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Overview

The Service Water and Impoundment Monitoring (SWIM) database was developed for the purpose of maintaining water level and water quality (salinity) data for areas managed by the U.S. Fish and Wildlife Service (USFWS). There are two versions of SWIM. SWIM1 is a Microsoft Access relational database intended for use by field stations not desiring to store their location data in a GIS format. A “geodatabase” version (SWIM2) is also available for field stations that would like to capture and maintain their location data using a GIS format.

SWIM was NOT designed to record water management actions! Other Service databases such as the Refuges Land Geographic Information System (RLGIS) and the Refuge Management Action Database (RMAD) are available to maintain this information. However, if properly used, SWIM1 data tables can be linked to data residing in RLGIS or with data exported from RMAD.

A user acceptance team (UAT) comprised of the following individuals were involved in the design and development of SWIM:

Todd Sutherland – Region 3/5
Kevin Holcomb - Region 5
Wendy Stanton – Region 4
Mary Balogh – Region 3
Tom Penn – Region 5
Doug Brewer – Region 3
Steve Earsom – Region 4
John Gallegos – Region 5
Jorge Coppen – Region 5

The following individual contributed significantly by designing and developing the Visual Basic application H20 which is used by SWIM for graphing purposes:

Tim Fox - USGS

The following individuals contributed by providing guidance, assistance, and/or suggestions:

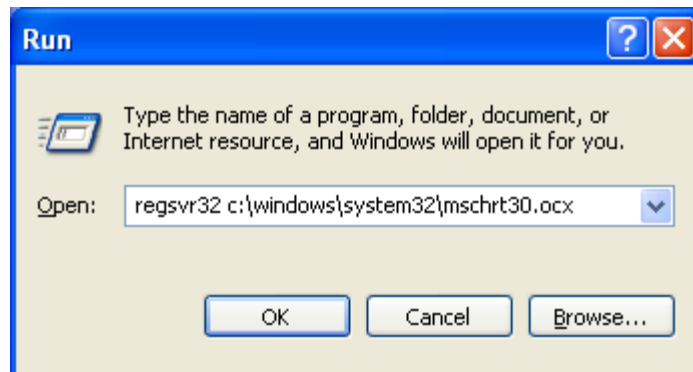
Hal Laskowski – Region 5
Patrick Donnelly – Region 2
Chuck Loesch – Region 6
Dan Craver – Region 1
Ron Huffman – Region 3

Installation

1. Unzip the SWIM1.zip file to any drive/folder on your PC or network drive.
2. NOTE: This step is only required if the computer you are using does not have ArcGIS 9.2 service pack 4 or higher installed. If not, you will need to register an OCX file that is used by the graphing application. You need ADMIN rights on your computer to register and OCX file.

Copy the *mschrt20.ocx* file located in \SWIM1\VB folder and paste into *c:\windows\system32* folder. If asked to overwrite the file, say NO and do not continue with this step. If not asked to overwrite this file, you will need to register this OCX file. From the **Start** menu, choose **Run** and type or paste the following text into the OPEN section:

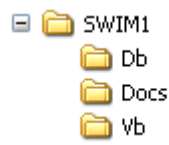
regsvr32 c:\windows\system32\mschrt20.ocx



Click **OK** and you will be notified that the file has been registered.

SWIM Folder Structure

Once the SWIM1 application files have been unzipped, you will have the following directory structure underneath the folder you specified during installation:



Do not move or rename any files underneath the SWIM1 folder structure!

The main application file is located immediately underneath the SWIM 1 folder and is named *watermon_main.mdb*. This is the file you open to enter data and

generate reports. It contains the code to run the SWIM1 user interface. This file does NOT store any of your data.

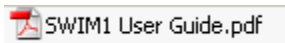
Under the **DB** folder, there are 2 Access database files (MDBs).



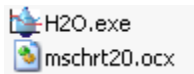
The *Water_Monitoring.mdb* file is the file that stores all of your station's water monitoring data. The *Water_Monitoring.mdb* file is the most important file and a copy or backup should be made periodically.

The *watermon_lookup.mdb* file stores the lookup tables used by the SWIM1 application.

The **DOCS** folder contains the "SWIM1 USER GUIDE".

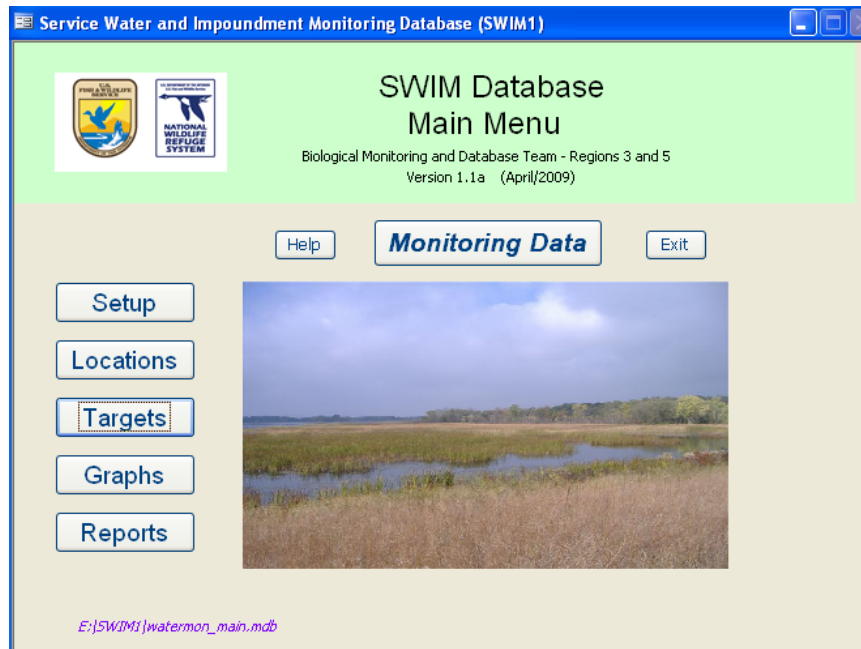


The **VB** folder contains the executable for the H2O charting application and a required OCX file that needs to be registered in order to use the graphing application (see Installation Step 2 above).



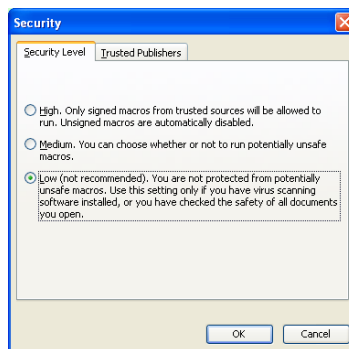
Getting Started

1. Double click on the *watermon_main.mdb* file to launch the *Main Menu*.



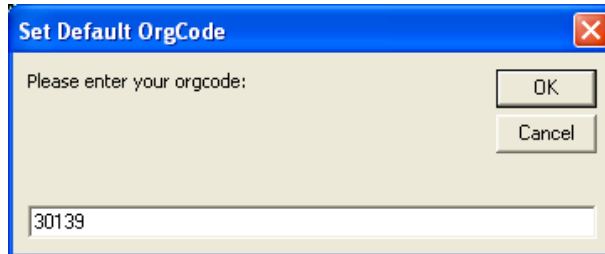
NOTE: If a security warning message appears, click NO and then choose OPEN in the next dialog that appears.

TIP: To avoid this security warning, change your MACRO SECURITY settings in Access. Simply go to **Tools...Macro...Security** and then check **LOW**.



2. Click on the **Setup** button. Enter your 5 digit organizational code. If you manage only one site, you just have to use the setup function once. If you manage more than one site, use the setup function prior to entering data for a site that uses a different organizational code.

