

# **N.C. Wetland Assessment Method (NC WAM)**

## **Tool Box User Manual**



Prepared for the N.C. Division of Water Resources



**Accompanies NC WAM User Manual Version 5  
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# NORTH CAROLINA WETLAND ASSESSMENT METHOD (NC WAM)

## TOOL BOX USER MANUAL

### 1.0 INTRODUCTION

The North Carolina Division of Water Resources (NCDWR) has directed the development of the North Carolina Wetland Assessment Method (NC WAM) Tool Box (Tool Box). The Tool Box encompasses two separate but complementary utilities: the global positioning system (GPS) based NC WAM Data Dictionary (Data Dictionary) and a Microsoft Access database application referred to as the NC WAM Database (Database). The utilities work in concert to streamline the collection of NC WAM data and the generation of wetland functional ratings.

Developed to accompany the Tool Box, this user manual begins with a brief overview of NC WAM and the associated functional rating process. The subsequent sections introduce the Tool Box in greater detail and provide instructions for the use of the Data Dictionary and Database. Lastly, a discussion outlining various workflows for using the Tool Box utilities is also provided.

### 1.1 North Carolina Wetland Assessment Method

The North Carolina Wetland Assessment Method (NC WAM) is a field-based method for determining the level of function of wetlands in North Carolina. The methodology was created by a team of federal and state agency staff for the purposes of project planning, alternatives analysis, compliance and enforcement, mitigation planning, and tracking functional replacement.

In NC WAM, the array of North Carolina wetlands are categorized into 16 general wetland types. The general wetland types include 1) Salt/Brackish Marsh, 2) Estuarine Woody Wetland, 3) Tidal Freshwater Marsh, 4) Riverine Swamp Forest, 5) Seep, 6) Hardwood Flat, 7) Non-Riverine Swamp Forest, 8) Pocosin, 9) Pine Savanna, 10) Pine Flat, 11) Basin Wetland, 12) Bog, 13) Non-Tidal Freshwater Marsh, 14) Floodplain Pool, 15) Headwater Forest, and 16) Bottomland Hardwood Forest.

Functional ratings are developed for each assessment area wetland type in comparison to a reference wetland (where appropriate) or by examining stressors of wetland condition. Three major functions are recognized with ten sub-functions as follows: hydrology (surface storage and retention and sub-surface storage and retention), water quality (pathogen change, particulate change, soluble change, physical change, and pollution change), and habitat (physical structure, landscape patch structure, and vegetation composition).

Sub-functions and functions are evaluated using 22 field metrics listed on a field assessment form (FAF). Data from completed FAFs are entered into a computer program to generate High, Medium, and Low ratings for each sub-function, function, and the assessment area. The original computer program developed for NC WAM is the Excel-based NC WAM Rating Calculator. With the release of the NC WAM Tool Box described in this user guide, a second computer program is available for performing NC WAM functional rating calculations.

For a comprehensive explanation of NC WAM, please see the NC WAM User Manual.

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## 1.2 NC WAM Tool Box

The utilities of the Tool Box were created to provide an integrated, efficient workflow for the collection, management, processing, and transmittal of NC WAM assessments. Streamlining these processes is seen as essential if NC WAM is to be used for large projects, such as transportation improvement projects. To this end, two complimentary utilities were developed: the NC WAM Data Dictionary and Database.

The Data Dictionary data collection utility is constructed as a Trimble GPS data dictionary. When installed on a Trimble GPS unit, the Data Dictionary provides the functionality to capture the wetland assessment data of the NC WAM FAF and append it to a GPS position. Collecting NC WAM assessment data with the Data Dictionary has two advantages. First, it unifies the collection of the NC WAM and spatial data, eliminating complications associated with maintaining separate paper FAFs and GPS data. Second, by digitally recording the NC WAM assessments, the data are already staged for functional rating processing with the NC WAM Database. It should be mentioned, though, that the Data Dictionary is solely a data collection device. It does not have the ability to generate wetland functional ratings from the collected assessment data. To calculate functional ratings, the collected assessment data must be exported from the GPS and imported to the second of the Tool Box utilities, the Database.

The Database is a Microsoft Access 2003 database application (.mdb file) that provides a range of functions, including assessment storage, data entry, and functional rating calculation. To start, the Database is a device for managing and storing NC WAM assessments. One Database file can store a large number of assessments, allowing NC WAM assessments for one or more projects, or for one or more permit applicants, to be centralized under a single Database file. Contrast this to the previously developed Excel-based Rating Calculator, which required a separate Rating Calculator file for each assessment stored. As for data entry, assessment data are incorporated into the Database in one of two ways: 1) by manually entering data through a database form resembling the FAF or 2) by importing assessments exported from the Data Dictionary or another NC WAM database. Once assessments are in the Database, they may be edited or supplemented with additional information. And conveniently, functional rating calculations are automatically performed for every assessment in the Database simultaneously.

An important aspect of the Tool Box is that it establishes a mechanism for distributing parcels of NC WAM assessment data to NCDWR, or other parties. The Data Dictionary and Database both export assessment data in a standardized format that can be read by the import function of any other Database file. Using these tools, permit applicants can submit wetland assessments to NCDWR. NCDWR would then append the data to a master database of NC WAM assessments to be maintained by the agency. Moreover, the assessment results can easily be compiled into a portable document format (.pdf) using the Database reporting functions.

The remainder of this user manual provides instructions for using the Data Dictionary and Database. The presentation is framed in terms of the Tool Box functions, namely the collection, management, processing, and transmittal of NC WAM assessments. To crystalize these concepts, the last section provides sample workflows outlining the entirety of the NC WAM process, from data collection to transmittal of the assessment results.

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### **1.3 Tool Box Requirements and Assumptions**

To get the most of out of the Tool Box utilities, the user should first and foremost have been trained to use NC WAM. In addition, the equipment and software listed below are required. Basic knowledge of each is recommended.

- Microsoft Access
- Trimble GPS unit (for Data Dictionary only)
- Trimble GPS Pathfinder Office (for Data Dictionary only) GIS software (optional)

It should also be mentioned that the Data Dictionary does not include any added functionality for collecting wetland delineation data; although, it does provide options for collecting generic point or line features (see Figure 3 in Section 2.3). If wetland boundary locations are to be recorded with the Data Dictionary, it is advisable to use these generic feature types.

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## **2.0 NC WAM DATA DICTIONARY**

The NC WAM Data Dictionary is a Trimble GPS data dictionary (.ddf file) designed for capturing the information and assessment data included on the NC WAM field assessment form, or FAF. The power of this utility is that it simultaneously records the geographic location of the assessment point while the FAF is being completed, coupling the attribute and spatial data of the assessment.

The Data Dictionary must be used with a Trimble GPS unit installed with the TerraSync software. It was developed and tested using Trimble GeoXT and GeoXH GPS units; although, it may work with other Trimble GPS products as well.

After downloading the Data Dictionary from the NCDWR website, the general process for using the Data Dictionary is to

1. Load the Data Dictionary onto a GPS unit
2. Create a TerraSync data file and associate it with the Data Dictionary
3. Create assessment points and record the FAF data for each
4. Export the data file to an ESRI shapefile or dBASE file (.dbf) for importing into the Database

Again, the Data Dictionary is strictly a data collection utility. It does not have the ability to generate wetland functional ratings from the collected assessment data itself. To generate wetland functional ratings, the assessment data must be downloaded to a local computer or server and then into the Database.

Detailed instructions for using the Data Dictionary follow.

### **2.1 Loading the Data Dictionary onto a GPS Unit**

The Data Dictionary is loaded onto a GPS unit using Trimble Pathfinder Office software. To do so, follow these steps.

1. Connect the GPS unit to a computer with Pathfinder Office.
2. Select Data Transfer from the Utilities menu along the top margin of the program window (Utilities > Data Transfer).
3. Select the Send tab from the Data Transfer dialog (see Figure 1)
4. Click the Add button on the Data Transfer dialog and select the option for Data Dictionary
5. Navigate to and select the NC WAM Data Dictionary.
6. Click the Transfer All button.

Pathfinder Office should respond by indicating if the Data Dictionary was successfully transferred.



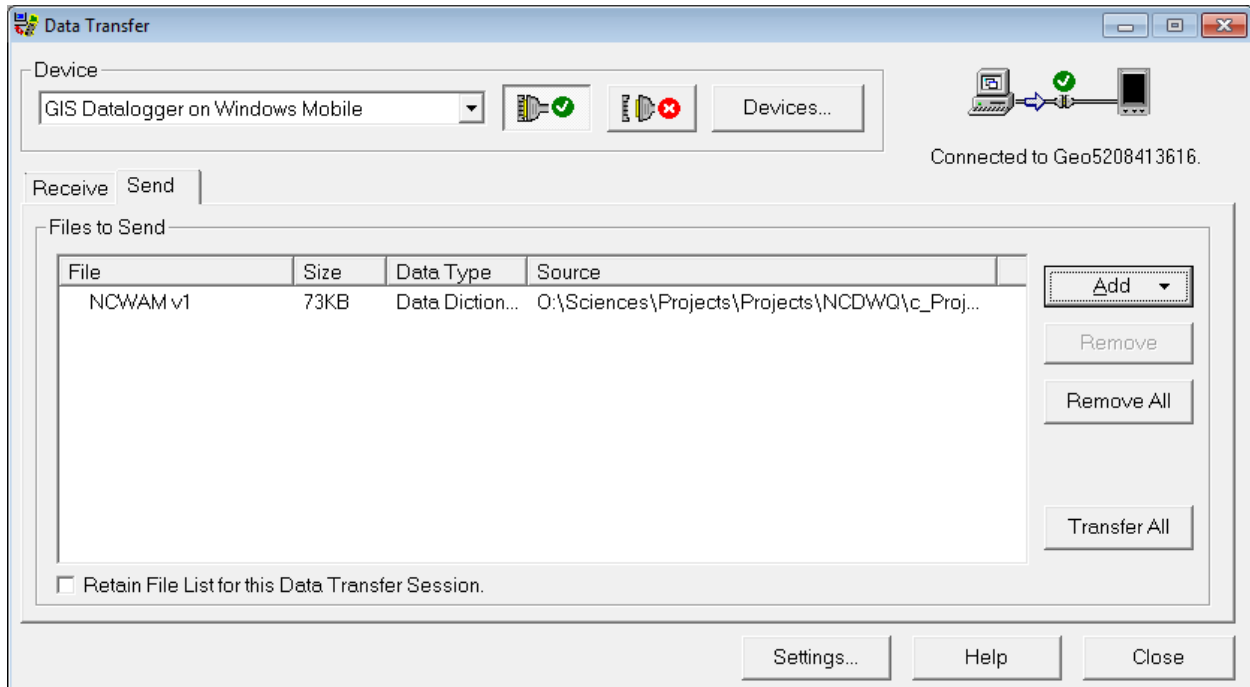


Figure 1. Load the Data Dictionary onto a GPS unit using the Data Transfer utility (Utilities > Data Transfer) of the Pathfinder Office software.

## 2.2 Create a TerraSync Data File

The Data Dictionary is used in association with TerraSync, the native data collection software for Trimble GPS units. In order to use the Data Dictionary, it must be linked to a TerraSync data file at the time the data file is created. To do this, open TerraSync and select Data from the dropdown list in the top left corner of the screen (Figure 2). By default, TerraSync displays the Create New Data File view. Input the name of the file and select the Data Dictionary from the Dictionary Name dropdown list (Figure 2). The Data Dictionary will be named NCWAM vX, where X is the version number. Click Create to generate the data file. The Data Dictionary will be permanently associated with the new file and will be available each subsequent time the data file is opened. At this point, the data file is ready to collect NC WAM assessment data.

For more details on TerraSync and data dictionaries, please review the TerraSync manual. Manuals for the various TerraSync versions can be found at the [Trimble Docushare](#) website.

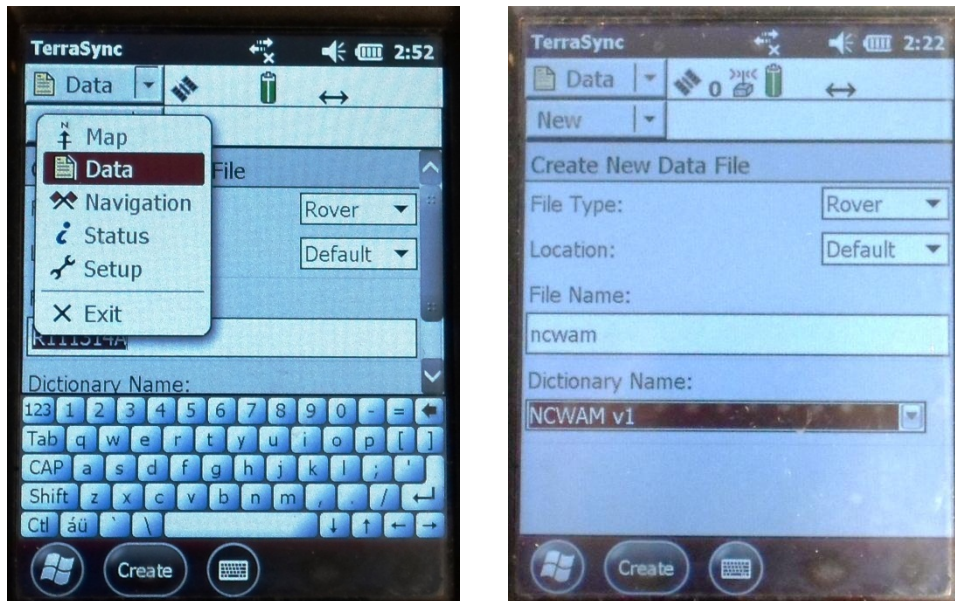


Figure 2. Access the Data Dictionary within TerraSync by associating it with a new Trimble data file.

