

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

Water quality measurements, **conductivity** ($\mu\text{S}/\text{cm}$), **salinity** (ppm), **pH** and **temperature** ($^{\circ}\text{C}$), are taken monthly with a handheld YSI meter (Environmental Model 556). As of January 2015, measurements are taken at a series of 27-establish sites located within the permanently flooded springs as well as the semi-permanently flooded and seasonally flooded wetland management units. One site, 'CSX', is a new site where measures have not been recorded previous to 2015. Measurements are usually recorded during the last week of the month.

What to Take in the Field:

- ☐ **YSI Meter** (stored in the black 'shotgun' case.)
- ☐ **YSI translucent 'cap'** with a small amount of fresh water ($<0.24"$) **or** damp paper towels.
- ☐ **Blank Data Sheet!** *(Blank data sheets should be available in the in the 'Water Conductivity' data binder, but if needed, an electronic copy is stored on the local server at I:\BIOLOGY PROGRAM\INVENTORY and MONITORING PLAN (IMP)_ISIs and SOPs\Initial Survey Instructions (ISIs)\ DATASHEET_1.04 and 1.06 Water Monitoring – Quality)*
- ☐ **Paper Map with Targeted Sites**– also located in the 'Water Quality Binder'.
(NEVER TAKE THE ONLY COPY INTO THE FIELD WITH YOU, make a copy if necessary. If the last print-out is lost, a copy of the table is available in the same server folder listed above.)
- ☐ **Pencils**
- ☐ **Clip Board**
- ☐ **Charged Radio**
- ☐ **Trimble**

Maintaining the YSI Meter and Buffering Solutions

YSI Sensors:

The YSI meter has several sensors. These sensors go bad and may need to be replaced. The **pH sensor** should be replaced **annually**. The sensor can be ordered from **Geotech Environmental Equipment, Inc. (2650 East 40th Avenue Denver, CO 80205 Ph.: 303-320-4764 www.geotechenv.com)**.

Buffering Solutions:

We use **three** buffering solutions to calibrate the YSI sensor. These buffering solutions can be ordered from the same company listed above. These solutions include:

1. A 15,000 $\mu\text{S}/\text{cm}$ conductivity solution
2. A pH 7 solution, and
3. A pH 10 solution.

Do not use a solution that has expired. **Also, be sure to order new solutions a month before they expire or once you are low on any buffer solution.** If you notice the buffer solution getting low, notify the Refuge manager immediately so s/he can order more. Whenever possible, you should purchase all solutions at the same time, but this does not have to be done. They can tell you how many of each was last ordered by the Refuge if you are unsure of how many to order. Orders are typically placed once a year.

Once the new solutions arrive, the expiration date should be highlighted on each buffer solution once it arrives at the Refuge. Place the new solutions behind any remaining 'old' solutions so that the 'older' solutions do not expire before

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

they are used. **Be sure to check these dates prior to calibration.**

Things to remember when using the YSI Meter:

- Keep a small amount of H₂O in the translucent cap (just enough to keep the sensor membranes saturated) when transporting or storing the probe
- The cap (or whatever receptacle is used to hold the buffer solution during calibration) should be rinsed each time before adding a different buffer solution.
- Wrap the probe in moist paper towels when going from site to site (or you can use the water in the cap, but you will need to replace the water with fresh water before storing at the end of the day).
- **Remove the batteries from the YSI meter after you are done using it for the day**, this helps to preserve battery life (the batteries will most likely be dead by the next month if you do not).

Calibrating the YSI Meter: Calibrate every time before going in the field - even if it has been only few day since you have last used the YSI meter.