NOTE: The **Initial Setup** button also checks and establishes links to required tables and other system files. You are warned if you have moved, deleted or renamed any required files. Therefore, after installing SWIM1, you must run **Setup** to ensure links to the required data tables and files are established. If you ever move the SWIM 1 folder after installation, you must run Setup again to establish table links!



3. You are now ready to begin using SWIM1!

Data Entry Basics

Data entry for SWIM is primarily performed through the use of forms. All forms can be accessed through the *Main Menu*. The *Gage Readings* form is provided below as an example.

All **required** fields have a white background.

All **auto-populated** fields have a yellow background.

And, fields that are **optional** have a blue background.

Gage Readings

Filters

All Records
Current Year

Jun 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

Delete Record
Cancel
Save & Close

Gage_Id: WIN001G001
Unit_Id: WIN001
Read_Date: 5/6/2007
Field_Tech: FWS-BioTech
Gage_Read: 8
Comments:
Temp_F: 23
Wind_speed: 4-7 mph, Light Breeze
Wind_direction: E
Tide: High
Moon_phase: Full

Record: 2 of 7

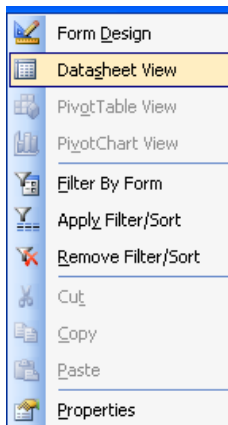
The lower left portion of the form has the navigation buttons for moving between records.

Record: 2 of 7

Move to the first record....
Previous record.....
Next record.....
Move to last record.....
Create new record.....

You may also choose to use datasheet view to enter records in a tabular format.

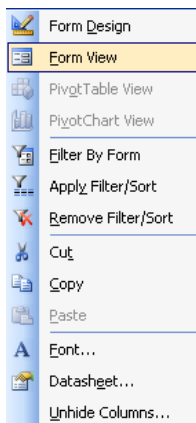
To switch to the datasheet view, simply right click on any empty space from the current form and choose *Datasheet View*.



USFWS Water and Impoundment Monitoring Database - Access Version (SWIM1) - [Gage Readings]

Gage_Id	Unit_Id	Read_Date	Field_Tech	Gage_Read	Temp_F	Wind_speed	Wind_direction	Tide	Moon_phase	Comments
WIN001G001	WIN001	1/1/2007	FWS-Biologist	23	64	1-3 mph, Light Air	S	Falling	Half	
WIN001G001	WIN001	6/6/2007	FWS-BioTech	8	23	4-7 mph, Light Breeze	E	High	Full	
WIN001G002	WIN001	6/6/2007	FWS-BioTech	5	23	8-12 mph, Gentle Breeze	E	High	Full	
WIN002G001	WIN002	6/6/2007	FWS-BioTech	4	23	4-7 mph, Light Breeze	E	High	Full	
WIN001G001	WIN001	2/2/2007	Seasonal Temp	12	12	1-3 mph, Light Air	NE	Rising	Half	
WIN002G001	WIN002	2/2/2007	Seasonal Temp	12	12	0-1 mph, Calm	NE	Rising	Half	
WIN003G001	WIN003	2/2/2007	Seasonal Temp	12	12	1-3 mph, Light Air	NE	High	Half	

To switch back to the form, simply right click on the datasheet view window heading and choose “Form View”.



Some forms have filters which allow you to subset the data by the current year. You can also subset by specific gage or sampling site using a custom date range on forms related to target values.

Delete Record – Deletes the existing record.

Cancel – Cancels any changes made to the existing record and closes the form.

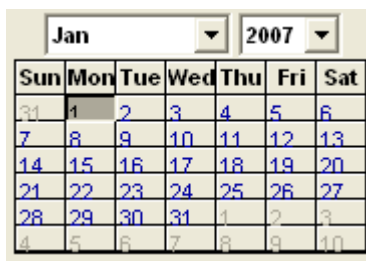
Save & Close – Saves the existing record and closes the form.

NOTE: If you click the X in the upper right of the form, this will also save the existing record and close the form.

Records are also saved when you move to the next record. You will be warned if any required fields are missing or if there are duplicate values in a primary key field.

Some records cannot be deleted due to referential integrity. For example, if you have any records related to an existing gage (targets or readings), you will not be able to delete this gage unless you delete the associated records.

On several forms, date fields can be entered manually using any acceptable DATE format or by choosing a date from the calendar.



Use the TAB key on your keyboard to move to the next field on the form or datasheet.

The *Unit_Id*, *Gage_Id*, *Site_Id* fields automatically convert letters to uppercase.

The *Unit_Name*, *Gage_Name* and *Site_Name* fields automatically convert the first letter of each word to upper case.

Locations

The locations button on the main menu launches the *Locations Menu*. This menu provides access to three data entry forms:

Water Management Units
Gages
Sampling Sites

Water Management Units

Water Management Units must be entered before any other data can be entered.

1. To enter water management units, from the *Main Menu* click on **Locations**. From the *Location Menu*, choose **Water Management Units**.

The screenshot shows a software window titled "Water Management Units". The window has a light green header area with the title "Water Management Units" and three buttons: "Delete Record", "Cancel", and "Save & Close". Below the header is a form area with a light beige background. The form contains several fields: "OrgCode" (text box with "30133"), "Unit Type" (dropdown menu with "pondment"), "Unit_Id" (text box), "Unit_Name" (text box), "Acres" (text box), "Latitude (Y value)" (text box), "Longitude (X value)" (text box), "Vertical Datum" (dropdown menu), "Describe Local Datum" (text box), "Maximum Pool Elevation" (text box), "Average Bottom Elevation" (text box), and "Water Control Structure Drainage Elevation" (text box). There are also two red text annotations: "Coordinate values are to be entered in DECIMAL DEGREES referenced to the horizontal datum of WGS84 or NAD83." and "Elevation values are to be entered in FEET!". At the bottom of the form, there is a "Records" section showing "1 of 1" with navigation buttons.

2. Begin entering data to define your water management unit. The *OrgCode*, *Unit_Type*, *Unit_ID* and *Unit_Name* fields are required. See *Appendix A* for field definitions and suggested naming conventions.

TIP: If you already have your water management units in a spreadsheet or other database, see *Appendix B* for instructions on importing existing data into SWIM1.

TIP: Here is a URL to convert from UTM coordinates to decimal degrees:

<http://home.hiwaay.net/~taylorc/toolbox/geography/geoutm.html>

Gages

1. To enter gages, from the *Main Menu* click on **Locations**. From the *Location Menu*, choose **Gages**.

The screenshot shows a software window titled "Gages". At the top, there are three buttons: "Delete Record" (red), "Cancel" (grey), and "Save & Close" (green). Below these is a large green header area with the word "Gages" in the center. The main form area has a light beige background and contains several input fields and labels. On the left side, there are dropdown menus for "Unit_Id" and "Gage Type" (set to "Staff"), and a text field for "Gage Name". Below these are text fields for "Latitude (Y value)" and "Longitude (X value)". A large text area for "Comments" is at the bottom left. On the right side, there are text fields for "Gage Reference Elevation" and "Gage Reference Description", a "Calibration Date" field, a "Field Technician" dropdown, and a "Gage Calibration Status" dropdown. A note at the top right states: "All elevation values are to be entered using US System (in Feet)". A note near the coordinate fields states: "Coordinate values are to be entered in DECIMAL DEGREES using either the WGS84 or NAD83 horizontal datum." At the bottom left, a status bar shows "Record: 1 of 1".

