain parts of this guide may not be relevant to you.

As a very general guideline that does not factor in overlap of NISIMS roles (i.e. someone who collects data and also transfers it into the database), here is the breakdown of sections based on user relevance:

- **All new users** should read the background and workflow overview to get an understanding of the system.
- **Field-only users** will be concerned with setting up mobile devices if you are responsible for configuring your own device, and data collection.
- **GIS users** can first focus on desktop setup, followed by outbound and inbound data steps.

VARYING ACCESS LEVELS

NISIMS users now include both BLM and non-BLM parties. While we kept this guide as generic as possible, certain steps in the workflow may only be possible and applicable to BLM users due to network access constraints.

These **BLM-only sections** are denoted by a green BLM logo:

NAVIGATING THE GUIDE

This user guide is organized into a very logical, hierarchical outline, and visualizing its structure can be beneficial to understanding primary concepts and how they are related.

VIEWING THE OUTLINE IN A PDF

If you viewing this document as a PDF in Adobe Reader, you may turn on the outline via **View > Show/Hide > Navigation Panes > Bookmarks**:
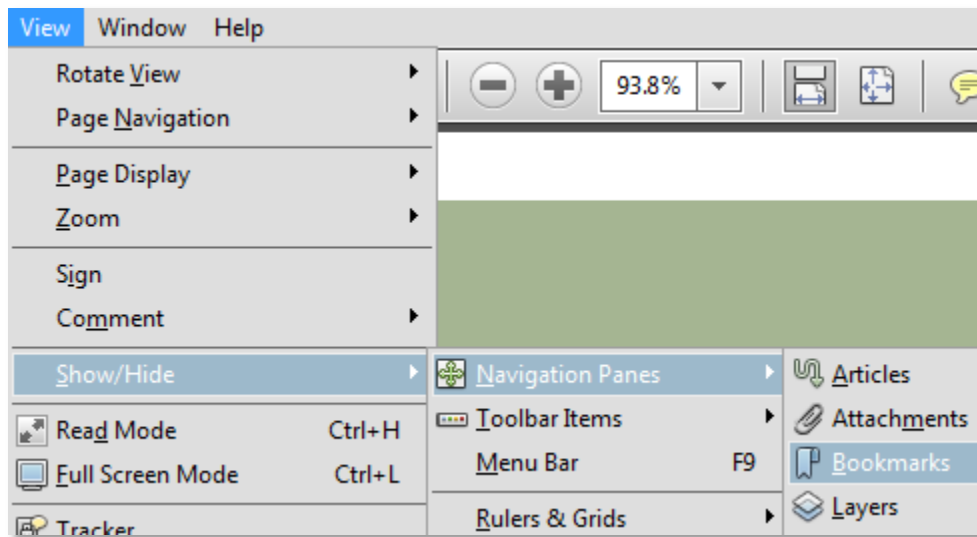
This should cause the outline to appear in the Bookmarks pane on the left side of the screen, and you may click the **+** signs to expand each section:
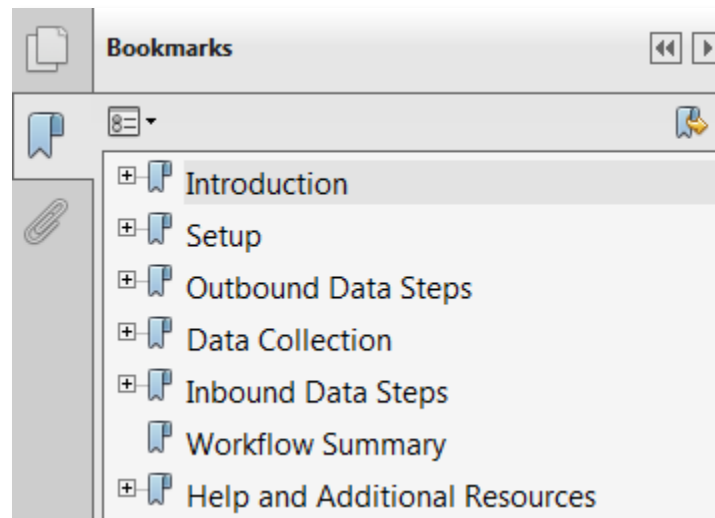
VIEWING THE OUTLINE IN AN MS WORD DOCUMENT

If you are reading this guide in Microsoft Word, click the **View** tab on the ribbon and make sure **Navigation Pane** is checked:
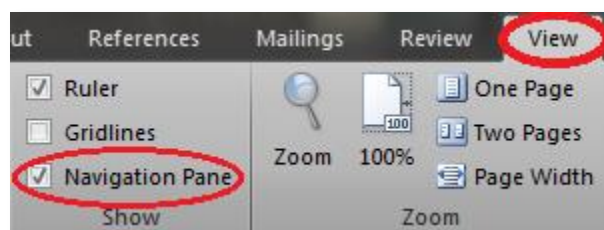
This will display the Navigation Pane in the left-hand panel, where you may click ▷ to expand a section:
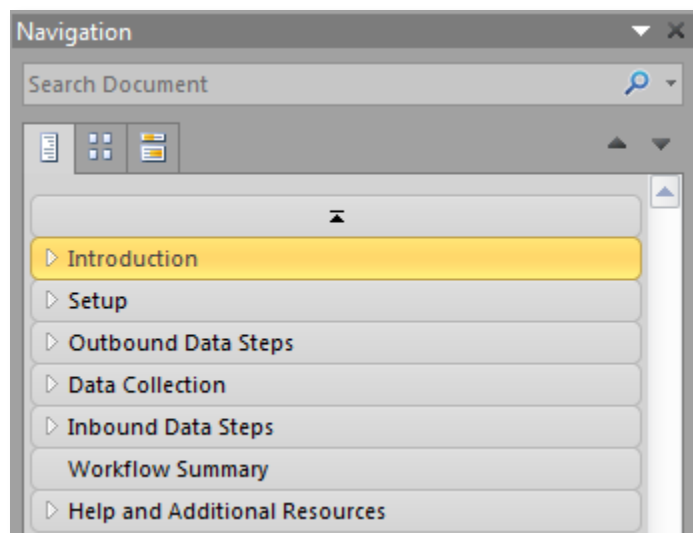
SUPPLEMENTAL RESOURCES

In addition to this guide, there are a couple of websites with an abundance of NISIMS instructional materials:

- **BLM users** may visit the NISIMS SharePoint site at http://teamspace/projects/nisims.
- **Non-BLM users** may visit the public NISIMS homepage at http://www.blm.gov/wo/st/en/prog/more/weeds/nisims.html.

BACKGROUND

Before you begin learning how to use NISIMS, take a minute to read what it's all about.

WHAT IS NISIMS?

The National Invasive Species Information Management System (NISIMS) is a standardized, spatially-enabled BLM database containing location, treatment, and monitoring data relevant to invasive species. Currently the system pertains to invasive plants, but future versions will incorporate additional taxa including birds, fish, and algae.

NISIMS is the first BLM system with tools to collect field data and seamlessly integrate it into a centralized geospatial database. A primary benefit of this is facilitated data sharing and reporting at regional, state and national levels.

The structure of NISIMS is based on the BLM's Enterprise Geographic Information System (EGIS) architecture and Geospatial Services Strategic Plan, which the BLM approved nationally in 2003 and 2008, respectively.

WHY IS NISIMS IMPORTANT?

Invasive species create a huge variety of environmental and economic problems. Consider this excerpt from the FWS website (http://www.fws.gov/invasives/faq.html#q2):

The introduction of invasive species can have a dramatic effect on our natural resources, human health, and economy. When non-native species are introduced into an ecosystem in which they did not evolve their populations sometimes explode in numbers. The reason for this is that in a natural or native community, species evolve together into an ecosystem with many checks and balances that limit the population growth of any one species. These checks and balances include such things as: predators, herbivores, diseases, parasites, other organisms competing for the same resources and limiting environmental factors. These checks and balances form the complex web of life that makes up an ecosystem and in which a native species competes for survival. However, when an organism is introduced into an ecosystem in which it did not evolve naturally, it no longer has those limits and its numbers can sometimes dramatically increase. The unnaturally large population numbers can then have severe impacts.

NISIMS has been established to map and document such impacts, and to ultimately use this data to create and implement strategic plans and budgets for mitigating them.

HOW DOES NISIMS AFFECT ME?

As a member of a national effort against invasive species, it is your responsibility to map and document infestations and treatments. NISIMS will reduce redundant data entry and make data collection and reporting of invasive species more efficient. It is designed to collect infestation and treatment data in a standardized format. This will enable better reporting, more accurate data and better representation of the efforts being made against invasive species by the Bureau.

WORKFLOW OVERVIEW

Although NISIMS is a complex system, its general workflow can be understood by describing its four primary types of data storage:

1. National SDE
2. State SDE replicas
3. Local file geodatabases (GDBs)
4. Mobile check-outs

NATIONAL SDE

Housed at the BLM National Operations Center, the *national SDE* (Spatial Database Engine) is an enterprise database containing the master set of NISIMS data and lookup tables (i.e. plant species, herbicides), which are updated weekly. Most users never access the national SDE directly except in a read-only capacity when viewing data and generating reports via the NISIMS web portal.

STATE SDE REPLICAS

State SDE replicas are essentially subsets of the national SDE but are hosted by and contain data specific to each state (or group of states, such as Montana and the Dakotas). To maintain currency, a weekly automated two-way synchronization occurs between replicas and the national SDE. Therefore, data added to replicas is pushed into the national SDE, and changes made to national lookup tables are pushed to state replicas.

Most users may view but not modify a replica's master version (referred to as *Default*), but can create *edit versions* that allow for input or modification of records safely outside Default. Once changes to an edit version are finalized, state SDE administrators will post and reconcile them with Default.

In addition to editing purposes, replicas serve as the source and destination of *local geodatabases*, discussed next.

LOCAL GEODATABASES

Local file geodatabases (GDBs) are smaller, user-generated spatial databases derived from their replica's Default version at a state-level extent in ArcMap. Their main NISIMS role is middleman between field data and state SDE replicas but, unlike SDE, may be used offline. GDBs are both the source of *mobile check-outs* used in data collection and the destination of this data when it is "checked in". Once a reasonable amount of data has been added (generally monthly) and geoprocessing is complete, the GDB is uploaded into an SDE edit version and then posted to Default by an administrator.

CHECK-OUTS

Derived from GDBs in ArcMap at a project-level extent, **check-outs** are the most common storage container for new NISIMS data. Once data collection in a check-out is complete, the data is checked back into its parent GDB and the check-out itself is deleted in order to prevent accidental subsequent check-in of the same data.

COLLECTION METHODS IN CHECK-OUTS

Data within a check-out may be generated several ways:

- **GPS data collection** is the most common method, whereby users map new data in the field using handheld GPS devices equipped with ArcPad software and custom tools to streamline a variety of tasks.
- **On-screen digitizing** involves tapping (or clicking, in ArcPad Desktop) to create new features. Although only practical in conjunction with a background reference layer, digitizing is often useful for creating NISIMS data obtained from non-NISIMS sources such as contractors, partners, or legacy records.
- **Coordinate entry** is based on manually entering known x/y coordinates of point features. As with digitizing, this method is only practical for reasonable amounts of data.

DATA FROM NON-NISIMS SOURCES

For **legacy data** (older data relevant to but not in the exact format as NISIMS) or **contractor/partner data**, data creation steps vary by scenario. For a larger number of records, the process may incorporate a custom method in ArcMap, or digitizing within a check-out in ArcPad Desktop for a small number of records. Note that the latter is generally the preferred

method of migrating data into NISIMS since custom ArcPad forms perform automated tasks that would otherwise be manual (i.e. creating unique IDs for new features).

For those migrating non-NISIMS data into the system, work with a BLM GIS specialist for assistance. Data dictionaries and object model diagrams of the NISIMS database are very useful for this process and can be found at http://www.blm.gov/wo/st/en/prog/more/weeds/nisims.html. Additionally, short videos describing the general approach to this task can be found on the NISIMS Vimeo channel at http://vimeo.com/channels/nisims.

SETUP

If your role in NISIMS involves any desktop tasks, there are several hardware and software items that may be required before using the system. Additional help can be found on the NISIMS public website at http://www.blm.gov/wo/st/en/prog/more/weeds/nisims/What_Contractors_and_Partners_Need_and_How_to_Get_it.html

DESKTOP

If you are *strictly a field user* and someone else is configuring your desktop computer for you, skip to mobile device setup. For those installing software onto mobile devices and/or performing GIS tasks, read the relevant sections below.

SYSTEM REQUIREMENTS

Depending on your role in NISIMS, certain software may be required for device connectivity and GIS tasks.

WINDOWS MOBILE DEVICE CENTER

If you are responsible for *setting up mobile devices*, then your PC must have **Windows Mobile Device Center (WMDC)**. This software enables communication between your mobile device and PC, which allows applications to be installed on the device via your computer. BLM users requiring this software must submit a Help Desk ticket if it is not presently installed.

ARCGIS

If you are involved in *GIS tasks* such as creating check-outs or editing geodatabases, read the applicable requirements below. For *BLM Citrix users*, some or all of these may already be available to you (if not, submit a Help Desk ticket). *BLM local users* require administrative privileges to install software on a PC, so you must submit a Help Desk ticket as well.

ALL GIS USERS

- **Adobe Acrobat Reader** to view PDF reports
- **Citrix ICA Client 12.1** if using ArcGIS in Citrix. It is important that the version is 12.1 since this ensures proper connectivity with mobile devices.

ARCGIS 10.1 AND 10.2 USERS

- **ArcGIS Desktop 10.1 SP1 or 10.2 SP1** to perform GIS tasks.
- **S1 ArcPad Data Manager 4.01.07** to streamline GIS data management tasks. Download (all users): http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/nisims.Par.94530.File.dat/S1_ESRI_Desktop_Applications_4_03_04_ArcGIS.zip
- **ArcPad 10 SP1 Desktop Extension** to allow data to be prepared for ArcPad. BLM users may download here: http://teamspace/projects/nisims/HelpInstall/ArcPadSetup_1001.zip.
- **Python Report Lab 2.6 for Python 2.7** to ensure functionality of custom tools (PRL is auto-installed with S1 Data Manager 3.0+). BLM users may download here: http://teamspace/projects/nisims/HelpInstall/reportlab-2.6.win32-py2.7.zip.

SETTING UP ARCGIS

For those NOT performing ArcMap tasks, skip to mobile device setup. For everyone else, read the relevant sections below and note that each step is required **one time only** as the settings will be retained by ArcGIS.

CONNECT TO NISIMS SDE

For those working with NISIMS SDE to create or upload GDBs or edit SDE data, you must first **establish a connection** with your state's SDE replica. Since most contractors and partners lack access to the BLM network, this section will not likely apply to you.

How you create your NISIMS database connection will depend on which state you operate in since each state manages its own user edit accounts. This connection will be stored in your user profile and made available each time you open ArcGIS.

To request a database edit account for your state, please contact:

- **California:**   Gary Walter
- **Idaho:**   Jon Norred
- **Montana:**   Michelle Johnson
- **New Mexico:**   Al Sandoval
- **Oregon:**   Jay Stevens
- **Utah:**   Marcel Martinez
- **NHS (NOC Hosted States):** John Reitsma

Once you receive your database connection properties, refer to the document relevant to your state below:

- **California:**   http://teamspace/projects/nisims/Help/Creating_DB_Connection_CA.docx
- **Idaho:**   http://teamspace/projects/nisims/Help/Creating_DB_Connection_ID.docx
- **Montana:**   http://teamspace/projects/nisims/Help/Creating_DB_Connection_MT.docx
- **New Mexico:** http://teamspace/projects/nisims/Help/Creating_DB_Connection_NM.docx
- **Oregon:**   http://teamspace/projects/nisims/Help/Creating_DB_Connection_ORWA.docx
- **Utah:**   http://teamspace/projects/nisims/Help/Creating_DB_Connection_Utah.docx
- **NHS:**   http://teamspace/projects/nisims/Help/Creating_DB_Connection_NOC_hosted_State.docx
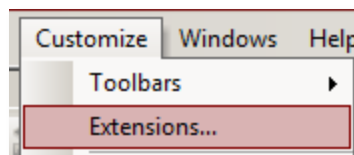
VERIFY EXTENSIONS

Extensions are add-ons that enable additional functionality in a program, two of which are required in ArcMap when using NISIMS. Follow these steps to enable the extensions:

1. **Launch ArcMap**. Exact steps vary, but for BLM personnel it is often through Citrix, while non-BLM users with local ArcGIS licenses (aka on your computer) will likely click *Start > All Programs > ArcGIS > ArcMap <your version #>*.

