FFCA INSPECTION AND MAINTENANCE *DOCUMENTATION*

Purpose

This Water Quality and Hydrology Group (ENV-WQH) procedure describes the process for conducting inspections and maintenance under the Federal Facility Compliance Agreement (FFCA) using the GeoXT handheld field data collectors to record inspection and maintenance data for the Storm Water Tracking System (SWTS) module of the Water Quality Database (WQDB).

Scope

This procedure applies to all ENV-WQH personnel and contractors who conduct inspection and maintenance of Best Management Practices (BMP) at Solid Waste Management Units (SWMU) and Areas of Concern (AOC).

In this procedure

This procedure addresses the following major topics:

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Integrated Work Management

The work specified in this procedure is conducted in accordance with applicable Integrated Work Documents, in accordance with LANL IMP 300-00-00, Integrated Work Management for Work Activities.

CONTROLLED DOCUMENT

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Signatures

First authorization review date is one year from Group Leader signature below; subsequent authorizations are on file in group office.

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General information about this procedure

Attachments

This procedure has the following attachments:

Number	Attachment Title	No. of pages
1	Using ArcPad GIS on the GeoXT Hand Held Unit	17
2	SMA Visit Inspection form	2
3	Inspection and Maintenance Form	4

History of revisions

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	3/06	New document.

Who requires training to this procedure

The following personnel require training before implementing this procedure:

- ENV-WQH personnel or contractors conducting inspections and maintenance for compliance with the Federal Facility Compliance Agreement.

Training method

The training requirements self-study to this procedure (read-training). This training will be documented in accordance with the procedure for training (ENV-WQH-QP-024, *Personnel Training*).

Prerequisites

The following training is required prior to performing activities covered under this procedure:

- Training as specified in ENV-ES-Field, *General Field Safety*

General information, continued

Definitions

AOC – Area Of Concern
BMP – Best Management Practices
FFCA – Federal Facility Compliance Agreement
GIS – Geographic Information Systems
GPS - Global Positioning System
MSGP – Multi-Sector General Permit
SMA – Site Monitoring Area
SWMU – Solid Waste Management Unit
SWTS – Storm Water Tracking System
WQDB – Water Quality Data Base
wSAL – Water Screening Action Level

Note

Actions specified within this procedure, unless preceded with “should” or “may,” are to be considered mandatory guidance (i.e., “shall”).

Overview of SWMU and AOC Inspections

Background

Under the FFCA, inspections are conducted to assess the condition of the SWMU or AOC with regard to potential pollutants, presence of erosion, condition of existing Best Management Practices (BMP), or to evaluate the need for additional BMPs. If a Water Screening Action Level (wSAL) is exceeded in storm water samples collected below a Site Monitoring Area (SMA), then BMPs must be installed on the Sites or within the SMA to reduce erosion potential. The BMPs must be installed within 2 weeks of an inspection. Inspection results may drive maintenance of existing BMPs and/or installation of new BMPs. Results of the inspections are stored in the Storm Water Tracking System (SWTS) portion of the Water Quality Data Base (WQDB). The results of maintenance conducted at a Site are also recorded in SWTS. These data are reported to the Environmental Protection Agency (EPA) and State of New Mexico Environment Department (NMED) in quarterly and annual reports.

Four types of Inspections are required in the process of conducting work:
- Site Monitoring Area (SMA) visits (storm event inspections)
- Water Screening Action Level (wSAL) inspections
- Maintenance inspections.
- Annual Comprehensive Site Compliance Inspection.

SMA visit inspection

ENV-WQH maintains a network of site specific storm water samplers at SMAs The SMAs are visited in the spring to activate the sampler and after rain fall events to check if a sample is collected. During each visit, a SMA Visit Inspection form (Attachment 2) is completed to document the sampler condition, process a storm sample that has been collected and to note if any visible damage has occurred to the BMPs in the vicinity of the sampler. This type of inspection is intended to be routine in nature and provide a quick look at the condition of the SMA. The paper form shall be turned into ENV-WQH at the end of each field day.

wSAL inspection

Analytical results are generally reported from the analytical laboratory 60 days after samples are collected at an SMA. Data are then compared to wSALs to determine if an exceedance occurred. A list of exceedances is developed and Sites within SMA locations must be inspected within 2-weeks. The information is collected using the GeoXT hand held units. If the hand held unit is not working properly, a paper form (Attachment 2) may be used. At the end of every field day, inspection information shall be uploaded into the SWTS database. Each wSAL inspection shall identify new BMPs to be installed at a site or in an SMA. A maintenance report shall be generated at the end of each week and given to the field maintenance team.

Overview of SWMU and AOC Inspections, continued

Maintenance inspection

The results of a SMA visit inspection may require maintenance to be conducted at a site. The results of a wSAL inspection will require new BMPs to be installed on a site or in an SMA. After maintenance is completed, information on new or updated BMPs shall be uploaded into the SWTS database. In addition, details on locations and types of new or updated BMPs shall be drawn on the appropriate Site Monitoring Area (SMA) map and information on the new BMPs shall be recorded on the form on the back of the SMA map (Attachment 3).

Annual Site Compliance inspection

The Annual Comprehensive Site Evaluations are required by the MSGP and documents: (1) the accuracy of the description of potential pollution sources contained in the storm water pollution prevention plan (SWPPP), (2) determine the effectiveness of the BMPs described within the SWPPP, and (3) assess compliance with the terms and conditions of the FFCA and MSGP. Note that the comprehensive site evaluations are not the same as periodic or other inspections.

Overview of FFCA Inspection Reporting

wSAL inspection	Results of the wSAL inspection shall be uploaded into the SWTS database on the day that the inspection is conducted. A maintenance required report shall be generated at the beginning of each week and provided to the field maintenance crew.
Maintenance inspection	After maintenance is completed, information on new or updated BMPs shall be uploaded into the SWTS database on the same day that the maintenance is conducted. Details on locations and types of new or updated BMPs shall be drawn on the appropriate Site Monitoring Area (SMA) map. Maps shall be updated in the field or at the end of the day that maintenance is completed. Updated maps shall be retained in a secure file and provided to ENV-WQH in early December each year for the annual update of the SWMU SWPPP.
Annual Site Compliance inspection	The results of each comprehensive site evaluation must be documented in a report signed by the ENV signatory authority. The report must describe the scope of the comprehensive site evaluation, the personnel making the comprehensive site evaluation, the date(s) of the comprehensive site evaluation, and any major observations relating to implementation of the SWPPP. Comprehensive site evaluation reports must be retained for at least three years after the date of the evaluation. Based on the results of each comprehensive site evaluation, the description in the plan of potential pollution sources and measures and controls must be revised as appropriate within two weeks after each comprehensive site evaluation, unless indicated otherwise in Part 6 of the MSGP. If existing BMPs need to be modified or if additional BMPs are necessary, implementation must be completed before the next anticipated storm, or not more than 12 weeks after completion of the comprehensive site evaluation.

Conducting inspections

Background

Under the FFCA, BMPs must be installed on Sites (SWMUs and AOCs) when analytical values are detected greater than wSAL. Analytical data normally is received 60 days after samples are submitted to the analytical laboratory. Once the data is loaded into WQDB, samples are screened against wSAL and a list of Sites with values greater than wSAL is generated. This list is provided to the Field Inspection Teams and the inspection process is started.

wSAL exceedence inspections

The **Field Inspection Team** shall begin the inspection process by performing the following steps:

- Download the Sites where samples were collected to the handhelds.
- Visit Sites and record inspection data onto the hand held. **Reference "Using the SWTS Customized Interface" in this SOP for more details**.
- Conduct photo documentation:
    1. Take photographs of the sites. Position a small dry erase whiteboard with the Site ID# and the Date in the field of view for the photograph.
    2. At the end of each day, download photographs onto the computer.
    3. Rename the photographs to correspond with the dry erase board; i.e. Site Id#, Date, followed by Pic 1.
    4. Place photographs in corresponding folders on the Contractors Directory.
    5. Transfer photographs onto the LANL network or copy onto CD for submittal to Project Leader.
    6. Imbed photos into Word Documents; i.e. corresponding BMP Inspection Forms.
- At the end of each field day, download inspection data from the GeoXT hand held unit to the Quality Assessment/Quality Control (QA/QC) temporary SWTS database. Review the data collected during the day to ensure accuracy.
- After QA/QC review, commit the data to the SWTS database.
- At the end of each week, provide the Field Maintenance Team with a maintenance required report.

In the event that the GeoXT is not working, a paper Inspection and Maintenance Form (Attachment 3) can be filled out. This data shall be entered into SWTS at the end of the day it was collected.

Conducting maintenance and maintenance inspections

Background

At the end of each week, the Field Maintenance Team shall be provided a maintenance required report based upon SMA Site inspections conducted during the week or wSAL Exceedance list provided by ENV-WQH. The maintenance required should be completed within two weeks of receiving the maintenance required report or wSAL Exceedance list.

Conducting maintenance and maintenance inspections

The **Field Maintenance Team** shall conduct maintenance and maintenance inspections by performing the following steps:

- Record data compiled on the results of maintenance on the handheld units. **Reference "Using the SWTS Customized Interface" in this SOP for more details.**

    1. Conduct photo documentation - Take photographs of the BMPs installed at Sites. Position a small dry erase whiteboard with the Site ID# and the Date in the field of view for the photo.
    2. At the end of each day, download photographs onto the computer.
    3. Rename the photographs to correspond with the dry erase whiteboard; i.e. Site Id#, Date, followed by Pic 1.
    4. Place photographs in corresponding folders on the Contractors Directory.
    5. Transfer photographs onto the LANL network or copy onto CD for submittal to Project Leader..
    6. Imbed photos into Word Documents; i.e. corresponding BMP Inspection Forms.

Conducting maintenance and maintenance inspections, continued

Conducting maintenance and maintenance inspections

- Update the SMA Map
    1. Take the appropriate SMA map for the Sites where maintenance is scheduled to the field.
    2. Draw the location and the type of BMP installed on the map.
    3. Record your name and the date the maintenance was completed on the back of the map.
    4. Give the completed maps to the Field Inspection Team at the end of each day that maintenance was completed.
- At the end of each day, download maintenance data compiled from the hand held unit to the Quality Assessment/Quality Control (QA/QC) temporary SWTS database. Review the data collected during the day to ensure accuracy.
- After QA/QC review, commit the data to the SWTS database.

Using the SWTS Customized Interface

Background

The Storm Water Tracking System (SWTS) is designed to store, query, and report data related to Erosion Matrix Scores, BMP installation, and BMP maintenance. All personnel granted access to the SWTS database for data entry, review, or data correction must do so under their username and password. To obtain a password, email ENV-WQH Information Management team at wqh_im_support@lanl.gov .

The GeoXT hand held system is designed to simplify data collection and allow the user to identify their location using Global Positioning System (GPS) and mobile Geographic Information System (GIS). BMP inspection and maintenance information is collected using electronic data sheets stored on the GeoXT.

When the user arrives at the SWMU or AOC to be inspected, the electronic data sheet is accessed by tapping the stylist on the handheld units screen. Data is entered into the data sheet by using drop down menus or by using the electronic keyboard.

Data gathered on the hand held unit shall be uploaded to the temporary SWTS data base at the end of each day and QA shall be performed before committing to the WQDB.