### 2.3 Create Assessment Points and Record FAF Data

After a data file is opened or created, TerraSync presents the Collection view. Data collection tasks are coordinated from this view. If the data file is linked to the Data Dictionary, the Collection view will include an NC WAM form button (Figure 3). Clicking this button initiates the collection of a single GPS point and launches the NC WAM data form. The NC WAM assessment data are recorded into the NC WAM form, while the GPS point represents the location of the assessment.

Generally, it will be best to perform the NC WAM assessment in the interior of the wetland assessment area, in which case the assessment location will not coincide with the wetland boundary. Per the NC WAM User Manual, it is important to walk the entire assessment area prior to completing the FAF. While walking the assessment area, the recording of the GPS positions may be paused by clicking the Pause button at the bottom of the screen (Figure 4). To resume recording positions, click the Log button (Figure 5).

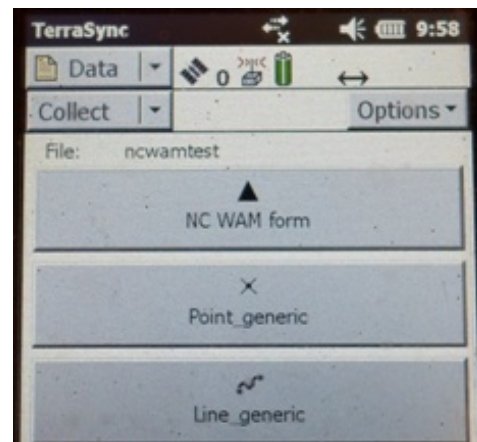


Figure 3. Click the NC WAM form button to initiate data collection for an NC WAM assessment.

Wetland boundary locations may also be recorded with the Data Dictionary. If the Data Dictionary is to be used for this purpose, it is advisable to record the boundary as either generic

point or line features. This avoids having an NC WAM FAF associated with each delineation feature.

The NCWAM form, partially pictured in Figures 4 and 5, resembles the NC WAM FAF on pages viii – xi of the NC WAM User Manual. It includes fields for collecting all the informational and metric data of the FAF plus additional project information related to NCDWR and USACE permitting, such as the NCDWR permit number and USACE action identification number.

The entirety of the FAF content could not be replicated within the limited space of a GPS display. Consequently, informational and metric text within the NC WAM form of the Data Dictionary is represented by abbreviated metric titles and descriptors (Figure 4). The assessor is advised to have a paper print out of the FAF on hand while collecting assessment data with the NC WAM form. Compared to the FAF, the informational and metric content on the NC WAM form are also organized in a more vertical orientation. This is particularly apparent for compound metrics, such as Metric 1. In the case of Metric 1, the Ground Surface Condition and Vegetation Condition components are reconfigured from their horizontal arrangement on the FAF and presented one after the other in the NC WAM form.

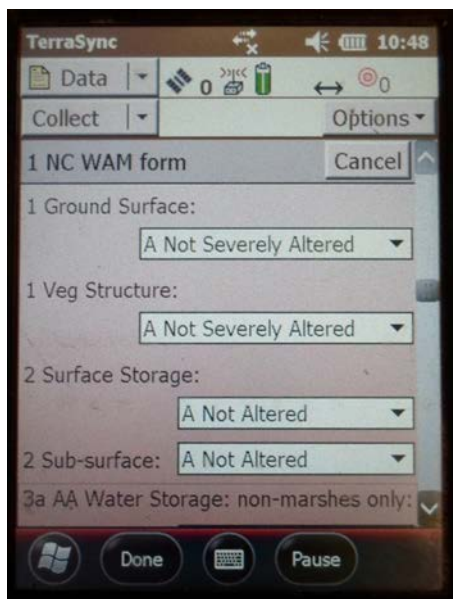


Figure 4. The FAF content in the Data Dictionary has been abbreviated to fit the limited space of a GPS screen. The Pause button can be used to pause the recording of GPS positions while the NC WAM Form is completed.

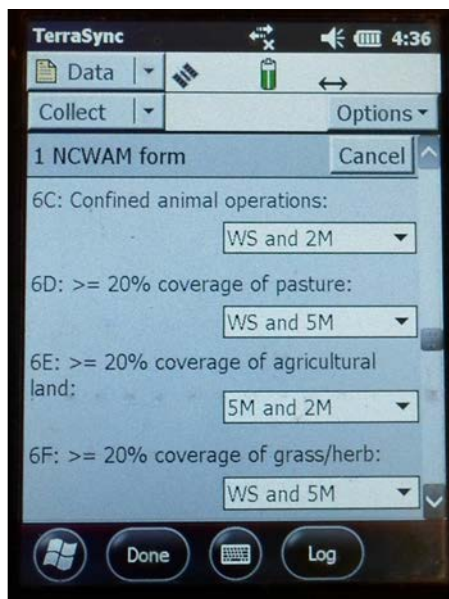


Figure 5. Metric 6 was reformatted as a series of eight data fields for recording the condition in the WS, 5M, and 2M evaluation areas. Click the Log button to resume recording GPS positions if collection was paused.

The presentation of Metric 6 in the NC WAM form represents the largest departure between the NC WAM form and FAF and warrants special discussion. There are 24 separate watershed conditions to be recorded between the watershed (WS), 5-mile (5M), and 2-mile (2M) evaluation

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areas of Metric 6. To avoid an excessively long running list, the presentation of Metric 6 was condensed into eight data fields pertaining to different watershed conditions (Figure 5):

1. 6A:  $\geq$  10% impervious
2. 6B:  $<$  10% impervious
3. 6C: Confined animal operations
4. 6D:  $\geq$  20% coverage of pasture
5. 6E:  $\geq$  20% coverage of agricultural land
6. 6F:  $\geq$  20% coverage of grass/herb
7. 6G:  $\geq$  20% coverage of clear-cut land
8. 6H: Little or no opportunity

Each field is associated with a dropdown list that includes the possible evaluation area combinations for each watershed condition:

1. WS, 5M, and 2M
2. WS and 5M
3. WS and 2M
4. 5M and 2M
5. WS only
6. 5M only
7. 2M only

To complete this metric, select the evaluation area or evaluation area combination in which the specific watershed condition is present. For instance, if  $\geq$  10% impervious surface is present in the 2M evaluation area and not the WS and 5M evaluation areas, then the 2M descriptor should be selected for 6A. Alternatively, if  $\geq$  10% impervious surface is present in the 5M and 2M evaluations areas, then the 5M and 2M descriptor should selected for 6A. A frequent response to this metric is that little or no opportunity is present in any of the evaluation areas. In this case, the WS, 5M, and 2M descriptor should be selected for 6H.

Data input in the NC WAM form is performed through several types of data fields, each of which collects information in a different way. Textual information, like the wetland site name or applicant, is input into text boxes using the keyboard. Metric values, as well as some of the informational data, are input by selecting from a series of descriptors presented in dropdown lists. In other cases, such as for the tidal stream type and regulatory considerations, radio buttons are used to record the assessment information. The vertical scroll bar on the right side of the NC WAM form can be used to navigate from the top of the form to the bottom.

Data fields that do not pertain to the selected wetland type may be disabled (grayed out) or absent. When a marsh wetland type is selected, for example, the descriptors for Metric 3 and Metric 17c are not presented. Further, if the NC WAM form is completed for one wetland type and then the wetland type is changed, some of the completed metrics may no longer apply. These metrics will be disregarded by the functional rating calculator in the NC WAM Database.

When the NC WAM form is complete and the GPS receiver has logged a requisite number of positions, click the Done (or OK) button at the bottom left of the screen (Figure 4). Doing so saves the NC WAM form along with the GPS point. **The NC WAM form does not need to be completely filled out to save the assessment.** As for the requisite number of positions, NCDOT wetland delineation guidance requires logging at least five positions at a five second logging interval (interval time is set in the TerraSync Logging Settings). It is advisable to follow this standard.

Circumstances may require updating a previously recorded assessment. This is done by selecting Update Feature from the second dropdown list in the upper left corner of the screen (Figure 6). Next, choose the feature to be updated from the feature list. The NC WAM Form for the selected assessment point is presented for editing. By default, the GPS position logger is paused as the assessment is updated. To record additional GPS positions, click the Log button at the bottom of the screen (Figure 5).

Assessments recorded with the Data Dictionary can also be edited after they are imported into an instance of the Database (Sections 3.5 and 3.8). Additional editing within the Database may in fact be necessary for answering metrics involving a GIS effort, such as Metrics 6, 11, 13, and 14, which are not readily completed in the field.

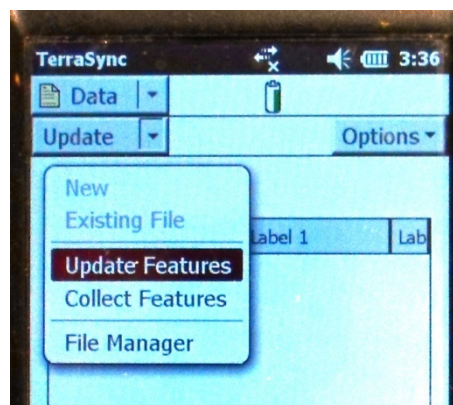


Figure 6. Revise an existing assessment by selecting Update Features, then the assessment to be updated.

## 2.4 Export NC WAM Assessments Collected with the Data Dictionary

Ultimately, NC WAM assessments collected using the Data Dictionary should be incorporated into the Database for data processing and storage (Section 3.5). Before this can happen, the assessments must first be exported to a dBASE file (.dbf) or ESRI shapefile using the GPS Pathfinder Office software. A dBASE file is a common file format for storing tabular data. The dBASE file generated by GPS Pathfinder Office will include coordinates for each wetland assessment and can be viewed in GIS software, but the file is not explicitly a spatial dataset. On the other hand, a shapefile is a spatial dataset that couples the NC WAM assessment data collected with the Data Dictionary to assessment locations. The choice to export the assessment data as a dBASE file or shapefile is one of preference; although, if the data will be viewed in GIS software, then exporting the assessment to a shapefile is preferable.

**The export procedure assumes the Trimble field data file has been transferred from the GPS unit to a local hard drive or server and that the data file has been differentially corrected.** For instructions on these procedures, consult the help documentation of the GPS Pathfinder Office software.

The export process is performed as follows.

1. Open the GPS Pathfinder Office program.

2. Select Export from the Utilities menu (Figure 7).

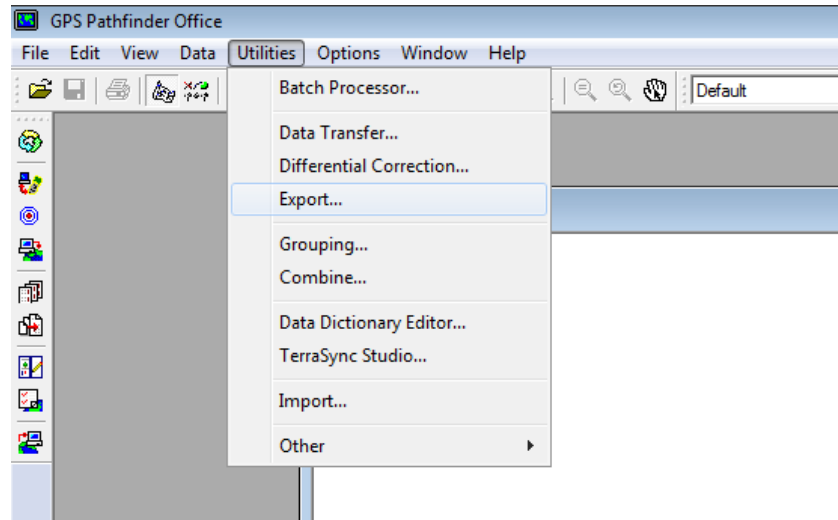


Figure 7. Export NC WAM assessments collected with the Data Dictionary by selecting Export from Utilities menu in GPS Pathfinder Office.

3. The Export dialog appears. Click the Browse button in the Input Files section to locate the NC WAM GPS file to be exported.
4. Click the Browse Button in the Output Folder section to specify the output folder for the exported file.
5. Choose Sample dBASE Setup or Sample ESRI Shapefile Setup from the Choose Export Setup dialog.
6. Click the Properties button in bottom right corner of the Export dialog (Figure 8).
7. Specify the export parameters from the Export Setup Properties dialog that appears. To start, select the Attributes tab. The export parameters vary slightly for dBASE and shapefiles (Figure 9). For both file types, select Code Value 1 in the Export Menu Attributes As section. Again for both, check the Date Recorded and Feature Name options in the Generated Attributes

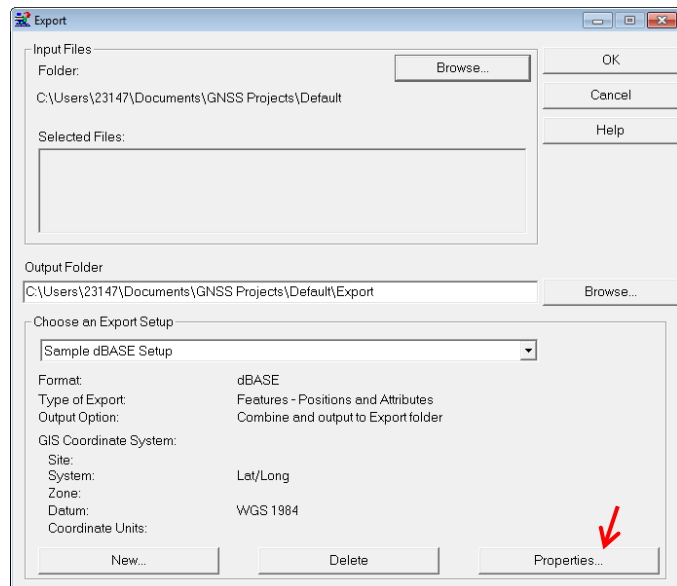


Figure 8. Click the Properties button to launch the Export Setup Properties dialog from which the export parameters are specified.

section. In the case of shapefiles, check the Position parameter in the Point Features section as well (Figure 9, right panel). If the assessment points have not been corrected, select the Position Filter tab and check Uncorrected. Click OK to register the selections and close the dialog.