2. Once ArcMap starts, the "Getting Started" dialog appears. Normally you may want to open an existing map, but since this is our first time and we want to start with a blank map, click **Cancel**:
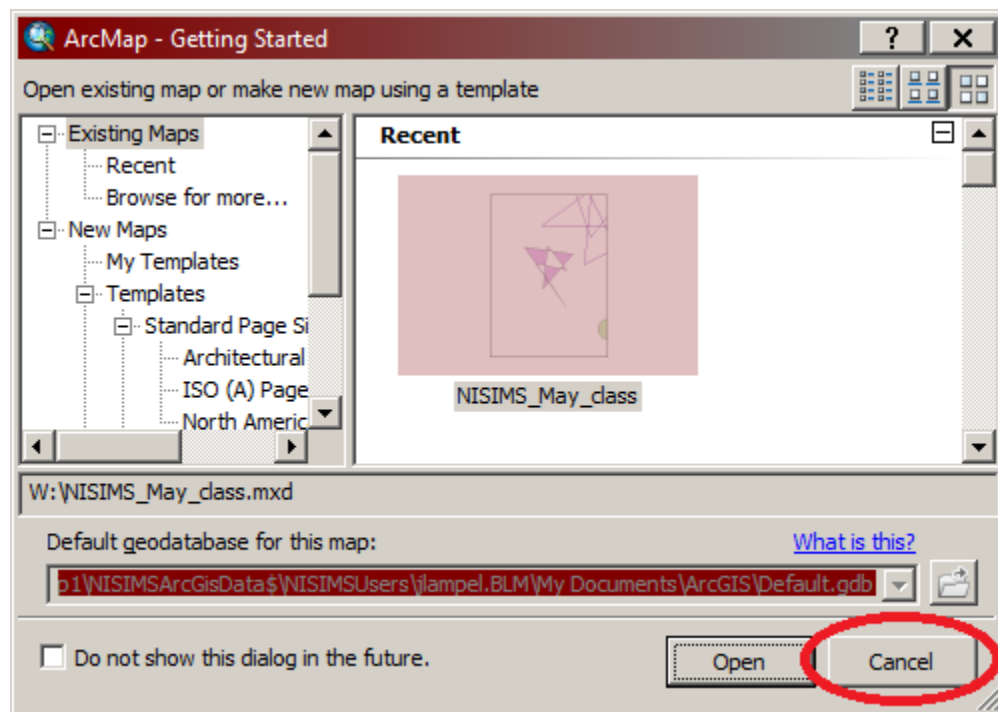
3. You should now be looking at a blank map in ArcMap. To view a list of currently available extensions, click the **Customize** menu, then **Extensions**:

4. The only extension we need is **ArcPad Data Manager,** so make sure the box is checked.
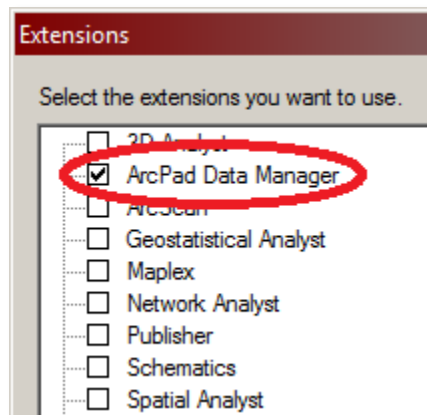

5. **Close** the Extensions dialog.

ENABLE S1 DATA MANAGER TOOLBAR

Many NISIMS GIS tasks require the *S1 ArcPad Data Manager Toolbar (S1APDM)*, which is a custom set of SDE/GDB/mobile data management tools developed by Service 1st to simplify integration between databases and field data.

To see a list of all available toolbars, click the *Customize* menu, then *Toolbars*. Scroll down to *S1 ArcPad Data Manager Version <your version #>* and make sure there is a checkmark to its left. If not, check it now:
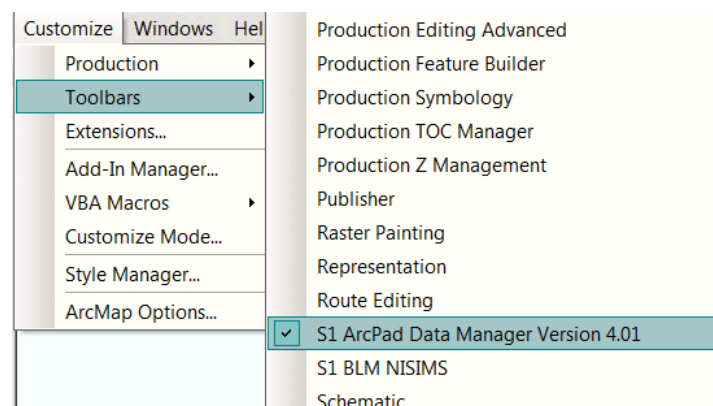
SET WORKING DIRECTORY

Your *S1 Working Directory* is an intermediate storage location for data check-outs which, as with all other steps in this "Setting Up ArcGIS" section, needs only to be set once. To do so:

1. Click the *Set Working Directory* on the S1APDM toolbar:

2. The "Set S1 ArcPad Data Manager Preferences" dialog appears, but its options vary by user:

   - *BLM users*' working directory is on a server whose path depends on state and field office, so choose the appropriate options.

   - Since *non-BLM users* lack access to the BLM network, you must set your working directory by clicking *Browse* and then navigating to a desired local folder. Coordinate with your BLM point of contact for assistance with this step if needed.

3. Click **OK** to save the changes.

MOBILE DEVICES

Although NISIMS field collection devices vary, they share some common requirements and basic setup steps.

OS AND HARDWARE REQUIREMENTS

Most mobile devices purchased within the last few years will meet the minimum operating system (OS) and hardware requirements, but it is important to verify them on your device before proceeding.

OPERATING SYSTEM

To collect NISIMS field data, you must use a mobile device with an **operating system (OS)** supported by ArcPad:

- *Windows Mobile* is the most common OS since it ships with the most popular devices, made by Trimble. Supported versions include *version 5 and above*.
- *Windows 7 and 8* are also supported and are generally found in tablets, but laptops can be used as well if they are paired with a USB or Bluetooth GPS device.

MEMORY CARD

Memory/storage cards (usually SD or Micro SD, depending on device) are a required item serving several purposes:

- *Additional storage:* most modern cards have considerable storage capacity and, since NISIMS check-outs require minimal space, you should have plenty of room left for reference data and other projects.
- *Portability:* the portable nature of storage cards facilitates transfer between individuals. For example, a field collector lacking GIS access can simply have a GIS user create a check-out for them on a storage card.
- *Desktop integration:* storage cards are essential to the data check-in process in that they are visible in any desktop environment (unlike devices using WMDC with Citrix) when used in conjunction with the *USB Toggle* (see below for details).

INTEGRATED GPS

To collect GPS data in a disconnected environment, your mobile device must be equipped with *integrated GPS*. This means that it does not rely on cellular signals or Wi-fi to locate your position. Any device designed specifically for GPS data collection (i.e. Trimble devices) will automatically have integrated GPS, but multi-purpose devices such as tablets often do not. So, do a little research before purchasing a tablet to use in the field!

SOFTWARE REQUIREMENTS

Several pieces of software are required in order to collect NISIMS data:

- **ArcPad 10 SP1:** a lightweight ArcGIS for the field. You will likely use ArcPad for all data collection as it is designed to integrate seamlessly NISIMS.
- **S1 ArcPad Toolbar v3.80 or later:** set of tools that simplify ArcPad tasks. Not just for NISIMS, this toolbar was designed by Service 1st to streamline many steps involved in feature creation, selection, and navigation.
- **S1 USB Toggle:** a means to switch between WMDC and USB Mass Storage Mode. By default, your device connects to PCs through WMDC and its entire hard drive is visible to the PC. The USB Toggle, however, allows just your storage card to be visible and therefore becomes accessible in any desktop environment (including Citrix). Detailed information and usage instructions can be found here: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/nisims.Par.38104.File.dat/S1%20USB%20Toggle_Public.pdf

To simplify installation of these items, use the **S1 Mobile Installer**. This custom Service 1st package automatically deploys and configures the necessary software onto mobile devices. You may download the installer here: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/nisims.Par.39304.File.dat/S1_ESRI_Mobile_Applications_3_80_12.zip

Detailed **written instructions** on the installer can be found at: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/nisims.Par.63021.File.dat/S1_ArcPad_Mobile_Installer_3_8-HowTo.pdf

For supplemental assistance, watch the **setup videos** on the NISIMS Vimeo channel:

- Part 1: http://vimeo.com/channels/nisims/62401975
- Part 2: http://vimeo.com/channels/nisims/62403071

ADDING DATA TO NISIMS LOOKUP TABLES

Before you begin collecting data in the field, you will need to ensure that your specific project names, Pesticide Use Proposal numbers (PUPs), Biological Control Agent Release Proposal numbers (BCARPs), and person/organization information are in the NISIMS database. By adding this information prior to collecting data in the field, this will ensure that the specific data you need will be available to you in the customized lookup tables that are used when collecting data. Contractors or partners lacking BLM network access will need someone to perform this step for them.

NISIMS LU TABLES

To request an update to the NISIMS database tables, BLM employees will need to navigate to the NISIMS SharePoint Site. Click on the DB Table Updates icon.

Scroll to the bottom of the page and click on the **Add Document** button. A new form will open up in Microsoft InfoPath. Select the appropriate **Requesting Office** and choose the **Request Type**. The information on the bottom portion of the form will change based on the Request Type selected. After filling out the required fields in the form, click on **Submit Request**.

Requests are updated every Friday afternoon to the National NISIMS Database. Individual states should see the changes reflected in their states Database the following Monday. Be sure to plan ahead and submit the information on the SharePoint site prior to creating your local GDB.

Note: The DB Table Updates form does not allow requests for chemical components, adjuvants, or species. To request additions of such items, BLM personnel must contact their state weed lead directly.

OUTBOUND DATA STEPS

To get from SDE to a local geodatabase (GDB) and eventually to mobile devices, NISIMS data goes through several stages. If you need a recap on the different stages, refer to the Workflow Overview.

SDE DEFAULT REPLICA TO LOCAL GDB

Before you can start creating mobile check-outs, you first need a GDB to work with. Contractors or partners lacking BLM network access will need someone to perform this step for them.

NISIMS GDB CONCEPTS

KEY NISIMS GDB CHARACTERISTICS

Below are a handful of important characteristics relevant to NISIMS geodatabases.

- **Schema only:** For the most part, a NISIMS GDB is just an empty *schema* of its parent SDE. That is, although there is no editable data in a new GDB, its structural properties such as field names, data types, and domains match those of the SDE database from which it originated.
- **Repeated use:** Once a GDB is created, you can continue to use it to make check-outs. There are two scenarios, however, when you might want to create new GDBs. If either of them apply to you and you do end up creating a new GDB, it may be wise to check all your data into your existing GDB and upload it to SDE before using the new GDB so that you are only dealing with one GDB.
  - *SDE lookup table updates-* changes to the master lookup tables in SDE do not get pushed down to local GDBs dynamically, so the only way to have the most current lookup tables is to create a new GDB. For example, if you request via SharePoint to have a new project name added to the master tables, you would need to create a fresh GDB once your request has been processed. Otherwise the new project name will not be an option to include in pick-lists.
  - *Viewing infestation from others' GDBs-* if you need to view new infestation records collected in a different GDB by others in your field office or district, you will need to create a new GDB to see their additions (providing they have been uploaded into SDE already). The reason for this is again due to the fact that changes made in SDE are not automatically pushed down to existing GDBs. So, if your co-worker uploads their GDB into SDE, their newest infestations will not appear in your WeedInfestationReference layer unless you create a fresh GDB.
- **State extent:** GDBs are created at the geographic extent of your state. Whatever reference data falls in that extent when creating the GDB in ArcMap will end up in your GDB. Even if you are only collecting data in a small area, it is

still highly recommended that the GDB be created at your state's extent because some of the reference layers such as county and field office are used for performing automatic attribute calculations in a future geoprocessing step.

- **Sharing GDBs:** Depending on your role in NISIMS, you may be responsible for generating GDBs for others. If this is the case, it is important to define and understand what types of GDB sharing are acceptable:
  - *Multiple users sharing a single GDB*, such as one stored in a shared network directory, is acceptable.
  - *Making copies of a GDB*, such as to give to a contractor who lacks network access required to make their own, is NOT acceptable. The reason is because if data is collected in two or more identical GDBs, there will be conflicts during upload to SDE since records from each GDB are viewed as the same data and there is no way to resolve the differences. To avoid this when handing over a GDB on a USB drive, simply **cut** the GDB (instead of copying it). That way there will only be one unique copy of that GDB in existence and therefore no potential for conflicts during upload to SDE.

WHAT'S IN A NISIMS GDB?

At first glance when you create a new GDB, the number of items that appear in ArcMap's table of contents may seem overwhelming and confusing. Fortunately they can be broken down into a few groups.

NISIMS GDB FEATURE CLASSES

A **feature class** is a container for spatial data. Feature classes in a NISIMS GDB can be broken down into several categories.
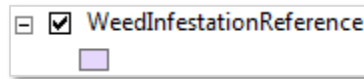
REFERENCE FEATURE DATASET
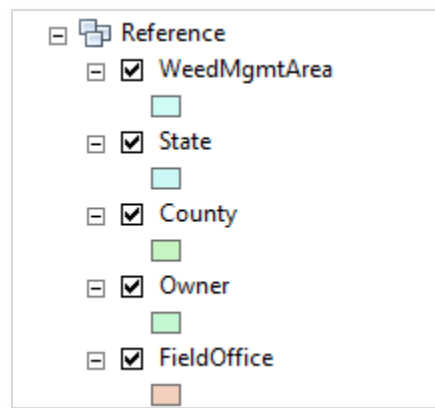
In GIS, a *feature dataset* is a container for feature classes. In the case of NISIMS, the only feature dataset is called *Reference* and contains feature classes used as background reference and for automated calculation purposes. They are maintained by other data stewards and are therefore not something you will edit. Note that they are not automatically updated in your GDB, only in SDE, so your GDB's reference layers are only guaranteed to be current at the time of download from SDE.

WEED INFESTATION REFERENCE

Another reference layer in its own right, albeit outside the feature dataset and not derived from SDE, **WeedInfestationReference** is a read-only feature class containing all weed infestations present in your map extent when a GDB is created. This layer is a simplified version of the primary infestation feature class, *WeedInfestationLocation*, and is included as a shapefile in check-outs in order to provide basic information about infestations collected in the past.

FEATURE CLASSES ENDING IN 'PT', 'LN', OR 'PG'
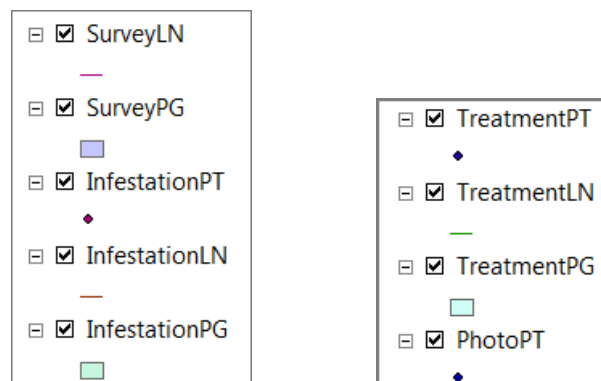
Layers ending in one of these two-letter suffixes serve as intermediate, temporary storage containers between check-outs and the GDB feature classes in which data is more permanently stored. When you first check your data back into a GDB, this is where it ends up.

As far as naming conventions go, their names should look familiar to data collectors as they match those of the layers in an ArcPad check-out.

In terms of data editing, it is recommended that, when possible, post-field editing is performed on these layers in ArcMap instead of on the permanent feature classes. Reason being, the data in these intermediate layers is still in its original geometry as the features have not yet been buffered into polygons by the NISIMS geoprocessing (GP) step.

Also note that after GP has been performed, the data in these intermediate layers is automatically deleted, so don't panic if you see it missing! Instead, look for it in the permanent feature classes.

FEATURE CLASSES ENDING IN 'LOCATION'
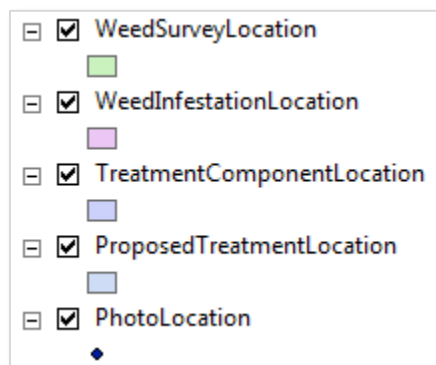
These are the more permanent layers mentioned above. Their names are derived from the SDE feature classes from which they originated, and they contain only polygons (except for *PhotoLocation*, which always retains its point geometry). These layers are the destination of your new data once NISIMS GP has been run, after which they may be uploaded directly into an SDE version. If you perform any edits on these feature classes, you may need to run NISIMS GP again before uploading.