The handheld inspection system was designed to replace the paper inspection forms currently used for SWTS inspections. The electronic system should help to save time, reduce office data entry, reduce errors and improve regulatory compliance. In addition, tying the inspection forms to a GPS receiver allows data collectors to ensure that they are inspecting the correct locations.

Opening the SWTS Inspection Program in ArcPad

To start the handheld inspection, turn the yellow Trimble GeoXT unit on using the gray button on the bottom of the unit. See Attachment 1 for detailed information on using the Trimble GeoXT.

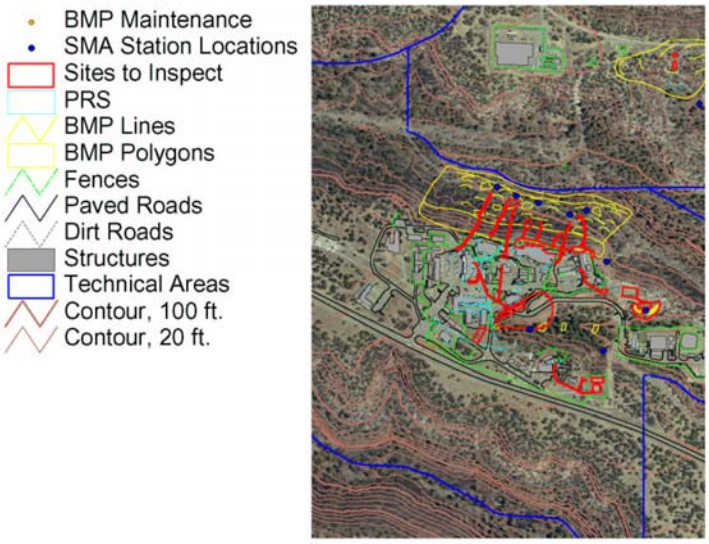
To open the SWTS Inspection Program, perform the following steps:

- Use the stylist and tap once on the Start button in the upper left corner of the screen. A list of programs should drop down.
- Tap the stylist once on ArcPad 6.0.3. The program should open.
- Tap the stylist on the folder icon in the upper left corner of the screen. This will open a screen called “Open ArcPad Map”.
- Tap once on the “Inspection” file. After a few moments the project will open.

Using the SWTS Customized Interface, continued

Map Display on Customized Interface

After following the steps above, the customized map should load onto the GeoXT that details information needed to conduct a SWTS inspection. The map below is zoomed in to display SWMUs at TA-46.



Using the SWTS Customized Interface, continued

Using the GPS

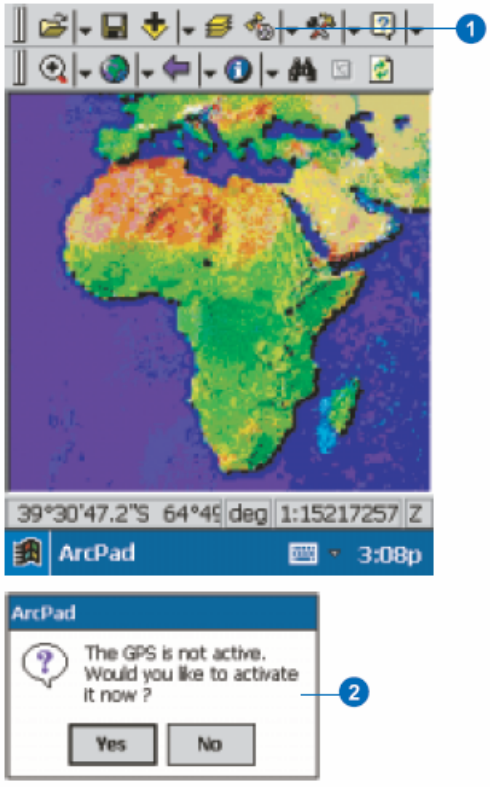
The Trimble GeoXT contains a GPS unit that can be used to help navigate to a location. Detailed information on the GPS can be found on Attachment 1, pages 13 to 15, of this document.

To use the GPS, perform the following steps:

- Touch the stylist to the symbol on the top tool bar that looks like a satellite.
- A small window will open asking if you want to activate the GPS, select yes. A small window will open in the upper left portion of the screen. Give the GeoXT a few moments to aquire satellites and calculate your position.
- A red circle will appear on the screen when the GPS is active. The small screen in the upper left portion of the screen may be closed; it will not turn the GPS off.
- The screen should move to your location.

Opening the GPS Position Window

1. Tap the GPS Position button to open the GPS Position Window.
2. A message box will be displayed if the GPS is not active. Tap Yes to activate the GPS and open the GPS Position Window.



Using the SWTS Customized Interface, continued

Moving around the Map

If the GPS is not working, use the find, zoom, and pan tools to move around the map. A detailed description of how to use these tools can be found in Attachment 1. The find tool is located near the right side of the middle tool bar and is represented by binoculars.

To the find tool:

- Touch the stylist to the binocular icon.
- A window will open; touch the stylist to the small icon in the upper right corner of the window (under the X). The Field Browser will open, touch the stylist to PRS and then OK.
- In the Find box, type in the Site number. On the bottom of the screen there is a blue and white icon in the middle. Touch the stylist to this and the keyboard will open. The same icon will close the keyboard when finished. The Shift on the keyboard will access punctuation.
- After the Site is entered, press the icon with the binoculars and yellow question mark. The site will appear in the table below. Touch the stylist any where in the row and it will turn blue.
- Touch the stylist to the icon of the person with red shirt and blue pants. The screen will zoom to the selected Site.

The zoom tool is located on the left side of the middle tool bar depicted by a magnifying glass with a plus or minus on it and the pan is depicted by a white hand. The small triangle to the right of the magnifying glass or hand will allow selection of the different options (zoom in, zoom out, pan).

To use the zoom tool:

- Select the zoom in or out tool from the tool bar.
- Touch on the screen once with the stylist, the screen will zoom in or out at a set rate.
- Touch the stylist to the screen and then drag a box around the location to zoom in or out on. Release the stylist from the screen and zoom will be completed.

Using the SWTS Customized Interface, continued

Moving around the Map

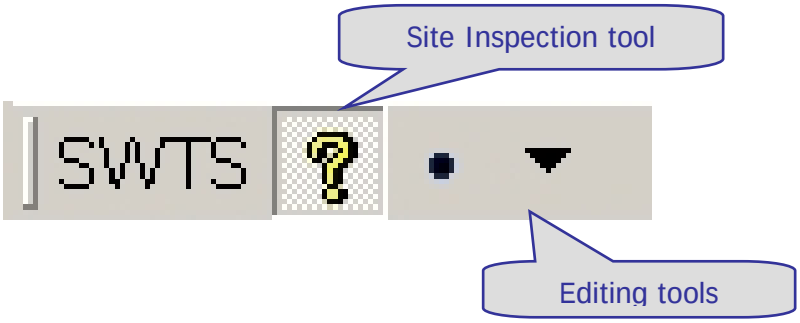
To use the pan tool:

- Select the pan (hand) tool from the tool bar
- Touch the stylist to the screen and move the hand to where the map to is to be centered.
- Release the stylist and the map will be set to your pan.

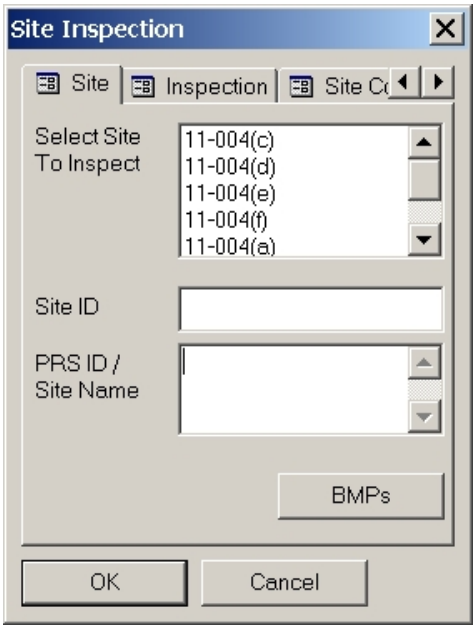
Using the SWTS Customized Interface To Inspect a Site

Inspecting a Site using the GeoXT

A specialized tool bar will be loaded when the SWTS Inspection application is started. The tool bar is displayed below.



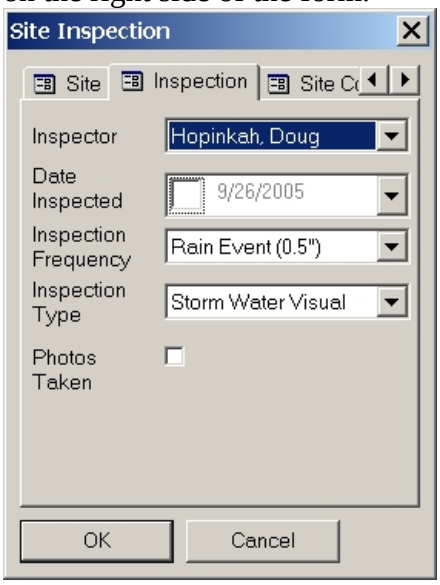
- Click on the Site Inspection tool on the SWTS toolbar. The Site Inspection tool is the yellow question mark. Touch the stylist to the question mark and it should depress.
- Touch the stylist to the Site to inspect on the map.
- The Inspection and BMP forms will open
- Enter the Inspection data into the forms using the dropdown menus.

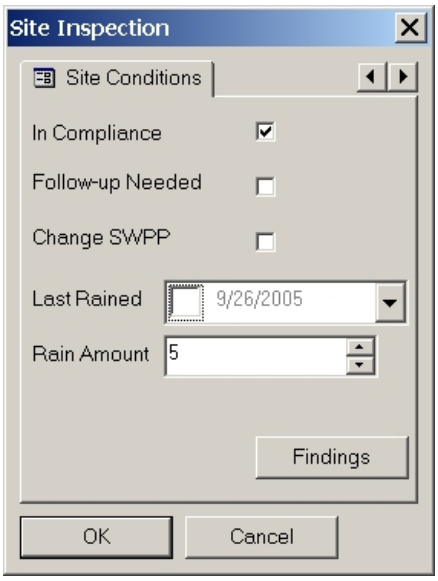


Using the SWTS Customized Interface To Inspect a Site, continued

Entering Site Conditions

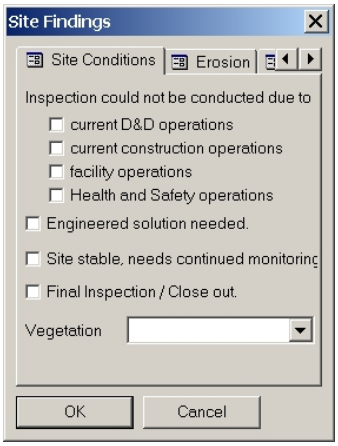
The screens below display the pages of the Inspection form. **Please note that the box next to Date Inspected must be checked to enter data on forms.** Navigation through the form can be done by clicking on the left and right arrows on the right side of the form.