1. **Begin YSI Calibration:**
 - a. Make sure that the batteries are in the unit and the battery door is screwed shut
 - b. Turn unit on.
2. First, **calibrate for Conductivity** (15,000 $\mu\text{S}/\text{cm}$):
 - a. Press the **Esc** button.
 - b. On the YSI Meters screen, select **calibrate** then press **enter** (the arrow button).
 - c. Take the **15,000 $\mu\text{S}/\text{cm}$ conductivity solution** and fill the cap to slightly above the label.
 - i. On the YSI Meters screen, select **conductivity** and press **enter**.
 - ii. Press **enter** on **specific conductivity**.
 - iii. Input **15** for 15,000.
 - iv. Place the probe in the solution.
 - v. Press **enter**.
 - vi. Let it read until it stops moving around – it should read somewhere around **15,000*** give or take.

**It is okay if it isn't exactly 15,000; that is what the calibration is for. If the number is way off there may be a problem. Try again with fresh solution – don't forget to rinse the cap before putting the new solution in. If there is still a problem -> 1) ask a supervisor; 2) look at the manual; 3) search on-line. It may be that there is a simple problem, like the sensor needs to be cleaned, or you may need to replace the sensor.*
 - vii. Once the values have stopped moving around continuously*, and is close to 15,000- press **enter** to calibrate.

**The numbers may still move a little, especially if you accidentally move the probe, solution or the table you are using.*
 - viii. Hit the **Esc** button to take you back to where you selected **calibrate**.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

3. Now calibrate for pH.

a. Calibrate for the first pH (pH 7):

- i. Make sure you have rinsed the cap.
- ii. Take the **pH buffer 7.00 solution** and fill the cap to slightly above the label.
- iii. Press **enter** on **calibrate**.
- iv. Press **enter** on **pH**
- v. Press **enter** on **2 point**
- vi. Input **7.00** (for pH 7)
- vii. Place the probe in the solution
- viii. Press **enter** to read
- ix. Let it read until it stops moving around – it should read somewhere around 7.00* give or take

**It is okay if it isn't exactly 7.00; that is what the calibration is for. If the number is way off there may be a problem. Try again with fresh solution – don't forget to rinse the cap before putting the new solution in. If there is still a problem -> 1) ask a supervisor; 2) look at the manual; 3) search on-line. It may be that there is a simple problem, like the sensor needs to be cleaned, or you may need to replace the sensor.*

- x. Once the values have stopped moving around continuously*, and is close to 7.0 - press **enter** to calibrate.

**The numbers may still move a little, especially if you accidentally move the probe, solution or the table you are using.*

b. Calibrate for the second pH (pH 10):

- i. Take the **pH buffer 10.00 solution** and fill the cap to slightly above the label
- ii. Press **Enter**
- iii. Input **pH 10.00** (for pH 10)
- iv. Place the probe in the solution
- v. Press **enter** to read
- vi. Let it read until it stops moving around – it should read somewhere around 10.00* give or take

**It is okay if it isn't exactly 10.00; that is what the calibration is for. If the number is way off there may be a problem. Try again with fresh solution – don't forget to rinse the cap before putting the new solution in. If there is still a problem -> 1) ask a supervisor; 2) look at the manual; 3) search on-line. It may be that there is a simple problem, like the sensor needs to be cleaned, or you may need to replace the sensor.*

- vii. Once the values have stopped moving around continuously*, and is close to 10.0 - press **enter** to calibrate.

**The numbers may still move a little, especially if you accidentally move the probe, solution or the table you are using.*

c. Finally, turn the YSI meter off until you are ready to use the unit in the field.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

Locating Survey Sites

PRIOR TO HEADING INTO THE FIELD:

- 1) Turn on the Trimble.
 - a) Turn on the unit to be used by tapping the green power button toward the bottom of the Trimble unit. Depending on the unit series (2000 or 6000), the boot up process may take a few minutes.
- 2) Check the Battery Level.
 - a) Check the battery level by looking at the battery icon in the upper right corner of the screen.
 - i) Make sure the battery has 3-4 vertical bars showing.
 - (1) If there are less than 3 bars and you are planning on using the Trimble for a long period that day, consider switching to another Trimble unit with more battery life if available and make sure to turn off the current unit* (see below for proper instructions to ensure the unit is turned off and not sleeping) and place the unit on its correct charging port.
 - (2) If you see a red '!' within the battery icon, this Trimble has very low battery life and is not going to be usable in the field at this time and you will need to switch to another Trimble unit. When this happens, make sure to turn off the current unit* and place the current unit on its correct charging port, this unit will not be useable in the field for several hours.