NISIMS GDB TABLES

In addition to feature classes, a NISIMS GDB also contains a variety of *tables* which can be grouped in several categories.

LOOKUP TABLES
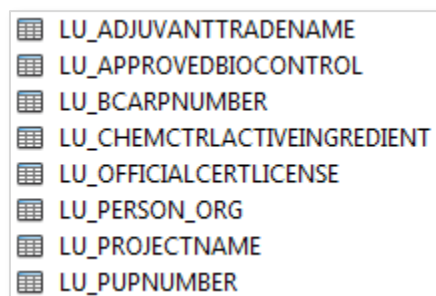
Tables whose names begin with *LU* are lookup tables that store the comprehensive set of values used to create your custom pick-lists as well as a variety of other attributes you will not see in the field. These read-only tables originate from those in SDE and, just like the reference layers in the feature dataset are not dynamically kept current in your GDB. Should you require a more current set of lookup tables (such as when a request to include a new project name has been processed), you must create a new GDB from SDE.

TEMPORARY DESTINATIONS OF TABLE DATA

ASSOCIATEDCHARACTERISTIC_PG
ASSOCIATEDCHARACTERISTIC_LN
ASSOCIATEDCHARACTERISTIC_PT
PHOTOS_PT
WEEDSURVEYSPECIES_PG
TREATMENTSPECIES_PG
TREATMENTSPECIES_LN
TREATMENTSPECIES_PT
ADJUVANTCOMPONENTAGENT_PG
ADJUVANTCOMPONENTAGENT_LN
ADJUVANTCOMPONENTAGENT_PT

BIOLOGICALCOMPONENT_PG
BIOLOGICALCOMPONENT_LN
BIOLOGICALCOMPONENT_PT
CHEMICALCOMPCONTROLAGENT_PG
CHEMICALCOMPCONTROLAGENT_LN
CHEMICALCOMPCONTROLAGENT_PT
CHEMICALCOMPONENT_PG
CHEMICALCOMPONENT_LN
CHEMICALCOMPONENT_PT
FIRECOMPONENT_PG
FIRECOMPONENT_LN
FIRECOMPONENT_PT

MANUALCOMPONENT_PG
MANUALCOMPONENT_LN
MANUALCOMPONENT_PT
MECHANICALCOMPONENT_PG
MECHANICALCOMPONENT_LN
MECHANICALCOMPONENT_PT
REVEGETATIONCOMPONENT_PG
REVEGETATIONCOMPONENT_LN
REVEGETATIONCOMPONENT_PT

Tables ending in *PT*, *LN*, and *PG* are tabular counterparts to the feature classes with corresponding names and, as with the feature classes, will automatically be removed of their records after NISIMS GP is run.

These tables contain fields that correspond to those of their respective external data collection forms (the ones with colored backgrounds, except for photo points), plus some auto-generated ID fields. If edits must be made to values filled out in the external forms during data collection, this must be done in these tables *prior* to NISIMS GP since the records will be deleted after this step, as mentioned above.

PERMANENT DESTINATIONS OF TABLE DATA

ADJUVANTCOMPONENTAGENT
ASSOCIATEDCHARACTERISTIC
BIOLOGICALCOMPONENT
CHEMICALCOMPCONTROLAGENT

CHEMICALCOMPONENT
FIRECOMPONENT
MANUALCOMPONENT
MECHANICALCOMPONENT

PHOTOS
REVEGETATIONCOMPONENT
WEEDSURVEYSPECIES
TREATMENTSPECIES

Tables in the screenshot above are essentially the permanent destination of all tables mentioned in the previous section, plus some additional fields not found on data collection forms. These tables are populated during NISIMS GP and have corresponding equivalents in SDE.

ALL OTHER TABLES

The remaining tables are beyond the scope of this guide, but more information can be found online:

- The **data dictionary** is a spreadsheet providing detailed information about all fields in NISIMS feature classes and tables. All users may download it here:
  http://www.blm.gov/style/medialib/blm/wo/Planning_and_Renewable_Resources/nisims.Par.2099.File.dat/NISIMS_25_Data Dictionary.pdf
- The **entity relationship diagram** describes how NISIMS feature classes and tables are related to each other. It can be downloaded here:

## HOW TO CREATE A NISIMS GDB

ADD SDE DATA TO ARCMAP

This step assumes you have already connected to your state's NISIMS SDE replica. To start making a new GDB, you must first add to ArcMap the source data from which the GDB originates, which is your state's (or state group) SDE replica. You should not have to repeat this step if you save your map project (mxd).

1. **Start ArcMap**. This process varies by user and state, so consult a GIS specialist if you are unsure how to start ArcMap.

2. **Cancel** the welcome screen that appears since we want to start with a blank map:
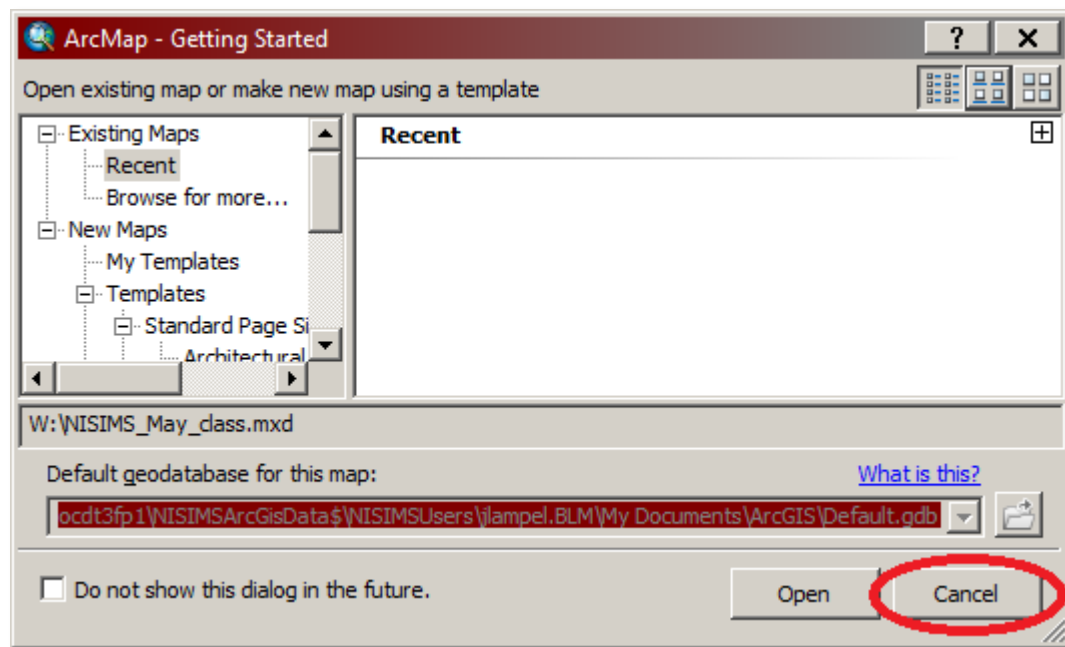
3. To add data to the map, click the **Add Data** button: ⊕

4. Navigate to your **NISIMS SDE connection**. This varies by user, but is often in the *Database Connections* of the *Look in* drop-down menu.

5. To see the **contents** of the database, double-click its container: 🗄

6. We need everything except the relationship classes, but it's easier to simply **select every item**. To do, click the **first item** (yours may vary from the screenshot) then hold the **Shift key** on your keyboard and press the **End key**. If you did it right, you should be able to scroll left and see every item selected:
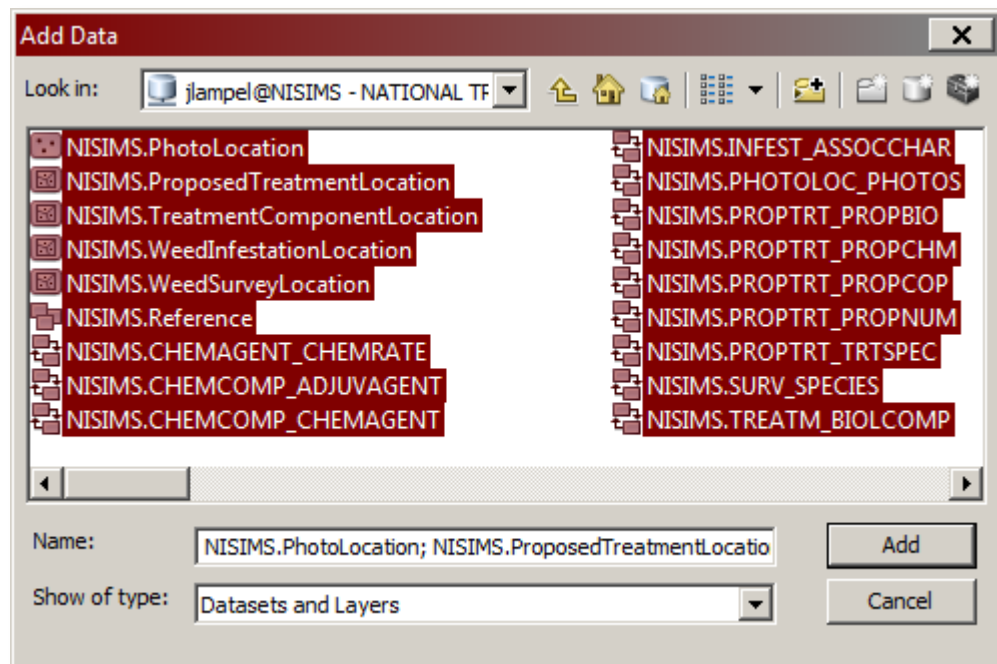

7. Click the **Add** button to add the selected items to ArcMap.

8. Because you selected all items in the database, including relationship classes, you will receive a warning popup since ArcMap cannot display relationship classes. Simply click **OK** and you will be taken to the map:
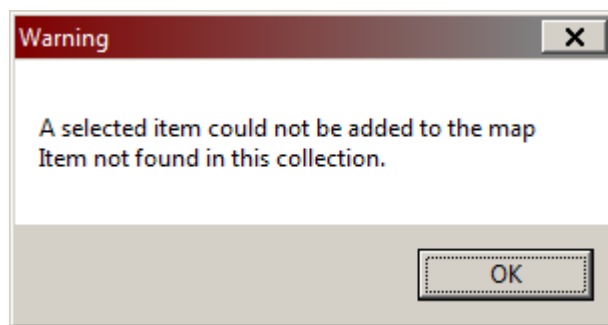
CREATE LOCAL GDB FROM SDE

Now that SDE data is present in your map, you can use it to generate a *local geodatabase (GDB)*.

1. As mentioned in the NISIMS GDB Concepts, NISIMS GDBs are intended to be used at *state-level* geographic extents. So, first make sure your **state layer is turned on** in the table of contents, and turn off any layers that may be obscuring it in the map:
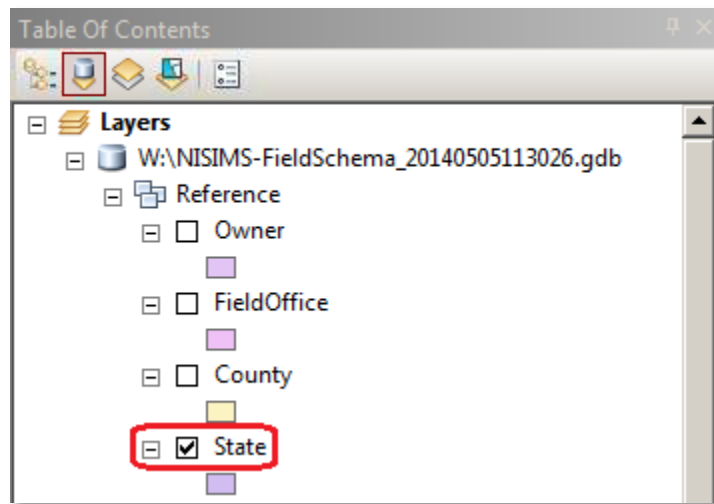
2. **Zoom to your state** using the *Zoom tool* 🔍 or whichever zoom method you prefer. The extent doesn't have to be perfect, but the idea is just to encompass the entire state so that all features from reference layers (i.e. County, Owner, etc.) that fall within its boundaries are included.

3. As with most steps involving S1 Data Manager tools, you must be in **List By Source** view so that map layers are arranged in the table of contents based on their their actual file location. This allows you to indicate to the S1 tools which database you are working with. To verify that you are in this view, make sure the *List By Source* icon is activated in the table of contents: .

4. The S1 tools need to know which SDE database you are working with, so click your **SDE name** in the table of contents (yours may differ from the screenshot):


5. Click **Download Schema From SDE Default** button on S1 Data Manager toolbar:


6. You are presented with a dialog box asking you to specify the **directory location** where the GDB will be stored (if you are wondering why the other options are disabled, it is to preserve the standardized NISIMS GDB naming convention and database type on which the S1 Tools rely). Click [Browse] to browse to a directory.
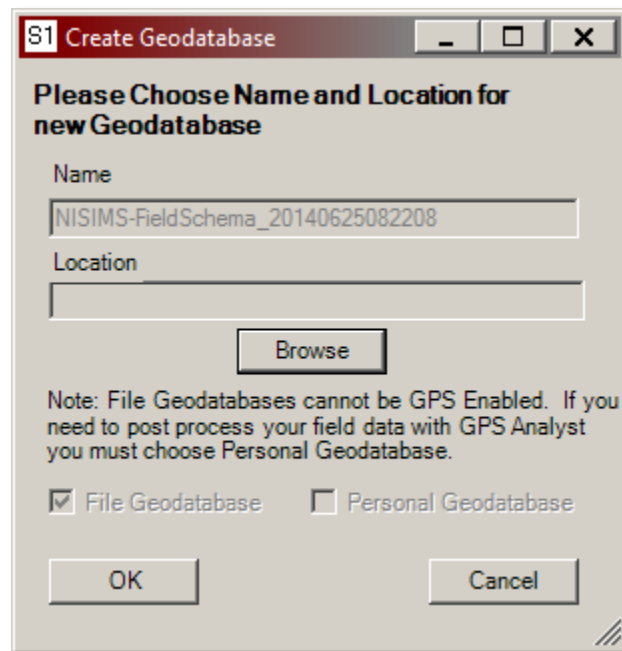
7. The location where your GDB will live is up to you and will therefore vary by user. It should be somewhere in which you have write privileges and will remember the location. If you already have a folder in mind then browse to that location, otherwise browse to a directory in which you have write privileges and (optionally) create a folder that will help you stay organized., then click **OK**.
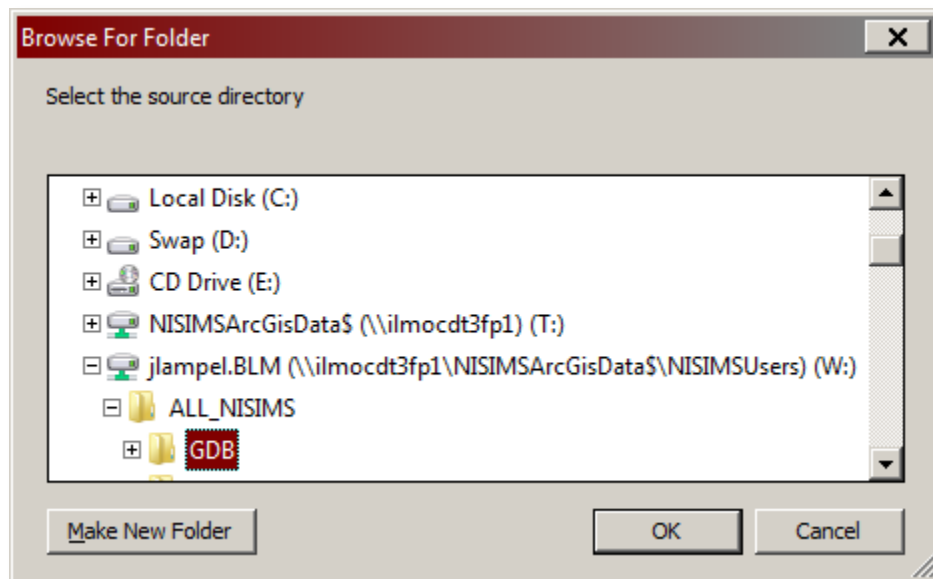
8. Click   OK   to close the *Browse For Folder* dialog.

9. Click   OK   again to initiate the SDE-to-GDB export.

10. Soon you should receive a confirmation prompt indicating a successful export. Click **OK** to close it:

S1_ArcPad_Data_Manager_V_3_00

Export of SDE Geodatabase to Local Geodatabase has completed successfully!