2. Begin entering data to define your gage. The *Unit_Type*, *Unit_ID* and *Gage Name* fields are required. See *Appendix A* for field definitions and suggested naming conventions.

NOTE: The *Gage_Id* field will be auto-populated with a concatenation of the *Unit_Id* plus the letter *G* plus *001* to conform to suggested naming conventions. However, you can change this field if you are employing your own naming convention for the *Gage_Id*.

TIP: If you already have your gages in a spreadsheet or other database, see *Appendix B* for instructions on importing existing data into SWIM1.

TIP: Here is a URL to convert from UTM coordinates to decimal degrees:

<http://home.hiwaay.net/~taylorc/toolbox/geography/geoutm.html>

Sampling Sites

1. To enter sampling sites, from the *Main Menu* click on **Locations**. From the *Location Menu*, choose **Sampling Sites**.

The screenshot shows a software window titled "Sampling Sites". The window has a light green header area with the title "Sampling Sites" and three buttons: "Delete Record" (red), "Cancel" (grey), and "Save & Close" (green). Below the header is a form area with a light tan background. The form contains several fields: "Unit_Id" (a dropdown menu), "Site_Id" (a text field), "Site Name" (a text field), and "Site Description" (a text area). To the right of these fields are "Sample Type" (a dropdown menu showing "Water") and "Latitude (Y value)" and "Longitude (X value)" (both text fields). A note on the right side of the form states: "Coordinate values are to be entered in DECIMAL DEGREES using either the WGS84 or NAD83 horizontal datum." At the bottom of the window, there is a record navigation bar showing "Record: 1 of 1" with navigation icons.

2. Begin entering data to define your sampling site. The *Unit_Type*, *Unit_ID* and *Name* fields are required. See *Appendix A* for field definitions and suggested naming conventions.

NOTE: The *Site_Id* field will be auto-populated with a concatenation of the *Unit_Id* plus the letter *S* plus *001* to conform to suggested naming conventions. However, you can change this field if you are employing your own naming convention for the *Site_Id*.

TIP: If you already have your sampling sites in a spreadsheet or other database, see *Appendix B* for instructions on importing existing data into SWIM1.

TIP: Here is a URL to convert from UTM coordinates to decimal degrees:

<http://home.hiwaay.net/~taylorc/toolbox/geography/geoutm.html>

Targets

Target water levels for your gages and target salinity values for your sampling sites can be entered using two different forms. The “custom” form allows you to enter targets for an entire year using the 1st and 15th of each month as the target date. You cannot edit records using the “custom” form. The “custom” form is simply used for data entry. The “standard” form allows you to enter target records individually. The “standard” form also allows you to edit and filter records.

Water Levels – Standard

The standard form can be used when you want to enter target levels for a specific date, make minor edits or if you simply want to peruse your existing records. This form also provides the ability to filter records by the current year or by a specific gage and date range. Individual records can be deleted using this standard form as well.

1. Click **Targets**. A *Specify Targets Menu* appears. Now click on **Water Levels – Standard**.

Target Water Levels - Standard Form

Filters

All Records
Current Year
Custom Filter

Target Water Levels

Mar 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26	27	28	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Delete Record
Cancel
Save & Close

Gage_Id Unit_Id Target_Date Level_Min Level_Max

Record: 1 of 1

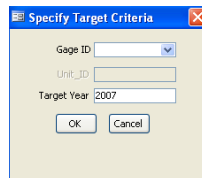
2. Begin entering data to define a target water level or range for a particular gage. If you wish to have target water levels defined as a range, change the *Level_Max* value. If not, leave the *Level_Max* field the same as the *Level_Min* field. The *Gage_Id*, *Unit_Id* and *Target_Date* fields are required. See *Appendix A* for field definitions.

TIP: If you already have your target water levels in a spreadsheet or other database, see *Appendix B* for instructions on importing existing data into SWIM1.

Water Levels – Custom

The custom form is used when you want to enter bi-monthly target levels for the entire year. This form allows you to enter target gage levels for the 1st and 15th of each month for an entire year.

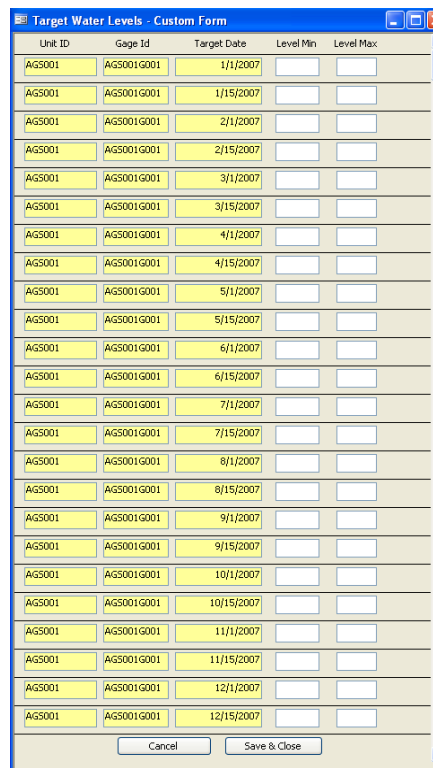
1. Click **Targets**. A *Specify Targets Menu* appears. Click on **Water Levels – Custom**.
2. Choose the *Gage ID* for which you wish to establish target water levels. Enter the desired year and click **OK**.



A small dialog box titled "Specify Target Criteria". It contains three input fields: "Gage ID" with a dropdown arrow, "Unit ID" with a text box, and "Target Year" with a text box containing "2007". At the bottom are "OK" and "Cancel" buttons.

3. Maximize the form window to see all 24 records. Begin entering minimum water levels. The *Level_Max* field is auto-populated with the *Level_Min* value. If you wish to have target water levels defined as a range, change the *Level_Max* value. If not, leave the *Level_Max* field the same as the *Level_Min* field.

TIP: Use the TAB key to move to the next *Level_Min* record.



A window titled "Target Water Levels - Custom Form" showing a table with 24 rows of bi-monthly target data for the year 2007. The columns are Unit ID, Gage Id, Target Date, Level Min, and Level Max. The first 12 rows are highlighted in yellow. The Level Max column is auto-populated with the Level Min value.

Unit ID	Gage Id	Target Date	Level Min	Level Max
AGS001	AGS001G001	1/1/2007		
AGS001	AGS001G001	1/15/2007		
AGS001	AGS001G001	2/1/2007		
AGS001	AGS001G001	2/15/2007		
AGS001	AGS001G001	3/1/2007		
AGS001	AGS001G001	3/15/2007		
AGS001	AGS001G001	4/1/2007		
AGS001	AGS001G001	4/15/2007		
AGS001	AGS001G001	5/1/2007		
AGS001	AGS001G001	5/15/2007		
AGS001	AGS001G001	6/1/2007		
AGS001	AGS001G001	6/15/2007		
AGS001	AGS001G001	7/1/2007		
AGS001	AGS001G001	7/15/2007		
AGS001	AGS001G001	8/1/2007		
AGS001	AGS001G001	8/15/2007		
AGS001	AGS001G001	9/1/2007		
AGS001	AGS001G001	9/15/2007		
AGS001	AGS001G001	10/1/2007		
AGS001	AGS001G001	10/15/2007		
AGS001	AGS001G001	11/1/2007		
AGS001	AGS001G001	11/15/2007		
AGS001	AGS001G001	12/1/2007		
AGS001	AGS001G001	12/15/2007		

4. Click **Save & Close** when finished.

WARNING: If any record with the same UNIT_ID, GAGE_ID and DATE already exists in the master gage targets table (*tbl_TargetsLevel*), it will be overwritten with the information on this form. No warning is given! However, any records with an empty (null) *Level_Min* value do not overwrite an existing record.