**If the unit is not turned off properly prior to charging, the unit may not charge properly causing a further delay prior to it being usable in the field.*

- 3) **Open ArcPad and see if the 'Water Conductivity Sites' Map is loaded on that Trimble.**
 - a) Open ArcPad.
 - i) For the **2000 series**: Use the attached stylus to tap on the '**Start**' button located in the upper left corner of the screen – a drop down menu should appear. From the menu, tap on the '**ArcPad**' icon to open the program. Wait for the program to open completely.
 - ii) For the **6000 series**: Use the stylus to tap on the '**Windows**' icon located in the lower left corner of the startup screen – this should send you to another screen with several program icons available. Use your stylus to scroll down the screen by dragging the tip from the lower portion of the screen to the upper portion. Continue to scroll down until you see the '**ArcPad**' icon appear. Tap on the '**ArcPad**' icon to open the program. Wait for the program to open completely.
 - b) Check to see if 'Water Conductivity Sites' Map is loaded on that Trimble.
 - i) Once ArcPad opens, tap the '**Choose Map to Open**' option.
 - ii) Look under the '**Folder**' column for the '**Water Spring Flow Sites**' Map.
 - iii) If it is there select that map and go to **step 5**. If it is **not** there, go to **step 4**.
- 4) **Add 'Water Conductivity Sites' Map to Trimble Unit.**
 - a) Open the '**Water Conductivity Sites**' Map in GIS.
 - i) On a computer with GIS, open ArcMap.
 - ii) Once ArcMap opens a box will appear with options. On the left-hand side of the box, under '**Existing Maps**' select '**Browse for more...**'
 - iii) Navigate to: **I:\GIS DATA and MAPS\Maps\Water Management.**
 - iv) Select '**Water Conductivity Sites**'.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

- b) Export ArcMap '**Water Conductivity Sites**' Map to an ArcPad '**Water Conductivity Sites**' formatted Map.
 - i) Make sure the ArcPad Data Manager toolbar is accessible. If it appears on the main screen, go to **step 4-b-iii**, if it is not go to **step 4-b-ii**.
 - ii) Add the toolbar to the main screen by going to '**Customize**' → '**Toolbars**' → and click on '**ArcPad Data Manager**'.

**If the icons on the 'ArcPad Data Manager' are greyed out, you will need to active the toolbar by going to 'Customize' → 'Extensions' → and checking the box by 'ArcPad Data Manager'.*

- iii) Click on the icon that looks like a Trimble with an arrow pointing to the **right**.
- iv) You are not checking out an RLGIS shapefile database for this, click '**No**'.
- v) In the window that appears, the middle column is titled '**Actions**'; click in that column next to where it says '**Conductivity_sites_CURRENT**' (you can click and drag a column divider to expand a column to see the entire name) and select '**Export as background data**' → '**Make read only**'.
- vi) Repeat **step 4-b-v** for '**Map_Refuges_Subunits**' and click '**Next**'.
- vii) Do not do anything in this screen except click '**Next**'.
- viii) In the middle **right** of the pop-up box, there is an icon that looks like a **folder**. Click on this icon and navigate to where you want to save the ArcPad '**Water Conductivity Sites**' formatted Map. Make sure you remember where you save this map; you will need it in future steps.
- ix) In this window, in the lower **right** section, there is a **white box** with '**Map Name**' to its left. In this box **name the map**; chose something short but clear. Click '**Next**'.
- x) On the new screen, click '**Finish**'.
- xi) A **report** will appear letting you know if everything transferred properly. Click '**OK**'.
- xii) You can now close out of ArcMap if you want.