OK

11. Since you will likely be working with this ArcMap project (mxd) again, it is not a bad idea to save the map if you have not yet done so. Click **File > Save**, then navigate to a familiar directory in which you have write access, and assign the map a descriptive name.

Nice work! You now have your very own NISIMS local GDB, whose contents should now be present in the table of contents.

CUSTOM LOOKUP TABLE LISTS

This step allows you to filter the hundreds of records in the master lookup tables into custom lists relevant to your own data collection. The lists are then used to populate drop-down menus in your data forms for several attributes:

- Chemical component
- Adjuvant component
- Project name
- Species treated
- Person/organization name
- Pesticide Use Proposal Number
- Biological Control Species

CUSTOM LOOKUP TABLE CONCEPTS

Before creating your first list, there are a few concepts to understand:

- **Number of items:** For the custom list tool to work, each list must contain *at least* one value regardless of its applicability to your data collection. For example, even if you are not performing chemical treatments, you must still select a value for the chemical component list. The value can be anything, so long as there is one. However, be sure to *avoid adding every item* as this may cause your device to freeze up.
- **Repeated use:** Once the lists are created, you may continue to use them throughout the field season.
- **Requesting additions:** If you need a person/organization, project names, or Proposal Numbers added to the master lookup tables, which are updated weekly, BLM employees may follow the steps outlined in the Adding Data to NISIMS LU Tables section of this document.
- **Request early:** While not always possible, it is recommended that NISIMS users browse through the available lookup table values prior to the field season to confirm whether or not the necessary values are present. This alleviates the need to create a new GDB after data collection has already begun (remember, data is not automatically pushed down from SDE to GDBs).

- **Modifications:** If you need to modify any of your custom lists, you may do so at any time through the same initial process used to create the lists.

HOW TO CREATE CUSTOM LOOKUP TABLE LISTS

The process of creating custom pick-lists is relatively straightforward:

1. Verify that you are in **List By Source** view in ArcMap's Table of contents (this should be the case by default). This view lists all layers in your map based on their actual file location:
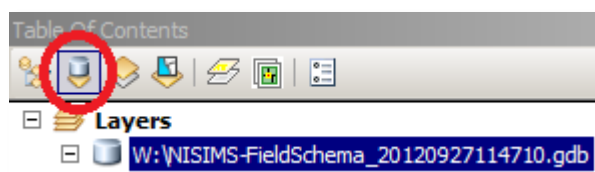

2. The custom list tool needs a GDB to work with, so click your **GDB path** to highlight it (this will differ from screenshot):
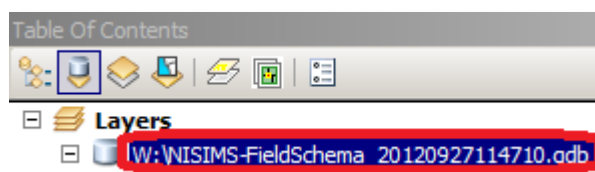
3. The pick-list tool is located on the **S1 ArcPad Data Manager toolbar**. To initiate it, click the **first drop-down menu** and then **Create BLM NISIMS Lookup Tables**:
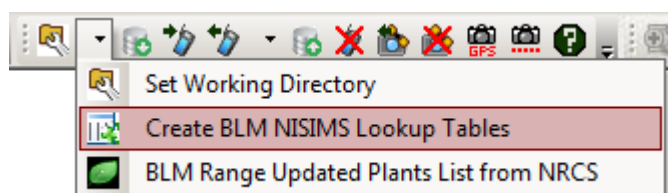
4. Prior to each pick-list customization, you will see the following popup. Click **Start** to proceed:
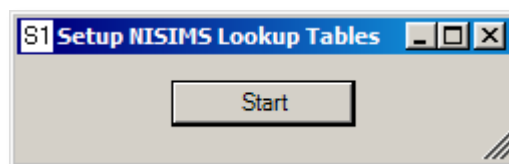
5. The Chemical Component list is the first to be customized, and the process to do so is the identical for the other four pick-lists. First click a desired item in the **Master List** on the left, and then click the **>** button to add it to your User List on the right:
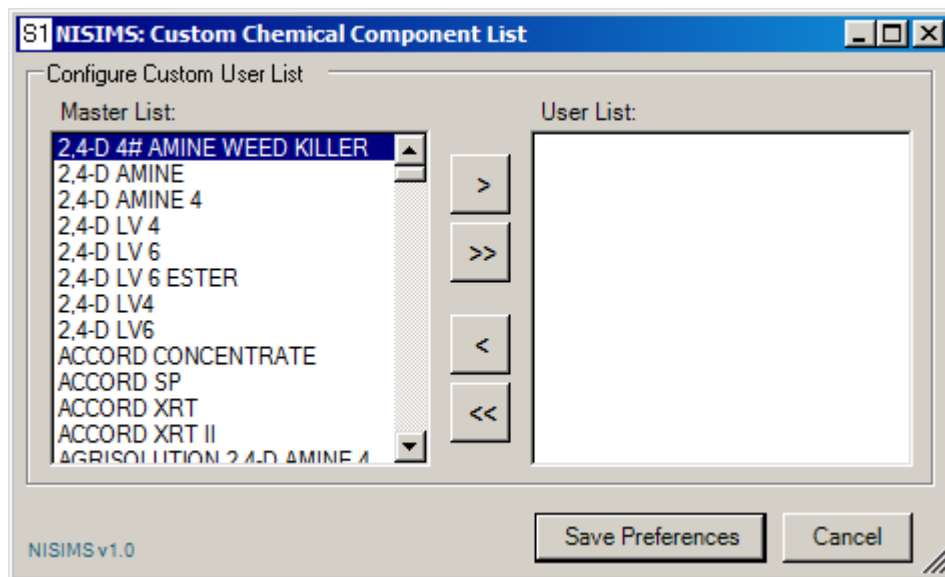
6. After adding as many items as needed (again, do not add all items), click **Save Preferences** to complete this form.

7. You should receive a **confirmation** that the list was successfully populated (followed by a similar message, if you are modifying an existing list, about files being overwritten). Click **OK** to close the message/s:
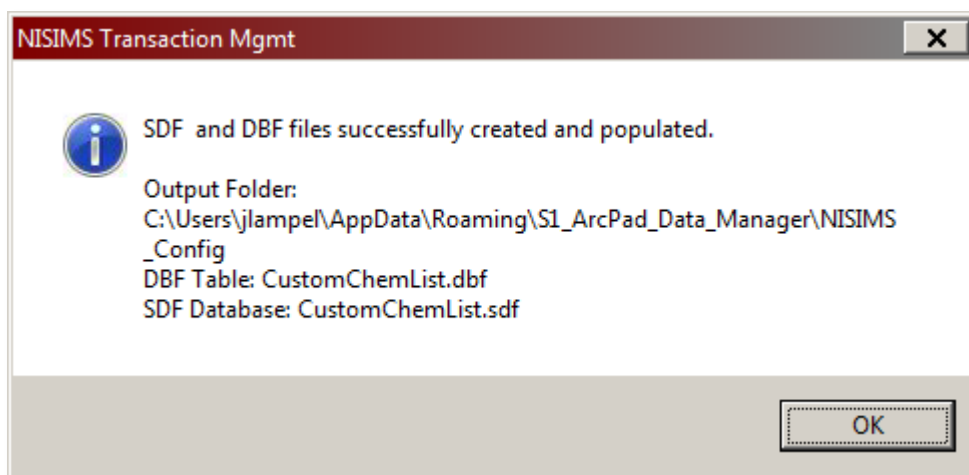
8. At the popup that appears, click **Next>>>** to proceed to customize the next list:
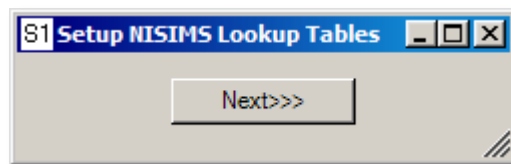
9. **Repeat steps 5-8** on the remaining lists and remember that each list must have at least one value regardless of whether or not you will be using it.

CHECK-OUTS

Check-outs are basically subsets of geodatabases used for collecting new data. They are "checked out" of their parent GDB and "checked in" to the same GDB after data collection.

IMPORTANT CHECK-OUT CONCEPTS

Before creating check-outs, there are some useful concepts to understand about them.

KEY CHARACTERISTICS OF CHECK-OUTS

- **Project extent:** Unlike GDBs, check-outs are created in ArcMap at a project-level view extent rather than state-level. Reason being, larger extents often mean more WeedInfestationReference features, which leads to larger file sizes and eventually poor performance if not complete inability to collect data on handheld devices due to system limitations.
- **Schema only:** The check-out layers in which you will collect data represent only the schema of the parent GDB. That is, they are essentially a skeleton of the GDB- field names and data types are the same, but there is no actual data present. The rationale for a schema-only check-out is to promote efficiency (checking out actual data takes much longer) and to ensure that existing data is edited only in ArcMap. T
- **Existing infestations:** The only layer in a check-out containing any NISIMS data is *WeedInfestationReference*. This read-only shapefile contains non-editable infestation features (and a simplified set of attributes) present in the map extent during check-out. The GDB source layer is updated with new infestations when NISIMS GP is run.
- **Device-agnostic:** Check-outs can be used in ArcPad on a mobile device or desktop, the latter being more common when digitizing is most applicable. The subtle variations between creating a check-out for the two platforms are discussed below.
- **Layer properties:** Changes to a layer's properties (i.e. labels, symbology, definition queries, etc.) in ArcMap will be preserved in the check-out, which opens up considerable options for customizing your map's appearance. This applies to both NISIMS and non-NISIMS layers.

CHECK-OUT FILE MANAGEMENT CONCEPTS

- **Single-GDB compatibility:** Data must always be checked back into the GDB from which it originated, and it is not possible to check it into a different GDB.

- **Automatic deletion:** Once data has been successfully checked back into its parent GDB, the check-out folder is automatically deleted to prevent subsequent check-in of the same data. When you are ready to collect more data, simply create a new check-out.

- **One unique copy:** As with GDBs, there can be only a single unique instance of a check-out since complications will arise if data is checked in from an original check-out and a copy of it. In other words, do not make copies of check-out folders! If you need multiple check-outs, either for yourself or for other users, you must repeat the check-out process for each particular instance.

- **Folder contents:** A check-out folder consists of a variety of files, none of which you should touch! Some files are databases, others are scripts, and modifying or deleting any of them may result in problems.

- **Short lifespan:** For the same reason, check-outs are suited for only a week or two of data collection. This is a rough guideline, but it is best to avoid using the same check-out for an extended period (i.e. an entire field season) since system memory issues can occur. To eliminate the potential for this, you may store multiple check-outs for different project areas and/or different timeframes on your device's memory card.

MOBILE DEVICE CHECK-OUTS

The majority of check-outs are created for use with mobile devices, discussed in this section.

ROUTINE REQUIREMENTS

Before creating a check-out on a mobile device, there are a few things to confirm:

- **Memory card:** A storage card, usually SD or microSD, must be present.

- **Power:** Your device must be powered on during check-out. The process varies by make and model, so consult your owner's manual if needed.

- **ArcPad closed:** ArcPad (or any GPS software for that matter) must be closed prior to data transfer to avoid problems caused when both the mobile device and ArcMap attempt to access files simultaneously.

- **USB cable:** Securely connect your device to your PC using the supplied USB cable.

- **USB Mass Storage Mode:** To ensure your device's visibility in any desktop environment, it must be set to USB Mass Storage Mode. If you want to verify that your device is in this mode, you may open My Computer or Windows Explorer and confirm that a removable disk is present. The name, size, and letter drive will vary, but here is a general example of what you might see:
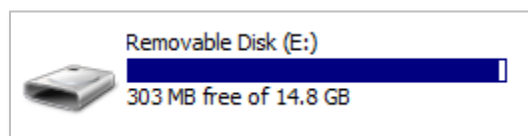

If a removable disk is **not present**, this may be due to one of several reasons:

- You are *not in mass storage mode*. Open USB Toggle and check which mode you are in.

- Your *USB cable is not securely connected*. Make sure both ends are snugly inserted into their ports, and try a different cable and/or port if you are still experiencing issues.

- Your device is *missing a memory card*. Turn the device off and check the card slot (steps vary by device).

- A memory card is present but *not seated properly*. To eliminate this possibility:

  1. Turn the device off.

  2. Remove the card (steps vary by device).

  3. Blow in the card slot to remove any dust.

  4. Wipe the terminal contacts with a small amount of rubbing alcohol, if available.

  5. Wait for the alcohol to dry, then put the card back in and turn on the device.

HOW TO CREATE MOBILE CHECK-OUTS

Once you have verified the required items, follow these steps to create a check-out for your mobile device:

1. Although optional, it helps to have some **reference layers** turned on during this step. You may either toggle the existing NISIMS reference layers (i.e. County, Field Office) or add your own. The online basemaps available via **Add Basemap…** (in the Add Data drop-down menu) are particularly useful, so feel free to experiment:
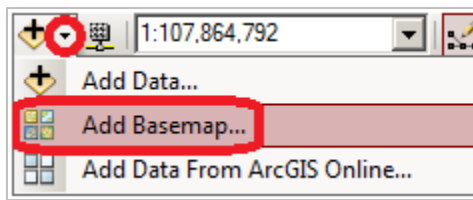
2. Since check-outs are intended to be used at **project-level** geographic extents, you must **zoom** to your general area of data collection using the *Zoom tool* 🔍 or whichever zoom method you prefer. The extent doesn't have to be perfect since you may still collect data outside this area once the check-out is created, but the idea is just to encompass the approximate area in which data will be collected.

   Remember that a large extent can lead to an excessive number of WeedInfestationReference features. Although there is no magic number in terms of scale or amount of features that causes this, if you are zoomed into a reasonably-sized project area with a normal amount of features then it should not be an issue.

   If you want to see whether problems occur right off the bat, try opening your check-out on a mobile device **prior to field collection** and maybe creating (and then deleting) a test feature or two. While this is not a 100% guarantee of problem-free fieldwork, you will at least know your check-out is functioning properly at the onset of collection.

   If, however, you begin experiencing memory errors or performance issues in ArcPad, try creating a new check-out with fewer features. Do this either by A) zooming in closer to reduce the number of features in the extent, or B) creating a **Definition Query** on the WeedInfestationReference layer. Consult a GIS specialist or the built-in ArcMap help for assistance.

3. As with creating pick-lists, you must indicate which GDB will be used in creating the check-out. So, first verify that you are in **List By Source** view in ArcMap's table of contents (this should be the case by default). This view lists all layers in your map based on their actual file location:
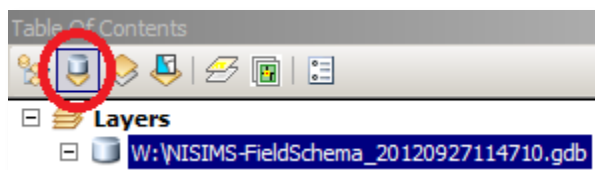

4. To specify which GDB will be used to make the check-out, **click its path** in the table of contents (yours will differ from the screenshot):
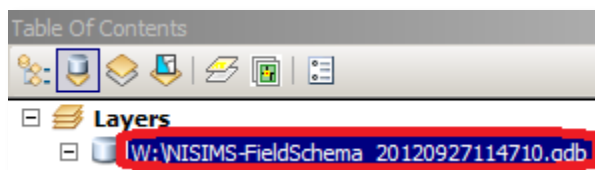
5. Click the **Check Out to ArcPad** button on the S1 ArcPad Data Manager toolbar to initiate the check-out process:

6. You will occasionally receive a message the first time you perform a NISIMS check-out, as the system downloads essential files from the web to your Windows profile that are used in the checkout process. From time to time, these files are updated and new versions are posted to the web. The S1 Data Manager checks for updates at each check-out and, if your profile needs to be updated, you will see the message while the files are downloading.
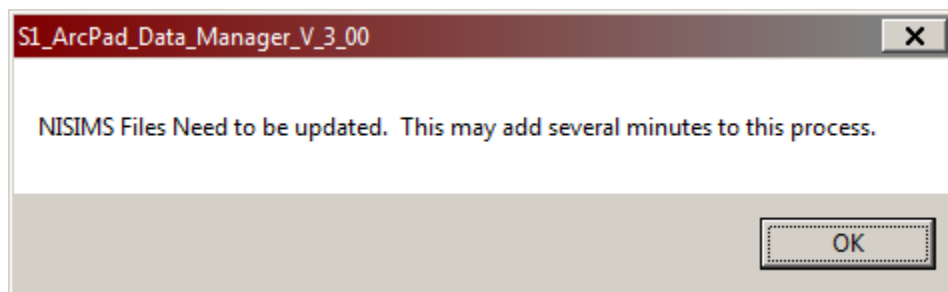
7. If you have not yet **saved your map**, you will be prompted to do so now. Navigate to your desired folder (locations vary), assign the map a descriptive name, then click **Save**. This step simplifies the NISIMS desktop workflow since you can simply open this map whenever you need to check data in or out of the same GDB. Saving the map also preserves any layer properties you assigned, baselayers you added, and a variety of other map-related options.