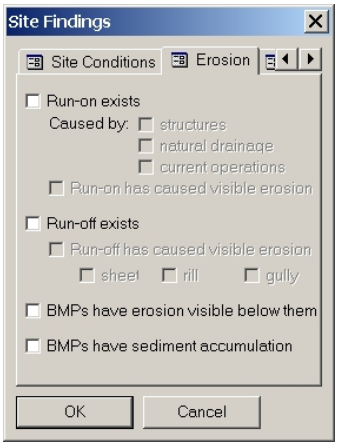


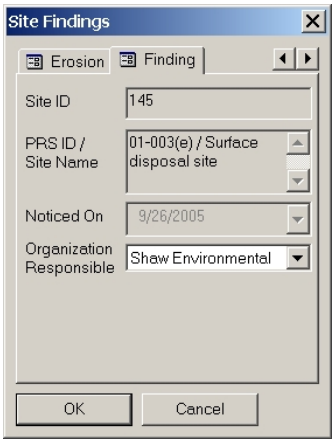


Forms in Findings

- Press on the Findings button under Site Conditions to enter data on the following three screens.
- Press the OK button when finished to commit the data to the file.



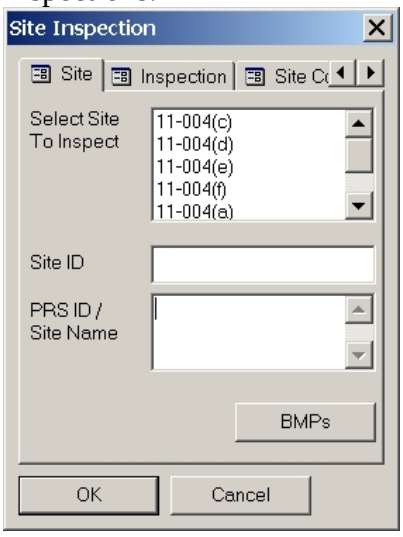




Using the SWTS Customized Interface To Inspect a Site, continued

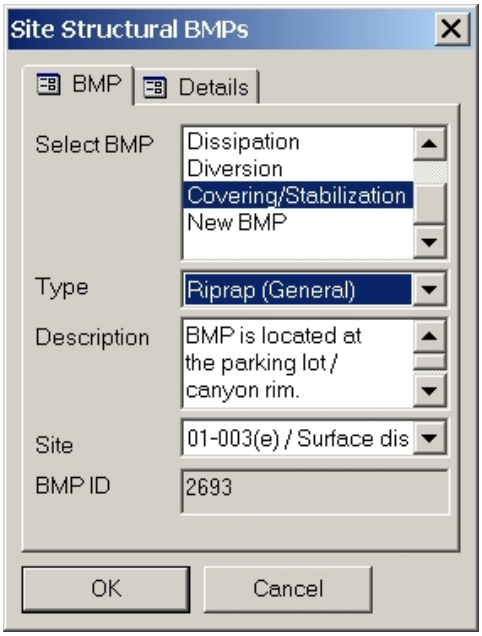
Entering or updating BMPs

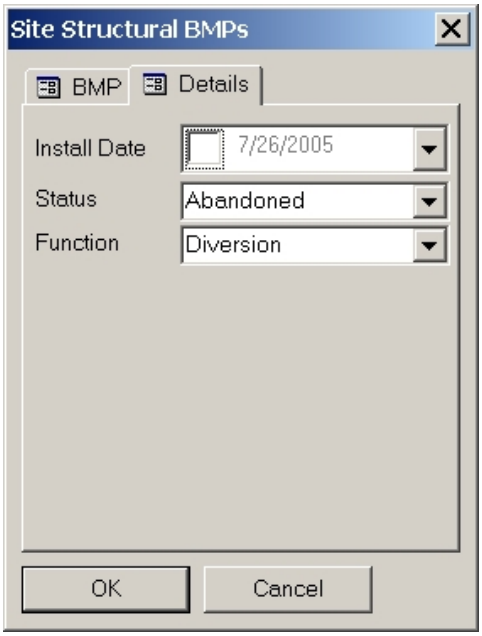
Data on existing BMPs or to record a new BMP is entered on the BMP screens. To access the BMPs, touch the stylist to the BMP box on the 1st Page in Site Inspections.



The BMP screens will open.

- Enter in information on the status of the existing BMPs if there have been changes or enter information on newly installed BMPs.
- Press the OK button when finished to commit the data to the file.





Using the SWTS Customized Interface To Inspect a Site, continued

Entering new BMPs

Information on a proposed BMP can now be entered by touching the stylist on the New BMP button.

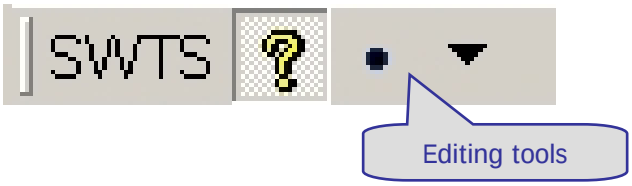
- Enter the information about the proposed BMP on the BMP and Details screen. This will add information that can be pulled after returning to the office for a maintenance report.
- Select "Proposed" for the Status under then Details tab.

Closing the inspection

After data has been entered on the three windows in Site Conditions (three windows in Findings and two windows in BMPs), press the OK key in the upper right portion of the Site Condition screen to close the window and commit the data to the GeoXTs disc.

Tracking BMP maintenance requirements

After a new BMP has been created in the inspection form, link it to a point on the map by using the editing tools. In addition, the maintenance crew can use the editing tools to update information about the BMP when the complete work. The editing tools on the SWTS tool bar are represented by dot next to the yellow question mark. This tool can be used to add, edit, or delete BMP maintenance entries. **Be sure to note the Site ID (PRS number) - this will be needed on the BMP Maintenance screen.**



Using the SWTS Customized Interface To Inspect a Site, continued

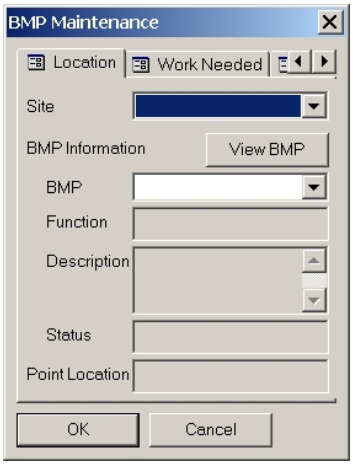
Tracking BMP maintenance tequirements, continued

To track BMP maintenance requirements, perform the following steps:

- Create a maintenance marker on the map to show the location at which the maintenance work to be completed; select a shape (point, line, or polygon).

- GPS function may also be used to create a new point (see "Transferring data to and from the GeoXT" chapter of this procedure)

- To create a location on the map, select the point by taping it once with the stylist.



-Touch the stylist to the map to create a point on the map and open the BMP Maintenance screen.

-Enter the Site ID (PRS number)

-Create a new BMP or select the new BMP.

-Enter data on the work needed or information on a new BMP.

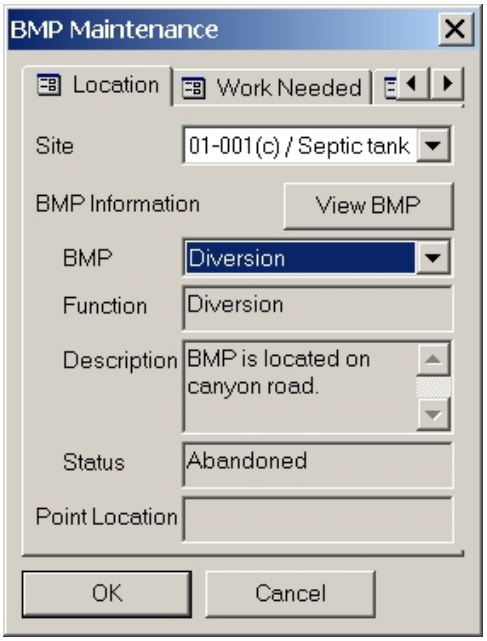
-List the BMP as "proposed" on the last screen.

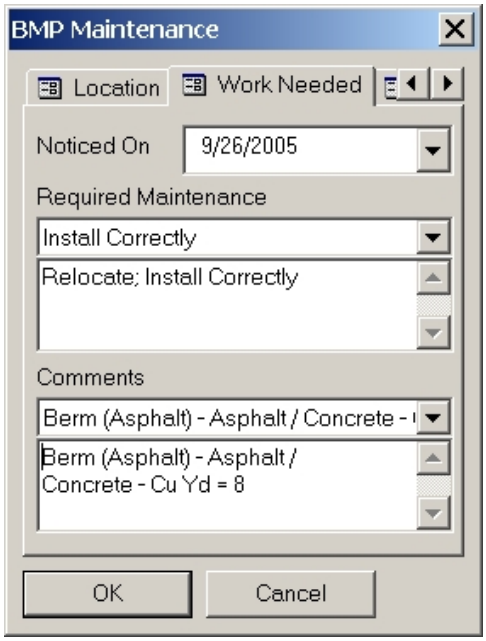
-When finished entering all the data, press OK to close the window. The data on the maintenance will be saved and a point will be displayed on the map.

Using the SWTS Customized Interface To Inspect a Site, continued

Tracking BMP maintenance tequirements, continued

Enter Site and BMP that need maintenance. Be sure to describe the maintenance that is needed.





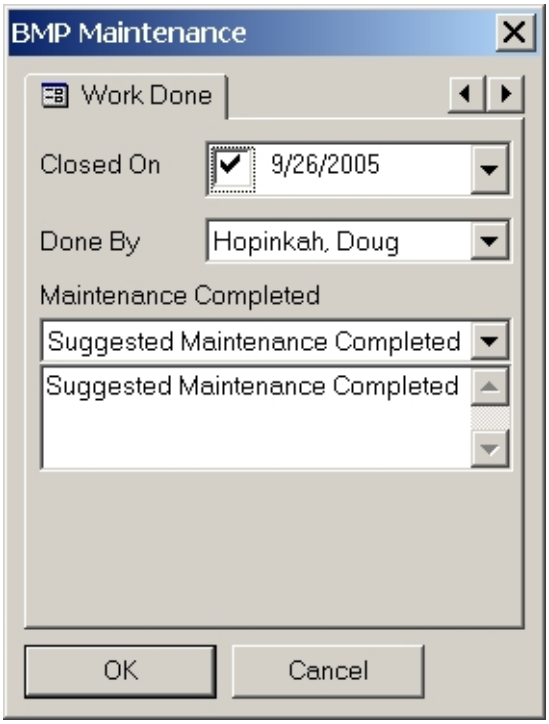
Using the SWTS Customized Interface To Document Maintenance

Tracking BMP maintenance completed

Maintenance personnel can take the GeoXT into the field to help locate where BMP maintenance is needed. Once maintenance is completed, BMP maintenance can be updated using the BMP Maintenance Screen.

To document BMP maintenance, the Field Maintenance Team will perform the following steps:

- Before heading to the field, obtain a list of locations where maintenance is required and the SMA maps for each location.
- Navigate around the BMP Maintenance Screen just like inspection personnel. Steps to navigate are detailed on page 12 of this document.
- Once the Site where maintenance is needed is found, select the site using the yellow question mark from the SWTS tool bar or use the Select arrow if the inspection crew has created a maintenance marker on the sight.
- Access the Select arrow by touching the stylist to the drop down menu next to the dot, then select the Select Icon from the list by touching the stylist to it.
- Once the select arrow is selected, use the stylist and touch twice (like a double click with a mouse) on the maintenance marker. The BMP Maintenance screen will open.
- Check the Closed On box and note what work was done on the "Work Done" screen.
- Update the paper SMA map with the location and type of maintenance completed.