c) **Connect Trimble to Computer.**

- i) If you still have ArcPad open on your Trimble, close the program by tapping on the upper left icon (Trimble in a circle) and selecting '**exit**'.
- ii) Make sure the proper connecting cable is plugged into the computer. For the **2000 series** it will be a charging cradle, for the **6000 series** it will be a USB cord.
- iii) On your computer, go to '**Start**' → '**All Programs**' → '**Windows Mobile Device Center**'. If a white pop-up window appears asking about setting up the Trimble, exit out of the window.
- iv) Once '**Windows Mobile Device Center**' is opened, with your Trimble still turned on, attached it to its charger or USB cable (see step 4-b-ii). On the Trimble screen a pop-up box will appear letting you know it is connecting. It will also say '**Connecting**' on the '**Windows Mobile Device Center**' screen in the lower left corner. Once it is connected, the pop-up box on the Trimble will disappear and the '**Windows Mobile Device Center**' screen will say '**Connected**'* in the lower left corner. If a white pop-up window appears asking about setting up the Trimble, exit out of the window.

**If it does not connect, repeat the step a couple more times. If it still doesn't want to work, you may need to re-start your computer. That will usually allow it to connect.*

- v) Repeat **steps 4-c-i thru 4-c-iv**.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

d) Move ArcPad 'Water Conductivity Sites' formatted Map onto Trimble device.





- i) Once connected, select '*Connect without setting up your device*'.
- ii) Select '*File Management*' → '*Browse the contents of your device*'.
- iii) In the pop-up box that opens, double click the disk icon in the box on the right and navigate to '*My Documents*'. Leave that window open.
- iv) On your computer, click '*Start*' → '*Computer*' to open a '*new file window*'.
- v) In that '*new file window*', navigate to where you just saved the ArcPad '*Water Conductivity Sites*' formatted Map from **step 4b** and copy the entire file.
- vi) Paste the Map you just copied in the '*new file window*' into the '*My Documents*' file in the '*Windows Mobile Device Center*' screen. A pop-up window will appear with a 'status bar' indicating the progress of the transfer. Once that box closes the transfer is complete.
- vii) The map should now be loaded onto the Trimble. Close the '*Windows Mobile Device Center*' window and remove the Trimble from the cradle or cable.
- viii) Go back to **step 3**.

5) Turn on the GPS function and make sure satellites acquire properly.

a) Turn on the GPS Function.

- i) Do this **outside*** prior to heading into the field. That way if there are any problems are right by the office for assistance and/or to switch out Trimble units if necessary.

****Turning this feature on before heading outside will cause the battery to drain quickly as it tried to search for satellites from within the building.***

- ii) In the top toolbar, tap on the  icon. A second toolbar will appear underneath the top toolbar.
- iii) On the second toolbar, tap on the  icon. It should (temporarily) turn blue and a **red** box should appear at the bottom of the screen with the words '**No Fix**'.
If this does not happen, tap on the black down arrow located immediately below the  icon. A dropdown menu should appear.
- iv) Within the drop down menu, look for the heading '*GPS Active*' with  icon to its left. If there is not a **red** box outline around the icon, tap once on the '*GPS Active*' heading. The dropdown menu should disappear and a **red** box should appear at the bottom of the screen with the words '**No Fix**'. If there is a **red** box outline around the icon, the the GPS function has already been turned on.

b) Acquiring Satellites and Current Position.

- i) Once the GPS function has been turned on, it will immediately start trying to acquire satellite signal. You must be outside and should not be too near buildings for this to work successfully.
- ii) While it is trying to acquire the satellites, the **red** box with the words '**No Fix**' will continue to stay red. Additionally, you will get a white pop-up window that appears periodically with the message "*No current position fix at this time.*"
- iii) Once the GPS has a strong enough signal, the **red** box with the words '**No Fix**' will turn **green** and the pop-up box will stop appearing. You can tap the small 'x' in the upper right corner of the **green** box to make it disappear so that you can better see the underlying map.