8. The **Check Out Options** dialog should now be visible. For non-NISIMS data, this form allows you to set a variety of parameters, many of which affect the structure of the GDB. For that reason, most of the options are disabled for NISIMS data so that it will retain its standardized format.

The only required item for NISIMS users is **project name**, so enter a descriptive name under *Please Give ArcPad Project a Name* that you will remember later. A unique, descriptive name is especially important when making multiple check-outs, on a single device or several, so that you will be able to keep track of which is which.

9. If you have any non-NISIMS **reference layers** present in your map that are in the same coordinate system as NISIMS data, they will appear in the right-hand column (this applies to vector data only, not raster files such as aerial imagery). To include one, click on it so that it becomes highlighted. To include additional layers, hold the **Ctrl** key and click on others. For additional help with reference layers and the check out options form in general, click the **Help** button on the S1 ArcPad Data Manager toolbar:

10. Click **OK** to initiate the check-out process.

11. Click **OK** again at the prompt to finish the check-out process:
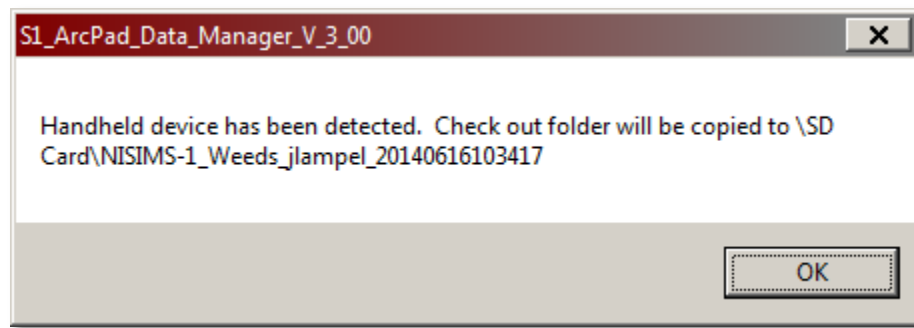
12. After a short time, a **transaction receipt** should appear. This is just a text file indicating various paths and filenames involved in the check-out. Note the **ArcPad Project Name** so you know which map to open later:

13. **Close** the transaction receipt, and then disconnect your mobile device from the PC. Optionally, if you wish to verify that the check-out opens properly, you may refer to the Initial Steps section. If you go want to go a step further, create a dummy feature and verify that no script errors occur in the process, and also make sure that drop-down lists contain values. Although entirely optional, it may be wise to perform this step before heading into the field!

DESKTOP CHECK-OUTS

There may be instances in which using ArcPad on a **desktop computer** is more practical than a mobile device.

WHY DESKTOP?

ArcPad (AP) Desktop comes with the purchase of any AP license (installation requires administrative rights) and is essentially the same as that of mobile devices but includes the benefits common to any desktop environment:

- **Bigger everything:** It is much easier to see data on a regular monitor and to enter it on a real keyboard.
- **Speed:** Desktop processors and RAM greatly enhance ArcPad performance and minimize wait times.
- **Connectedness:** Being online means easy access to a variety of web-based map services.

So, what are some scenarios in which AP Desktop *would be* practical?

- **Digitizing:** When you are creating new features in the office via digitizing, AP Desktop is often the way to go. This generally requires a basemap of some sort to serve as a background reference layer.
- **Reasonable amount of features:** If you only have a small number of features to digitize ("small number" varies by user and patience level), AP Desktop is likely a good choice.

When would ArcPad Desktop *not be* practical?

- **Many features:** If you have hundreds of features to digitize, it may be wiser to consult a GIS specialist who can help you create your data using ArcMap instead. The trade-off to using ArcMap is that it lacks the custom data collection forms and all the behind-the-scenes code associated with them, including things like auto-generation of unique IDs. Any such automated tasks will have to be addressed manually when using ArcMap, so take that into account when deciding on a data creation program.
- **Editing:** AP Desktop is incapable of editing existing features already in a NISIMS GDB or SDE database, so use ArcMap for that process instead.

Note that the steps to create desktop check-outs may also be used to create mobile check-outs when a device is not connected. For example, a device may be out in the field but you want to have new check-outs prepared before the user returns. Or, maybe you are creating check-outs for users in a different location that warrants handing off the check-out via email or a shared directory.

HOW TO CREATE DESKTOP CHECK-OUTS

Steps to create a check-out for AP Desktop are nearly identical to those of mobile devices except for some minor variations:

1. Make sure you **do not** have a mobile device connected.

2. Follow **steps 1-6** in the Checking Out Data section above.

3. When the check-out process is initiated, the S1 tools check for a connected device and will issue a prompt if none is found. Click **Yes** to this prompt:

S1_ArcPad_Data_Manager_V_3_00

No Mobile Device detected. Is it your intent to create a check out on your desktop computer?

Yes   No
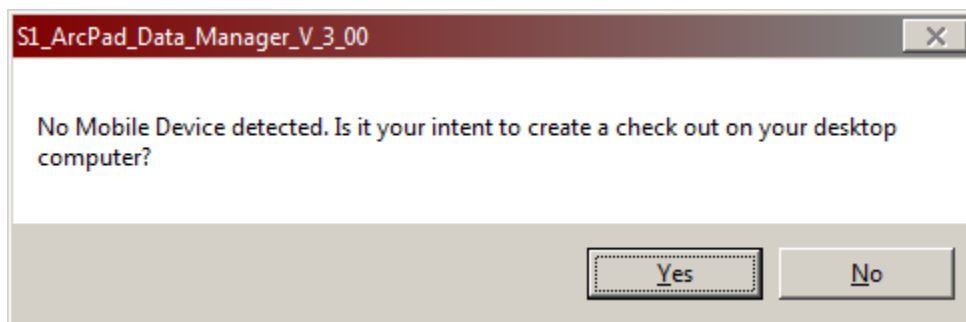
4. The S1 tools need to know where to store the new check-out. Unlike GDBs, however, this check-out needs to reside in a specific location that will ensure proper ArcPad functionality. To minimize confusion, a screenshot is omitted for this step since folder names vary, but the folder you must select is:

Local Disk (C:)\Users\<yourusername>

To clarify, <yourusername> will be replaced by the username with which you log into Windows. Optionally, if you want to be a little more organized, you may create additional subfolders inside that directory such as "C:\Users\jlampel\nisims-check-outs" or something to that effect. As long as the custom folders are below the <username> directory level, you can create check-outs in them.

5. Once you have selected the appropriate check-out destination, click **OK**.

6. Follow **steps 7-12** in the Checking Out Data section above.

DATA COLLECTION

Before you begin collecting field data, there are some business rules and tips you should be aware of.

BUSINESS RULES AND TIPS

ALL LAYERS

- In order to simplify acreage calculations, all NISIMS features (with the exception of photo points) are ultimately stored as polygons. When collecting data, however, features appear in their native geometry since points and lines are not buffered into polygons until the geoprocessing step in ArcGIS Desktop.
- The mobile app automatically assigns a unique ID to each infestation.
- When possible, determine the extent/perimeter of a feature prior to mapping it as this can aid in choosing an appropriate geometry type as well as lead to a cleaner shape in general.
- Utilize the **Repeat Attributes** button 📑 on each of the data forms to auto-populate fields with values last used for that layer. This is especially useful when you are collecting a lot of features that have many or all of the same attributes.

POINTS

- During the geoprocessing step mentioned above, points are buffered into circular polygons based on the size class range as buffer distance)
- When collecting a point via GPS, stand in the center of the feature.

LINES

- When collecting a line, do not allow it to cross over itself as this will lead to geometry errors in GIS.
- For all line features, you must supply the following buffer information:

- o **Buff Dir** is the direction, relative to the path of travel, in which the resulting polygon will be created from the line (remember, all NISIMS features are ultimately buffered into polygons).
- o **Buff Width** is the width of the buffer being applied to the line.
    - If *Left* or *Right* is chosen as the buffer direction, the buffer width will be extended to one side or the other of the line being walked.
    - If *Center* is chosen, the width will be extended to BOTH sides of the line. For example, a left buffer direction with a width of 5 feet (units specified in next drop-down) will produce a buffer 5 feet wide to the left of the line walked, but the same buffer width for a center buffer will yield a buffer that is 10 feet wide (5 feet on each side of the line).
- o **Buff Units** are the units used for the buffer width.

POLYGONS

- As with lines, do not allow a polygon to intersect itself as this will lead to geometry errors in GIS.
- Complete your polygon feature before returning to the initial vertex because ArcPad will close the polygon automatically. This minimizes potential for self-crossing features.

INFESTATIONS

- Each infestation can contain one species only, so if you are mapping multiple species then you must create multiple infestations.
- For infestation points, you must choose one of the following three size classes, which ultimately produce circular polygons when buffered (resulting polygon acreage in parentheses):
    - o < 0.10 (0.10)
    - o 0.10 Acre to 0.50 Acre (0.5)
    - o 0.50 Acre to 5 Acres (2.5)
- Although the minimum infestation size is 0.10 acre (11.3 meters from center to edge of population), you may still map a single plant as long as you choose an appropriate percent cover.
- For infestations larger than 5 acres, create an infestation polygon instead.
- If two infestations of the same species and same year overlap, they will ultimately be merged into a single infestation containing only the attributes of the largest feature. If you anticipate such a scenario, consider mapping the entire area as a single feature with attributes representing the entire infestation.

TREATMENTS

- A treatment pertains to a single treatment type, so multiple treatments performed in the same extent (i.e. hand-pulling and spraying herbicide) must be mapped as separate treatments.
- You must turn on repeat attributes in two places for treatments: in the general attribute form (the black and white forms) as well as in the treatment specific attribute form (the colored forms).
- There are no size classes for treatment points- they are ultimately buffered into circular polygons with a 20-yd radius. So, if mapping a treatment as a point, its radius must be smaller than 20 yards from the treatment center. Otherwise, use a treatment polygon instead.

- Field descriptions, special instructions, and various examples can be found in the treatment help document by tapping the ? button on any page.
- When mapping a treatment, you are required to document the species of any infestations being treated. When data is later uploaded into the SDE database, if no infestations are found within the treatment area that match the species names recorded at time of treatment, a tool will automatically generate new infestation features based on the geometry of the treatment area. While efficient, this can be undesirable for two reasons:
    1. Since the auto-generation can only use fields present in both the infestation and treatment feature classes, not all of the fields in each infestation will be populated. Therefore, certain attributes must be populated manually back in the office.
    2. The potential for spatial inaccuracies is higher since not all of the infestations may have been identical in size and shape to the treatment.

CHEMICAL TREATMENTS

- Have all treatment attribute info handy before mapping treatment feature (ex: herbicide application info… amount chemical sprayed, rate of spray, tank application mix rate, etc.)
- Only chemical application rates are entered in the field. The NISIMS geoprocessing tools on the desktop will calculate actual amount of chemical applied. Calculations for amount applied are:
    - <u>Broadcast applications reporting a rate/acre application</u> – Rate of chemical applied X GIS area of treatment feature = Chemical application amount (2 pt/acre x 5 acre polygon = 10 pts or 1.25 gallons chemical applied)
- <u>Spot applications reporting a % solution rate application</u> – Total mix volume amount x % solution rate = Chemical application amount (20 gallons mix applied 2% solution = 0.4 gallons chemical applied)
- Treatment data forms contain built-in validation code to enforce logical data entry by disabling irrelevant fields or limiting pick-list values for certain scenarios. Refer to <u>External Treatment Forms</u> for specifics.

SURVEY POLYGONS AND SURVEY LINES

Survey polygons and **survey lines** map areas that have been covered by a field observer and document the invasive species that were *searched for* in those areas (not necessarily what was *found*, those are recorded as infestation features).

The survey polygon or line is later used to designate the *historic status* of existing infestations of the same species in the same extent found in the database. An infestation is initially recorded as *current* when it is the first observation of that species in a given area. Subsequent surveys of that same area for the same species will result in the previous observations of that species' infestations to be changed to *historic* when a survey polygon or line is mapped in the same area.

For an existing infestation to be considered *historic*, three conditions must be met:

1. It must be of the same species as listed in the new survey polygon or line.
2. Its collection date must be earlier than the start date of the new survey polygon or line.
3. 75% of its area must fall within the new survey polygon or line.

If infestations do not meet all of these criteria, their status will remain as *current*.

If new infestations are mapped on top of existing ones of the same species but a survey polygon or line is not captured, there will be no change in the current/historic flags for any infestation observations, and infestations' current/historic designations must be set *manually* in the SDE database. To minimize two overlapping infestations of the same species from different survey years both being set to *current* in the database, always map a survey polygon or line to document where recent searches are performed.

PHOTO POINTS

PhotoPT is a standalone feature class that allows you to capture NISIMS-related photos containing basic attribute information without being associated with other layers.

INITIAL STEPS

Before you can collect any NISIMS data, you first need to open ArcPad and the check-out from previous steps.

OPENING ARCPAD

1. To open ArcPad, tap the **ArcPad icon** on the Desktop (aka Home Screen):
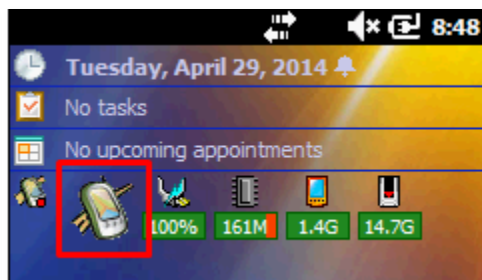
2. When you reach the welcome screen, tap **Choose map to open**:
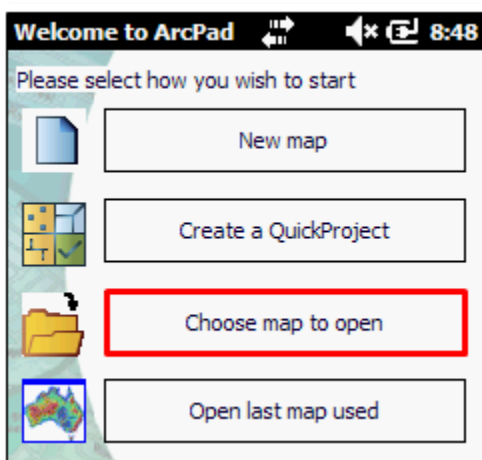
3. In the list you may see several maps available (their names will differ from this screenshot). Tap on the map that was created during the checkout process. It should be located on your **Storage Card**, which you will see in the Folder column. If your check-out map does not appear in the list, make sure your device is disconnected from the PC prior to opening ArcPad.
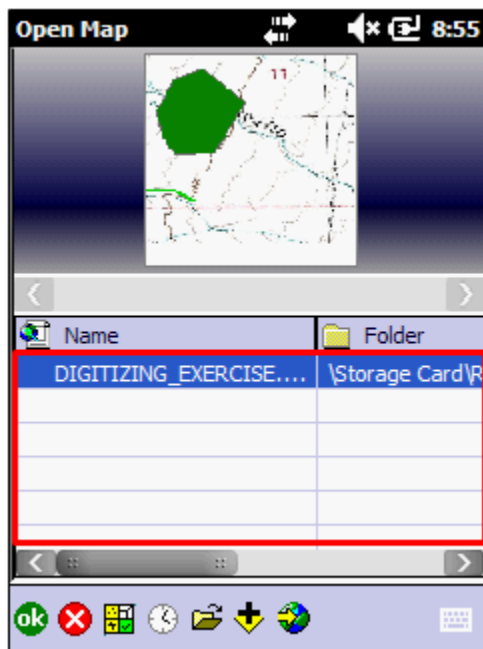
4. To open your map, tap the ⓞⓚ button. Be patient as this process may take several minutes.

ACTIVATING THE GPS RECEIVER

If you are collecting data via GPS (as opposed to digitizing or coordinate entry), you must first activate your GPS receiver:

1. If necessary, promote the **Favorites toolbar** by tapping on the star icon:

2. Tap the **Activate GPS Receiver** button and its background should turn orange:

3. Once your GPS cursor contains a yellow cross like this ⊕, you have a GPS signal.

COLLECTING FEATURES

The majority of data collection tasks you perform will be via the **S1 Toolbar**. For additional help, refer to the S1 Toolbar user guide that is included in the extracted folder of the S1 Installer zip file.

CHOOSING BASIC PARAMETERS

Regardless of the type and location in which you are creating features, you must decide on three options:

1. **Geometry type:** Will the new feature be best mapped as a point, line, or polygon?
2. **Destination layer:** In which feature class will the new feature class be stored?
3. **Data capture method:** How will the data be recorded? Will you digitize indoors, or use GPS in the field?