8. The Export dialog (Figure 8) should be visible once again. Click the OK button to generate the export file.
9. The Export Completed dialog is presented when the export process concludes. The dialog provides details regarding the number of files, positions, and features exported. A problem may have occurred with the export if any of these values are zero.

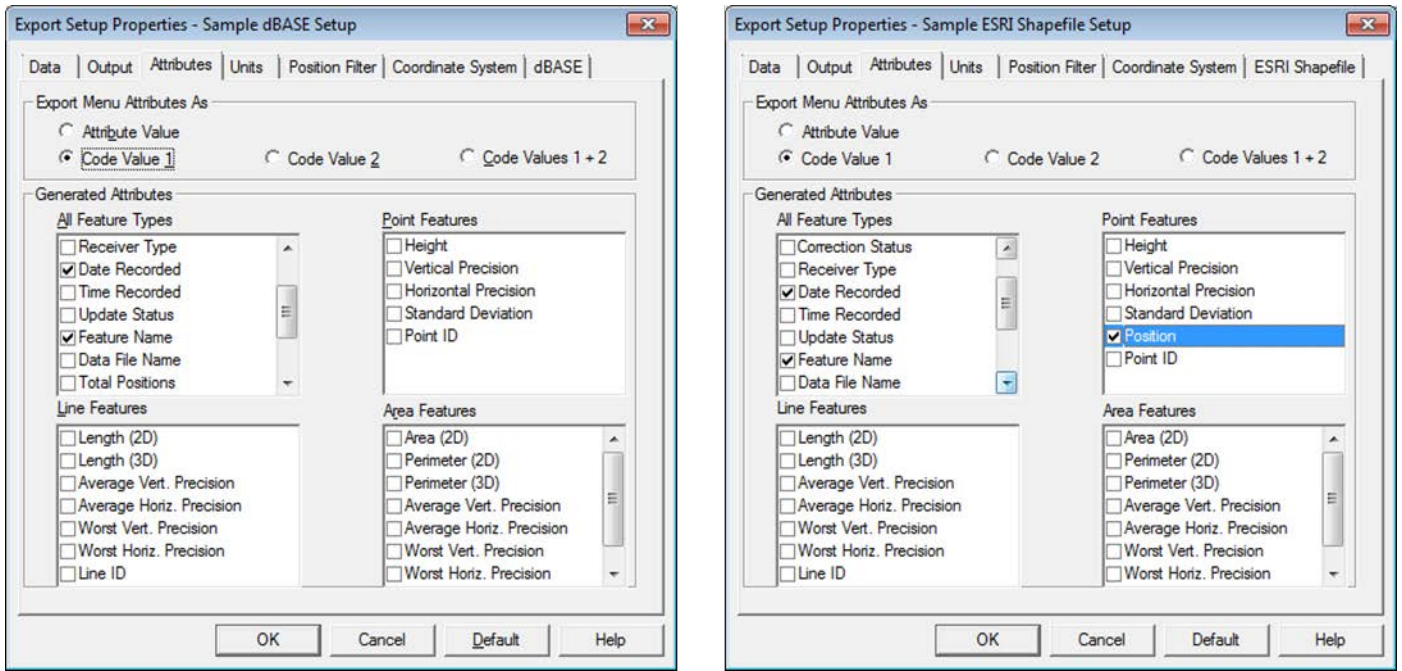


Figure 9. Required export parameters for dBASE and shapefiles. Export parameters for a dBASE file are pictured in the left panel and those for a shapefile in the right panel.

The exported dBASE or shapefile should be located in the output folder specified in step 4 above. The file is now ready to be imported in the Database. Instructions for doing so are included in Section 3.5.

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### 3.0 NC WAM DATABASE

The NC WAM Database is a multi-faceted application for the input, storage, and processing of NC WAM assessment data. As a Microsoft Access application, the Database can inherently store large numbers of NC WAM assessments. The functionality of the Database, however, has been expanded beyond just data storage to provide an integrated workflow for handling NC WAM assessment data. Utilities are included for importing assessment data collected with the Data Dictionary; viewing, editing, and creating individual assessments; calculating functional ratings; and exporting assessments to a text file format for transmittal to resource agencies or others.

The functionality of the Database is provided through a series of tables, forms, and reports – otherwise referred to as database objects. The specific functionality provided by an object is identified in Table 1. Corresponding instructions for using each object are presented in the remainder of this section.

Table 1. Database objects and functions.

Object	Function	Section
<i>Tables</i>		
NCWAM	Stores NC WAM assessment data	3.2
Ratings	Stores functional ratings of each NC WAM assessment	3.2
<i>Forms &amp; Dialogs</i>		
NC WAM Database	Central form for accessing Database utilities	3.3
Assessment Inventory	Lists all assessments in the Database Provides links for viewing the assessment FAF, ratings, and report	3.4
Import Assessments	Imports NC WAM assessments into the Database	3.5
Delete Assessments	Deletes one or more selected assessments	3.6
Export Assessments	Exports one or more selected assessments	3.7
Field Assessment Form	View and edit individual assessments Search for a specific assessment Create and edit a new assessment Delete an individual assessment View assessment ratings and report	3.8
Assessment Reporting	Generates Wetland Rating Sheet or Wetland Report reports for one or more selected assessments	3.9
<i>Reports</i>		
Wetland Rating Sheet	Viewing and printing function ratings of an assessment	3.10
Wetland Report	Viewing and printing the FAF and functional ratings of an assessment	3.10



### 3.1 Opening the Database

The first step to using the Database is opening it. The Database was developed as a Microsoft Access 2003 file (.mdb file extension). It is opened like any other Access database – by double-clicking the Database file or by using the Open function available from Access’s File menu (File > Open). **The Database can be used with Access 2007 or later, but must be retained as an Access 2003 (.mdb) file to maintain compatibility with ESRI ArcGIS (see Section 3.10).**

A Security Warning prompt with a button labeled either Options (Access 2007) or Enable Content (Access 2010) appears in the upper left corner of the Access frame (Figure 10, item ①) when the Database is opened. The content referred to by the prompt are the macros developed to provide functionality. **Click the Options button to open the Microsoft Office Security Options dialog. Select the Enable this content option and click OK to continue opening the Database and activate the macros.**

When using the Database with Access 2010, Access may ask if the file should be registered as a trusted document. Select either yes or no. The Database functions are not affected by the response.

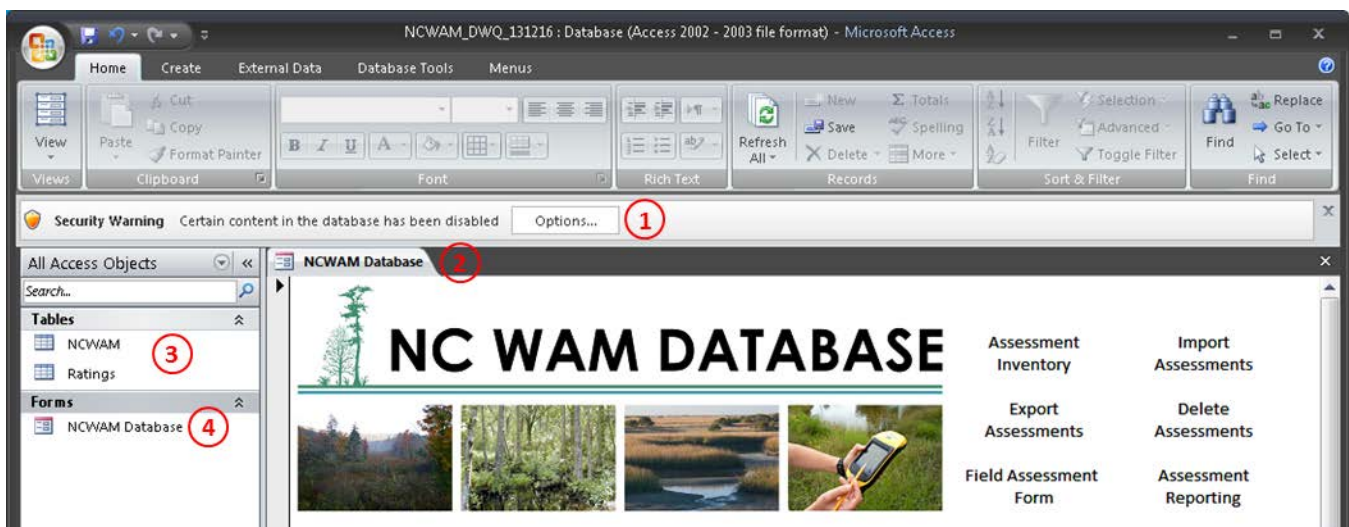


Figure 10. Opening the Database file. Upon opening the Database, a security warning will likely be present (①), the NC WAM Database form (②) will be displayed, and the NCWAM and Ratings tables (③) and NC WAM Database form (④) will be visible in the Navigation Pane along the left margin.

### 3.2 NCWAM and Ratings Tables

The NCWAM and Ratings tables act as data repositories (Figure 10, item ③). The NCWAM table includes 107 fields for storing assessment data captured on the FAF as well as additional information related to NCDWR and USACE permitting. Each NC WAM assessment imported into or created within the Database is automatically stored as a row, or record, in the NCWAM table. Data values recorded in the NCWAM table automatically update if an assessment is edited with the FAF form or deleted with the Delete Assessments form.

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The Ratings table includes 31 fields, 26 of which correspond to the sub-function or function ratings presented on the NC WAM Wetland Rating Sheet (page xii in NC WAM User Manual). As sub-function, primary function, and overall ratings are produced for each NC WAM assessment, the results are automatically written to a record in the Ratings table.

The values in the WetKey fields of both the NCWAM and Ratings tables are automatically generated in sequential order and should not be modified. The fields play a particularly important role in the management of assessments within the Database. To start, assessment records in the NCWAM and Ratings tables are stored in ascending order based on the field value. Just as significant, the NCWAM and Ratings tables are related by the WetKey field and share a one-to-one relationship. This means for each record in the NCWAM table there is a corresponding record in the Ratings table. The companion records are identified by the shared value in the WetKey field. Using the WetKey field, the two tables can be joined in an Access query or in ArcMap (section 3.11).

As new assessments are added to the Database, they are assigned WetKey values in sequential order. If the Database currently contains assessments, the values in the WetKey field cannot be reset or modified without short circuiting the relationships between the NCWAM and Ratings tables. If resetting the WetKey values is necessary, follow these steps.

1. Export the assessments in the Database that should be retained (Section 3.7).
2. Delete all the assessments in the Database (Section 3.6).
3. Close the Database file.
4. Reopen the Database file.
5. Import the assessments that were exported in Step 1 (Section 3.5).

While the NCWAM and Ratings tables are accessible and editable, ***it is strongly recommended that all additions and edits to NC WAM assessments be made through the Database forms (FAF, Import Assessments, and Delete Assessments)***. The forms are designed expressly for such purposes. Using the forms for data management tasks, instead of directly editing the tables, will ensure the relationship between the NCWAM and Ratings tables remains intact.

### **3.3 NC WAM Database Form**

The NC WAM Database form (Figure 10, item ② and Figure 11) is visible as the Database opens. This form is the central point for navigating the Database forms and utilities. Along the right margin of the NC WAM Database form, there are a series of labels that correspond to the Database forms and utilities. Clicking a label opens the respective form. For example, clicking the Assessment Inventory label opens the Assessment Inventory form.

It is useful to leave the NC WAM Database form open in the background and revisit it to access the Database features. If it is closed, it can be reopened by double-clicking the NC WAM Database object in the Navigation Pane (Figure 10, item ④).



Figure 11. The NC WAM Database form provides access to the Database forms and utilities. Clicking the labels along the right side of the NC WAM Database form opens the respective form or utility.

WetKey	USACE #	DWR #	Site Name	Wetland Type	Project	Date	Form	Ratings	Report
10			Emerald Isle Woods	Estuarine Woody Wetland	WFAT	10/5/2007	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
38			Speight Branch	Floodplain Pool	WFAT	9/21/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
39			Dinah's Landing HF	Hardwood Flat	WFAT		<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
40			West Carolina Freightliner	Headwater Forest	WFAT	12/6/2004	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
41			Buckridge - Clear Cut	Non-Riverine Swamp Forest	WFAT	4/14/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
42			Marsh Creek	Non-Tidal Freshwater Marsh	WFAT	9/21/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
43			Sandy Landing Road, PCS	Pine Flat	WFAT	5/24/2004	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
44			Croatan Tall Pocosin	Pocosin	WFAT	5/12/2004	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
45			Interstream 1b	Pine Savanna	WFAT	8/1/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
46			Roanoke River 13/17	Riverine Swamp Forest	WFAT	9/14/2011	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
47			NC306 - Suffolk Scarp	Seep	WFAT	1/26/2007	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
48			Huddy Gut - TM	Brackish/Salt Marsh	WFAT	9/20/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
94			Goose Creek Tidal Freshwater	Tidal Freshwater Marsh	WFAT	12/10/2012	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
108			Grandover Mafic Depression	Basin Wetland	WFAT	10/28/2008	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
109			The Nooks - 2010	Bog			<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
110			Pink Beds Beaver Meadow	Bottomland Hardwood Forest			<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
111			Haw River State Park	Riverine Swamp Forest			<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
112			Croatan Low Pocosin	Pocosin			<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
113			USS North Carolina	Brackish/Salt Marsh			<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>

Figure 12. The Assessment Inventory form includes an inventory table (①) listing all the NC WAM assessments in the Database. The Wetland Rating Sheets and Wetland Reports of the assessments can be viewed by clicking View Ratings and View Reports, respectively (②). The assessments can also be sorted (③) and filtered (④).