Salinity – Standard

The standard form can be used when you want to enter target values for a specific date, make minor edits to your data or if you simply want to peruse your existing records. This form also provides the ability to filter records by current year or by a specific date range and sampling site. Individual records can be deleted using this standard form as well.

1. Click **Targets**. A *Specify Targets Menu* appears. Now click on **Salinity – Standard**.

Target Salinity Values - Standard Form

Target Salinity Values

Filters

All Records

Current Year

Custom Filter

Mar 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26	27	28	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Delete Record

Cancel

Save & Close

Site_Id Unit_Id Target_Date Salinity_Min Salinity_Max

Record: 1 of 1

2. Begin entering data to define a target salinity value or range for a particular sampling site. If you wish to have target salinity levels defined as a range, enter the appropriate values in the *Salinity_Min* and *Salinity_Max* fields. If you do not want to specify a range, enter the same value in both the *Salinity_Min* and the *Salinity_Max* field. The *Site_Id*, *Unit_Id* and *Target_Date* fields are required. See *Appendix A* for field definitions.

TIP: If you already have your target water levels in a spreadsheet or other database, see *Appendix B* for instructions on importing existing data into SWIM1.

Salinity – Custom

The custom form is used when you want to enter bi-monthly target values for the entire year. This form allows you to enter target salinity values for the 1st and 15th of each month for an entire year.

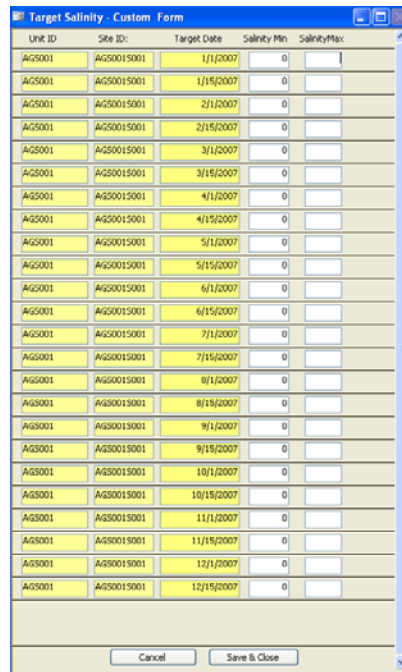
1. Click **Targets**. A *Specify Targets Menu* appears. Click on **Salinity – Custom**.
2. Choose the *Site ID* for which you wish to establish target salinity values. Enter the desired year and click **OK**.



A dialog box titled "Specify Target Criteria" with a close button (X) in the top right corner. It contains three input fields: "Site ID:" with a dropdown arrow, "Unit_ID:" with a text box, and "Target Year:" with a text box containing the value "2007". At the bottom are "OK" and "Cancel" buttons.

3. Maximize the form window to see all 24 records. Begin entering data to define a target salinity value or range for a particular sampling site. If you wish to have target salinity levels defined as a range, enter the appropriate values in the *Salinity_Min* and *Salinity_Max* fields. If you do not want to specify a range, enter the same value in both the *Salinity_Min* and the *Salinity_Max* field.

TIP: Use the TAB key to move to the next *Salinity_Max* record.



A window titled "Target Salinity - Custom Form" showing a table with 24 rows of data. The columns are "Unit ID", "Site ID", "Target Date", "Salinity Min", and "Salinity Max". The data is organized by month, with each month having two rows (1st and 15th). The "Unit ID" and "Site ID" are constant for all rows (AG5001 and AG50015001 respectively). The "Target Date" column shows dates from 1/1/2007 to 12/15/2007. The "Salinity Min" and "Salinity Max" columns are currently empty, with a "0" in the first row's "Salinity Min" field. At the bottom are "Cancel" and "Save & Close" buttons.

Unit ID	Site ID	Target Date	Salinity Min	Salinity Max
AG5001	AG50015001	1/1/2007	0	
AG5001	AG50015001	1/15/2007	0	
AG5001	AG50015001	2/1/2007	0	
AG5001	AG50015001	2/15/2007	0	
AG5001	AG50015001	3/1/2007	0	
AG5001	AG50015001	3/15/2007	0	
AG5001	AG50015001	4/1/2007	0	
AG5001	AG50015001	4/15/2007	0	
AG5001	AG50015001	5/1/2007	0	
AG5001	AG50015001	5/15/2007	0	
AG5001	AG50015001	6/1/2007	0	
AG5001	AG50015001	6/15/2007	0	
AG5001	AG50015001	7/1/2007	0	
AG5001	AG50015001	7/15/2007	0	
AG5001	AG50015001	8/1/2007	0	
AG5001	AG50015001	8/15/2007	0	
AG5001	AG50015001	9/1/2007	0	
AG5001	AG50015001	9/15/2007	0	
AG5001	AG50015001	10/1/2007	0	
AG5001	AG50015001	10/15/2007	0	
AG5001	AG50015001	11/1/2007	0	
AG5001	AG50015001	11/15/2007	0	
AG5001	AG50015001	12/1/2007	0	
AG5001	AG50015001	12/15/2007	0	

4. Click **Save & Close** when finished.

WARNING: If any record with the same UNIT_ID, SITE_ID and DATE already exists in the master salinity targets table (*tbl_TargetsSalinity*), it will be overwritten with the information on this form. No warning is given! However, any records with an empty (null) *Salinity_Max* value do not overwrite an existing record.

Monitoring Data

Monitoring data for gages and sampling sites can be entered using two different forms. The “standard” forms allow you to enter gage readings or salinity sampling measurements individually. These forms also allow you to edit and filter records. The “mass data entry” form allows you to enter data for all of your station’s gage and/or sampling sites on one form. The monitoring event details such as date and weather conditions only needs to be entered once when using the “mass data entry” form. This form is the most efficient way to enter several monitoring data records that were obtained on the same day.

Water Levels

This standard form is used when you want to enter a gage reading for a specific gage and date, make minor edits to your data or if you simply want to peruse your existing records. This form also provides the ability to filter records by current year. Individual records can be deleted using this standard form as well.

1. Click **Monitoring Data**. An *Enter Monitoring Data Menu* appears. Click on **Water Levels**.

Gage Readings

Filters

All Records
Current Year

Apr 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9

Delete Record
Cancel
Save & Close

Gage_Id [dropdown]
Unit_Id [dropdown]
Read_Date [text]
Field_Tech [dropdown]
Gage_Read [text]
Comments [text area]

Temp_F [text]
Wind_speed [dropdown]
Wind_direction [dropdown]
Tide [dropdown]
Moon_phase [dropdown]

Set Defaults

Record: 969 of 969

2. Begin entering gage readings data. See *Appendix A* for field definitions. Use “Set Defaults” to streamline data entry when entering multiple readings.

TIP: If you already have gage reading data in a spreadsheet or other database, see *Appendix B* for instructions on importing existing data into SWIM1.

Salinity

This standard form is used when you want to enter a salinity values for a specific sampling site and date, make minor edits to your data or if you simply want to peruse your existing records. This form also provides the ability to filter records by current year. Individual records can be deleted using this standard form as well.