CHOOSING A GEOMETRY TYPE

When creating a feature, you must choose the most appropriate of three options: point, line, or polygon. Each type is suited for different scenarios:

- **Points** are ideal for small infestations or spot treatments.
- **Lines** feature are suited for linear features such as roads, streams, and fencelines.
- **Polygons** are very versatile but not recommended for small features (use a point instead).

The process for creating a new feature of a certain geometry type does not vary between layers, so follow the steps below regardless of what layer you are collecting in.

1. Promote the **S1 Toolbar** by tapping the S1 icon at the top of the screen.
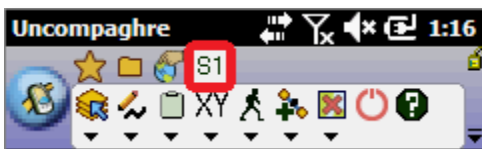
2. Open the **second sub-menu** from the left (the *Create Features* sub-menu) by tapping on its black drop-down arrow:

3. Of the first three options in the sub-menu, tap the one relevant to the feature you are collecting.
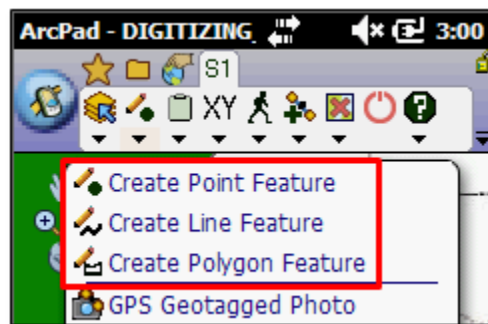
SELECTING A DESTINATION LAYER

After selecting a geometry type from the Create Features sub-menu, a list displays all the *editable* layers in your map for *this geometry type*. In other words, you will not see layers that are non-editable by default such as WeedInfestationReference, or layers of a geometry type other than the one you just chose. Note also that you may only edit or create features in *one layer per geometry type* at a time.

There are three point layers available- InfestationPT, PhotoPT, and TreatmentPT:
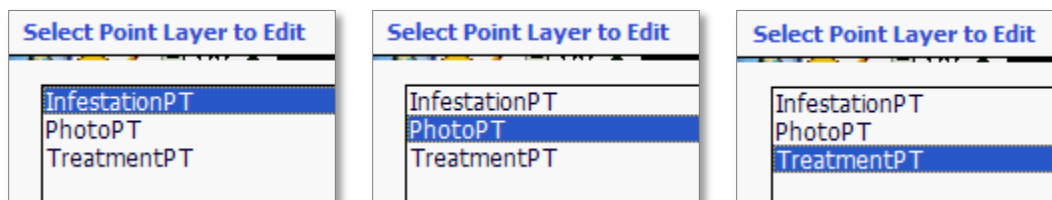
…three line layers- InfestationLN, SurveyLN, and TreatmentLN:
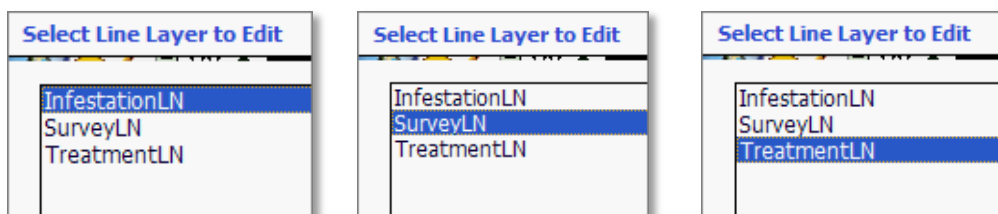
…and three polygon layers- InfestationPG, SurveyPG, and TreatmentPG:
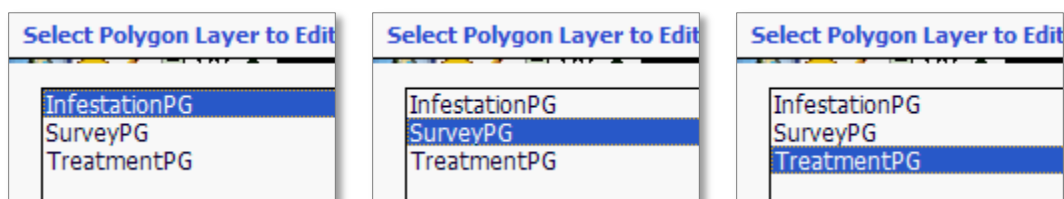
To **select your desired layer**, simply tap its name and it will become highlighted in blue.

CHOOSING A CAPTURE METHOD

After you select your desired layer, you will choose a capture method. Your choice will be based on whether or not you are using GPS and on your feature's geometry. The following sections describe how each capture method works, which geometry types they apply to, and when to use them.
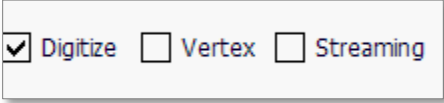
DIGITIZING

Regardless of geometry, you always have the option to **Digitize**.

In **point capture** options:
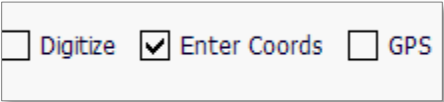
☑ Digitize ☐ Enter Coords ☐ GPS

In **line/polygon** capture options:

☑ Digitize ☐ Vertex ☐ Streaming
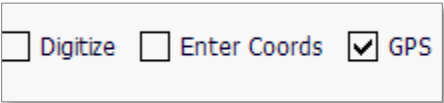
Digitizing involves tapping (or clicking, when using ArcPad Desktop) on the screen to create features. This method does not utilize the GPS receiver and is particularly useful for creating features based on hand-drawn maps or written descriptions of a feature's location. In general, digitizing is only practical if a background layer such as an aerial image or topo layer is present to digitize against. Otherwise you will just be tapping in empty white space with no spatial reference to guide you.

ENTERING COORDINATES

☐ Digitize ☑ Enter Coords ☐ GPS
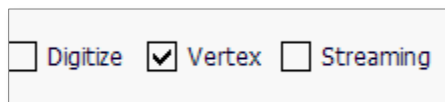
Available to point features only, the **Enter Coords** capture method involves entering known coordinates to create a point feature. This is a useful approach in ArcPad Desktop when creating points based off a list of coordinates. If it is an especially long list, however, you may want to consider an alternative method using ArcMap. Note that doing so requires a number of additional steps that normally are automated in ArcPad, so make sure to consult someone on this first!

GPS

☐ Digitize ☐ Enter Coords ☑ GPS

Again available only to point features, the **GPS** capture method involves creating a point feature based on your current location. Generally the most common means of collecting point features, the GPS method requires that you are outdoors and that your device's GPS receiver first be activated (refer to instructions in Initial Steps).
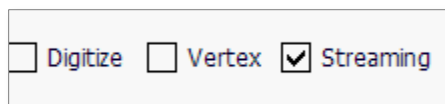
VERTEX METHOD

The **Vertex** method uses an averaged set of coordinates (30 x/y pairs by default) to create a single vertex. It is ideal for sharp corners and well-defined straight edges, or any time when higher accuracy is required.

Note that once you have selected a capture method for a line or polygon, you are not required to use it throughout the duration of collecting a feature, but can rather toggle between capture methods as needed.

STREAMING METHOD

Available to lines and polygons only, the **Streaming** method involves capturing vertices at pre-defined distance intervals (every 5m by default). Streaming is ideal for curved features and is faster than the vertex method, although less accurate as it only collects a single set of coordinates per vertex.

Again, note that once you have selected a capture method for a line or polygon, you are not required to use it throughout the duration of collecting a feature, but can rather toggle between capture methods as needed.

CAPTURING FEATURES

If you have not already done so, tap the 🆗 button to submit your choices and begin capturing a feature. Depending on the geometry type and especially the collection method you choose, the next steps will vary.

DIGITIZING

If you chose **Digitize** as your capture method, you will create your feature by tapping on the map.

DIGITIZING POINTS

For point features, you will receive a prompt instructing you to tap on the screen. Tap **ok** to close this.
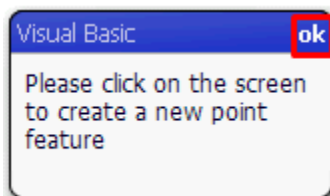
To digitize your point, simply tap your desired location. The geometry of the feature is captured and you will then be taken to the attribute form.

DIGITIZING LINES AND POLYGONS

For a line or polygon, **tap on the map** to create each vertex (minimum of two vertices for lines, three for polygons):
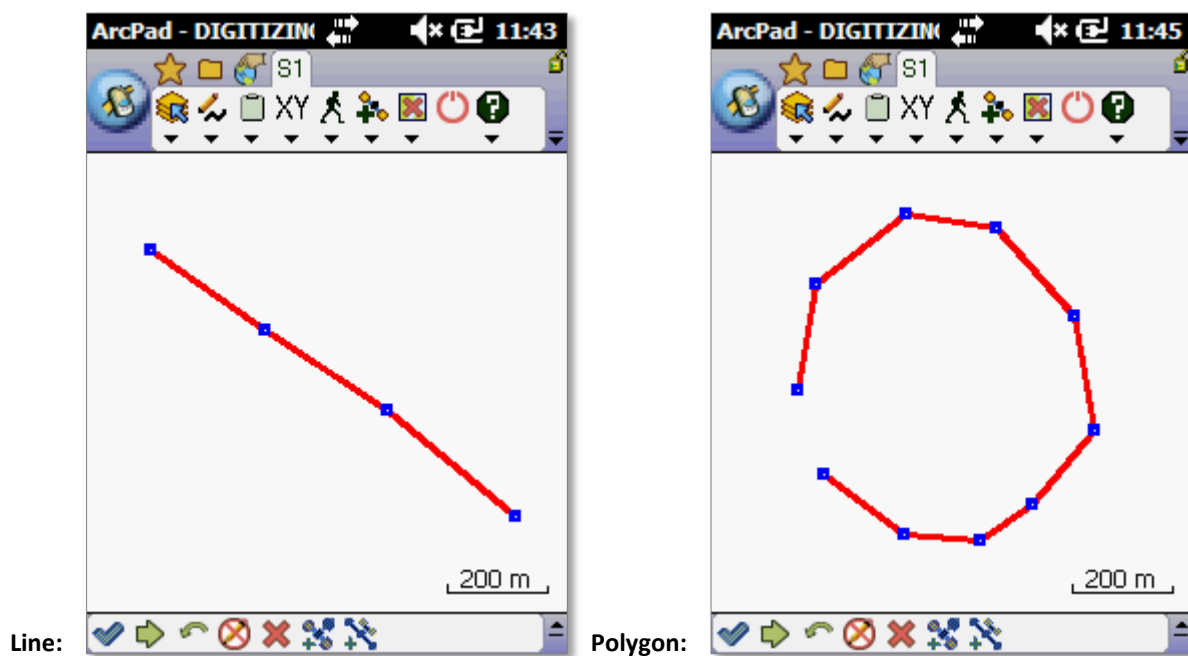
Line: **Polygon:**

Remember not to let features self-intersect as this will lead to geometry errors in GIS (this applies to any collection method, not just digitizing). Also, do not close polygons by creating a final vertex on top of the initial one- leave a small gap (as shown in the screenshot above) and ArcPad will close the polygon automatically.

To complete the feature's geometry and begin filling out attributes, tap the **Proceed to Attribute Capture** button on the bottom toolbar:
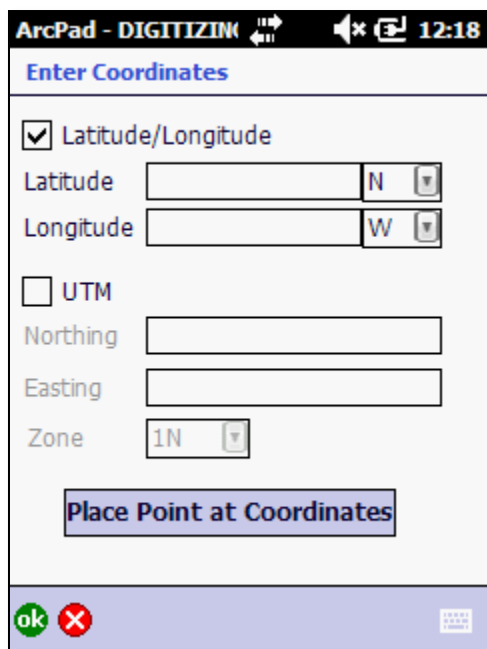
There are a couple of other useful options on the bottom toolbar that may help you:

- If you make a mistake while digitizing, you may **undo** as many vertices as necessary by tapping the left-facing green arrow button on the bottom toolbar:

- To **permanently cancel** the feature (this action cannot be undone), tap the red X:

ENTERING COORDINATES

If you are capturing a feature using the **Enter Coords** method (points only), the following screen will appear:

Check the box of the desired coordinate type (Latitude/Longitude or UTM), enter the coordinates, and tap .

GPS

If you chose **GPS** as your capture method (points only), no further capture steps are needed and you will be taken directly to the attribute form.

VERTEX METHOD

If you chose **Vertex** as your collection, ArcPad will immediately begin collecting GPS positions whose coordinates will be averaged into a single vertex. You will see the status of this process in a screen similar to following:
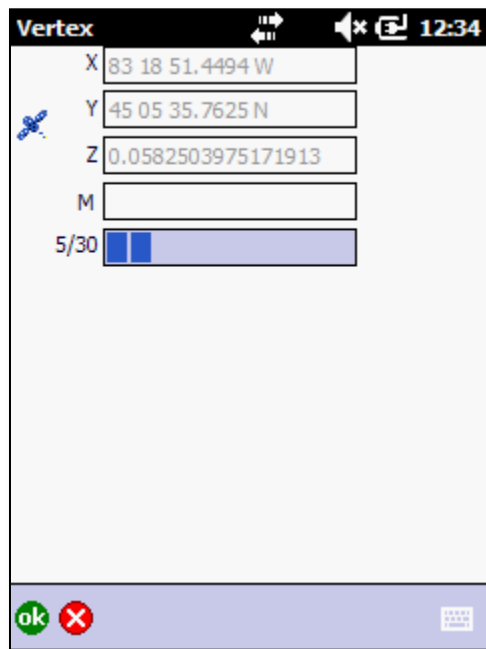
No action is required on this screen, which will close as soon as the averaging is complete. If you wish to store the vertex sooner, you may tap and tap **Yes** to the prompt.

Once the averaging is complete, you are returned to the map with the feature not yet complete and not currently logging additional vertices. As indicated by the taskbar, this is called **Pause Mode**:
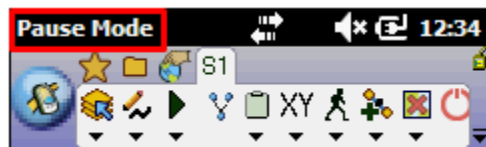
While in Pause Mode, you now have a couple of options:

A. Create another vertex using the **Vertex** method again after you move to a new spot (likely a corner or the end of the current line segment). To do this, tap on the **Vertex button** now available on the S1 Toolbar (in Pause Mode only):
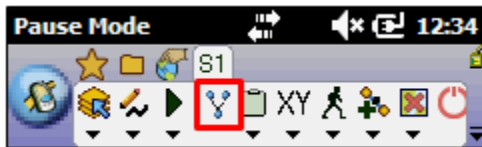
B. Move forward at least 10 feet in order to prevent self-intersection, and begin **Streaming** (see "Streaming" section below for details) by tapping the **Play** button, which is available only in Pause Mode:

You may hit the Pause/Play button to toggle between Pause and Streaming modes as often as necessary and continue creating vertices via streaming or the Vertex button. When you are satisfied with your feature, tap the **Proceed to Attribute Capture** button on the bottom toolbar to begin entering attributes:

STREAMING METHOD

If you chose Streaming as your capture method, ArcPad will create an initial vertex at your current location and continue to do so as you move (one vertex every 5m by default). As indicated by the taskbar, this is referred to as **Streaming Mode**:

While streaming, you may need to pause your feature so that you can walk around an obstacle, capture a point feature (without losing your current line/polygon), or capture a new vertex using the Vertex method (see "Vertex" section above). To pause, tap the **Pause** button on the S1 Toolbar (present only in Streaming Mode):
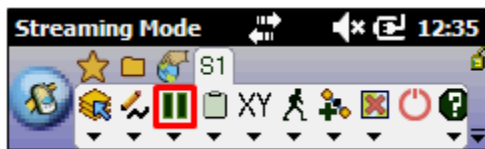
You may hit Pause and Play to toggle between Pause and Streaming modes as often as necessary and continue creating vertices via streaming or the Vertex button. When you are satisfied with your feature, there is no need to pause it first if you are currently streaming- just tap the **Proceed to Attribute Capture** button on the bottom toolbar to complete the feature's geometry and begin entering attributes:

FILLING OUT ATTRIBUTES

Once you have captured the geometry of a new feature, you are required to fill out attributes specific to that layer in the default ArcPad form that appears. This type of form is generally distinguished from "external" forms by its black and white appearance, whereas external forms are generally colorful (with the exception of photo point forms). External forms are based entirely on custom programming code, are present only for certain scenarios, and share several common concepts.