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### 3.4 Assessment Inventory Form

The Assessment Inventory form (Figure 12) is intended to function as a hub for accessing the NC WAM assessments in the Database. It does this by providing a complete inventory of the Database assessments. The assessments are presented in a table format with select summary information: WetKey, USACE action identification number, NCDWR permit number, site name, wetland type, project, and date.

Each assessment is accompanied by three links (underlined blue text) on the right side of the inventory table. The links provide one-click access to the assessment FAF (Section 3.8), Wetland Rating Sheet (Section 3.9), and Wetland Report (Section 3.9). To open the FAF for a particular assessment, click the Form link. Similarly, the Ratings and Report links open the Wetland Rating Sheet and Wetland Report.

There are also two buttons at the bottom of the form, View Ratings and View Reports. Clicking the View Ratings button displays the Wetland Rating Sheets for each assessment listed in the inventory table. In contrast, clicking View Reports opens a report with both FAFs and Wetland Rating Sheets for each assessment listed in the inventory table. The two buttons provide a speedy means to create comprehensive reports for printing. **Please note: in both cases, the reports will only include the assessments currently listed in the inventory table.** If the table is filtered, only the assessments meeting the filter criteria will be included in the reports.

Conveniently, the Assessment Inventory form includes sorting and filtering functions for adjusting the presentation of assessments on the form. By default, assessments are sorted by the WetKey value. To sort on one of the six other fields in the inventory table, select the field from the Sort by dropdown list.

Filtering the assessments is a two-step process that requires first specifying a filter field and then a filter value from the respective dropdown lists. When the filter field is selected, the Filter Value dropdown list is populated with the distinct values from the field. Selecting a value from the Filter Value dropdown completes the filter criteria. The inventory list is then reduced to just those assessments with the filter value in the specified filter field. The "<NULL>" value in the Filter Value dropdown list is used to select assessments that have no value in the filter field.

For example, if the Database includes assessments collected for three different projects, P1, P2, and P3, then selecting Project from the Filter Field dropdown list populates the Filter Value dropdown list with the values P1, P2, and P3. Selecting P1 as the filter value then reduces the inventory table to just those assessments associated with project P1.

In Figure 13 below, the assessments are sorted by date and filtered by the WFAT project. Accordingly, only assessments specified as WFAT in the Project field are presented.

WetKey	USACE #	DWR #	Site Name	Wetland Type	Project	Date			
39			Dinah's Landing HF	Hardwood Flat	WFAT		<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
44			Croatan Tall Pocosin	Pocosin	WFAT	5/12/2004	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
43			Sandy Landing Road, PCS	Pine Flat	WFAT	5/24/2004	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
40			West Carolina Freightliner	Headwater Forest	WFAT	12/6/2004	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
41			Buckridge - Clear Cut	Non-Riverine Swamp Forest	WFAT	4/14/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
45			Interstream 1b	Pine Savanna	WFAT	8/1/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>
48			Huddy Gut - TM	Brackish/Salt Marsh	WFAT	9/20/2005	<a href="#">Form</a>	<a href="#">Ratings</a>	<a href="#">Report</a>

Figure 13. The sorting and filtering functions on the Assessment Inventory form are useful for isolating assessments for a particular project, wetland type, permit action, etc.

### 3.5 Import Assessments Dialog

The Database includes an import utility for incorporating wetland assessments collected with the GPS Data Dictionary or exported from another NC WAM Database – see sections 2.4 and 3.7 for instructions on exporting assessments from the Data Dictionary and the Database, respectively. Using the import utility is the most efficient way to add new assessments to the Database. The imported assessments are automatically appended to the NCWAM table and are immediately accessible with the FAF. Additionally, the utility attempts to calculate the functional ratings for the new assessments and creates corresponding records in the Ratings table.

To import assessments, follow the instructions below.

1. Click the Import Assessments label from the NC WAM Database form to launch the Import Assessments dialog (Figure 14). The dialog is a typical file search dialog used by many Windows-based applications. In this case, it has been tailored to specifically look for dBASE files (.dbf) produced by the Data Dictionary and comma-separated values (.csv) files produced by the Database.
2. Using the dialog, navigate to and select one or more NC WAM .dbf or .csv files. Multiple files and file types (.dbf and .csv) can be imported simultaneously. If the NC WAM assessment data were exported from GPS Pathfinder Office as a shapefile, select the .dbf component file with the Import Assessments dialog, just as if it were a standalone .dbf file. Bear in mind that a shapefile is actually a composite file consisting of at least three component files: a .shp file, .shx file, and .dbf file.

3. Click the OK button to perform the import.

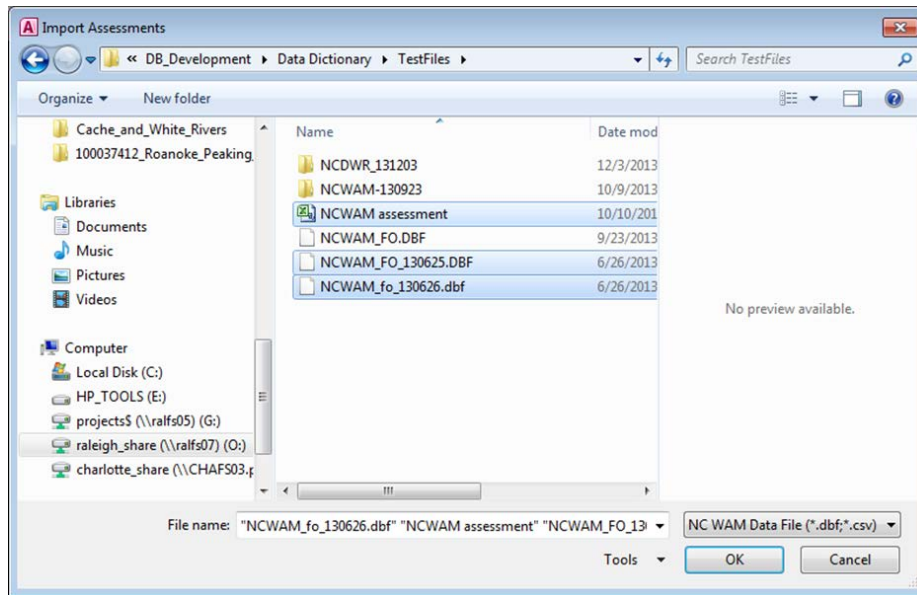


Figure 14. Navigate to and select the NC WAM assessment file(s) to be imported from the Import Assessments dialog.

The Database will display a summary message reporting the number of files imported and the number of assessments added to the Database (Figure 15). Use the import summary to check if the assessments were imported to the Database as expected. Some files may not be imported. The import utility performs a degree of data validation on files selected for importing. The validation process ensures the files in fact contain NC WAM assessment data. Files that do not include assessment data will not be imported and an error message identifying the excluded file will be presented (Figure 16).

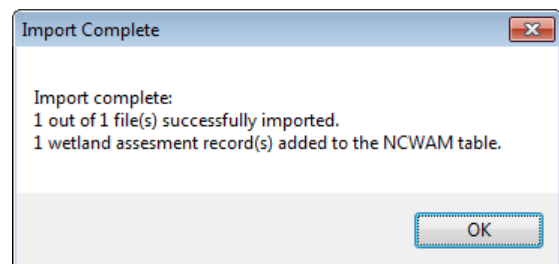


Figure 15. The Import Complete message summarizes the results of the import.

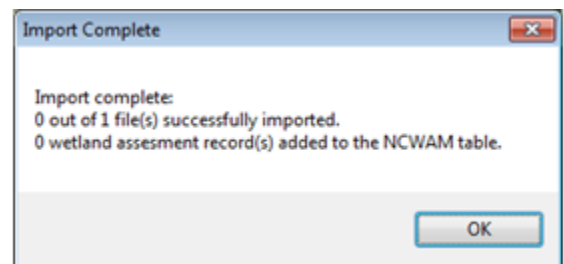
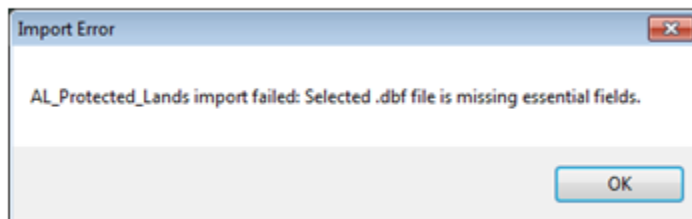


Figure 16. The Import Error message (left) is presented if a file selected for importing does not include NC WAM assessment data. The import summary (right) will indicate the file was not imported.

In the final stage of the import process, the Database attempts to calculate the functional ratings for the imported assessments. An error message like the one in Figure 17 will be displayed for assessments lacking wetland type or ecoregion information. If the Wetland Rating Sheet or Wetland Report is open when the import occurs, the reports will need to be closed and reopened to register the imported assessments.

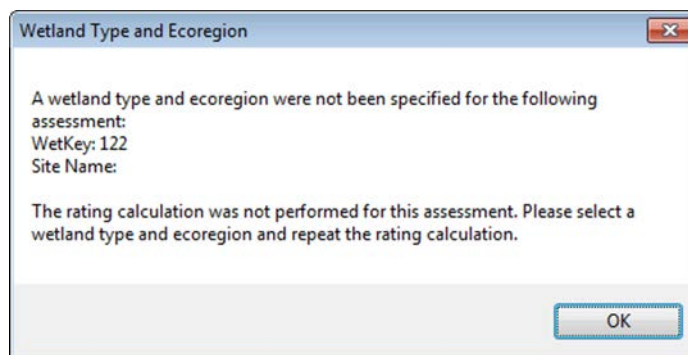


Figure 17. The Wetland Type and Ecoregion message will be displayed if the functional ratings for an assessment cannot be calculated due to missing wetland type or ecoregion information.

### 3.6 Delete Assessments Form

The Delete Assessments form is a data management utility for deleting wetland assessments from the Database (Figure 18). Deleting an assessment removes the corresponding records from the NCWAM and Ratings tables. After deletion, an assessment is no longer available for viewing with the FAF or any of the Database reports and cannot be exported. Please be aware that assessments should only be deleted using the Delete Assessments form or the delete function on the FAF (Section 3.8). If done with these forms, the deletion is straightforward.

Instructions for deleting assessments using the Delete Assessments form follow. The annotations on Figure 18 identify the buttons and other elements referenced.

1. Click the Delete Assessment label from the NC WAM Database form to launch the Delete Assessments form. The form presents the assessments in the same table format as the Assessment Inventory form (Section 3.4). All the assessments in the Database are included in the table when the form opens. Note: the Delete Assessments form pictured in Figure 18 has been filtered for demonstration purposes.
2. Select the assessment(s) to be deleted by clicking the corresponding Delete checkbox in the table. Alternatively, click the Select All button in the lower left corner of the form to select all the assessments currently displayed. It may be necessary to scroll downward to see all the selected assessments. Clicking the Clear All button will uncheck all the currently selected assessments.
3. Click the Delete button.
4. A message will be displayed confirming the deletion. Click Yes to proceed with the deletion or No to cancel.

The Delete Assessments form includes sorting and filtering functions similar to the Assessment Inventory form. Assessments are initially sorted by the WetKey value as the form opens. To sort

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on one of the six other fields in the table, select the field from the Sort by dropdown list. To filter the assessments, first specify a filter field and then a filter value from the respective dropdown lists. The Filter Field dropdown list includes the field headings of the table. When the filter field is selected, the Filter Value dropdown list is populated with the distinct values from the field. Selecting a value from the Filter Value dropdown completes the filter criteria. The assessment list is then reduced to just those assessments with the value in the specified filter field. The “<NULL>” value in the Filter Value dropdown list is used to select assessments that have no value in the filter field. The filter is cleared and the list populated with all assessments by clicking the Clear Filter button.

By using the filter in conjunction with the Select All button, assessments can be quickly located and isolated for deletion. After the form is filtered, only the assessments meeting the filter criteria will be displayed in the table. Clicking the Select All button selects the displayed assessments, as indicated by the checkmarks in the Delete checkboxes of all the assessments. Only the displayed assessments are marked for deletion. Subsequently, clicking the Delete button will delete the selected assessments. The process is illustrated by the Delete Assessments form pictured in Figure 18. Here, the form has been filtered for assessments collected for the WFAT project. Notice that only assessments with WFAT in the Project field are displayed. Clicking Select All in this case will check the Delete checkboxes for just these assessments. Clicking Delete will delete the WFAT assessments, leaving the assessments with different project classifications in the Database. By using the filter in this manner, assessments for a particular wetland type, permit application, or project can easily be selected for deletion.