1.04 Spring Water Monitoring – Quality



1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016




- iv) **You may lose signal on occasion in the field**, especially when in a car. When this happens the pop-up box will reappear and keep appearing until you get a strong enough signal.
- v) **Be careful when using the Trimble in a vehicle**. The vehicle may be moving faster than the Trimble is re-acquiring your current position. This can cause a 'lag' effect that can cause you to overshoot your destination.

USING THE TRIMBLE IN THE FIELD:

1) Viewing the full extent of the map loaded on the Trimble.

- a) Zoom out to see the full map that has been loaded.
 - i) In the top toolbar, tap on the  icon. A second toolbar will appear.
 - ii) Tap on the **black** arrow directly under the icon second from the left.
 - iii) Select the 'Zoom to Full Extent' option.
 - iv) The icon above the black arrow will now change to .
 - v) Tap the icon once to view the full extent of the map loaded to the Trimble.



2) How to adjust your view of the underlying map to a certain area.

- a) Zooming in/out to a specific area. *
 - i) In the top toolbar, tap on the  icon. A second toolbar will appear
 - ii) Tap on the **black** arrow directly under the left most icon.
 - iii) Tap on the option that you want, either 'Zoom In' or 'Zoom Out'.
 - iv) The icon above the black arrow will now change to either  or **.
 - v) Use your stylus to draw a square around the area you want to zoom to. Do this by placing the tip of the stylus to the top left of the area and then (while keeping continuous contact) dragging the stylus in a downward diagonal to your right.
 - vi) The size of the box will impact the magnitude of the zoom. A small box will zoom the image further in or out than a larger box. *

**Keep in mind that once the GPS function is turned on and has acquired satellites, current Trimble settings will not allow you to zoom into an area that does not include your current position.*

***If the icon you need is already the one that appears above the black arrow, then all you need to do is tap the icon prior to using your stylus on the screen.*

b) How to 'Pan' (move the screen without zooming)

- i) In the top toolbar, tap on the  icon. A second toolbar will appear
- ii) Tap on the **black** arrow directly under the left most icon.
- iii) Tap on the 'Pan' option.
- iv) The icon above the black arrow will now change to .
- v) Tap the screen to 'grab' it and without lifting the stylus, drag the image to the desired location.



c) Going back to your previous zoom extent.

- i) This function can be used if you unintentionally zoom too far in or out, or if you accidentally move the underlying image so that it is no longer where you need it to be.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

- ii) In the top toolbar, tap on the  icon. A second toolbar will appear underneath the top toolbar.
- iii) Tap on the **black** arrow directly under the third icon from the left.
- iv) Select the 'Go Back to Previous Extent' option.
- v) The icon above the black arrow should now look like .
- vi) Tap that icon once to go back one 'move'. You can tap the icon more than once if needed.

3) Navigating to a location.

a) Knowing which way is north.

- i) The map in the Trimble is loaded so that when looking at the map, 'North' is always at the top of the Trimble (furthest from the 'power' button'). The underlying map does not reorient itself when you move around. In other words, if you have the top of the Trimble pointed east, north on the map will still be at the top of the Trimble. If confused, reorient the Trimble so the the top of the Trimble is pointed north (towards Harrison and Gadwall unit).

4) Knowing where you are on the map.


a) Understanding the red circle.