GENERAL CONCEPTS

Regardless of geometry type, certain attribute forms share a few common concepts, discussed below.

REQUIRED FIELDS

In both ArcPad forms and external forms, fields with **bold** labels are generally required. For example, consider page 2 of the InfestationPT form or page 3 of the chemical treatment form:

On the infestation form "Recorder", "Role", and "Date" are required, while "Qty of Plants", "Qty UoM", and "Qty Method" are optional. On the chemical treatment form, "Chemical Agent" is required and "Adjuvant Agent" is optional.

If you skip any required attributes, you will receive a message indicating what those were. For example, if you attempted to proceed to page 2 of an InfestationPT form with the "Estimated Size" field left blank on page 1, you would receive the following:
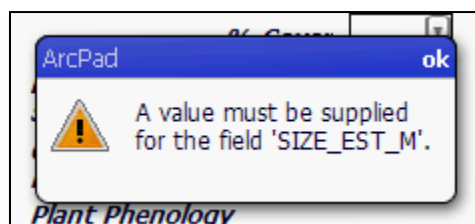
PICKLISTS

Certain drop-down menus (aka "picklists") in ArcPad forms contain the filtered values from the Configure Custom Lookup Table Lists step. The labeling and presence of the fields containing these values vary by layer (i.e. "Recorder" in infestations and treatments, or "Surveyor Name" in a survey polygon). If you wish to modify these pick-lists, you must follow the original steps and then create a new checkout.

BUTTONS

There are a variety of buttons you will come across in both ArcPad forms and external forms.
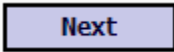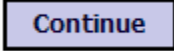
ARCPAD FORM BUTTONS

All ArcPad forms have several default buttons in common:

- **ok** Technically completes a form when creating a new feature, but it is recommend to instead use the buttons on the forms themselves (i.e. "Finish" or "Complete") to accomplish this so that you can confirm that you have reached the final page of a form. These buttons are a much safer distance from the Cancel button (see next item), not to mention larger and easier to tap.
- ❌ Cancels the current feature **without an undo option**, so make sure this is your intention before tapping it!
- ⌨ Toggles your device's keyboard panel, which should appear automatically when you tap a field that requires typing, but if not then just tap the button.
- ➡ Enables **Repeat Attributes** functionality, which retains the form's current values the next time you create a feature in this layer. This can be an especially useful time-saving tool when creating many features with similar attributes. Here are a few things to note about Repeat Attributes:
  - Attributes do not transfer from one layer to another and are only carried over from the last feature created in that same layer.
  - You can enable it for as many layers as you want.
  - You may enable it on any page of a form before, during, or after filling out attributes, just as long as it is done before the feature is completed.
- ➡| Disables Repeat Attributes. This icon is identical to that of "Enable Repeat Attributes" except that it appears pushed in and has a white background. In other words, if it looks this way then Repeat Attributes is currently enabled.

In ArcPad forms there are also **custom buttons** whose functions are logically indicated by their label:

- **Next** Takes you to the **next page** of a form.
- **Previous** Takes you to the **previous page** of a form.
- **Continue** **Completes** a treatment or SurveyPG form and opens the relevant external form.

EXTERNAL FORM BUTTONS

Functions of **buttons in external forms** are relatively straightforward:

- Open a secondary external attribute form (i.e. Treatment Species) or add a selected item to a list.

- Remove a selected item from a list.

- Open selected chemical or adjuvant record for editing (chemical treatments only).

- Complete the form and stores the feature.

- Proceed to next page.

- Go back to previous page.

- Repeat Attributes is currently active for this treatment type (press to deactivate).

- Repeat Attributes is currently inactive for this treatment type (press to activate).

- Submit Store the values of a secondary external form and returns you to the main form.

- Cancel Cancel a secondary form and returns you to the main form.

- Open the treatment help file at section relevant to current form.

INFESTATION FORMS

ArcPad forms for infestations have three pages with essentially the same information for any geometry type. The exception is page 1, which contains the "Estimated Size" attribute for points or buffer information for lines (the Infestations and Lines sections contain detailed information):

Pages two and three of infestation forms, however, contain the same attributes regardless of geometry type:

On page 3, you have two options for completing the feature:

- **Finish** completes an infestation attribute form and stores the feature.
- **Finish-w/ Assoc Characteristics** completes an infestation form and opens the optional "Associated Characteristics" external form by which to designate land use categories.

ASSOCIATED CHARACTERISTICS

The **Associated Characteristics** form is an optional way to indicate land use and appears after you click the "Finish-w/ Assoc Characteristics" button on the last page of an infestation form:

TREATMENT FORMS

After a treatment feature is captured, you will see a two-page form whose attributes do not vary between geometry types, except for the buffer information required by line features (refer to the Lines section):

Other than the buffer information, attributes in ArcPad treatment forms are identical but may be located on different pages (i.e. the "Treatment" field may be on page 1 or 2, depending on geometry type):

Note that whatever you choose for "Treatment" determines which external form you will be taken to next, and you are not permitted to change this field later (any other field can be changed, however).

EXTERNAL TREATMENT FORMS

Based on your selection in the "Treatment" field mentioned above, you will be taken to an external form for one of the six treatment types available: Biological, Chemical, Fire, Manual, Mechanical, or Revegetation.

It is recommended that all infestations being treated are also mapped in addition to mapping the treatments (refer to the business rules for the reasoning behind this). If an infestation is the same size and shape as a treatment associated with it, use the Copy Geometry tool to save time (it doesn't matter which feature you map first, the infestation or the treatment, because you can use either as your source feature).

CHEMICAL TREATMENTS

Chemical treatments are the most complex treatment type in NISIMS and therefore have the most attributes. They also have special business rules that can affect values in the external forms, so be sure to familiarize with the business rules before mapping features.

Pages 1 and 2 of chemical treatment forms have the most fields:

Note that on page 1, if BROADCAST is chosen as the pattern, *Total Mix Sprayed* and *Mix Units* are inapplicable and therefore disabled. Similarly, if NONE is chosen for Mix Diluent, then *Total Mix Sprayed, Mix Units, Equip Calib Rate* and *Rate Unit* are disabled:

Pages 3 and 4 contain only list boxes that are populated by additional external forms:

Originating from page 3, **Chemical Agent** and **Adjuvant Agent** have their own forms as well:

Note that on these two pages, only volume units are available when a liquid chemical is chosen, and only weight units when a dry chemical is chosen:
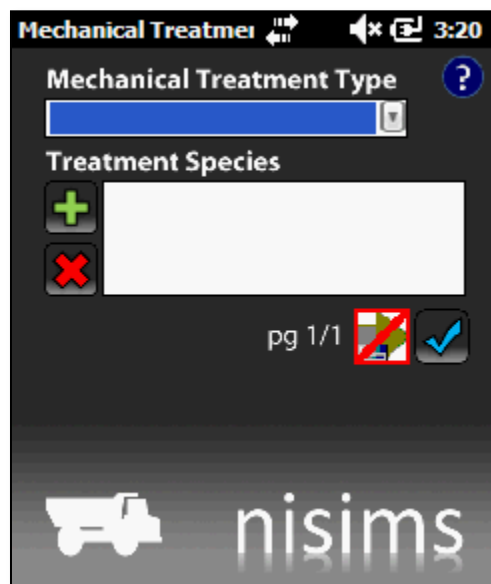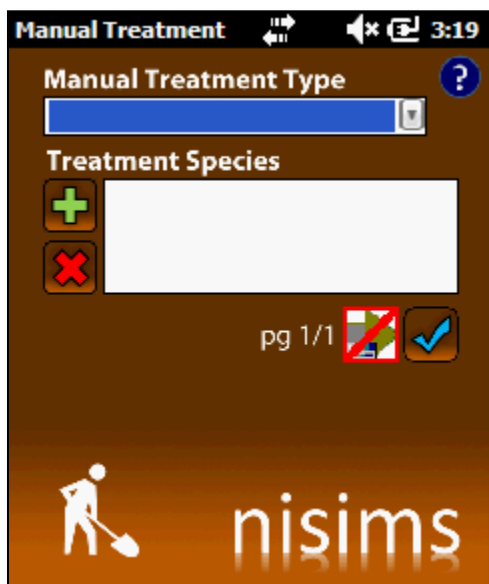
Also, if BROADCAST was chosen as the pattern on page 1, then choosing PERCENT SOLUTION as your rate units will result in a validation error.
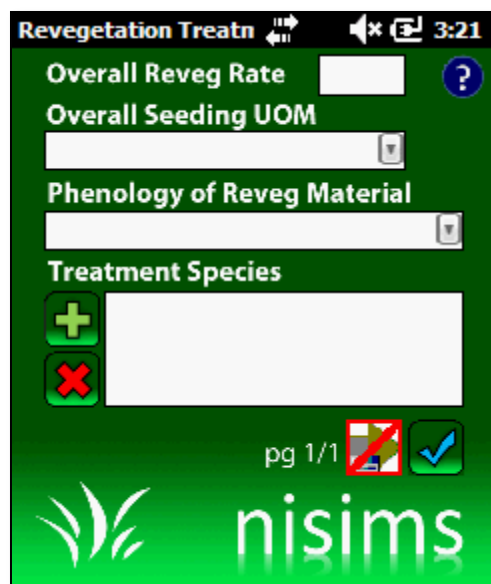
NON-CHEMICAL TREATMENTS

Biological treatments are the only treatment type besides chemical that has more than one page:

Manual and mechanical treatments have one page each:

…as do fire and revegetation:

TREATMENT SPECIES

There is no limit to the number of treated species you may add, but you must include only species that are treated AND observed in the Treatment Species form that appears after tapping the green plus button:

SURVEY LINE AND SURVEY POLYGON FORMS

Survey lines and survey polygons have only one page on both their ArcPad form and external form:
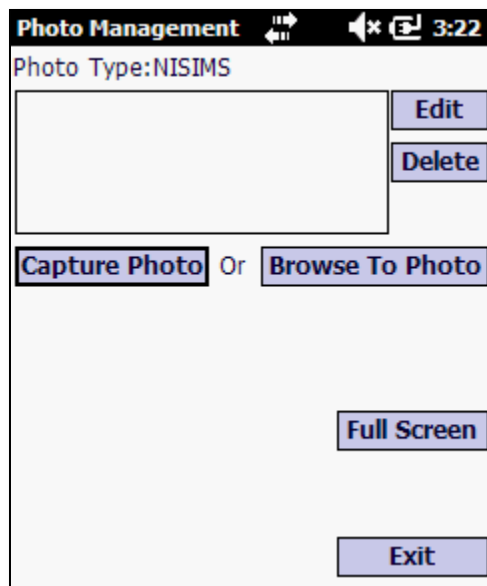

Note that on the Weed Species form you are permitted to add **multiple species** if necessary.

PHOTO POINT FORMS

The PhotoPT ArcPad form only has one page as well. To open the external form, tap **Add Photo Record**:

The **Photo Management** form appears:

To add a photo to this feature, choose from either of these buttons:

- **Capture Photo** opens your device's camera for you to take a new photo. The process for capturing a photo varies by device, so consult your owner's manual if you need assistance.
- **Browse to Photo** lets you navigate to an existing photo stored on your device.

After capturing or selecting a photo, fill out the basic attributes on the NISIMS Photos form that appears, then tap **Submit** to store the attributes:

Once the attributes of the photo are stored, you are returned to the Photo Management form, where you have a few more options:

- **Edit** allows you to modify the attributes of a selected photo in the list box to its left.
- **Delete** will delete the selected photo in the list box to its left.
- **Full Screen** opens a full-size view of the selected photo instead of just a thumbnail.
- **Exit** stores the photo/s and their attributes then closes the form.

CLOSING ARCPAD

When you are finished collecting data for the day, or even for several hours, it is highly recommended that you **close ArcPad** for two reasons:

1) Leaving the program running will drain your device's battery, even if the screen is off.
2) Attempting to transfer data to a PC while ArcPad is still open can seriously corrupt the data.

To close ArcPad:

1. Tap **S1** to promote the toolbar.

2. Tap the **red circle**.

3. If you have not yet saved your map, you may be prompted to do so. Note that the data you collected is saved regardless of what you choose here. So, if you are not saving data, what are you saving? By saving the map, ArcPad preserves a variety of map properties including, but not limited to:

- Data layers' presence and display
- Symbology
- Labeling
- Map extent

If you would like your map's properties to be stored for future use, choose **Yes**. Keep in mind that, once the data is successfully checked back into the database, the map file and its checkout folder will automatically be deleted anyway. So, saving the map even if you are not using it again is somewhat unnecessary.


ADDITIONAL TOOLS

COPY GEOMETRY

If you have two features of the same size, shape, and location, use the **Copy Geometry** tool to duplicate an existing feature and paste it into the same layer (or into any layer of the same geometry type) as a new feature. This can save a lot of time by eliminating the need to walk an entire feature twice, and will also produce an exact duplicate of the original shape. To use this tool:

1. Make sure your **source feature** (the one you're copying from) is selected. If it is a feature that you *just created*, it should already be selected by default. *If not*, you may need to make sure the feature's layer is **selectable**:

   a. S1 Toolbar > first sub-menu > Set Selectable Layers:
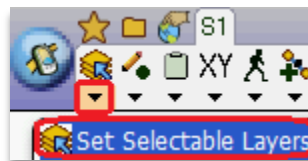
   b. Confirm that your **source layer** (the one you're copying from) is highlighted in blue (InfestationPT in the screenshot below), otherwise tap the layer name to make it selectable:
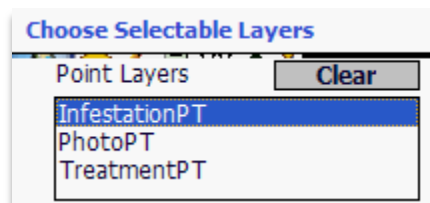
   c. Tap to close the form.

d. Depending on which tool you last used, you may or may not need to activate the **Select tool** in the first sub-menu of the S1 Toolbar:

2. In the S1 Toolbar, tap the **Advanced Create Features sub-menu** (third from left).

3. Choose **Copies Geometry**.

4. Choose the destination layer into which the source feature will be copied.

5. Tap **OK**.

6. Fill out all necessary attributes and complete the feature as usual. You will now have two features of identical size, shape, and location.

INBOUND DATA STEPS

Once your data has been collected, it must be integrated into the desktop environment.

CHECKING DATA INTO PARENT GDB

The first step in the inbound data workflow involves checking the new data into its *parent GDB*. That is, the original GDB from which it was created. You cannot check the data into a different GDB!

FROM MOBILE DEVICE

Follow these steps to check your data in from a mobile device:

1. Follow the same routine requirements as those for checking data out.

2. If necessary, **start ArcMap** and open the mxd you used during check-out.

3. As with most steps involving S1 Data Manager tools, you must be in **List By Source** view so that map layers are arranged in the table of contents based on their their actual file location. To verify that you are in this view, make sure the *List By Source* icon is activated in the table of contents: .