NCWAM Database Delete Assessments

Delete Wetland Assessments

Sort by: 5 WetKey

Filter: 6 Field: Project Value: WFAT Clear Filter

WetKey	USACE #	NCDWR #	Site Name	Wetland Type	Project	Date	<span>2</span> Delete
10			Emerald Isle Woods	Estuarine Woody Wetland	WFAT	10/5/2007	<input type="checkbox"/>
38			Speight Branch	Floodplain Pool	WFAT	9/21/2005	<input type="checkbox"/>
39			Dinah's Landing HF	Hardwood Flat	WFAT		<input type="checkbox"/>
40			West Carolina Freightliner	Headwater Forest	WFAT	12/6/2004	<input type="checkbox"/>
41			Buckridge - Clear Cut	Non-Riverine Swamp Forest	WFAT	4/14/2005	<input type="checkbox"/>
42	<span>1</span>		Marsh Creek	Non-Tidal Freshwater Marsh	WFAT	9/21/2005	<input type="checkbox"/>
43			Sandy Landing Road, PCS	Pine Flat	WFAT	5/24/2004	<input type="checkbox"/>
44			Croatan Tall Pocosin	Pocosin	WFAT	5/12/2004	<input type="checkbox"/>
45			Interstream 1b	Pine Savanna	WFAT	8/1/2005	<input type="checkbox"/>
46			Roanoke River 13/17	Riverine Swamp Forest	WFAT	9/14/2011	<input type="checkbox"/>
47			NC306 - Suffolk Scarp	Seep	WFAT	1/26/2007	<input type="checkbox"/>
48			Huddy Gut - TM	Brackish/Salt Marsh	WFAT	9/20/2005	<input type="checkbox"/>
94			Goose Creek Tidal Freshwater	Tidal Freshwater Marsh	WFAT	12/10/2012	<input type="checkbox"/>
108			Grandover Mafic Depression	Basin Wetland	WFAT	10/28/2008	<input type="checkbox"/>

3 Select All Clear All 4 Delete

Figure 18. The Delete Assessments form includes a table (1) listing all the NC WAM assessments in the Database. Assessments are individually selected for deletion by checking the corresponding Delete checkbox (2). The Select All button (3) will select all the displayed assessments. Conversely, the Clear All button (3) deselects all the displayed assessments. After the desired assessments have been selected for deletion, click the Delete button (4). The assessments can also be sorted (5) and filtered (6).

### 3.7 Export Assessments Form

The export function of the Database compiles selected NC WAM assessments into a comma-separated values file (.csv), referred to as the export file. The export file is a simple, text-only file that includes data from the NCWAM table for the selected assessments. Designed to be the standard parcel format for transferring NC WAM assessments, the export file lacks the computer coding of the Database and has a much smaller file size, making it unlikely that an export file will exceed file size limits or cause security concerns when distributed by email. It is therefore recommended that the export file be used for distributing wetland assessments to interested parties, such as clients or resource agency staff.

Export files are produced using the Export Assessments form (Figure 19). Instructions for using the form to export assessments follow. The annotations on Figure 19 identify the buttons and other elements referenced.

- 
1. Click the Export Assessment label from the NC WAM Database form to launch the Export Assessments form. The form presents the assessments in the same table format as the Assessment Inventory form (Section 3.4). All the assessments in the Database are included in the table when the form opens. Note: the Export Assessments form shown in Figure 19 has been filtered for demonstration purposes.
  2. Select the assessment(s) to be exported by clicking the corresponding Export checkbox in the table. Alternatively, click the Select All button in the lower left corner of the form to select all the assessments currently displayed. It may be necessary to scroll downward to see all the selected assessments. Clicking the Clear All button will uncheck all the currently selected assessments.
  3. Click the Export button.
  4. The Export to NC WAM CSV File dialog will appear. Using the dialog, navigate to the folder where the export file is to be saved and provide a file name. Click Save. The export function creates the export file in the specified folder. The file contents only include assessment data, data from the NCWAM table, for the selected assessments (Figure 19). Each token of data separated is separated by commas. Notably, the export file will not include functional ratings. Ratings for the assessments will be calculated when the export file is imported into a Database with the companion import routine (Section 3.5).

Assessments targeted for export can quickly be identified using the sorting and filtering functions on the Export Assessments form. When the form opens, assessments are sorted by the WetKey value. To sort on one of the other six fields in the table, select the field from the Sort by dropdown list. To filter assessments, first specify a filter field and then a filter value from the respective dropdown lists. The Filter Field dropdown list includes the field headings of the table. When the filter field is selected, the Filter Value dropdown list is populated with the distinct values from the field. Selecting a value from the Filter Value dropdown completes the filter criteria. The assessment list is then reduced to just those assessments with the value in the specified filter field. The filter is cleared and the list populated with all assessments by clicking the Clear Filter button.

When filtered, only assessments meeting the filter criteria will be displayed in the table. Clicking the Select All button selects the displayed assessments, as indicated by the checkmarks in the Export checkboxes of all the assessments. Only displayed assessments are marked for export. Subsequently clicking the Export button will export selected assessments to the specified file. The filter function is demonstrated in Figure 19. Here, the form has been filtered for assessments collected for the WFAT project. Notice that only assessments with WFAT in the Project field are displayed. Clicking Select All in this case will check the Export checkboxes for just these assessments. Clicking Export will in turn export the assessments. By using the filter in this manner, assessments for a particular wetland type, permit application, or project can easily be selected for export.

Export Wetland Assessments

Sort by:

Filter:

WetKey	USACE #	NCDWR #	Site Name	Wetland Type	Project	Date	Export
10			Emerald Isle Woods	Estuarine Woody Wetland	WFAT	10/5/2007	<input type="checkbox"/>
38			Speight Branch	Floodplain Pool	WFAT	9/21/2005	<input type="checkbox"/>
39			Dinah's Landing HF	Hardwood Flat	WFAT		<input type="checkbox"/>
40			West Carolina Freightliner	Headwater Forest	WFAT	12/6/2004	<input type="checkbox"/>
41			Buckridge - Clear Cut	Non-Riverine Swamp Forest	WFAT	4/14/2005	<input type="checkbox"/>
42			Marsh Creek	Non-Tidal Freshwater Marsh	WFAT	9/21/2005	<input type="checkbox"/>
43			Sandy Landing Road, PCS	Pine Flat	WFAT	5/24/2004	<input type="checkbox"/>
44			Croatan Tall Pocosin	Pocosin	WFAT	5/12/2004	<input type="checkbox"/>
45			Interstream 1b	Pine Savanna	WFAT	8/1/2005	<input type="checkbox"/>
46			Roanoke River 13/17	Riverine Swamp Forest	WFAT	9/14/2011	<input type="checkbox"/>
47			NC306 - Suffolk Scarp	Seep	WFAT	1/26/2007	<input type="checkbox"/>
48			Huddy Gut - TM	Brackish/Salt Marsh	WFAT	9/20/2005	<input type="checkbox"/>
94			Goose Creek Tidal Freshwater	Tidal Freshwater Marsh	WFAT	12/10/2012	<input type="checkbox"/>
108			Grandover Mafic Depression	Basin Wetland	WFAT	10/28/2008	<input type="checkbox"/>

Figure 19. The Export Assessments form includes a table (1) listing all the NC WAM assessments in the Database. Assessments are individually selected for export by checking the corresponding Export checkbox (2). The Select All button (3) will select all the displayed assessments. Conversely, the Clear All button (3) deselects all the displayed assessments. After the desired assessments have been selected for exporting, click the Export button (4). The assessments can also be sorted (5) and filtered (6).

### 3.8 Field Assessment Form

The Field Assessment Form, or FAF, is the most fully featured of the Database utilities. From the FAF, assessments can be viewed, edited, created, or deleted. It includes a search function for quickly locating an assessment. The Wetland Rating Sheet and Wetland Report for an assessment can be viewed with a button click. And finally, the functional ratings are automatically updated for all the assessments in the Database when the form is closed. Each of these functions is described in the subsequent sections. However, first the structure of the FAF is discussed.

The FAF within the Database (Figure 20) is designed to include all the components of the NC WAM FAF worksheet presented in the NC WAM User Manual (pages viii – xi). The resemblance is immediately apparent when the Database FAF opens; although, some distinct differences are noticeable as well.

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Starting with the similarities, the bulk of the form is devoted to presenting the familiar FAF content (Figure 20, item ③). The four pages of the FAF are presented on a series of tabs (Figure 20, item ②). Click a tab to access the respective page.

As for the differences, some additional information related to NCDWR and USACE permitting, such as the Permit Status and NCWAM Status, has been added. This content, which is not included on the original FAF in the NC WAM User Manual, is located at the top of the form (Figure 20, item ①). There are also some Database-specific data management and viewing features integrated into the bottom of the form (Figure 20): the New Assessment and Delete Assessment buttons (item ⑥), a search function (item ⑦), and the View Ratings and View Report buttons (item ④).

### 3.8.1 Viewing and Editing Assessments

The FAF displays the entirety of the NC WAM assessment data – metrics, general wetland information, and NCDWR and USACE permitting information – for viewing and editing. Assessments are displayed a single assessment at a time. The FAF presents the assessments in the same order they occur in the NCWAM table, which is ascending order based on the WetKey value.

The currently selected record is identified in the Record Selection bar at the bottom of the FAF (Figure 20, item ⑤) – in Figure 20, the record 5 of 30 is displayed. The bar is also used to scroll through the other assessments in the Database. Clicking the ◀ or ▶ buttons advances the form to the first or last assessment. Clicking the ◀ or ▶ moves the form to the previous or next assessment. Alternatively, if the index of the assessment is known, the record can be selected directly by typing the index value into the Current Record text box, 5 of 30.

Of the many functions of the FAF, perhaps the foremost is that it provides a mechanism for editing assessment data. There are a number of potential reasons for editing an existing assessment. For one, the metrics requiring a GIS effort (Metrics 6, 11, 13, and 14) can be difficult to complete in the field. Instead, it may be preferable to complete these metrics after field data have been collected and imported into the Database. An existing assessment may also be edited to correct a misinterpretation of the methodology or to account for new information. In any case, the metric values, general wetland information, and permitting information presented by the FAF for the currently selected assessment may all be edited.

Figure 20. The FAF is a multi-purpose form for viewing, editing, creating, and deleting assessments. Permit information is entered at the top of the form (1). The assessment data are organized on four tabs (2). Each tab includes the metrics and wetland information from a page of the FAF. The content is presented in the center of the form (3). The Wetland Rating Sheet and Wetland Report for the assessment can be viewed by clicking the View Ratings and View Report buttons (4). Scroll through the assessments with the Record Selection bar (5) or search for a specific assessment by typing a value into the Find text box (7). A new assessment is created by clicking New Assessment (6). The current assessment is deleted by clicking Delete Assessment (6).

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Any edits are automatically recorded in the NCWAM table and are recognized by subsequent rating calculations. Several different types of user interfaces are used for inputting and editing wetland assessment data, including text fields, combo boxes, option buttons, and checkboxes.

Text fields receive information typed directly from the keyboard. General wetland and permit information, such as the wetland site name, assessor name, applicant, and wetland notes are represented by text fields. Information is input into text fields by clicking on a specific text field with the mouse and then typing with the keyboard. The Date field is a special case. The date can either be typed in MM/DD/YYYY format or selected from the calendar popup.

The combo boxes at the top of the form and on tab Page 1 are used to specify the county of the assessment, NCDWR region, permit status, assessed wetland type, ecoregion of occurrence, and river basin. The combo boxes are used by typing text directly from the keyboard or by clicking the arrow on the right side of the combo box and selecting the appropriate entry from the dropdown list. Both the wetland type and ecoregion are required information for calculating wetland functional ratings. The Database will display a message listing any assessments lacking a wetland type or ecoregion when ratings are calculated.

Option buttons and checkboxes are used throughout the FAF to record the selection of metric descriptors, regulatory considerations, and stream types, among other items. Option buttons are used to select mutually exclusive items. Consider Metric 9 (Inundation Duration) for example. The three descriptors of Metric 9 are mutually exclusive; the inundation duration condition denoted by descriptor “A” can only occur absent the conditions described by descriptors “B” and “C,” and vice versa. On the other hand, checkboxes are used for inclusive items. The land use conditions described in Metric 6 (Land Use) are not necessarily exclusive of each other and therefore are represented by checkboxes. The same is true for the regulatory considerations in the general wetland information section. In such cases, checkboxes allow multiple items to be selected at once.

### **3.8.2 Creating an Assessment**

Another key function of the FAF is that it provides a means for creating new assessments. It is, in fact, the form in the Database from which new assessments can be created. Of course, new assessments can be created outside of the Database by the Data Dictionary (Section 2.3).

To create a new assessment, click the New Assessment button in the bottom left of the form (Figure 20, item ⑥). Several actions are invoked when the new assessment is created. The most apparent of which is the FAF immediately displays a blank new assessment. In addition, the total number of assessments shown in the Current Record text box of the Record Selection bar (Figure 20, item ⑤) is incremented to account for the new assessment. The new assessment is added to the end of the assessment list, so Current Record indicates that the last record is selected. A change that may not be apparent is that a new assessment record is appended to the NCWAM table. If the NCWAM table is open when the new assessment is created, the table will need to be closed and reopened to register the addition.

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After an assessment is created, the metric values, general wetland information, and permitting information need to be input into the form. The assessment data are automatically recorded to the NCWAM table.

### 3.8.3 Deleting an Assessment

The FAF can also be used to delete an assessment. Clicking the Delete Assessment button permanently deletes the currently displayed assessment from the Database. The action is equivalent to deleting an assessment using the Delete Assessments form (Section 3.6). Before the deletion is executed, a message is displayed confirming the action. Click Yes to proceed with the deletion or No to cancel. Deleting an assessment removes the corresponding records from the NCWAM and Ratings tables. After deletion, an assessment is no longer available for viewing with the FAF or any of the Database reports and cannot be exported.

### 3.8.4 Searching for an Assessment

A search function is provided on the FAF for quickly navigating to a desired assessment (Figure 20, item ⑦). The FAF will search the Project, Applicant, USACE AID#, NCDWR#, WetKey, Wetland Site Name, and Assessor fields, in that order, for a specified text string. To execute a search, type a text string into the Find text box and click the Enter button on the keyboard. The first assessment matching the search text in one of the seven listed field is displayed in the FAF. If two assessments match the search text, the assessment with the lowest WetKey value is displayed.