Transferring data to and from the GeoXT

QA check data

The main interface between the SWTS data base and the GeoXT units is a Microsoft Access database. The MS Access database facilitates the transfer of data from SWTS to the GeoXT for inspections and maintenance and from the GeoXT to the SWTS data base after inspections have been completed.

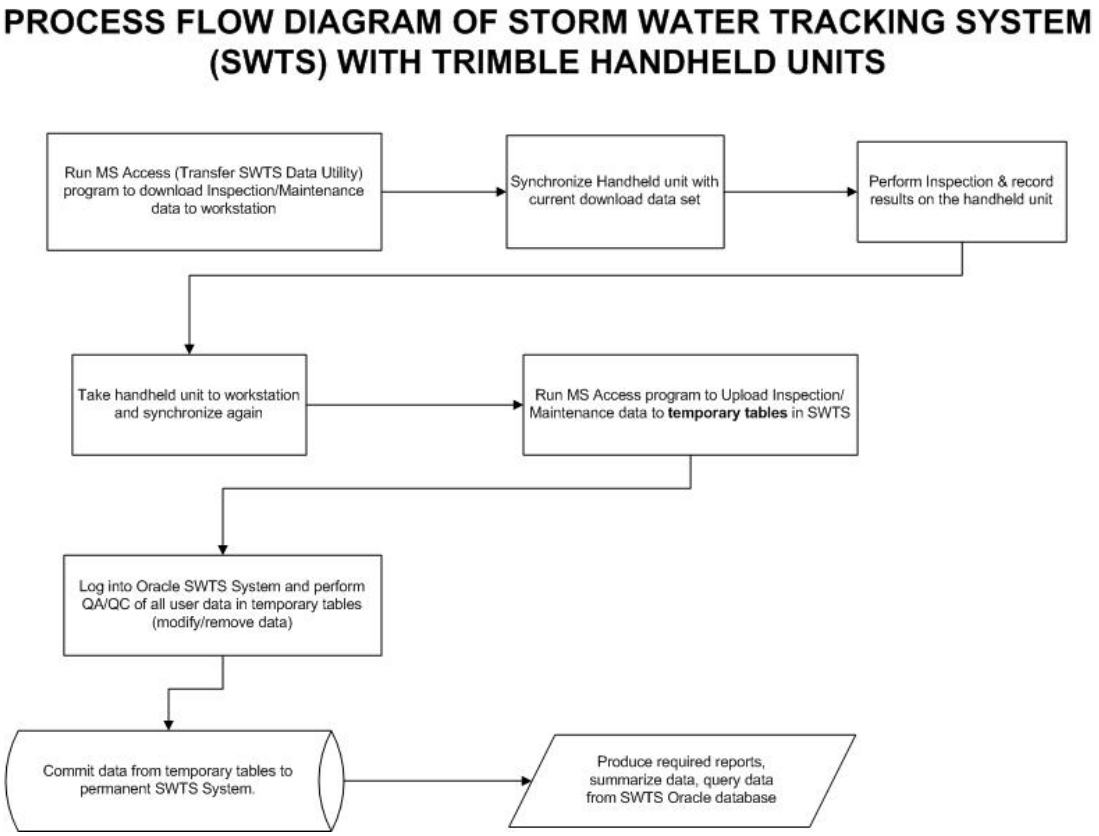
Specific SWMUs, AOCs, and all Sites to be inspected must be downloaded to the GeoXT before heading to the field so that the most up to date information is available.

After inspection data and maintenance data has been collected in the field with the GeoXT, the data must undergo a Quality Assurance (QA) check to insure that field entered data is accurate and complete.

- Complete the QA check of field data at the end of each field day.
- Before committing data to the SWTS, enter field inspection data into the temporary data tables that have been created.
- QA the data uploaded to the temporary tables - verify all dates, locations, and inspection information is correct.
- Once QA has been completed and it is determined that all data is accurate and complete, load data into SWTS.

Transferring data to and from the GeoXT, continued

SWTS process flow



Data Installations and Maintenance for the GeoXT/SWTS Interface

Set up download machine

To set up downloand machine, perform the following steps:

1. Create directories
    a. C:\BMPHandTransOut (for downloading data to handheld)
    b. C:\BMPHandTransIn (for uploading from handheld to SWTS)
    c. C:\SWTS_GISData (for static GIS data)
2. Set up ODBC connection
    a. System DSN: **s9prod** linked to SWTS
3. Place data in directories
    a. Copy files in SWTS directory to C:\BMPHandTransOut
        i. Remove "Read Only" property from files
            1. Select files
            2. Right click, select properties
            3. Make sure "Read Only" is not checked
    b. Copy files in GIS_Data directory to C:\SWTS_GISData
4. Set up Access database
    a. Copy dbBMPHAND.mdb to download machine
    b. Check to make sure ODBC connection is working
        i. Unhide database window (Window|Unhide)
        ii. Open a table named WQDB*
        iii. Open the site in table
        iv. Use ODBC and/or linked table manager to fix any broken connections
    c. Remove "Read Only" property from file
5. Set up ActiveSync connection
    a. Either a guest connection or a partnership will work
    b. If using a partnership, do not allow synchronization of any data types
6. Create shortcuts on desktop to upload and download directories and Access database

Data Installations and Maintenance for the GeoXT/SWTS Interface, continued

Initial set up on handheld

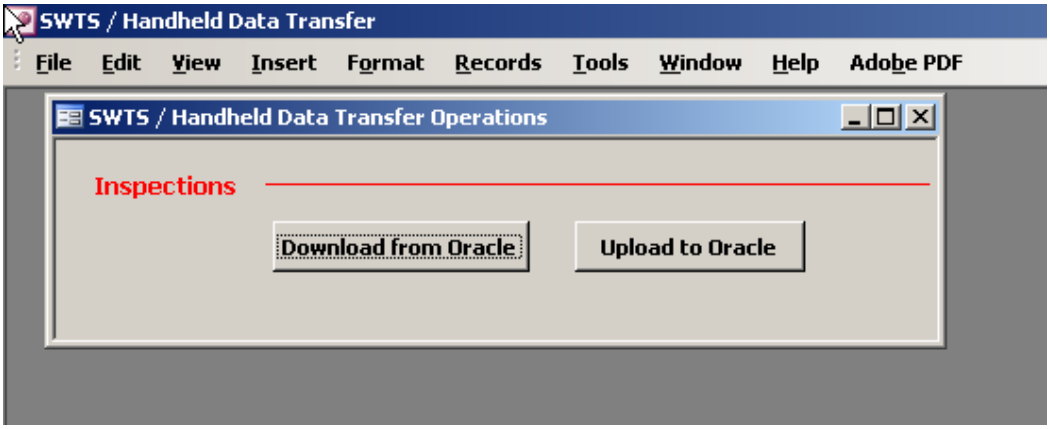
To perform the initial set up on the handheld, perform the following steps:

1. Create directories
   a. \Disk\My Documents\SWTS (directory for uploads and downloads)
   b. \Disk\My Documents\GIS_Data (directory for static GIS data)
2. Copy static GIS data onto handheld
   a. Copy files in C:\SWTS_GISData to \Disk\My Documents\GIS_Data

Accessing the handheld transfer program

Once the steps to get data off the handheld/desktop have bee completed, use the Access handheld transfer program. On the desktop of the computer that the GeoXT handheld computer is connected to, click on the SWTS to Handheld Icon.

A small Microsoft Access window will open.

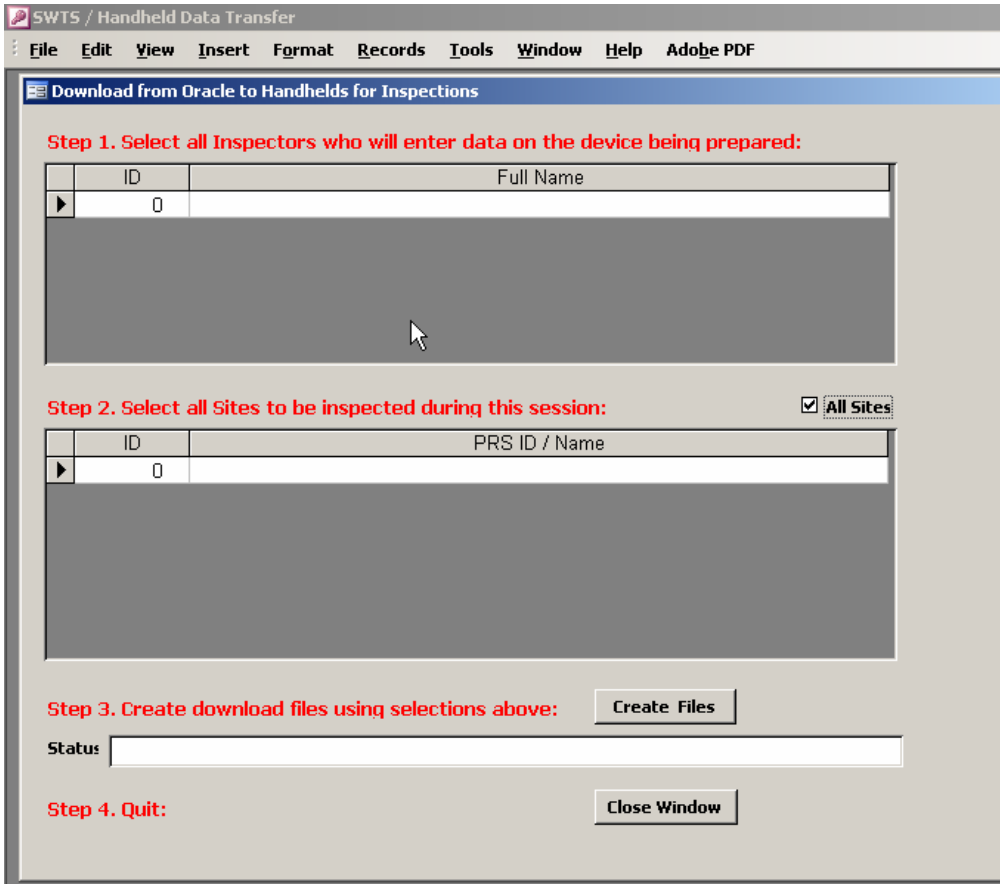


Data Installations and Maintenance for the GeoXT/SWTS Interface, continued

Selection of sites and inspectors

The window below displays the interface to select inspectors and sites to be inspected and/or sites that require maintenance. Perform the following steps:

- Select inspectors.
- Make sure the "All Sites" box is checked. Doing this will allow the handheld to accept inspecation data at any site instead of just specified sites.
- Press Create Files button
- Press Close Window



-

Data Installations and Maintenance for the GeoXT/SWTS Interface, continued

Download data to handheld

To download data to handheld, perform the following steps:

- Delete all data in \Disk\My Documents\SWTS on handheld.
- Make sure the data is uploaded first!
- Use Access upload/download database to download data.
- Copy all files from C:\BMPHandTransOut on the desktop to \Disk\My Documents\SWTS on handheld.