4. The check-in tool needs to know which GDB to work with, so In the table of contents click the **path to your local GDB** from which the check-out originated (yours will differ from the screenshot):
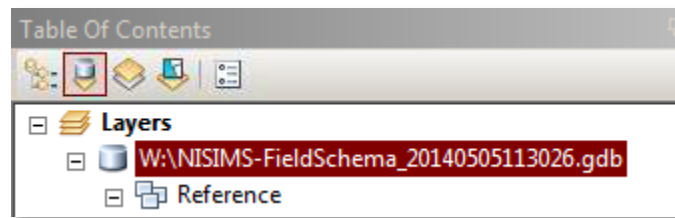
5. To begin the check-in process, click the **Check In From Arcpad** button on the S1 Data Manager toolbar:

6. You are presented with a list of all *.apm files* on your device's SD card (an .apm resides within a check-out folder and can be thought of as the ArcPad equivalent of an ArcMap mxd). If you DO NOT see this list and are instead given a prompt stating that no mobile device has been detected, refer to the troubleshooting steps in the Routine Requirements section. Otherwise, **click to select** the applicable apm file:
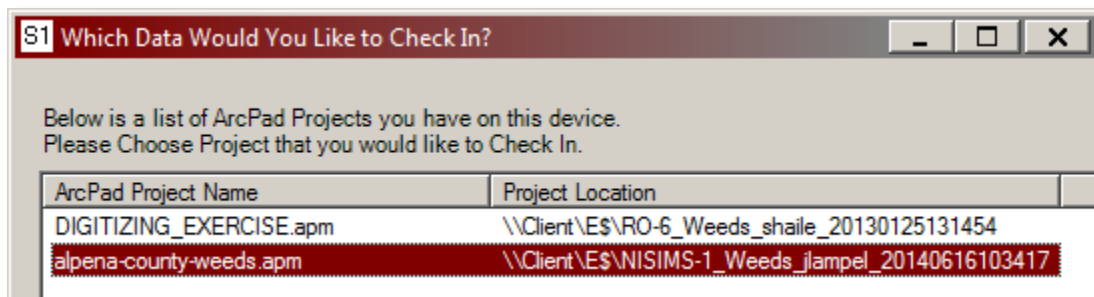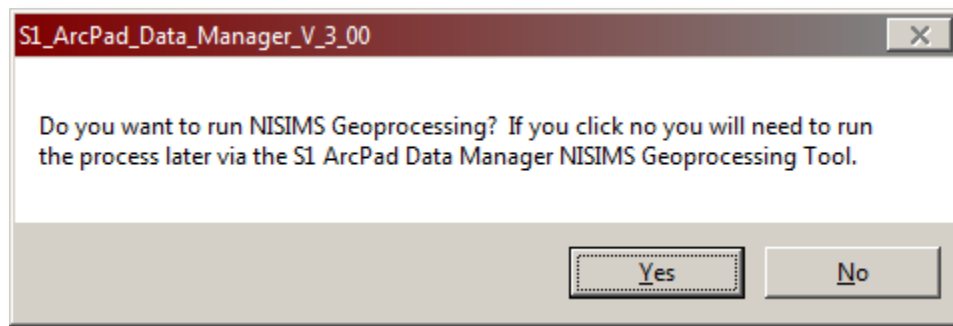

7. Click [OK] to check the data in.

8. After the data has been checked in, a transaction receipt appears with basic information about features involved in the check-in. You may **close** the receipt at any time.
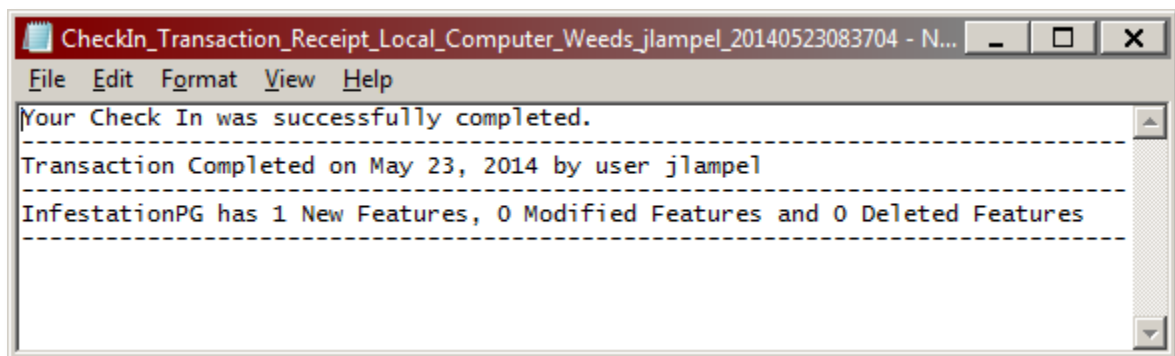
9. Read NISIMS Geoprocessing to determine how to respond to the prompt that appears:
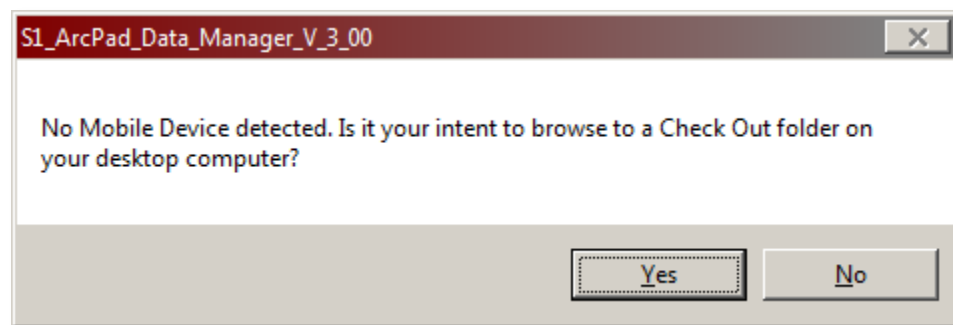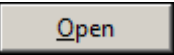
FROM DESKTOP TO GDB

The steps for checking data in from a *desktop check-out* are similar to those of a mobile device:

1. Make sure you DO NOT have a mobile device connected, and then follow **steps 1-4** in From Mobile Device.

2. The check-in tool looks for a mobile device and issues a prompt if one is not found. Click **Yes** to the prompt:

3. You must now **browse** to the location of your check-out folder. This will vary by user, but should be in the *C:\Users\<yourusername>* directory level or below.

4. Open the check-out folder itself, then click on the **.axf file** (file name varies):
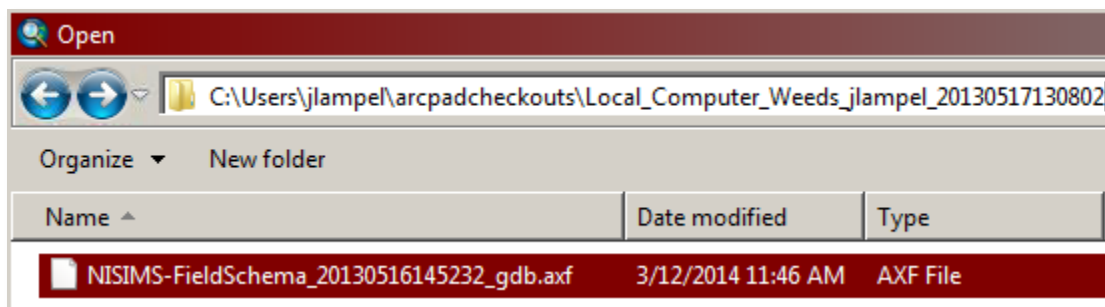
5. Click [Open] to initiate the check-in.

6. Follow **steps 7-8** in From Mobile Device.

NISIMS GEOPROCESSING (GP)

Before NISIMS data can be uploaded from a local geodatabase into SDE, *NISIMS Geoprocessing (GP)* must be run. This automated process performs a variety of spatial and attribute calculations and tasks, including:

- *Buffering* points (except photo points) and lines into polygons
- *Merging* overlapping infestations of the same species and same year
- Generating polygon *centroid coordinates*
- Populating *attributes* such as state, field office, and county with coded values
- Determining infestation and treatment *acreage*
- *Calculating* herbicide and active ingredient amounts
- Generating *reports* for Pesticide Application Records (PAR) and Biological Control Agent Release Record (BCARR) in PDF format (one for each treatment record) in the same folder as the local geodatabase.

WHEN TO PERFORM NISIMS GP

Now that you have an understanding of what's involved in NISIMS GP, let's return to the *Yes/No prompt* you received after check-in. Your response to it depends on a few scenarios:

If neither of the following conditions apply, click **Yes** (then follow step 4 below), otherwise click **No**:

a) You have **additional data** to check in. It is more efficient to check in all of your data before running GP rather than doing it for every check-in. To do so, simply click 'No' to each NISIMS GP prompt until the last of your data has been checked in, and then click 'Yes' at the prompt.

b) You would like to **review or edit** your data in its original state (this assumes some degree of familiarity with GIS). Feature geometry can more difficult to edit after GP since points and lines are buffered into polygons, and editing attributes may require GP to be run again or certain manual calculations to be performed.

Note that if you chose NOT to run GP immediately after a check-in, you will eventually need to run it **manually** before your data can be uploaded to SDE. Read the next section to learn how.

INITIATING NISIMS GP MANUALLY

If you chose not to run NISIMS GP after check-in, or perhaps you ran it but then edited your data afterwards (i.e. changed the shape of a polygon or modified some chemical quantities), you must run NISIMS GP manually so that the necessary automated calculations are performed:
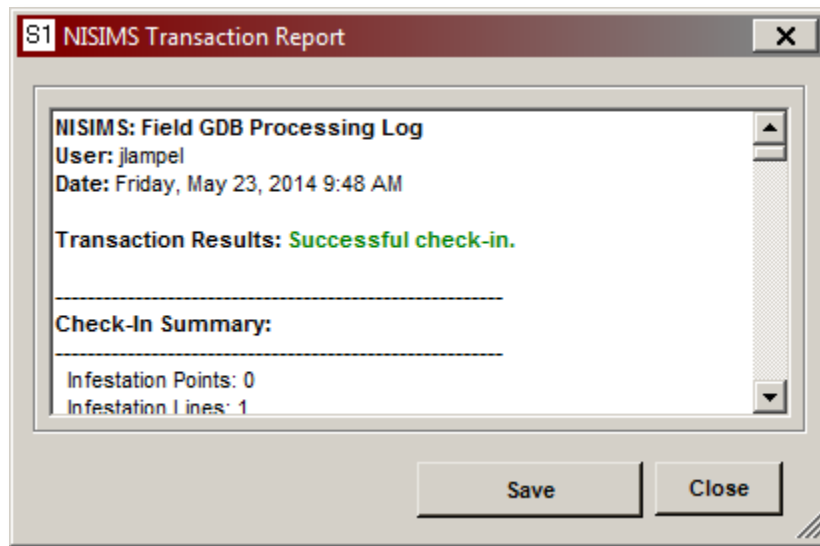
1. As with most steps involving S1 Data Manager tools, you must be in **List By Source** view so that map layers are arranged in the table of contents based on their their actual file location. To verify that you are in this view, make sure the *List By Source* icon is activated in the table of contents: .

2. Click your **GDB path** to highlight it in ArcMap's table of contents:
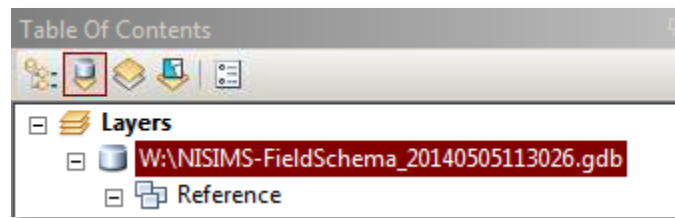
3. Click the **second sub-menu** on the S1 Data Manager toolbar, then choose **BLM NISIMS Geoprocessing**:
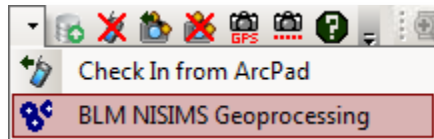
4. Be patient as this step may take several minutes, after which you should receive a detailed **transaction report** and a message indicating successful check-in. Click **Close** to exit the report:
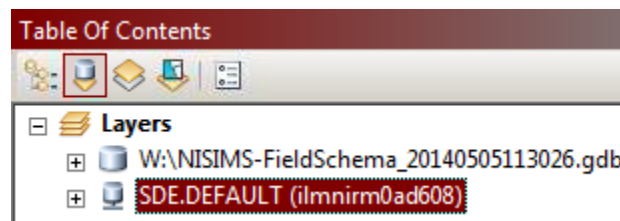

UPLOAD TO SDE

At this point your data is still in its own individual location, the local GDB, and must make its way into the comprehensive SDE database. For those *without network access* (i.e. contractors), this step will be completed by your BLM point of contact.

1. If necessary, **open ArcMap** and the project (.mxd file) you have been using.

2. If it is not already present, add all **NISIMS SDE data** to the map. If you need a refresher on how to do this, refer to Add SDE data to ArcMap.

3. As with most steps involving S1 Data Manager tools, you must be in **List By Source** view so that map layers are arranged in the table of contents based on their their actual file location. To verify that you are in this view, make sure the *List By Source* icon is activated in the table of contents: .

4. The S1 tools need to know which SDE database you are working with, so click your **SDE name** in the table of contents (yours may differ from the screenshot). If your local GDB's contents occupy most of the table of contents, it might be easiest to *collapse* the GDB by clicking the *minus sign* to the left of its name: .


5. Click **Upload Data to SDE Version** button on S1 Data Manager toolbar:

6. A list appears displaying all of the GDBs in your map (most likely you will only have a single NISIMS GDB present, but if not then make sure to keep track of which is which!). Click the **filename** of the GDB containing the processed features (yours will differ from the screenshot):
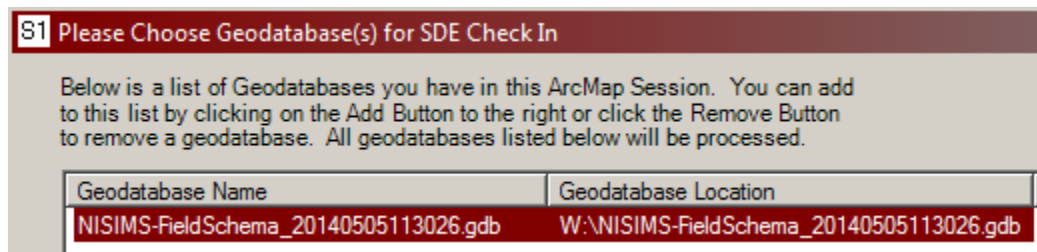
7. Click .

8. You should soon receive a **transaction report** indicating successful check-in to SDE (if not, click *Save* and provide your SDE administrator with the saved report). Click to exit the report when you are finished with it.
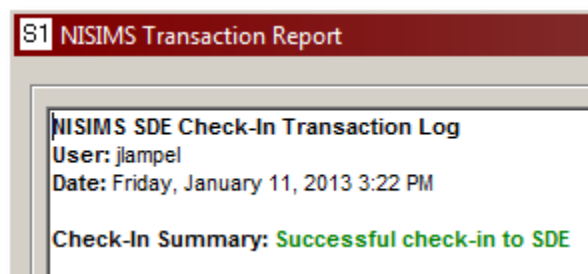
9. You should also receive a prompt stating that your data was uploaded to your SDE Version, and that you and your SDE administrator have been notified via e-mail. To close the prompt, click **OK**:
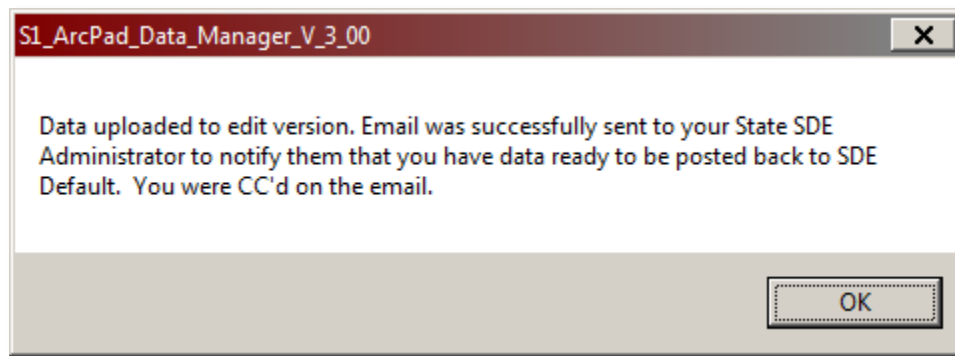
So, what just happened? Several things:

1. The data from your local geodatabase is now in your **SDE edit version**, but not yet in *SDE Default*. For a basic description of SDE types, read <u>State SDE Replicas</u>.
2. Your **SDE administrator** was automatically notified that your edit version is ready to be posted to Default. Once they inspect the data for any major issues, they will post it to your state's SDE Default replica and it will become visible to other users in your state.
3. You may have noticed that your **SDE path name** in the table of contents changed from *Default* to something with your *username* in it. This indicates that you are working with an *SDE edit version* in which you have permissions not available to you in SDE Default.

Once your SDE administrator performs some routine checks on your SDE version they will post it to Default, where the data will permanently reside. It is still possible to edit SDE data by manually creating a version, and the basic steps to do so can be found in the "Editing Existing NISIMS Data in SDE" video on the NISIMS Vimeo channel: <u>http://vimeo.com/channels/nisims/95971656</u>.

SUMMARY

This guide provided in-depth instruction on the National Invasive Species Information Management System (NISIMS) workflow. We hope you found it useful and intuitive, but if you have additional questions then please visit the NISIMS SharePoint site if you are a BLM user, and other users may consult their BLM point of contact.

Thank you for using NISIMS!

ADDITIONAL WEB RESOURCES

- **Online reporting tools** that generate PDF reports and summary spreadsheets, without the need for ArcGIS Desktop, are available through the <u>NISIMS Web Reporting tools</u> . (BLM only)
- **Instructional videos** on the *NISIMS Vimeo channel* provide additional assistance: <u>http://vimeo.com/channels/nisims</u>.

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