### 3.8.5 Viewing the Assessment Wetland Rating Sheet and Wetland Report

The Wetland Rating Sheet and Wetland Report for the displayed assessment can be viewed by clicking the respective buttons in the bottom right of the FAF (Figure 20, item ④). In both cases, the functional rating calculation function is triggered. The rating calculation is halted if the wetland type or ecoregion is not specified for the current assessment. An error message like the one pictured in Figure 21 will appear indicating that required data are missing. Click OK to dismiss the message and provide the missing data. Detailed information about the Wetland Rating Sheet and Wetland Report is provided in Section 3.9. Note: The Wetland Rating Sheet or Wetland Report must be closed prior to clicking the report buttons. If not, the report will not be updated to display the results of the current assessment.

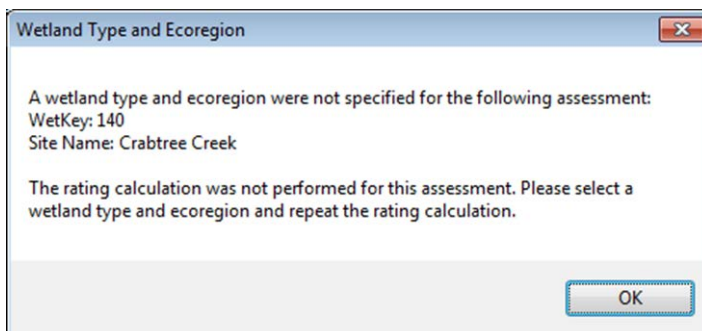


Figure 21. The Wetland Type and Ecoregion message will be displayed if the functional ratings for an assessment are not calculated due to missing wetland type or ecoregion information.

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### 3.8.6 Functional Rating Calculation

The FAF triggers the functional rating calculation whenever the View Ratings or View Report buttons are clicked. Additionally, the functional ratings are automatically updated for all the assessments in the Database when the FAF is closed.

### 3.9 Assessment Reporting Form

The Assessment Reporting form is a dedicated utility for generating Wetland Rating Sheet and Wetland Report reports (Section 3.10). The form is the easiest way to compile the assessments for a particular project, wetland type, or permit into a printable report.

Instructions for generating Wetland Rating Sheet and Wetland Report reports using the Assessment Reporting form follow. The annotations on Figure 22 identify the buttons and other elements referenced.

1. Click the Assessment Reporting label from the NC WAM Database form to launch the Assessment Reporting form. The form presents the assessments in the same table format as the Assessment Inventory form (Section 3.4). All the assessments in the Database are included in the table when the form opens. Note: the Assessment Reporting form pictured in Figure 22 has been filtered for demonstration purposes.
2. Select the assessment(s) to be included in the report by clicking the corresponding Report checkbox in the table. Alternatively, click the Select All button in the lower left corner of the form to select all the assessments currently displayed. It may be necessary to scroll downward to see all the selected assessments. Clicking the Clear All button will uncheck all the currently selected assessments.
3. Click the Rating Sheet or Wetland Report button to generate a report. Clicking the Rating Sheet button produces a report that includes the Wetland Rating Sheets for the selected assessments. On the other hand, clicking the Wetland Report button generates a report that includes the FAF and Wetland Rating Sheet for the selected assessments.

Like several of the other Database forms, the Assessment Reporting form includes sorting and filtering functions. With minimal effort, assessments can quickly be selected for inclusion in reports using these functions. By default, assessments are sorted by the WetKey value. To sort on one of the other six fields in the table, select the field from the Sort by dropdown list. To filter assessments, first specify a filter field and then a filter value from the respective dropdown lists. The Filter Field dropdown list includes the field headings of the table. When the filter field is selected, the Filter Value dropdown list is populated with the distinct values from the field. Selecting a value from the Filter Value dropdown completes the filter criteria. The assessment list is then reduced to just those assessments with the value in the specified filter field. The filter is cleared and the list populated with all assessments by clicking the Clear Filter button.

The filter function updates the assessment table in the form to only include those assessments meeting the filter criteria. Clicking the Select All button selects the displayed assessments, as indicated by the checkmarks in the Report checkboxes of all the assessments. Only displayed assessments are marked for inclusion in the reports. Clicking the Rating Sheet or Wetland



Report button will generate a report with the specified assessments. Figure 22 illustrates the filtering function being used to filter assessments collected for the WFAT project. In the figure, only assessments with WFAT in the Project field are displayed. Clicking Select All in this case will check the Report checkboxes for just these assessments. Subsequently clicking the Rating Sheet or Wetland Report button will generate a report for the assessments. Within the reports, assessments will be sorted by the selected field in the Sort by dropdown list, or the WetKey field by default.

WetKey	USACE #	NCDWR #	Site Name	Wetland Type	Project	Date	Report
10			Emerald Isle Woods	Estuarine Woody Wetland	WFAT	4/7/2007	<input checked="" type="checkbox"/>
38			Speight Branch	Floodplain Pool	WFAT	9/21/2005	<input checked="" type="checkbox"/>
39			Dinah's Landing HF	Hardwood Flat	WFAT		<input checked="" type="checkbox"/>
40			West Carolina Freightliner	Headwater Forest	WFAT	12/6/2004	<input checked="" type="checkbox"/>
41			Buckridge - Clear Cut	Non-Riverine Swamp Forest	WFAT	4/14/2005	<input checked="" type="checkbox"/>
42			Marsh Creek	Non-Tidal Freshwater Marsh	WFAT	9/21/2005	<input checked="" type="checkbox"/>
43			Sandy Landing Road, PCS	Pine Flat	WFAT	5/24/2004	<input checked="" type="checkbox"/>
44			Croatan Tall Pocosin	Pocosin	WFAT	5/12/2004	<input checked="" type="checkbox"/>
45			Interstream 1b	Pine Savanna	WFAT	8/1/2005	<input checked="" type="checkbox"/>
46			Roanoke River 13/17	Riverine Swamp Forest	WFAT	9/14/2011	<input checked="" type="checkbox"/>
47			NC306 - Suffolk Scarp	Seep	WFAT	1/26/2007	<input checked="" type="checkbox"/>
48			Huddy Gut - TM	Brackish/Salt Marsh	WFAT	9/20/2005	<input checked="" type="checkbox"/>
94			Goose Creek Tidal Freshwater	Tidal Freshwater Marsh	WFAT	12/10/2012	<input checked="" type="checkbox"/>
108			Grandover Mafic Depression	Basin Wetland	WFAT	10/28/2008	<input checked="" type="checkbox"/>

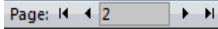




Figure 22. The Assessment Reporting form includes a table (1) listing all the NC WAM assessments in the Database. Assessments are individually selected for inclusion in the Wetland Rating Sheet or Wetland Report by checking the corresponding Report checkbox (2). The Select All button (3) will select all the displayed assessments. Conversely, the Clear All button (3) deselects all the displayed assessments. After the desired assessments have been selected, click the Rating Sheet (4) or Wetland Report (5) button to display the respective report. The assessments can also be sorted (6) and filtered (7).

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### 3.10 Wetland Rating Sheet and Wetland Report

The Wetland Rating Sheet and Wetland Report are Access reports that present the results of an NC WAM assessment or assessments for viewing and printing. The two reports have slightly different formats. The former is a reproduction of the NC WAM Wetland Rating Sheet from page xii of the NC WAM User Manual. It is a single page report expressly for presenting the functional ratings produced for an assessment. The latter is more comprehensive, as it includes both the completed FAF and Wetland Rating Sheet for an assessment. In both cases, the reports are snapshots of the assessment results and are not editable. Accordingly, the metric values in the Wetland report cannot be changed. To do that, use the FAF.

#### 3.10.1 Navigating the Reports

Because the Wetland Report includes both the FAF and Wetland Rating Sheet, the report content extends over five pages. Use the Page Selection bar, , in the bottom left corner of the report to cycle through the pages. Clicking the  or  buttons advances the report to the first or last page: the first page being the first page of the FAF and the last page being the Wetland Rating Sheet. Clicking the  or  moves the report to the previous or next page. Additionally, typing a page number into the Current Page text box moves the report directly to that page.

The reports can be launched from several locations within the Database. Both reports are accessible from the Assessment Inventory form (Section 3.4) and the FAF (Section 3.8), while the Wetland Report can also be launched from the NC WAM Database form.

#### 3.10.2 Printing and Saving Reports

The reports open in Access's print preview mode and are ready to print if so desired. The content will be printed as it appears on the screen. To print, click the Print button in the top left of the Access window. A standard Print dialog appears. From the dialog, specify the printer and click OK.

Converting the reports to a portable document file (.pdf) nicely packages the assessment data into a parcel that can be emailed to clients or resource agency staff. Access offers two ways to convert a report to a .pdf file.

The most direct approach is to print the report to a .pdf file. This is done, as described above, by opening the report and clicking the Print button in the top left of the Access window. Select a PDF writer (Adobe Acrobat and CutePDF are two common writers) from the Print dialog. The writer will request a file name and location for the .pdf file.

The second approach is to save the report as a .pdf file. This process is more involved, but it is a useful alternative if a PDF writer is not installed on the computer. With the report already opened, follow the below instructions to save a report as a .pdf file (Figure 23).

1. Select the File button in the upper left corner.
2. Select the Save & Publish button from the left panel

3. In the File Types section, select Save Object As.
4. In the Save the current database object section, select PDF or XPS.
5. Click the Save As button
6. Choose the file location and file name, then select Publish.

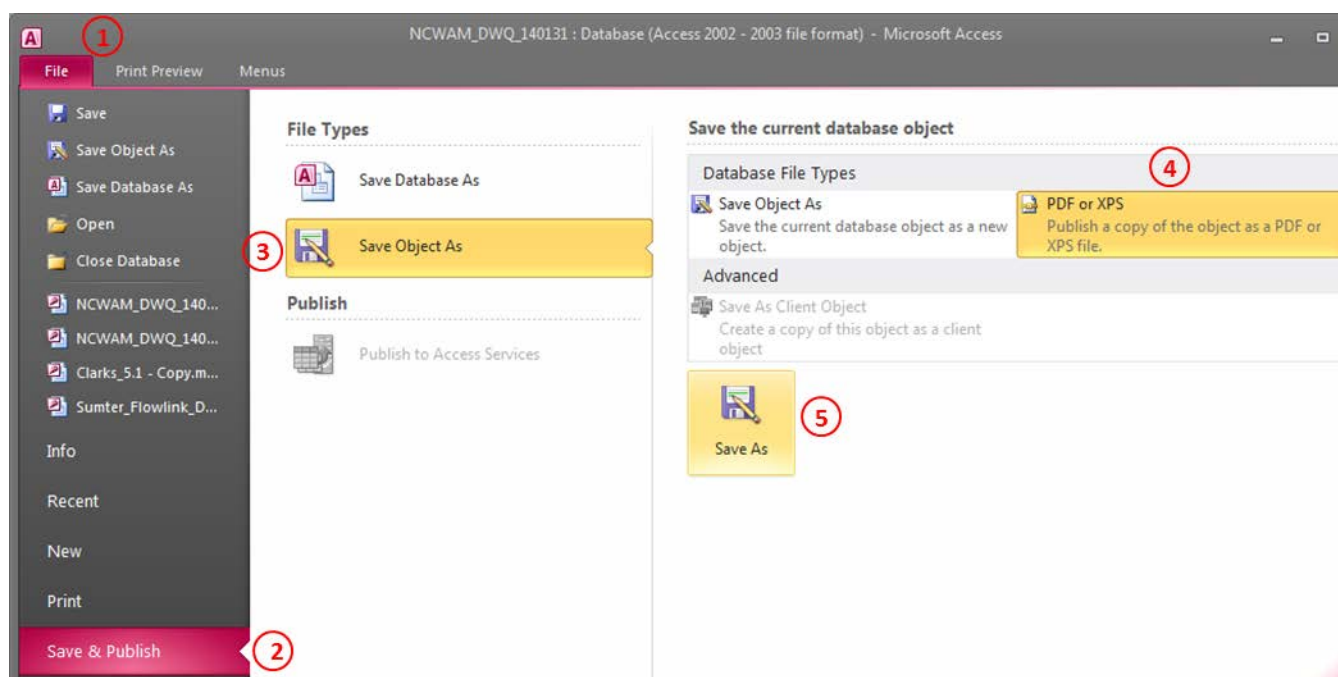


Figure 23. Sequence for saving a report to a .pdf file. From the File tab (1), select Save & Publish (2). Next, select Save Object As (3), then PDF or XPS (4), and finally Save As (5).

### 3.11 Using the NCWAM and Ratings Tables in ArcMap


The NCWAM and Ratings tables, being Access tables, are recognized as valid datasets by ArcMap and can be added to a map document just as a shapefile or feature class can. Once in ArcMap, the coordinate data in the X and Y fields of the NCWAM table can be used to display the assessments as points. This compatibility adds a powerful spatial dimension to the datasets that is helpful for not only viewing the assessments in a geographic context but also for evaluating the metrics requiring a GIS effort (Metrics 6, 11, 13, and 14).

A few points about using the NCWAM and Ratings tables within ArcMap are worth mentioning. First, when viewed within the Database, the function values in the Ratings table appear as LOW, MEDIUM, HIGH, and NA. These are not the actual values stored in the table, but rather are a translation of the integer values (1, 2, 3, etc.) stored in the table. ArcMap does not translate the integer values as Access does. Consequently, when the Ratings table is viewed in ArcMap, the function values appear as integers: 1 is HIGH, 2 is MEDIUM, 3 is LOW, and 4 is NA. Edits made to the NCWAM and Ratings tables in ArcMap will be stored in the NC WAM Database; although, doing so is not encouraged. Lastly, but most importantly, **do not delete**

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**assessment records from ArcMap.** Deleting an assessment from ArcMap short circuits the data integrity procedures built into the Database.

To add the NCWAM and Ratings tables to an ArcMap map document, follow the instructions below.

1. Open ArcMap.
2. Click the Add Data button  to open the Add Data dialog.
3. Navigate to the folder including the Database file and double click the file (Figure 23).
4. Select the NCWAM and Ratings tables listed in the window and click the Add button (Figure 24).