1. Click **Monitoring Data**. An *Enter Monitoring Data Menu* appears. Click on **Salinity**.

Salinity Values

Filters

All Records
Current Year

Apr 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9

Delete Record
Cancel
Save & Close

Site_Id
Unit_Id
Read_Date
Field_Tech
Salinity_PPT
Comments

Temp_F
Wind_speed
Wind_direction
Tide
Moon_phase

Set Defaults

Record: 6 of 6

2. Begin entering salinity values data. See *Appendix A* for field definitions. Use “Set Defaults” to streamline data entry when entering multiple readings.

TIP: If you already have salinity values data in a spreadsheet or other database, see *Appendix B* for instructions on importing existing data into SWIM1.

Mass Data Entry

The “mass data entry” form allows you to enter data for all of your station’s gage and/or sampling sites on one form. The monitoring event details such as date and weather conditions only needs to be entered once when using the “mass data entry” form. This form is the most efficient way to enter several monitoring data records that were obtained on the same day.

1. Click **Monitoring Data**. An *Enter Monitoring Data Menu* appears. Click on **Mass Data Entry**.

The 'Enter Monitoring Details' dialog box contains the following fields and controls:

- Monitoring Date:
- Field Technician:
- Air Temperature in Fahrenheit:
- Wind Speed:
- Wind Direction:
- Tide:
- Moon Phase:
- Buttons: Cancel, OK

3. Enter your monitoring details. See *Appendix A* for field definitions. Click **OK** when finished. A new form opens up showing all of your gages and sampling sites on one form.

The 'Enter Station Monitoring Data' form displays a table with the following columns: Unit_Id, Gage/Site ID, Type, Read, Read_Date, Field Technician, Temp_F, Wind Speed, Wind Direction, Tide, Moon Phase, and Comments. The table contains two rows of data:

Unit_Id	Gage/Site ID	Type	Read	Read_Date	Field Technician	Temp_F	Wind Speed	Wind Direction	Tide	Moon Phase	Comments
AGS001	AGS001G001	GAGE	<input type="text"/>	3/27/2007	Other	45	1-3 mph, Light Air	NE	<input type="text"/>	<input type="text"/>	
AGS001	AGS001S001	SALINITY	<input type="text"/>	3/27/2007	Other	45	1-3 mph, Light Air	NE	<input type="text"/>	<input type="text"/>	

Buttons: Cancel, Save & Close

4. Enter your “read” for each gage and sampling site. Change additional parameters if necessary. Click **Save & Close** when finished.

WARNING: If records with the same UNIT_ID, LOC_ID and DATE already exist in the master tables (*tbl_Gage_Reads*, *tbl_Quality_Reads*), they will be automatically overwritten with the new data you have entered on this form. No warning is given! If you did not obtain a “read” value for one of the gages or sampling sites on this particular date, delete the record before clicking on **Save & Close**. But, if this is a legitimate null value (you actually went to the site on this date but couldn’t perform a reading because of ice or some other reason), then do not delete the record so it can be recorded as a null value (essentially recording the fact that you actually physically monitored this gage or site, but could not obtain a value). If you do not delete gage and site records that were not physically monitored on this date, these records will appear in the master database with null values in the *Gage_Read* or *Salinity_PPT* field.

TIP: To delete a record on this form, click on the left side of the record you wish to delete to **select the record**. Next, right click and select **Cut**. Click **OK** to delete the record from the form.

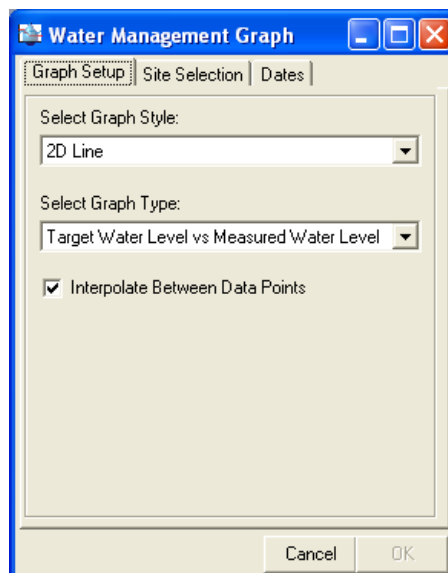
Graphs

After you have successfully entered your data into SWIM, you can easily start producing graphical reports. A separate Visual Basic application called H2O, allows you to generate graphs using the SWIM database. Click **Graphs**.

1. Ensure the GRAPH SETUP tab is selected. Select your *Graph Style* and *Graph Type*. There are two types of graphs that can be generated:

Target Water Level vs. Measure Water Level
Target Salinity vs. Measured Salinity

Specify whether you want interpolation between the data points. By default, interpolation is selected.

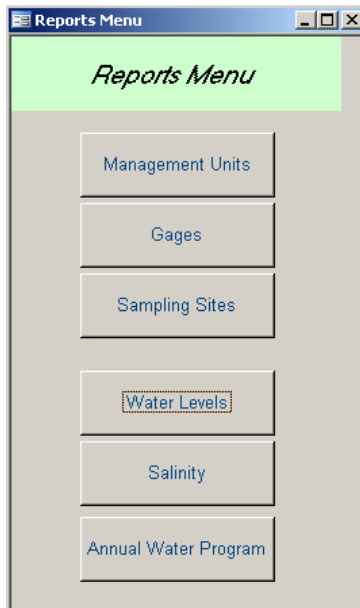


3. Now click the SITE SELECTION tab. Specify the water management unit. A list of all gages or sampling sites appear depending on you graph type selection. Choose the appropriate gage or sampling site that you want to use.
5. Now click on the DATES tab. Choose the *Graphing Interval*. The total number of records that meet your gage/site and date parameters are displayed in red.
6. Click **OK**. The *H2O Chart* window appears. You can modify the graph using the CAPTIONS, LEGEND, AXES or SERIES tabs. There is also functionality to save and export your graphs in a vector format.

7. If you want to change your data parameters, close the *H2O Chart* window and the *Water Management Graph* dialog will appear again. Now simply change your parameters and hit **OK** to view your changes.

Reports

There are six summary reports that can be generated from SWIM data.



Management Units - Summary report of all water management units in the SWIM database.

Gages - Summary report of all gages in the SWIM database.

Sampling Sites - Summary report of all sampling sites in the SWIM database.

Water Levels – Summary report for a specific gage and date range.

Salinity – Summary report for a specific sampling site and date range.

Annual Water Program – Summary report for annual water program. This report interpolates data to report dates of the 1st and 15th of the month. All read dates between the 23rd and the 7th are interpolated to the 1st. All read dates between the 8th and the 22nd are interpolated to the 15th. If more than one read date occurs within these periods, the closest to the report date is used.

TIP: For reports requesting start/end dates, simply double click in the *Enter Start Date* field to auto-populate with January 1st of current year. Double click in the *Enter End Date* field to auto-populate with December 31st of current year.

APPENDIX A – Table & Field Descriptions

LOCATIONS

Water Management Units data are stored in the *Water_mgmt_units* table.

Gages data are stored in the *Gages* table.

Sampling Sites data are stored in the *Sampling_sites* table.