The handheld is now ready to be taken to the field to collect inspection and/or maintenance data.

Upload data from handheld

After data has been collected in the field, copy the files onto the desktop computer by performing the following steps:

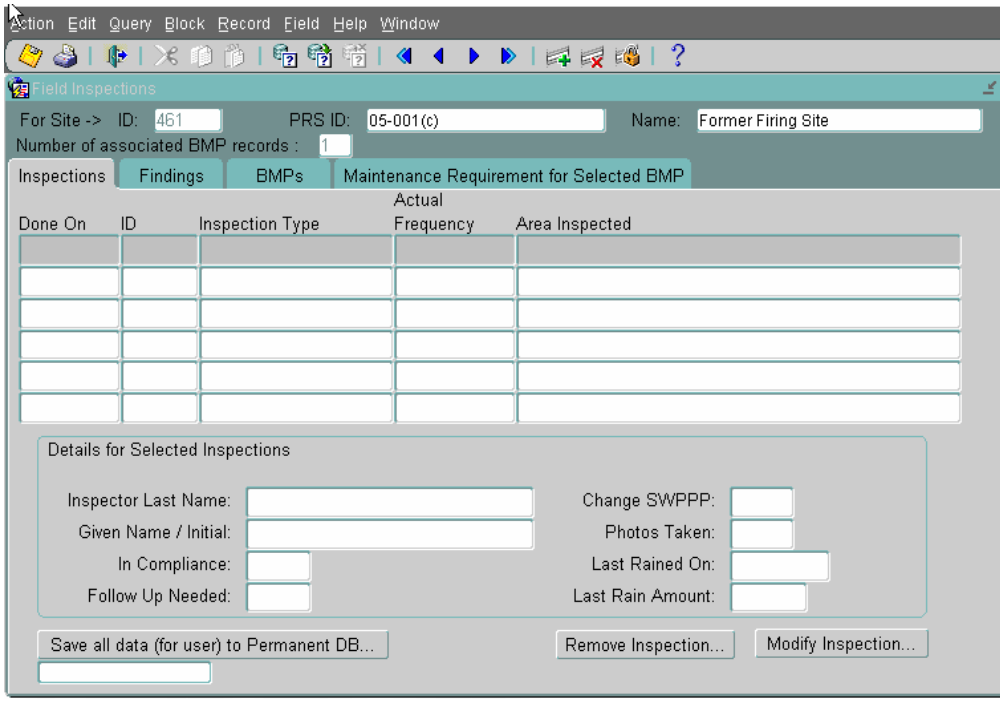
- Copy all files in \Disk\My Documents\SWTS on the handheld to C:\BMPHandTransIn on the desktop computer.
- Open Access upload/download database and use to upload data.
- If previous upload has not undergone QA, finish QA before uploading.
- QA data in SWTS.

Data Installations and Maintenance for the GeoXT/SWTS Interface, continued

Conducting QA/QC in the temporary SWTS tables

To conduct a QC on the field inspection data, perform the following steps:

- Log into the SWTS Oracle database.
- From the main menu, click the "QA/QC Field Data" button.
- Browse, delete, or change all records that were uploaded from the last field inspection (be sure to check all BMP and Maintenance Requirement records).



Commiting QA/QC data to SWTS

To commit QA'd data to SWTS, perform the following steps:

- After all records have been QA'd, go back to the "Inspections" tab and click on the "Save all data (for user) to Permanent DB"
- A pop-up window will appear indicating how many records were instered and/or updated.

Records resulting from this procedure

Records

The following records are generated as a result of this procedure and are maintained in accordance with ENV-WQH-QP-025, *Records Management*:

- SMA Visit Inspection Form
- wSAL Maintenance Report
- SMA BMP maps
- Annual Site Compliance Inspections

Click here to record self study training to this document.

Using ArcPad GIS on the GeoXT Hand Held Unit

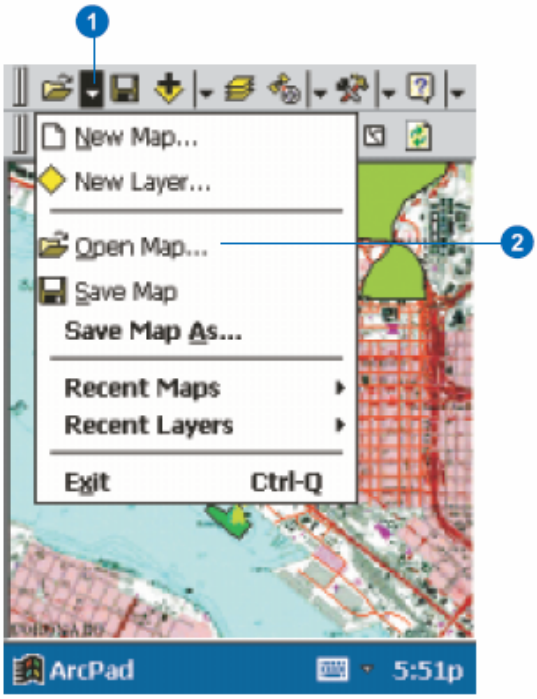
Overview

ArcPad is a mobile GIS program that is loaded on the GeoXT. ArcPad is used to display maps and when linked to the GPS can help field personnel navigate to locations for inspection and maintenance. The ArcPad window features three toolbars: The main tool bar, the Browse toolbar, and the Edit/Drawing toolbar. The map window also includes a panning frame, a scale bar, and a status bar.

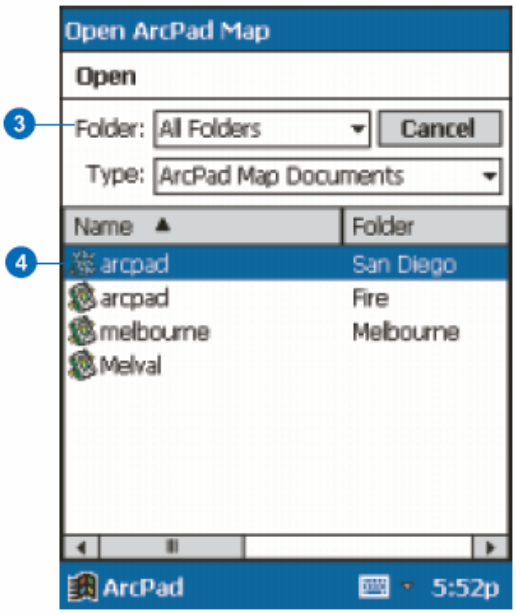
Opening a map

Opening an existing map

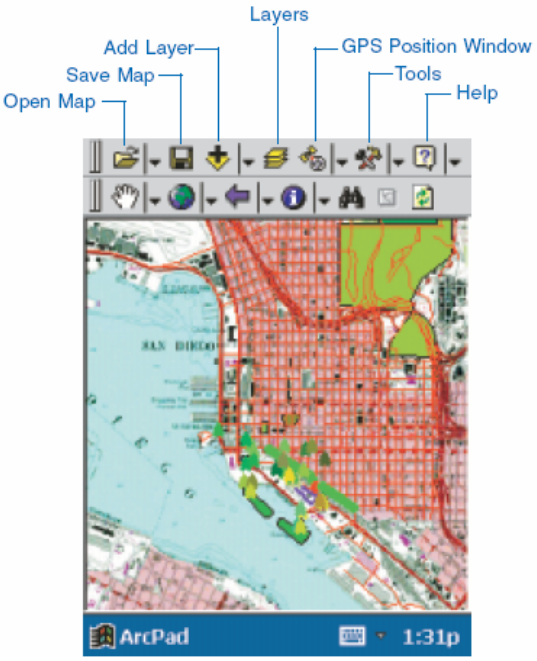
1. Tap the dropdown arrow to the right of the Open Map button on the Main toolbar to display the dropdown list.
2. Tap Open Map. ▸

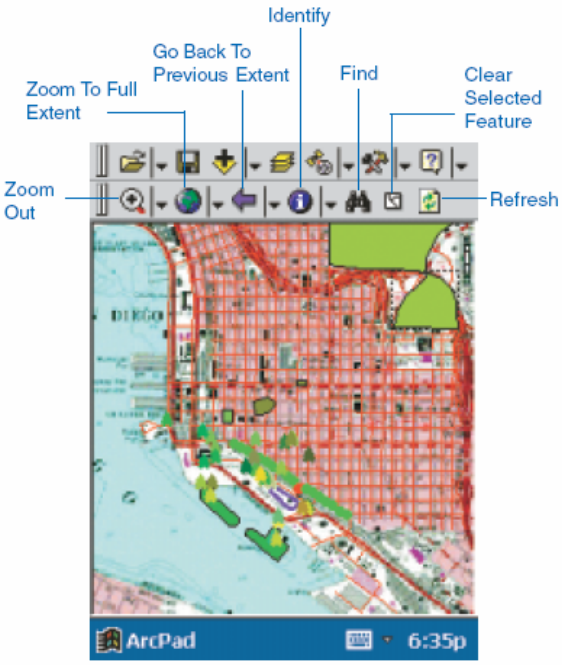


3. Navigate to the location of your existing map file.
4. Tap the ArcPad map file you would like to open.



Viewing and editing maps

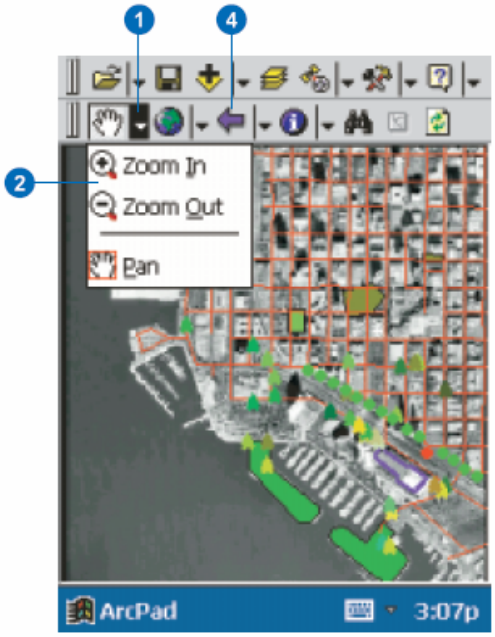




Zooming in and out on map

Zooming and panning

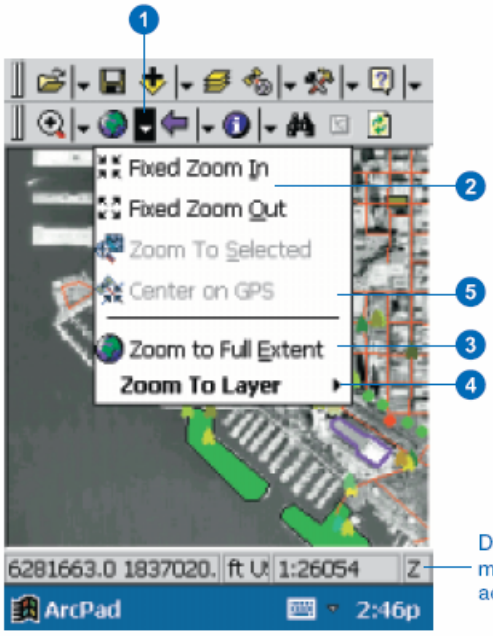
1. Tap the dropdown arrow to the right of the Pan button to display the dropdown list.
2. Tap either the Zoom In, Zoom Out, or Pan tool, depending on what you would like to do.
3. Zoom In or Out by drawing a rubberband box. Pan by dragging the pen along the map.
4. Tap the Go Back To Previous Extent button to undo your last zoom or pan.