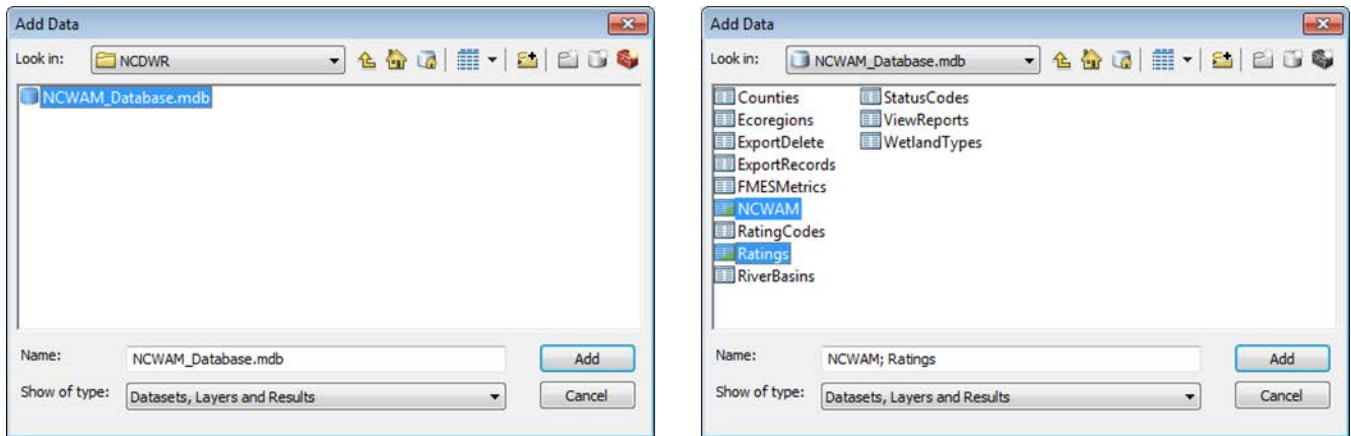


Figure 24. Using the ArcMap Add Data dialog, navigate the Database file and select the NCWAM and Ratings tables.

After the tables are added to the map document, the X and Y fields in the NCWAM table can be used to display the assessments as points. To do so, follow the instructions below.

1. Right click the NCWAM table in the Table of Contents pane (Figure 25).
2. Select the Display XY Data option to launch the Display XY Data dialog (Figure 25).
3. Specify the X field as X and the Y field as Y.
4. Click the Edit button to assign the coordinate system of the data – most likely World Geodetic System 1984 (WGS 84) or North Carolina State Plane.
5. Click OK.

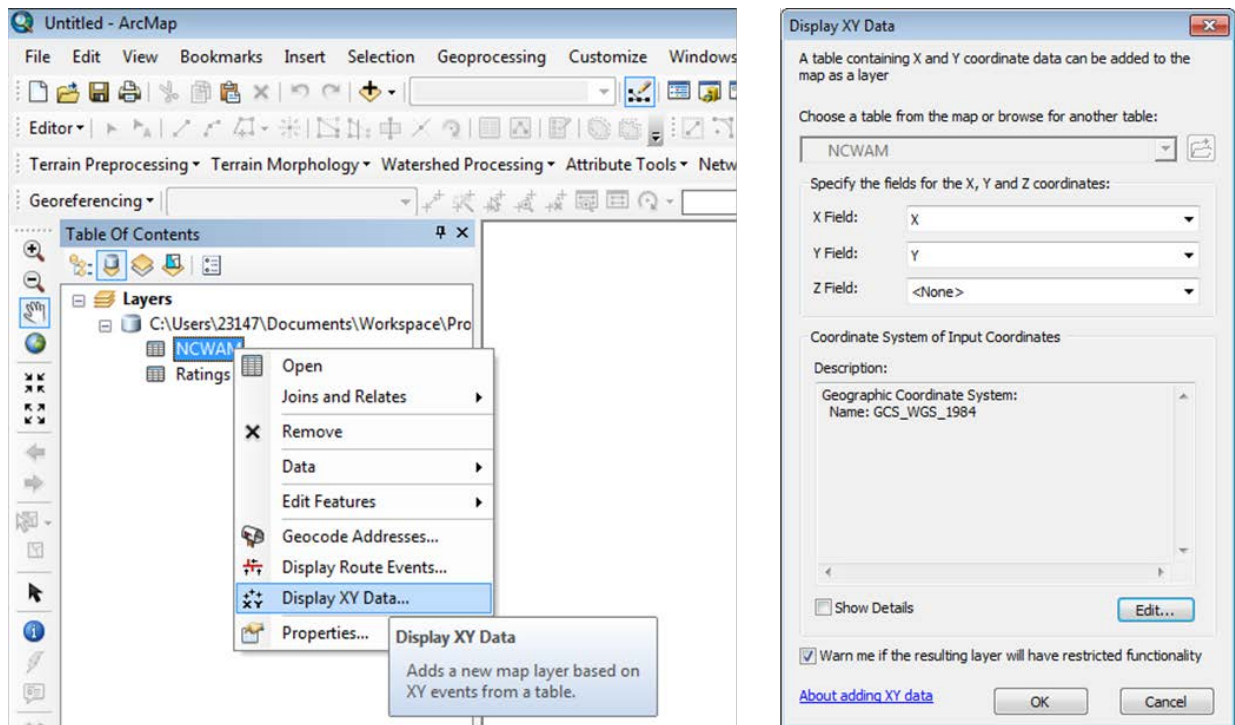


Figure 25. Display NC WAM assessments as points in ArcMap. Right click the NCWAM table in the Table of Contents pane (left panel) to launch the Display XY Data dialog (right panel). From the dialog, specify the X and Y fields as well as the coordinate system.

Unlike the NCWAM table, the Ratings table does not include the X and Y coordinate fields necessary to spatially represent the data as points. Instead, the table must be joined to the NCWAM table. From there, the X and Y fields of the NCWAM table can be used to spatially display the collective data of both tables. A join is created between the NCWAM and Ratings tables by

1. Right clicking the NCWAM table in the Table of Contents pane and selecting Joins and Relates > Join... (Figure 26). Doing so launches the Join Data dialog (Figure 26).
2. Select WetKey as the field the join will be based on (item 1 in the dialog).
3. Select the Ratings table as the table to be joined (item 2 in the dialog).
4. For item 3, select WetKey as the join field.
5. Click OK.

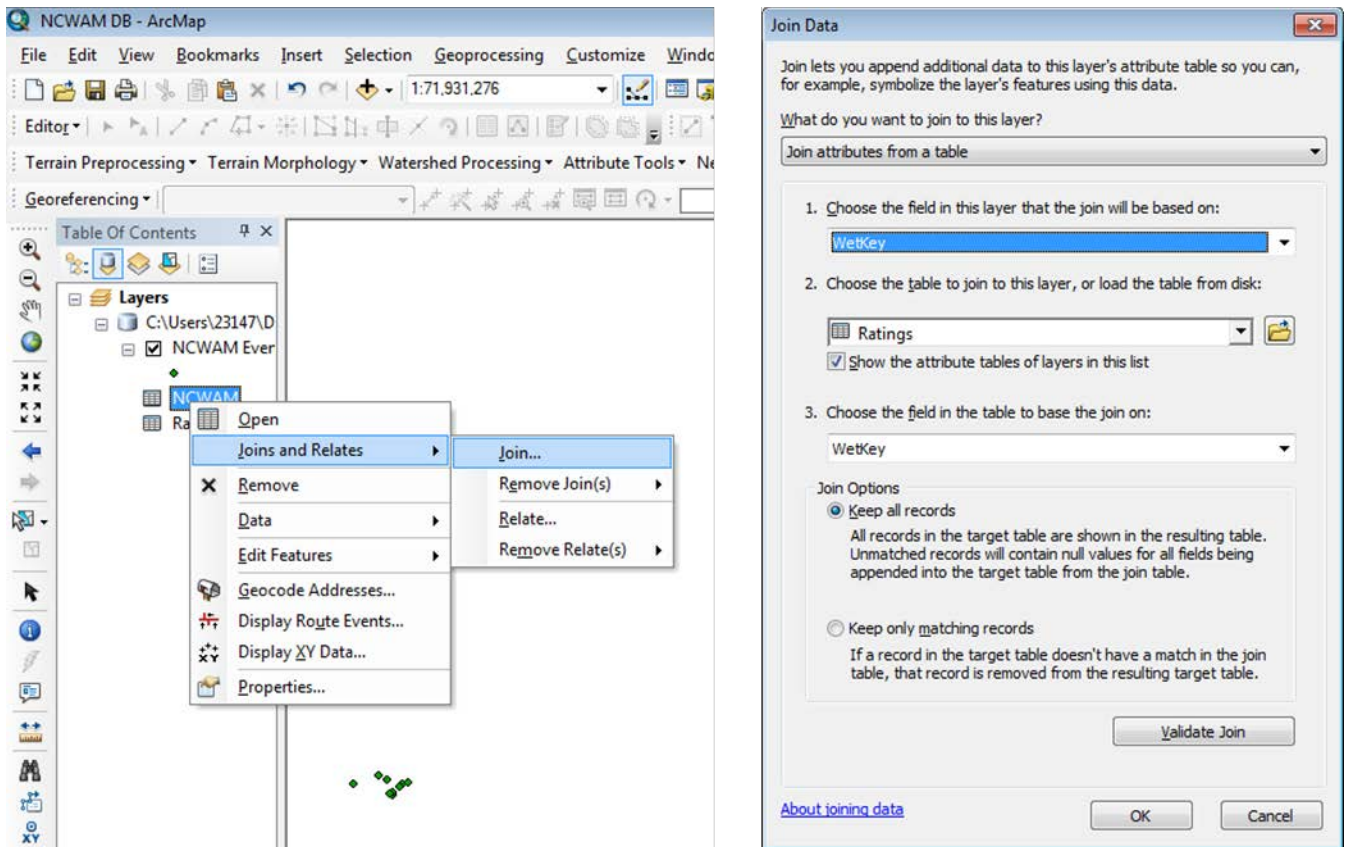


Figure 26. Join the NCWAM and Ratings tables together in ArcMap. Right click the NCWAM table in the Table of Contents pane (left panel) to launch the Join Data dialog (right panel). From the dialog, select WetKey from the dropdown list for item 1, the Ratings table from item 2, and WetKey again for item 3.

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## 4.0 NC WAM TOOL BOX APPLICATION EXAMPLES

The Data Dictionary and Database utilities of the NC WAM Tool Box enable an integrated workflow for collecting, processing, and storing NC WAM assessment data. This section outlines a general procedure for applying the Tool Box utilities to an NC WAM effort. The procedure is described as a series of steps starting with obtaining the Data Dictionary and Database products and ending with the transfer of completed wetland assessment to interested parties, such as resource agency staff or clients. In addition, the following specific applications of the Tool Box are discussed:

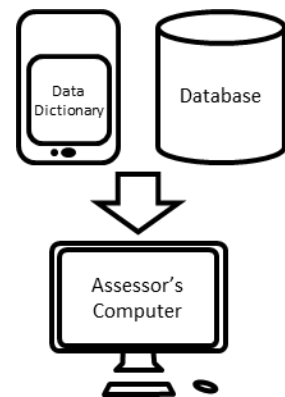
- Collecting and processing assessment data with the Data Dictionary and Database for large projects with multiple impacts and exporting the assessments to a .csv file
- Collecting assessment data with the paper FAF, processing it with the Database, and printing the assessments to a .pdf file
- Incorporating previously performed assessments into the Database

### 4.1 General Tool Box Procedures

The procedure for applying the Tool Box within an NC WAM assessment effort will generally be consistent from project to project: first, field assessments are performed, and then the assessment data are incorporated to the Database for additional editing and functional rating calculation. The principal variable is whether the assessment data are collected with a paper FAF or the Data Dictionary – both are viable options. The manner by which the assessment data are collected in turn determines how the data are incorporated into the Database. That being the case, the following steps outline how the Tool Box utilities can be integrated into the NC WAM process. These procedures will apply to the majority of NC WAM efforts.

#### Step 1. Download the NC WAM Tool Box Utilities

The NC WAM Tool Box consists of the Data Dictionary and Database utilities. The source files for both are available as downloads from the NCDWR website. The first step in using either product is to download the respective files. The Data Dictionary, described in Section 2.0, will download as a Trimble data dictionary file (.ddf). Use of the Data Dictionary is optional, so downloading the file is not required. The Database will download as a Microsoft Access 2003 file. Some configuring of Access' macro security settings may be required on the first use (see Section 3.1).



#### Step 2. Add the Data Dictionary to a GPS Unit (Optional)

The NC WAM Data Dictionary is built as a Trimble data dictionary file for use on Trimble GPS units. Prior to use, the Data Dictionary must be loaded on a Trimble GPS unit. Instructions for doing so are provided in Section 2.1. **Please note: use of the Data Dictionary is**



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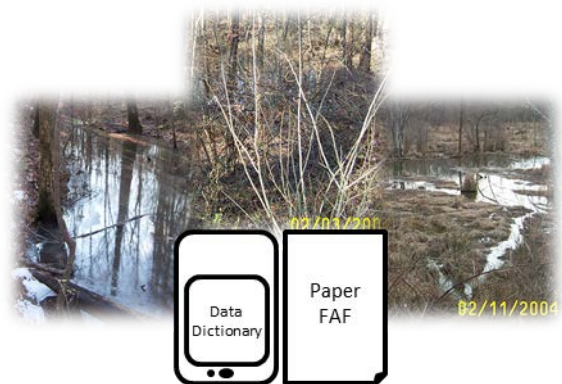
**optional.** In absence of the Data Dictionary, wetland assessment data should be recorded with the paper FAF. Skip to Step 3b if the Data Dictionary will not be used.