TARGETS

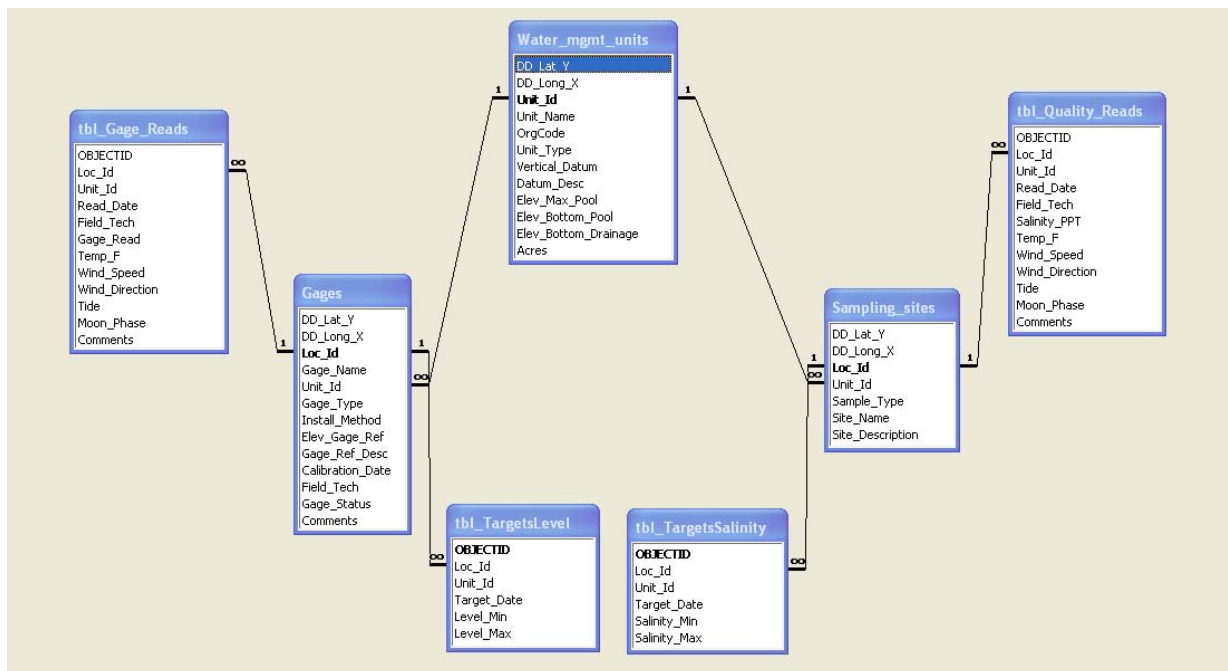
Water Level Targets data are stored in the *tbl_TargetsLevel* table.

Salinity Targets data are stored in the *tbl_TargetsSalinity* table.

MONITORING DATA

Water Levels data are stored in the *tbl_Gage_Reads* table.

Salinity data are stored in the *tbl_Quality_Reads* table.



Water Management Units

Water management units (WMUs) are areas located within or outside NWRs boundaries that are managed or monitored by FWS staff. These units can be natural occurring or artificial impoundments.

WMUs must be entered into SWIM1 before anything else can be entered. WMUs have “gages” and “sampling sites”. WMUs may have zero, one or many “gages”. WMUs may have zero, one or many “sampling sites”.

Data records for WMUs are stored in the ***Water_mgmt_units*** table.

There are four required fields in the ***Water_mgmt_units*** table: *Unit_Id*, *Unit_Name*, *OrgCode* and *Unit_Type*.

The primary key for the ***Water_mgmt_units*** table is the *Unit_Id* field. Since this field is the primary key, all records in this field must be unique. The *Unit_Id* field contains a unique identifier for each WMU.

You may use an existing naming convention for the *Unit_Id* field. However, the naming convention must conform to this field's data type and length. The *Unit_Id* field is a “text” field with a length of 6. If your existing naming convention doesn't meet these requirements, a suggested naming convention is provided below. You may also choose to develop your own naming convention.

The “suggested” naming convention is as follow:

Station literal + *sequential numbering starting at 001*

A list of all FWS station literals(lit) is found here:

http://www.fws.gov/stand/standards/IFWS_LIT_LRS_012406.txt

NWR Example: WMUs located on Agassiz NWR would have the following *Unit_Ids*:

AGS001, AGS002, AGS003.....AGS999

WMD Example: WMUs located in Jackson County Minnesota maintained by the Windom WMD would have the following *Unit_IDs*:

WJC001, WJC002, WJC003.....WJC999

This suggested naming convention allows for a maximum of 999 water management units for each NWR or 999 WMUs for each county within a WMD. This naming convention is highly recommended for field stations that may want

to combine monitoring data at a later point in order to conduct regional statistical analysis.

Gages

Gages are located within WMUs and used to measure water levels.

You must create and attribute "gages" before you can specify "targets" or enter "gage readings".

A "gage" is owned by one and only one WMU. There can be many "gages" within one WMU.

Data records for gages are stored in the **Gages** table.

There are three required fields in the **Gages** table: *Gage_Id**, *Gage_Name* and *Unit_Id*.

*Field alias, this field is actually named *Loc_Id* in the master table.

The primary key for the **Gages** table is the *Gage_Id* field. Since this field is the primary key, all records in this field must be unique. The *Gage_Id* field contains a unique identifier for each gage.

A foreign key in the **Gages** table is the *Unit_Id* field. This field allows gages to be related back to the **Water_mgmt_units** table.

You may use an existing naming convention for the *Gage_Id* field. However, the naming convention must conform to this field's data type and length. The *Gage_Id* field is a "text" field with a length of 10. If your existing naming convention doesn't meet these requirements, a suggested naming convention is provided below. You may also choose to develop your own naming convention.

The "suggested" naming convention is as follow:

Unit_Id + G + sequential numbering starting at 001

NWR Example: A gage located on an Agassiz NWR impoundment with a *Unit_Id* of AGS001 would have the following *Gage_Id*:

AGS001G001

WMD Example: A gage located on a Jackson County impoundment with a *Unit_Id* of WJC001 would have the following *Gage_Id*:

WJC001G001

This suggested naming convention allows for a maximum of 999 gages for each WMU. This naming convention is highly recommended for field stations that may want to combine monitoring data at a later point in order to conduct regional statistical analysis.

Sampling Sites

Sampling sites are the point locations within WMUs where salinity measurements are taken.

You must create and attribute "sampling sites" before you can specify "targets" or enter "salinity readings".

A "sampling site" is owned by one and only one WMU. There can be many "sampling sites" within one WMU.

Data records for sampling sites are stored in the ***Sampling_sites*** table.

There are four required fields in the ***Sampling Sites*** table: *Site_Id**, *Site_Name*, *Unit_Id* and *Sample_Type*.

*Field alias, this field is actually named *Loc_Id* in the master table.

The primary key for the ***Sampling_sites*** table is the *Site_Id* field. Since this field is the primary key, all records in this field must be unique. The *Site_Id* field contains a unique identifier for each sampling site.

A foreign key in the ***Sampling_sites*** table is the *Unit_Id* field. This field allows sampling sites to be related back to the ***Water_mgmt_units*** table.

You may use an existing naming convention for the *Site_Id* field. However, the naming convention must conform to this field's data type and length. The *Site_Id* field is a "text" field with a length of 10. If your existing naming convention doesn't meet these requirements, a suggested naming convention is provided below. You may also choose to develop your own naming convention.

The "suggested" naming convention is as follow:

Unit_Id + S + sequential numbering starting at 001

NWR Example: A sampling site located on a Back Bay NWR impoundment with a *Unit_Id* of BKB001 would have the following *Site_Id*:

BKB001S001

This suggested naming convention allows for a maximum of 999 sampling sites for each WMU. This naming convention is highly recommended for field stations that may want to combine monitoring data at a later point in order to conduct regional statistical analysis.

Water Level Targets

Water level targets are the proposed or desired target levels for a particular gage.

A target value is owned by one and only one gage. A gage may have zero, one or many target values.

Data records for water level targets are stored in the ***tbl_TargetsLevel*** table.