Zooming in and out on map, continued

Zooming with the fixed zoom tool

1. Tap the dropdown arrow to the right of the Zoom to Full Extent button to display the dropdown list.
2. Tap the Fixed Zoom In/Out tools to perform an incremental zoom in or zoom out.
3. Tap Zoom to Full Extent to zoom to the extent of all the layers in the map.
4. Tap Zoom To Layer to select a layer to zoom to. ArcPad zooms to the geographic extent of the selected layer.
5. Tap Center on GPS when you want to center the display on the current GPS position. Your GPS receiver needs to be activated for this tool to be enabled.



Adding Shape files to your ArcPad map

A shapefile is an electronic map item such as roads or SWMU boundaries that you can add or subtract from the display on the GeoXT screen to help you navigate and conduct inspections.

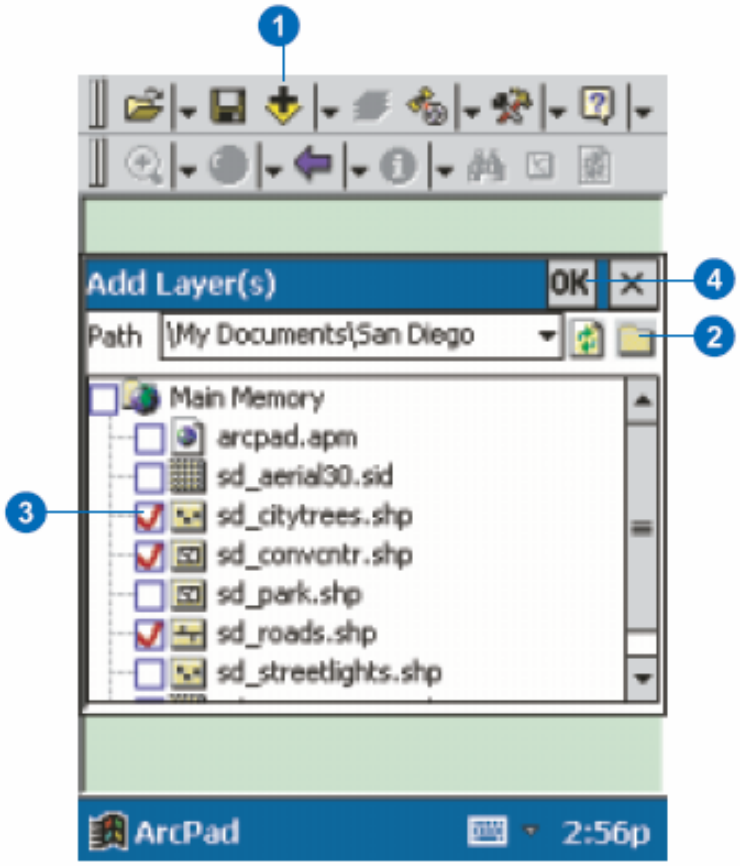
Adding shapefiles to your ArcPad map

1. Tap the Add Layer(s) button on the Main toolbar.
2. Tap the Folder button to navigate to the shapefile you would like to add.

   Shapefiles have a .shp suffix.
3. Check the checkbox beside the datafile(s) you would like to add.

   A red check mark indicates selected files.
4. Tap OK.

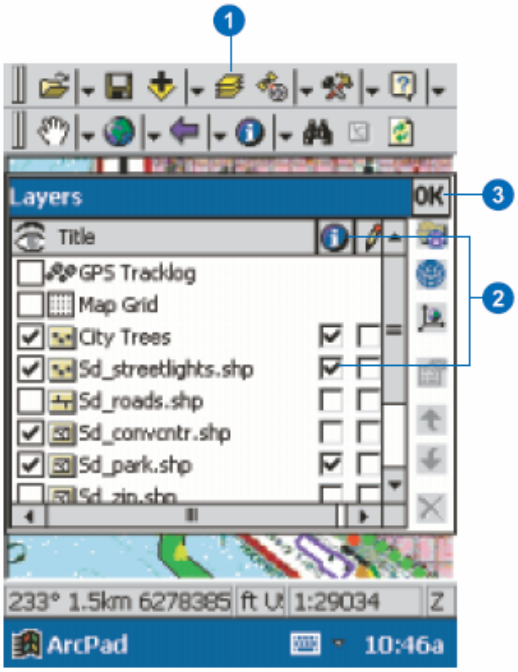
   Your shapefiles are now added as layers to the existing ArcPad map.



Modifying Layers on a Map

1. Tap the Layers button.

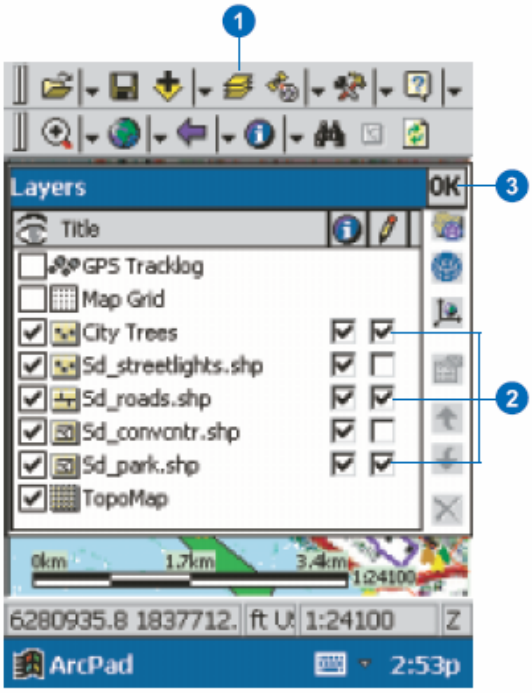
   The Layers dialog box opens and lists all of the layers in the current ArcPad map.
2. Check the Identify tool check box for the layer(s) you would like to retrieve information for.
3. Tap OK.



1. Tap the Layers button.

   The Layers dialog box opens and lists all of the layers in the current ArcPad map with a corresponding icon to indicate the type of layer.
2. Check the Edit check box for each layer, or shapefile, that you want to edit.
3. Tap OK.

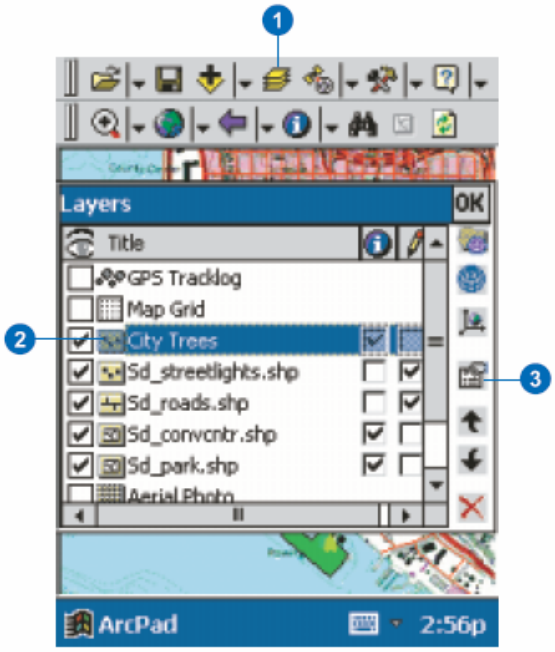
   The Edit/Drawing toolbar will be displayed if it is not already displayed.



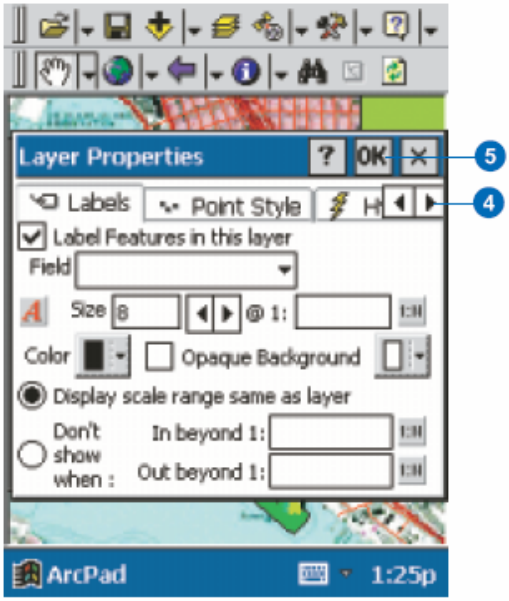
Modifying Layers on a Map, continued

Setting layer properties

1. Tap the Layers button on the Main toolbar to open the Layers dialog box.
2. Tap the layer of interest.
3. Open the Layer's properties dialog box by either double-tapping on the selected layer or tapping the Layer Properties button. ▸



4. Scroll through the different tabs using the left and right arrow buttons. Set your properties.
5. When finished, tap OK.



Using the Identify Tool

Using the Identify tool

1. Tap the Identify button on the Browse toolbar.
2. Tap the feature you would like to identify.

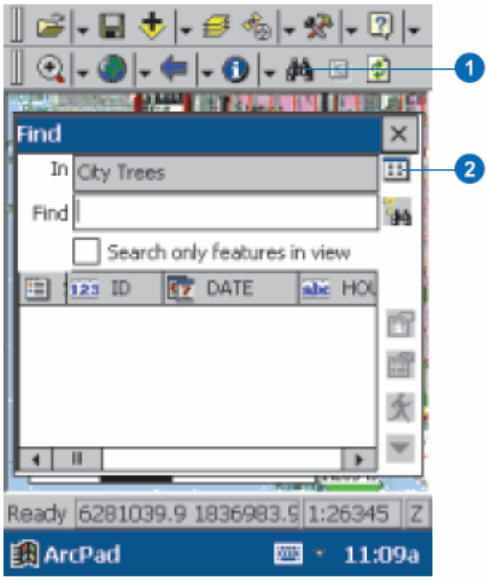
   The Feature Properties dialog box is displayed.
3. Tap OK.

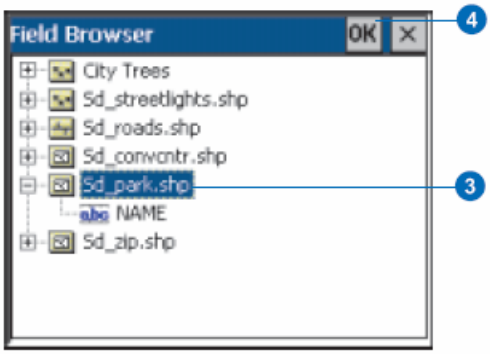
Querying data

Using the Find tool to query data

1. Tap the Find button.
2. Tap the Select Layers button.
3. Tap the layer that you wish to search on and, optionally, the field.