- i) Once the Trimble has acquired a GPS signal, a **red** circle will appear on the map. This circle indicates where you are in relation to the map.
- ii) The Trimble settings are currently set so that you cannot zoom into an area of the map that does not include your **red** circle.
- iii) As you move around in the field, the Trimble unit will automatically adjust the underlying map so that your **red** circle, and subsequently, the current area you where are located is always in view.
- iv) Be aware that your 'level of zoom' can impact how close you look to a designated spot. If you are zoomed way out, you may look like you are at a target location when in fact you may be several meters away. If you are zoomed in too close, every slight move will cause your **red** circle to 'jump' a distance on the screen. Subsequently, as you appear to get closer to a target, you may have to slowly zoom in more and more until you find that 'sweet spot' that lets you know you are where you should be without causing the **red** circle to jump all of the screen.

5) Closing out of ArcPad at the end of the Day*

*This must be done in order to ensure the data collected during the day is properly saved.

a) Close out of ArcPad

- i) Tap the  icon in the upper left corner.
- ii) Tap '**Exit**'.
- iii) If it asks if you want to save changes, select 'Yes'.
- iv) You may see several processing bars flash across the screen – that is okay.
- v) ArcPad is now closed down.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

6) Turning the Trimbles OFF* and placing them to Charge.

The Trimble may be in 'Power Saver' mode with screens grayed out – **THAT DOES NOT MEAN THEY ARE OFF. Do **NOT** plug them in to charge while in 'Power Saver' mode. The GPS will continue to try and acquire satellites which will drain the battery as fast as or faster than it can charge. This results in it Trimble not being usable (i.e. having enough battery charge) the next time it is needed in the field.*

a) Make sure the Trimble is not in 'Power Saver' Mode.

- i) If the screen is on and you can see the map it is not in 'Power Saver' Mode.
- ii) If the screen is gray, tap the button once quickly. It is better to accidentally turn it back ON and have to wait to turn it back OFF than it is to plug it in while in 'Power Save' Mode.
- iii) Once the screen is visible, turn OFF the unit.

b) Turn OFF the Trimble Unit.

- i) Press and hold down the **green** power button at the bottom of the Trimble.
- ii) A new screen will appear with 4 or 5-buttons to choose from.
- iii) Tap the 'Shutdown' button.
- iv) The unit will shut off.

c) Place the Unit on the correct charger.

- i) The 2000 series Trimbles are placed on the cradle chargers.
 - (1) Insert the top of the Trimble under the 'hooks' at the top of the cradle and **gently** push the unit down at the bottom so that it locks into the base.
 - (2) The light at the lower right corner of the cradle should light up. If it does not, remove the Trimble unit and try again.
 - (3) The light will turn green once the unit is fully charged.

The 6000 series Trimbles are charged using charger cables.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

Taking Water Quality Measurements in the Field:

1. Remove the translucent cap and place the protective black guard on the probe
2. Turn the unit on
3. Carefully drop the probe into the water
4. Let the unit read until the numbers stop changing (this can take a few minutes); try not to move the probe around as that will cause the water to stir and the sensors to fluctuate.
5. Record the values in the proper associate location on the data sheet. Make sure to record conductivity in μS (ex> 3421 not 3.42) as the database for water conductivity is set up for μS and water quality data for the IMP 1.03 Wetland State-and-Transition Model Monitoring Survey is also in μS .
6. Once all values have been recorded and double-checked*, carefully remove the probe from the water and remove and SAV or debris that is caught on the black guard.
7. If a number does not seem right, remove the probe and rinse it in fresh water if available. Once removed (and rinsed if possible), place the probe back into the water and repeat **steps 1-5. If the number still doesn't seem correct and it is one of the first sites, come back to the office** to prevent collecting faulty data.

Once back at the office, compare the measured values to the previous one-three months. If it still doesn't look correct, speak with the Refuge manager to see if s/he can account for why a drastic jump may have occurred. If not, the sensor may need to be cleaned. There is a cleaning kit in the YSI-bag. Directions can be found on-line. Proceed with care and the sensors can be damaged during this process. If this doesn't solve the issue, a new sensor may need to be ordered. Notify the Refuge manager immediately and see how s/he wants to proceed.