There are four required fields in the ***tbl_TargetsLevel*** table: *OBJECTID*, *Gage_Id**, *Unit_Id* and *Target_Date*.

*Field alias, this field is actually named *Loc_Id* in the master table.

The primary key for the ***tbl_TargetsLevel*** table is the *OBJECTID* field. This field is automatically maintained by MS Access.

A foreign key in the ***tbl_TargetsLevel*** table is the *Gage_Id* field. This field allows water level targets to be related back to the **Gages** table.

Salinity Targets

Salinity targets are the proposed or desired salinity values for a particular sample site.

A target value is owned by one and only one sampling site. A sampling site may have zero, one or many target values.

Data records for salinity targets are stored in the ***tbl_TargetsSalinity*** table.

There are four required fields in the ***tbl_TargetsSalinity*** table: *OBJECTID*, *Site_Id**, *Unit_Id* and *Target_Date*.

*Field alias, this field is actually named *Loc_Id* in the master table.

The primary key for the ***tbl_TargetsSalinity*** table is the *OBJECTID* field. This field is automatically maintained by MS Access.

A foreign key in the ***tbl_TargetsSalinity*** table is the *Site_Id* field. This field allows salinity targets to be related back to the **Sampling_sites** table.

Water Levels

Water levels are the values obtained when readings gages.

A water level is owned by one and only one gage. A gage may have zero, one or many water level readings associated to it.

Data records for water levels are stored in the ***tbl_Gage_Reads*** table.

There are four required fields in the ***tbl_Gage_Reads*** table: *OBJECTID*, *Gage_Id**, *Unit_Id* and *Read_Date*.

*Field alias, this field is actually named *Loc_Id* in the master table.

The primary key for the ***tbl_Gage_Reads*** table is the *OBJECTID* field. This field is automatically maintained by MS Access.

A foreign key in the ***tbl_Gage_Reads*** table is the *Gage_Id* field. This field allows water levels to be related back to the **Gages** table.

Salinity

Salinity is the measurement obtained at a sampling site.

A salinity reading is owned by one and only one sample site. A sample site may have zero, one or many salinity readings associated to it.

Data records for salinity are stored in the ***tbl_Quality_Reads*** table.

There are four required fields in the ***tbl_Quality_Reads*** table: *OBJECTID*, *Site_Id**, *Unit_Id* and *Read_Date*.

*Field alias, this field is actually named *Loc_Id* in the master table.

The primary key for the ***tbl_Quality_Reads*** table is the *OBJECTID* field. This field is automatically maintained by MS Access.

A foreign key in the **tbl_Quality_Reads** table is the *Site_Id* field. This field allows water levels to be related back to the **Sampling_sites** table.

Field descriptions for **Water_mgmt_units** table:

Field Name	Alias	Type	Length	Required	Description	Valid Values	Notes/Tips
DD_Lat_Y	Latitude (Y value)	Double	n/a		Latitude in decimal degrees	-90 to 90	Coordinate values must be referenced to the horizontal datum of WGS84 or NAD83.
DD_Long_X	Longitude (X value)	Double	n/a		Longitude in decimal degrees	-180 to 180	Coordinate values must be referenced to the horizontal datum of WGS84 or NAD83.
Unit_Id	None	Text	6	x	Unique identifier for water management unit	Any valid text	Primary key, must be unique
Unit_Name	None	Text	50	x	Common name of water management unit	Any valid text	Use the same water management unit name as used in RLGIS/RMADs so SWIM data can be linked to these databases
OrgCode	None	Long Integer	n/a	x	Organizational Code	Any valid 5 digit integer	This field is auto-populated. Setup must be run to set your orgcode.
Unit_Type	None	Integer	n/a	x	Type of water management unit	1= Impoundment 2 = Natural	Lookup values obtained from <i>tlu_UnitType</i> table. The default value is 1.
Vertical_Datum	None	Text	20		Vertical Datum used for all elevation values related to this water management unit	Local = Local Datum MSL = Mean Sea Level NGVD 29 = Sea Level Datum of 1929 NGVD 88 = North American Vertical Datum of 1988	Lookup values obtained from <i>tlu_VerticalDatum</i> table.
Datum_Desc	Describe Local Datum	Text	255		Description of "LOCAL" datum used.	Any valid text	Only available on form if LOCAL is selected.
Elev_Max_Pool	Maximum Pool Elevation	Double	n/a		Elevation value when the water management unit is at its maximum pool level	Any valid number	
Elev_Bottom_Pool	Average Bottom Elevation	Double	n/a		Average bottom elevation value of water management unit	Any valid number	
Elev_Bottom_Drainage	Water Control Structure Drainage Elevation	Double	n/a		Lowest elevation value at which water can be drained using existing water control structure	Any valid number	
Acres	None	Double	n/a		Total area in acres for the water management unit.	Any valid number	

Field descriptions for **Gages** table:

Field Name	Alias	Type	Length	Required	Description	Valid Values	Notes/Tips
DD_Lat_Y	Latitude (Y value)	Double	n/a		Latitude in decimal degrees.	-90 to 90	Coordinate values must be referenced to the horizontal datum of WGS84 or NAD83.
DD_Long_X	Longitude (X value)	Double	n/a		Longitude in decimal degrees.	-180 to 180	Coordinate values must be referenced to the horizontal datum of WGS84 or NAD83.
Loc_Id	Gage_Id	Text	10	x	Unique identifier for gage	Any valid text	Primary key, must be unique
Gage_Name	Gage Name	Text	50	x	Common name of gage.	Any valid text	
Unit_ID	None	Text	6	x	Unit_ID of the water management unit this gage is located within.	Any existing <i>Unit_Id</i> found in the water_mgmt_units table.	This field is auto-populated on all forms. Foreign key, allows linking back to water_mgmt_units table.
Gage_Type	None	Integer	n/a		Type of gage	1 = Staff 2 = Other	Lookup values obtained from <i>tlu_GageType</i> table. The default value is 1.
Install_method	None	Integer	n/a		The type of gage installation method.	1 = Vertical 2 = Inclined	Lookup values obtained from <i>tlu_GageInstall</i> table.
Elev_Gage_Ref	Gage Reference Elevation	Double	n/a		Elevation value used to calibrate or reset gage if disturbed.	Any valid number	Use same vertical datum as specified by the water management unit in which this gage is located
Gage_Ref_Desc	Gage Reference Description	Text	255		Brief description of how to calibrate or reset gage if disturbed.	Any valid text	
Calibration_Date	None	Date/Time	n/a		Date gage was last calibrated or reset.	Any valid date	Leave blank if unknown
Field_Tech	None	Double	n/a		Position/title of field technician who last calibrated or reset gage.	1 = FWS- Biologist 2 = FWS-BioTech 3 = FWS-OTHER 4 = Seasonal Temp. 5 = Volunteer 6 = Other	Lookup values obtained from <i>tlu_FieldTech</i> table.
Gage_Status	None	Double	n/a		Status of gage calibration.	1 = OK 2 = Needs to be reset 3 = Needs to be checked	Lookup values obtained from <i>tlu_GageStatus</i> table.
Comments	None	Text	255		Additional comments.	Any valid text	

Field descriptions for **Sampling_sites** table:

Field Name	Alias	Type	Length	Required	Description	Valid Values	Notes/Tips
DD_Lat_Y	Latitude (Y value)	Double	n/a		Latitude in decimal degrees.	-90 to 90	Coordinate values must be referenced to the horizontal datum of WGS84 or NAD83.
DD_Long_X	Longitude (X value)	Double	n/a		Longitude in decimal degrees	-180 to 180	Coordinate values must be referenced to the horizontal datum of WGS84 or NAD83.
Loc_Id	Site_Id	Text	10	x	Unique identifier for gage	Any valid text	Primary key, must be unique
Unit_ID	None	Text	6	x	Unit_ID of the water management unit this site is located within.	Any existing <i>Unit_Id</i> found in the water_mgmt_units table.	This field is auto-populated on all forms. Foreign key, allows linking back to water_mgmt_units table.
Sample_Type	None	Integer	n/a	x	Type of salinity sample.	1= Water 2 = Soil	Lookup values obtained from <i>tlu_SampleType</i> table. The default value is 1(Water).
Site_Name	Site Name	Text	50	x	Common name of sampling site.	Any valid text	
Site_Description	Site Description	Text	50		Brief description of site where sample is taken.	Any valid text	

Field descriptions for **tbl_TargetsLevel** table:

Field Name	Alias	Type	Length	Required	Description	Valid Values	Notes/Tips
OBJECTID	None	AutoNumber	n/a	x	Unique system generated number		Primary key maintained by MSAccess.
Loc_Id	Gage_Id	Text	10	x	Gage ID for which this target water level value is associated with	Any valid <i>Gage_Id</i> found in the Gages table.	Foreign key, used as link to Gages table.
Unit_ID	None	Text	6	x	Water management unit ID for which this target water level value is associated with	Any existing <i>Unit_Id</i> found in the water_mgmt_units table.	This field is auto-populated on all forms.
Target_Date	None	Date/Time	n/a	x	Target date	Any valid date	
Level_Min	None	Double	n/a		Minimum target water level	Any valid number	
Level_Max	None	Double	n/a		Maximum target water level	Any valid number greater than Level_Min	Defaults to Level_Min value. Change only if target "range" is desired. Otherwise, leave same as Level_Min.

Field descriptions for **tbl_TargetsSalinity** table:

Field Name	Alias	Type	Length	Required	Description	Valid Values	Notes/Tips
OBJECTID	None	AutoNumber	n/a	x	Unique system generated number		Primary key maintained by MSAccess.
Loc_Id	Site_Id	Text	10	x	Site ID for which this target salinity value is associated with	Any valid <i>Gage_Id</i> found in the Gages table.	Foreign key, used as link to Sampling_sites table.
Unit_ID	None	Text	6	x	Water management unit ID for which this target salinity value is associated with	Any existing <i>Unit_Id</i> found in the water_mgmt_units table.	This field is auto-populated on all forms.
Target_Date	None	Date/Time	n/a	x	Target date	Any valid date	
Salinity_Min	None	Double	n/a		Minimum target salinity value	Any valid number	Defaults to 0.
Salinity_Max	None	Double	n/a		Maximum target salinity value	Any valid number greater than Level_Min	

Field descriptions for **tbl_Gage_Reads** table:

Field Name	Alias	Type	Length	Required	Description	Valid Values	Notes/Tips
OBJECTID	None	AutoNumber	n/a	x	Unique system generated number		Primary key maintained by MSAccess.
Loc_Id	Gage_Id	Text	10	x	Gage ID for which this gage reading is associated with	Any valid text	Foreign key, used as link to Gages table.
Unit_Id	None	Text	6	x	Water management unit ID for which this gage reading is associated with	Any valid text	This field is auto-populated on all forms.
Read_Date	None	Date/Time	n/a	x	Date gage was read	Any valid date	
Field_Tech	None	Double	n/a		Position/title of field technician who read the gage.	1 = FWS- Biologist 2 = FWS-BioTech 3 = FWS-OTHER 4 = Seasonal Temp. 5 = Volunteer 6 = Other	Lookup values obtained from <i>tlu_FieldTech</i> table.
Gage_Read	None	Double	20		The water level gage reading	Any valid number	Usually in tenths of a foot.
Temp_F	None	Double	n/a		Air temperature at the time of the monitoring activity in Fahrenheit degrees	Any valid number	
Wind_Speed	None	Integer	n/a		Estimated wind speed at the time of the monitoring activity using the Beaufort wind scale.	0 = 0-1 mph, Calm 1= 1-3 mph, Light Air 2 = 4-7 mph, Light Breeze 3 = 8-12 mph, Gentle Breeze 4 = 13-18 mph, Moderate Breeze 5 = 19-24 mph, Fresh Breeze 6 = 25-31 mph, Strong Breeze 7 = 32-38 mph, Near Gale 8 = 39-46 mph, Gale 9 = 47-54 mph, Severe Gale	
Wind_Direction	None	Text	3		Estimated wind direction at the time of the monitoring activity	E = east N = north NE = northeast NW = northwest SE = southeast SW = southwest VRB = variable wind direction W = west	Lookup values obtained from <i>tlu_WindDirection</i> table.
Tide	None	Text	8		Tide status at the time of the monitoring activity	Low Falling High Rising	Lookup values obtained from <i>tlu_Tides</i> table.
Moon_Phase	None	Text	8		Moon phase at the time of the monitoring activity	Full Half New Quarter	Lookup values obtained from <i>tlu_MoonPhase</i> table.
Comments	None	Text	255		Additional comments.		

Field descriptions for **tbl_Quality_Reads** table:

Field Name	Alias	Type	Length	Required	Description	Valid Values	Notes/Tips
OBJECTID	None	AutoNumber	n/a	x	Unique system generated number		Primary key maintained by MSAccess.
Loc_Id	Site_Id	Text	10	x	Site ID for which this salinity reading is associated with	Any valid text	Foreign key, used as link to Sampling_sites table.
Unit_Id	None	Text	6	x	Water management unit ID for which this salinity reading is associated with	Any valid text	This field is auto-populated on all forms.
Read_Date	None	Date/Time	n/a	x	Date salinity was measured or read	Any valid date	
Field_Tech	None	Double	n/a		Position/title of field technician who took the salinity reading	1 = FWS- Biologist 2 = FWS-BioTech 3 = FWS-OTHER 4 = Seasonal Temp. 5 = Volunteer 6 = Other	Lookup values obtained from <i>tlu_FieldTech</i> table.
Salinity_PPT	None	Double	20		The salinity value in parts per thousand	Any valid number	
Temp_F	None	Double	n/a		Air temperature at the time of the monitoring activity in Fahrenheit degrees	Any valid number	
Wind_Speed	None	Integer	n/a		Estimated wind speed at the time of the monitoring activity using the Beaufort wind scale.	0 = 0-1 mph, Calm 1= 1-3 mph, Light Air 2 = 4-7 mph, Light Breeze 3 = 8-12 mph, Gentle Breeze 4 = 13-18 mph, Moderate Breeze 5 = 19-24 mph, Fresh Breeze 6 = 25-31 mph, Strong Breeze 7 = 32-38 mph, Near Gale 8 = 39-46 mph, Gale 9 = 47-54 mph, Severe Gale	
Wind_Direction	None	Text	3		Estimated wind direction at the time of the monitoring activity	E = east N = north NE = northeast NW = northwest SE = southeast SW = southwest VRB = variable wind direction W = west	Lookup values obtained from <i>tlu_WindDirection</i> table.
Tide	None	Text	8		Tide status at the time of the monitoring activity	Low Falling High Rising	Lookup values obtained from <i>tlu_Tides</i> table.
Moon_Phase	None	Text	8		Moon phase at the time of the monitoring activity	Full Half New Quarter	Lookup values obtained from <i>tlu_MoonPhase</i> table.
Comments	None	Text	255		Additional comments.		