### **Step 3a. Collect Wetland Assessment Data with the Data Dictionary**

Skip to step 3b if the Data Dictionary will not be used. Otherwise, proceed with the following.

After the Data Dictionary is installed and operational on a GPS device, wetland assessment data can be collected. NC WAM assessment should be performed according to the guidelines provided in the NC WAM User Manual. Record the general wetland information and metric values requested on the FAF into the NCWAM form of the Data Dictionary. Individual wetland assessments are recorded as separate points by the GPS device. At each point, the wetland assessment data on the FAF are recorded into the GPS device through the Data Dictionary (see Section 2.3). Due to the limited screen size of a GPS, the Data Dictionary does not include the metric text contained on the FAF. It is advisable to carry a paper FAF, included in the NC WAM User Manual, for referencing the metric text.

The Data Dictionary is designed to collect the wetland assessment data and the location (as a point) at which the wetland assessment was performed. The Data Dictionary will not calculate functional ratings. To calculate functional ratings, the wetland assessment needs to be imported in the Database (Step 4a).

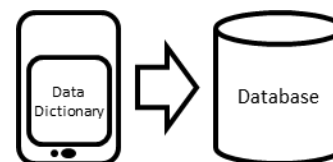


### **Step 3b. Collect Wetland Assessment Data with the Paper FAF**

As an alternative to using the Data Dictionary, wetland assessment data may be collected on the paper FAF. When performing the NC WAM assessment, follow the guidelines provided in the NC WAM User Manual. The recorded assessment data will be manually input (Step 4b) into the Database for functional rating calculation and storage.

### **Step 4a. Import GPS-Collected Wetland Assessments into the Database**

Wetland assessments recorded with the Data Dictionary should be exported from the GPS unit (Section 2.4) and imported to the Database for storage and functional rating calculation (Section 3.5). Wetland assessment records contained in the Data Dictionary file are appended to the NCWAM table inside the Database. The functional ratings are then automatically calculated and recorded in the Ratings table.



There are at least two file management strategies that could be used for storing wetland assessment data. The first option is to use one copy of the Database to store all wetland assessments, across all projects. Under this strategy, each additional wetland assessment added to the Database would be aggregated into the NCWAM table, regardless of project. A

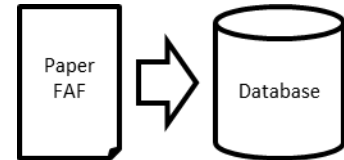


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second option is to create a separate copy of the Database for each project – done by creating a copy of the Database .mdb file. A project-specific Database would only include wetland assessment related to the given project.

#### **Step 4b. Manually Add Wetland Assessments into the Tool Box**

NC WAM assessments collected using the paper FAF must be manually added to the Database for functional rating calculation and storage. The FAF form in the Database is used for this. For each assessment collected, create a new assessment and transcribe the general wetland information and metric values into the Database FAF according to the instructions in Section 3.8.2. Each wetland assessment entered into the form will be stored as a unique record in the NCWAM table. The functional ratings are also automatically calculated and recorded in the Ratings table.

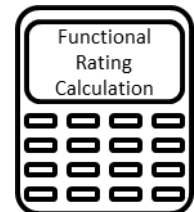


#### **Step 5. Edit Wetland Assessments**

In the event that an assessment within the Database needs to be edited, navigate to the assessment using the FAF and add or modify the general wetland information and metric values as necessary (Section 3.8.1). Often, assessments will need to be edited to complete the metrics requiring a GIS interpretation (Metrics 6, 11, 13, and 14).

#### **Step 6. Calculate Functional Ratings**

Functional ratings are calculated automatically for all wetlands assessments added to the Database, regardless of whether the assessment was added with the Database import utility or manually. The functional ratings can be viewed using the Wetland Ratings Sheet or Wetland Report reports described in Section 3.10. The reports can be accessed from the Assessment Inventory (Section 3.4), the FAF (Section 3.8.5), or the Assessment Reporting (Section 3.9) forms.



#### **Step 7. Send Wetland Assessments to Resource Agencies or Client (Optional)**

The Database provides two options for digitally packaging wetland assessments to be sent to a resource agency staff or clients. The Export Assessments form (Section 3.7) creates a .csv file of selected wetland assessments. This option should be used if the recipient intends to incorporate the assessments into a Database themselves. Otherwise, circulating a .pdf of the Wetland Report(s) is likely the better option. If this is the case, use the Assessment Reporting form to create a Wetland Report of selected assessments (Section 3.9). Both the .csv and .pdf can be emailed to interested parties.

## 4.2 Example Applications

Three typical sample applications of the Tool Box utilities are discussed below. For each, the stepwise procedure of collecting and processing the wetland assessment data with the Tool Box utilities is described. The examples refer to the project depicted in Figure 27 and assume the wetlands have been delineated and the assessment areas defined before NC WAM field assessments are performed. In the figure, a linear project area crosses seven wetland systems. Accordingly, seven distinct NC WAM assessment areas are defined and a separate NC WAM assessment is performed at each assessment area.

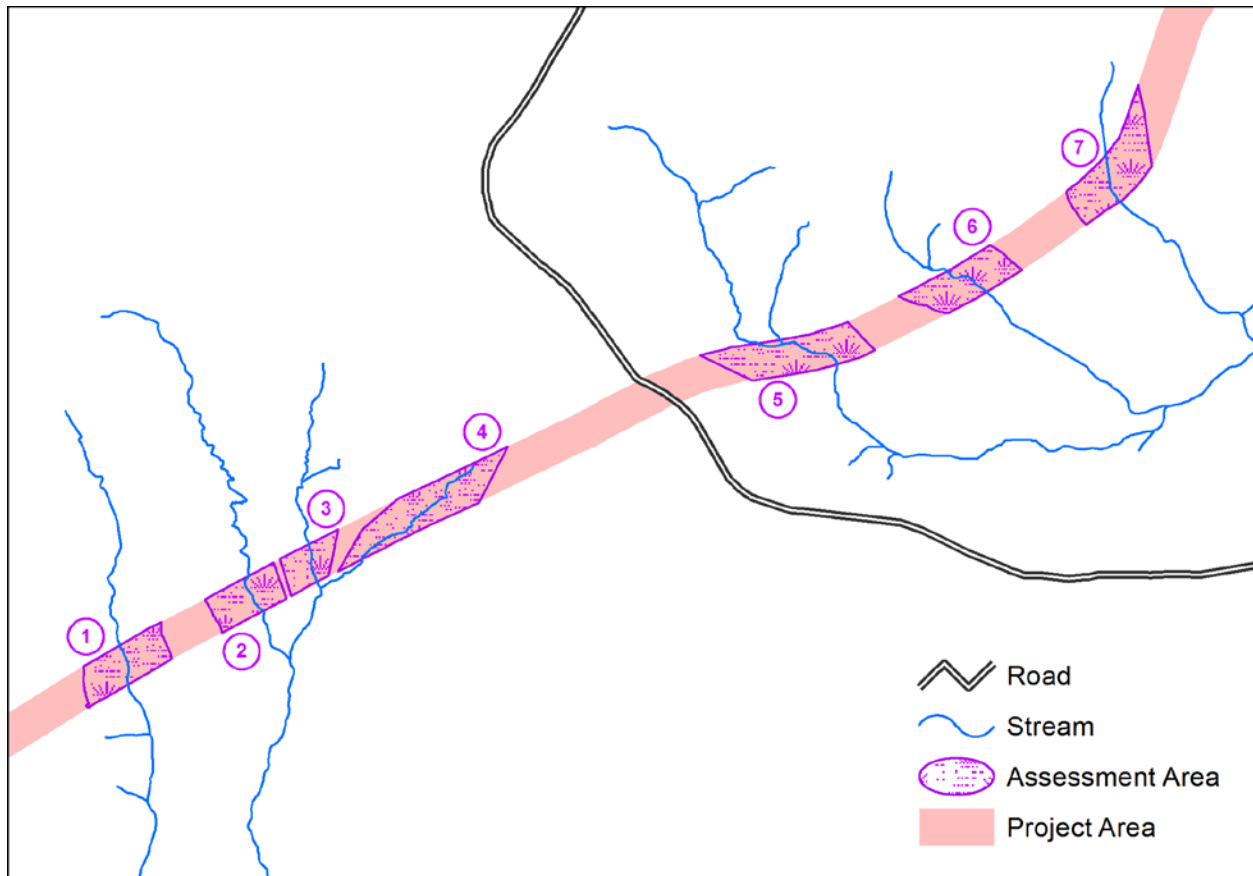


Figure 27. Project for example NC WAM Tool Box Applications.

### 4.2.1 Example 1: Data Dictionary and Database Approach

In this example, the NC WAM assessment data for the seven assessment areas depicted in Figure 27 are collected using the Data Dictionary and subsequently processed with the Database. A separate assessment is performed at each assessment area, with the general wetland information and metric values collected using the Data Dictionary. After field data are collected, it is exported from the GPS unit and imported into the Database for processing and storage. The process for doing so is outlined below.

1. Download the NC WAM Tool Box Utilities.

- 
2. Add the Data Dictionary to a GPS unit (Section 2.1).
  3. Collect the NC WAM assessment data at the seven assessment areas using the Data Dictionary. Section 2.3 provides instructions for creating an assessment point within the Data Dictionary and recording the assessment data. The process is repeated for each assessment area.
  4. Export the seven wetland assessments from the GPS unit to a dBASE file or Shapefile (Section 2.4).
  5. Open the Database file (.mdb) (Section 3.1). The Database file may be a new instance of the Database, created specifically to store wetland assessments for this project, or an existing Database file with preexisting assessment data.
  6. Use the import utility to import the wetland assessments into the Database (Section 3.5). The imported assessments are appended to the NCWAM table.
  7. Use the Database FAF to edit the assessment data for the seven assessment areas as necessary (Section 3.8.1). For instance, metrics requiring a GIS interpretation (Metrics 6, 11, 13, and 14) may need to be completed.
  8. Review the completed Wetland Reports for the seven assessment areas with the Assessment Reporting form (Section 3.9). The forms filter function can be used to isolate and select the seven assessments to be included in the report. Use the Project Name as the filter criteria. The report may be saved as a .pdf that can be distributed to interested parties or simply saved for later viewing.
  9. If necessary, export the wetland assessment data for the seven assessment areas using the Export Assessments form (Section 3.7). The forms filter function can be used to isolate and select the seven assessments for exporting. Use the Project Name as the filter criteria.
  10. If requested, distribute the exported .csv file to resource agency staff.

#### **4.2.2 Example 2: Paper FAF and Database Approach**

The NC WAM assessment data for the example project may be collected using the paper FAF found on pages viii – xi of the NC WAM User Manual. Separate assessments are performed for the seven assessment areas and recorded onto paper FAFs. The assessments are then manually transcribed into the Database using the FAF form. The Database FAF is the point of entry for new assessments into the Database. It provides the means of creating a new assessment within the Database and inputting the general wetland information and metric values. Instructions for completing these tasks follow.

- 
1. Collect the NC WAM assessment data at the seven assessment areas using the paper FAF.
  2. Open the Database file (.mdb) (Section 3.1). The Database file may be a new instance of the Database created specifically to store wetland assessments for this project or an existing Database file with preexisting assessment data.
  3. Launch the FAF from the NC WAM Database form that is present when the Database opens (Section 3.1).
  4. From the FAF, create a new NC WAM assessment (Section 3.8.2) and transcribe the assessment data from the paper FAF onto the Database FAF (Section 3.8.1). Repeat this step for each of the seven assessment areas.
  5. Still using the Database FAF, edit the assessment data for the seven assessment areas as necessary (Section 3.8.1). For instance, metrics requiring a GIS interpretation (Metrics 6, 11, 13, and 14) may need to be completed.
  6. Print the wetland assessment data for the seven assessment areas to a .pdf file. First use the Assessment Reporting form (Section 3.9) to generate a Wetland Report. The forms filter function can be used to isolate and select the seven assessments for inclusion in the report. Use the Project Name as the filter criteria. After the report is generated, click the Print button and select a PDF driver (Section 3.10.2).
  7. If necessary, export the wetland assessment data for the seven assessment areas using the Export Assessments form (Section 3.7). The forms filter function can be used to isolate and select the seven assessments for exporting. Use the Project Name as the filter criteria.
  8. If requested, distribute the .pdf or.csv file to resource agency staff.

#### **4.2.3 Example 3: Add Existing Assessments to the Database**

Existing NC WAM assessments, predating the NC WAM Tool Box, are added to the Database in the same way assessments collected with the paper FAF are. A new assessment record for each of the assessments to be added is created within the Database using the Database FAF.

**Note: NC WAM assessments previously recorded with the Excel-based NC WAM Rating Calculator cannot be electronically imported into the Access-based Database.** After the assessment is created, the assessment data are manually entered through the FAF. The steps for adding existing assessments follow.

1. Open the Database file (.mdb) (Section 3.1). The Database file may be a new instance of the Database created specifically to store wetland assessments for this project or an existing Database file with preexisting assessment data.

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2. Launch the FAF from the NC WAM Database form that is present when the Database opens (Section 3.1).
  3. From the FAF, create a new NC WAM assessment (Section 3.8.2) and transcribe the assessment data from the paper FAF onto the Database FAF (Section 3.8.1). Repeat this step for existing assessment area.
  4. Still using the Database FAF, edit the assessment data for the seven assessment areas as necessary (Section 3.8.1). For instance, metrics requiring a GIS interpretation (Metrics 6, 11, 13, and 14) may need to be completed.
  5. If requested, distribute the exported .csv file to the resource agency staff by exporting the wetland assessment data for the assessment areas using the Export Assessments form (Section 3.7). The forms filter function can be used to isolate and select the assessments for exporting. Use the Project Name as the filter criteria.