   To select an optional field, tap on the plus, +, symbol next to the layer name to display the list of available fields.
4. Tap OK. ▸





Querying data, continued

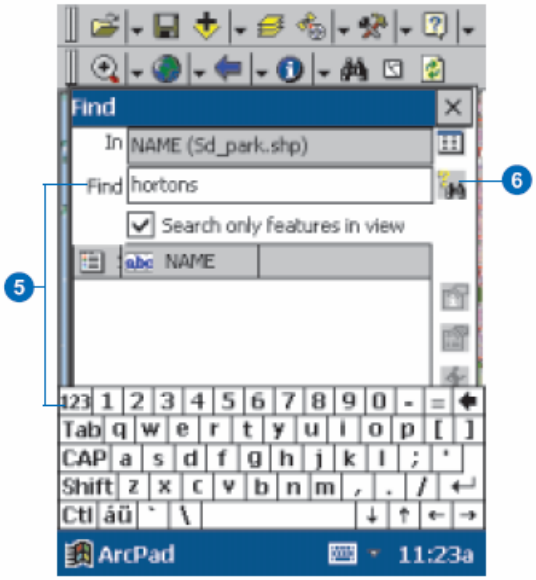
5. Use the Soft Input Panel to type the value that you want to find.

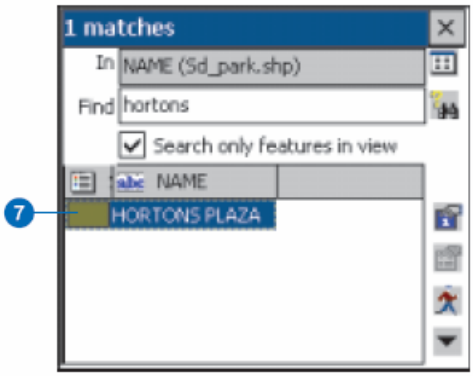
   If you do not enter a value, ArcPad will display a list of all the features in that layer when you execute the search (see Step 6).

6. Tap the Find button to execute the search.

   ArcPad displays a list of features and the number of matches based on your query.

7. Tap the feature you are searching for.



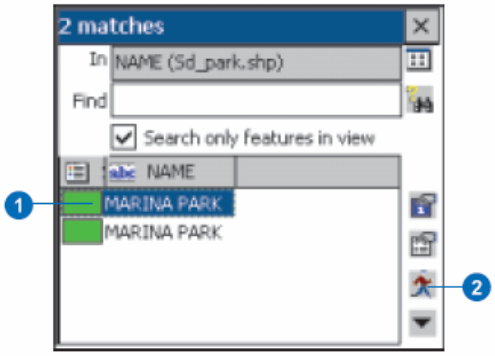


Querying Data, continued

Using the Go To tool on your query

1. Tap the feature you would like to select as a destination.
2. Tap the Go To button.
3. ArcPad zooms to the selected feature.

   The feature is highlighted using the current highlight color and set as the current navigation destination. The feature is also labeled using the value of the field that was searched on. If no field was specified, then the label will use the field that has any part of the word 'name' in the field name.



Using the Measuring Tool

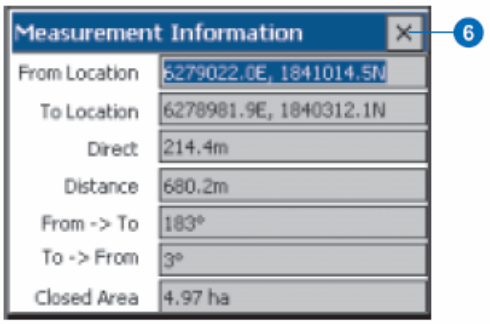
Using the Measure tool

1. Tap the arrow to the right of the Identify tool to display the dropdown list.
2. Tap Measure. ▸

Using the Measuring Tool, continued

3. Tap the map where you would like to begin to measure.
4. Tap again to end the distance or continue to tap to create a multiline or polygon.
5. Tap the Measure tool again.

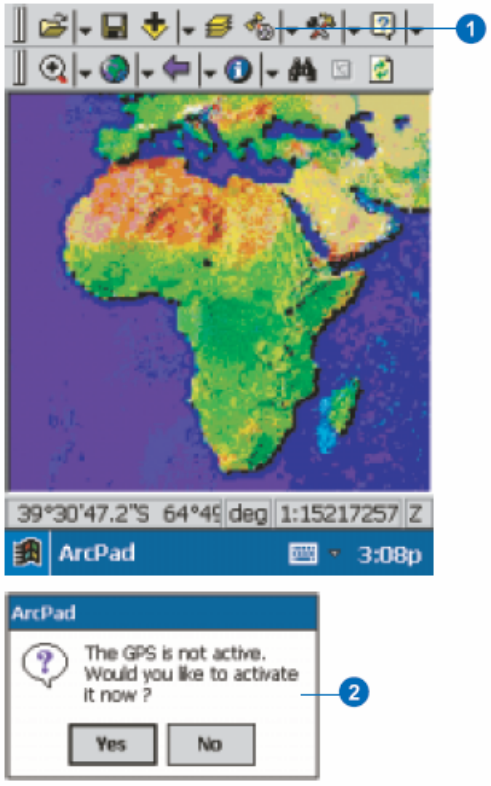
   The Measurement Information dialog box displays with the following data: the coordinates (from and to location); the direct distance (from start to end); the actual distance drawn; the bearings; and if you drew more than two vertices, the estimated closed area of the shape.
6. Close the Measurement Information dialog box.



Using the GPS with ArcPad To use the GPS feature of the GeoXT you will need to turn it on. The following screens will guide you through a series of steps for using the GPS.

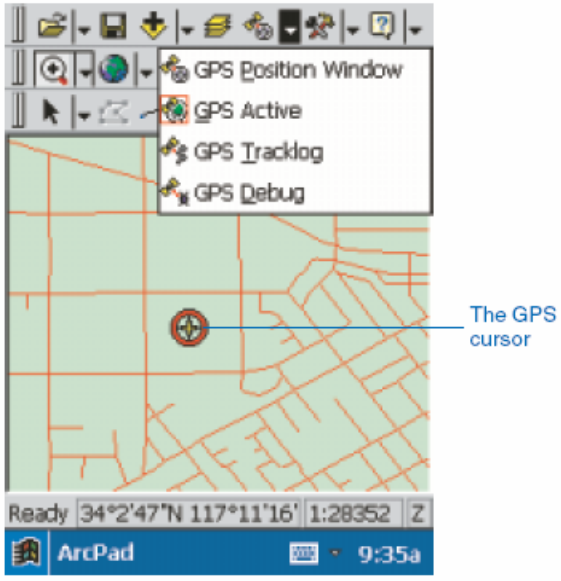
Opening the GPS Position Window

1. Tap the GPS Position button to open the GPS Position Window.
2. A message box will be displayed if the GPS is not active. Tap Yes to activate the GPS and open the GPS Position Window.



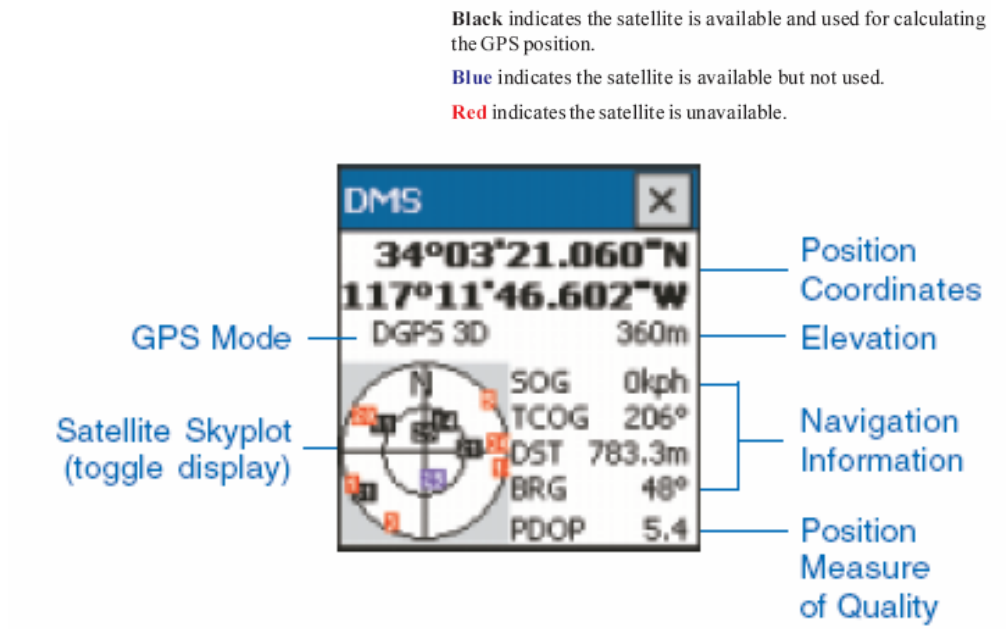
The GPS cursor is displayed when the GPS is active and is located at the last known or current GPS position. The GPS cursor is shown with a slash when using the last known GPS position.

The GPS Active icon is also highlighted with a red box when the GPS is active.



Using the GPS with ArcPad, continued

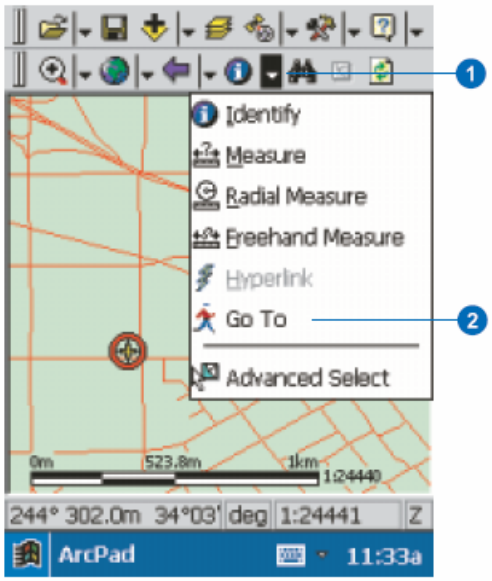
The window below displays the GPS status. To open this window, tap on the arrow button between the satellite icon and the hammer and wrench icon. This window allows you to determine if there are enough satellites to collect data. The window also displays your current position coordinates.



Using GPS to Go To a point on map

In some cases you may want to use the GPS to navigate from one location to another. The screen below describes the process.

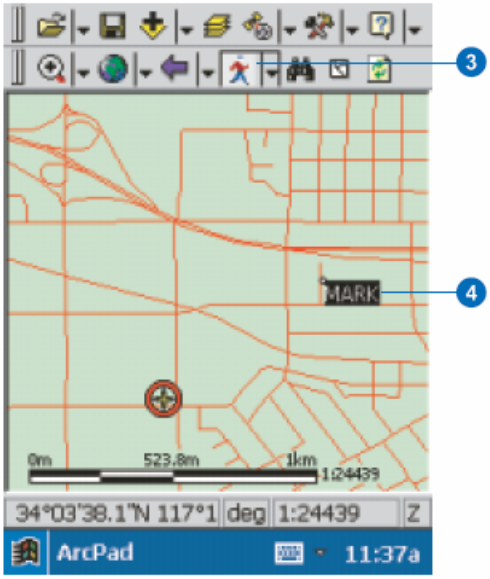
1. Tap the arrow to the right of the Identify button to display the dropdown list.
2. Tap Go To.►

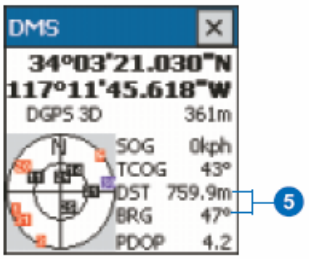


Using GPS to Go To a point on map, continued

3. The Go To button is displayed on the Browse toolbar and is depressed to indicate that the tool is active.
4. Tap the map to select a navigation destination.