8. Remove the guard and wrap the probe with damp paper towels (or put the cap back on with a little bit of fresh water in the bottom)

Back in the Office:

1. Remove the wet paper towel or cap.
2. Rinse the cap and replace any water with fresh water - just enough to keep the sensor membranes damp.
3. Place the cap over the probe and make sure it is secure and won't leak, but don't over tighten.
4. Make sure the black probe guard has been placed back into the case where it belongs.
5. Remove the screws and take out the batteries.
6. Place the batteries in the case and make sure you screw the batter cover back on loosely so that no screws get lost.
7. Place the YSI meter into its protective case.
8. Ensure all other pieces and parts are in the case where they belong then return the case to its storage location.

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

DATA ENTRY

Data Collection Form Created On: 2/21/2014
First Form Created By: M. Lapinski

Last Updated On: 1/11/2016
Last Updated By: T. Cummins

DATABASE TITLE:	<u>Water Quality</u>
DATA TYPE:	<u>Conductivity, salinity, pH and temperature measurements made at Fish Springs NWR 1964-present.</u>
FORM used for data entry:	<u>Water Quality</u>
TABLES associated w/Form:	<u>Water Quality, REF: Month, REF: Location</u>

Type of Data Collected:	<u>Conductivity, salinity, pH and temperature.</u>
Data Collection Sheet/s:	<u>DATASHEET_1.04 and 1.06 Water Monitoring – Quality.xls</u>
e-Datasheet (blank) Location/s:	<u>Group Data I:\BIOLOGY PROGRAM\INVENTORY and MONITORING PLAN (IMP)_ISIs and SOPs\Initial Survey Instructions (ISIs)\1.04 and 1.06 Spring and Management Unit Water Monitoring – Quality\Current</u>
Raw Data Location/s:	<u>Completed data sheets are located in a 3-ring binder labeled “Conductivity” and in the file cabinets in the room with the staff entrance.</u>

Data Entry Instructions:

1. On the *Group Data* server, find and open the Water Quality Microsoft Access Database under “Biology Program - > Databases -> Water Quality Database -> **“Water Quality.accdb”**
2. On the left hand side of the screen under **“Forms”**, double click the form labeled **“Water Quality”**.
 - a. Enter water quality data on a line by line basis; one site will be entered per database record.
 - b. Enter the date (MO/DY/YEAR), year (XXXX), month* (select from dropdown menu).

**If measurements were taken in the month before or after the month for which the data was gathered, make sure to enter the correct month for which the data was collected. Ex: we didn’t have time to collect December’s data until January 2, then the date would be 1/2/XXXX but the month would still be “December”.*

1.04 Spring Water Monitoring – Quality

1.06 Management Unit Water Monitoring - Quality

last updated: 01/11/2016

- c. From the dropdown menu provided next to '**Location**', select the correct site for which you are entering data.
- d. Type in the **conductivity ($\mu\text{S}/\text{cm}$)*** for the site selected in **step 2c** – make sure you enter it in as **μS** (3420), even if recorded on the data sheets as **mS** (3.42).
**If the data is entered in ms/cm (milisiemens/cm), move the decimal place 3 places to the right (you may have to add a zero) so that it is converted $\mu\text{S}/\text{cm}$ (microsiemens/cm)!*
- e. Type in the **salinity** for the site selected in **step 2c**.
- f. Type in the **temperature ($^{\circ}\text{C}$)** for the site selected in **step 2c**.
- g. Type in the **pH** for the site selected in **step 2c**.
- h. In the **comment** box, enter any relevant comments about the site conditions (i.e. icy, etc.) or measurements.
- i. Use the tab key or the forward arrow at the bottom of the form next to the label "**Record**" to navigate to a new blank record and repeat steps 1 and 2 for all of the data you are entering.

Additional information regarding the database development and design can be found in the black 'Database SOP binder' or in the Excel workbook titled 'WaterQuality' located in the 'WaterQuality SOP' subfolder within the same source folder as the 'WaterQuality' database.