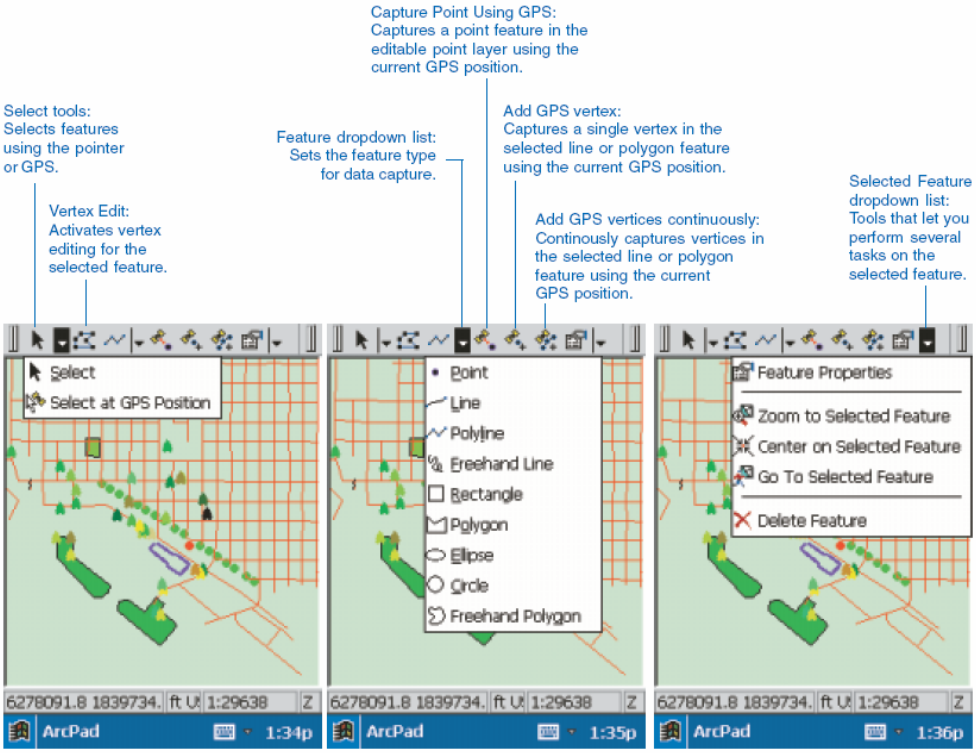
   The destination is displayed with a MARK label.
5. Use the GPS Position Window to view the distance (DST) and bearing (BRG) from your current GPS position to your selected destination.





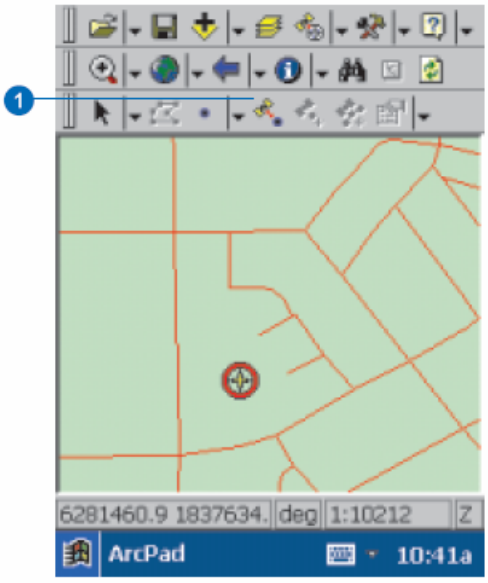
Creating new features

While in the field you may want to collect GPS position information for features such as points, lines or polygons. The screens below describe how to collect GPS position information.



1. Tap the GPS Point button to capture a new point feature at the current GPS position.

   The Feature Properties dialog box or custom edit form is automatically displayed after the new point feature has been created. ▸

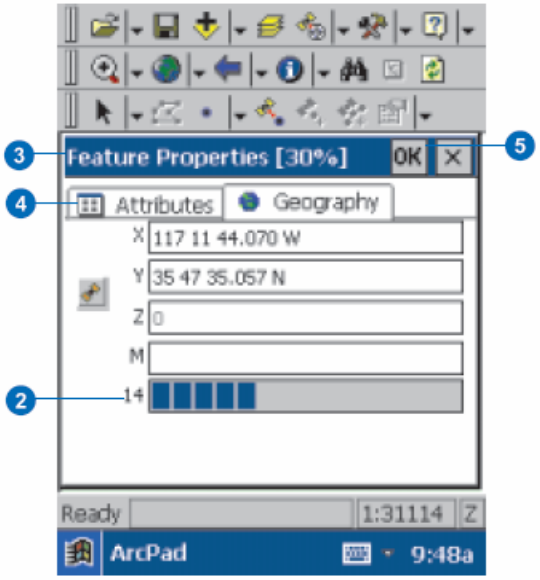


Creating new features, continued

2. The Geography page shows a progress bar, which counts down from the specified number of GPS positions to average to zero.
3. The GPS position averaging status is also displayed in the title bar—for example, 30%.
4. Tap Attributes to display the Attributes page. Type the attributes for the new point feature.
5. Tap OK to save the attributes, close the edit form—or the Feature Properties dialog box—and complete the new point feature.

   If you tap OK before the averaging is complete, a dialog box will display asking whether you want to terminate the GPS position averaging.

   You can also tap the X button if you want to cancel the capture of the new point feature. The point feature and any attributes that have been typed in will be deleted.



Site Monitoring Area Visit Inspection Form

Field team: _____

Date/Time: _____ **Location:** _____

Location Number/Name: _____ **PRS:** _____

Sampling Setup: (ISCO, Single Stage)

Bottles: 1 Gal Glass_____ 1 Gal Poly_____ 1 L Poly____ 300 ml Glass ____
Additional SSC: 1 L Poly____

Inspection Items: ISCO

□ ISCO turned on/off reason if off:_____ □ Bottles replaced/present

□ Battery cable OK □ Voltage on bat: _____ □ Sample tubing OK

□ Sample tubing plugged/unplugged □ Debris cleaned from intakes/vent tubes

Inspection Items: SS

□ Sample/Vent tubing OK □ Silt dike, sand bags, or other Daming material OK

□ Bottles replaced/present □ Sample tubing plugged/unplugged

□ Debris cleaned from intakes/vent tubes

Comments:_____
_____
_____
_____
_____

Repairs/Improvements:_____
_____
_____
_____
_____

BMP Repairs/New Installation:_____
_____
_____

Los Alamos National Laboratory

Page: **Inspection**

Inspection and Maintenance Form

White-background items must always be filled. Gray-background items are optional.

Completed form consists of:
- **1 Inspection page**
- **0 or more BMPs pages**
- **0 or more Findings pages**
- **0 or more Maintenance pages**

Site Inspected

Site ID	PRS ID (If Site is PRS)	Site Name

Inspector

Inspector ID	Inspector Given Name / Initial	Inspector Last Name

Inspection Details

Inspect Done On (mm/dd/yyyy)
/ /

Inspection Type (Check One)		Inspection Frequency (Actual Time since Last. Check One)	
☐ Construction SWPP	☐ SWMU BMP	☐ Weekly	☐ Semiannually
☐ Industrial Compliance	☐ Storm Water Visual	☐ Biweekly	☐ Annually
☐ Industrial Short		☐ Monthly	☐ Rain Event (0.5")
		☐ Quarterly	☐ None

In Compliance?	Follow Up Needed?	Change SWPPP?	Photos Taken?
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

Last Rain

Last Rained On (mm/dd/yyyy)	Amount in Inches (nn.nn)
/ /	

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Page: **BMPs**

Inspection and Maintenance Form

White-background items must always be filled. Gray-background items are optional.
Combine one or more BMP pages, if needed, with one Inspection page.

This Page Goes with Inspection Page for:

Site ID	PRS ID (If Site is PRS)	Site Name	Inspect Done On (mm/dd/yyyy)
			/ /

Structural BMP Information (Use Site BMP ID from database for preexisting BMPs. Use range 999,000-999,999 for new BMPs.)

Site BMP ID	BMP ID	BMP Name

Description

Function (Check One)

- ☐ Covering / Stabilization
- ☐ Dissipation
- ☐ Diversion
- ☐ Filtration
- ☐ Inlet Protection
- ☐ Secondary Containment
- ☐ Sediment Retention
- ☐ Vegetative Protection
- ☐ Unknown / Other

Status (Check One)

- ☐ Abandoned
- ☐ Deficient
- ☐ Fire Damaged
- ☐ Good
- ☐ Permanent/Dfcnt
- ☐ Permanent/Good
- ☐ Proposed
- ☐ Removed

Installed On (mm/dd/yyyy) / /

Structural BMP Information (Use Site BMP ID from database for preexisting BMPs. Use range 999,000-999,999 for new BMPs.)

Site BMP ID	BMP ID	BMP Name

Description

Function (Check One)

- ☐ Covering / Stabilization
- ☐ Dissipation
- ☐ Diversion
- ☐ Filtration
- ☐ Inlet Protection
- ☐ Secondary Containment
- ☐ Sediment Retention
- ☐ Vegetative Protection
- ☐ Unknown / Other

Status (Check One)

- ☐ Abandoned
- ☐ Deficient
- ☐ Fire Damaged
- ☐ Good
- ☐ Permanent/Dfcnt
- ☐ Permanent/Good
- ☐ Proposed
- ☐ Removed

Installed On (mm/dd/yyyy) / /

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Page: **Findings**

Inspection and Maintenance Form

White-background items must always be filled. Gray-background items are optional.
Combine one or more Finding pages, if needed, with one Inspection page.

This Page Goes with Inspection Page for:

Site ID	PRS ID (If Site is PRS)	Site Name	Inspect Done On (mm/dd/yyyy)
			/ /

Finding for Site

Noticed On (mm/dd/yyyy)
/ /

Finding

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Page: **Maintenance**

Inspection and Maintenance Form

White-background items must always be filled. Gray-background items are optional.
Combine one or more Maintenance pages, if needed, with one Inspection page and one or more BMP pages.

This Page Goes with Inspection Page for:

Site ID	PRS ID (If Site is PRS)	Site Name	Inspect Done On (mm/dd/yyyy)
			/ /

Maintenance Requirement for BMP (Site BMP ID must match entry on BMPs page.)

Site BMP ID	Noticed On (mm/dd/yyyy)
	/ /

Maintenance Required (Check One)	Comments (including materials and quantities needed)
☐ Install Correctly	
☐ Install New BMP	
☐ Relocate	
☐ Remove BMP	
☐ Remove Debris	
☐ Remove Sediment	
☐ Repair	
☐ Replace	

Maintenance Requirement for BMP (Site BMP ID must match entry on BMPs page.)

Site BMP ID	Noticed On (mm/dd/yyyy)
	/ /

Maintenance Required (Check One)	Comments (including materials and quantities needed)
☐ Install Correctly	
☐ Install New BMP	
☐ Relocate	
☐ Remove BMP	
☐ Remove Debris	
☐ Remove Sediment	
☐ Repair	
☐ Replace	

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