Instructions for Completing the Form
"Surface Water Chemistry Monitoring Record"

The following Site Information section should be completed in the office prior to departing for the field as many of the entries require reference materials.

1. Obtain the Lake/Stream ID from the Alt_ID in the NRIS-Air database or the Location Identifier (Sta) in the ARM Lake and Stream Chemistry Database (contact Barbara Gauthier at 970-295-6012 or bgauthier@fs.fed.us). To determine a new identifier you will use the decimal degree Longitude and Latitude. It will consist of 13 digits where the first 7 digits are the decimal degree longitude and the last 6 digits will be the decimal degree latitude.
2. Find the official USGS Lake/Stream Name on a Forest or topographic map
3. Alternative Name/FieldID is the field assigned name and or field ID assigned when no official USGS Lake/Stream Name is not available.
4. Select Latitude, Longitude, and Datum for the sampling point from a map or GIS layer. Enter in decimal degrees (xxx.xxxx).
5. Update of Lat/Long: circle Y or N.
6. Circle if this is a Long-term or Synoptic Study.
7. Find the National Forest, Wilderness or Other Administrative Name, if one exists, on the appropriate Forest map. Fill in appropriate blank.
8. Describe the Lake/Stream Location Description.

The following Sample Information should be collected in the field.

1. Enter Sampler Technician Name and Phone Number. SE
2. Date and Time. Self explanatory (SE).
3. Enter Sample Measurement Location 4-letter code from attached table.
4. Circle Sampling Method. A Grab sample is taken a selected location, depth and time usually near shore; a Composite sample is made by mixing several discreet samples into one; Shallow samples are made by creating a small dam to create enough depth to get a bottle submerged; a Point (depth) sample is taken at a single depth usually with a special bottle such as a Van Dorn; a Pole sample is taken by attaching a bottle to pole but is otherwise similar to a grab sample; an Auto sample is collected by an autosampler.
5. Enter Sample Depth Zone 4-letter code from attached table.
6. Enter Measurement Sampling Depth to the hundredth of a meter.
7. Enter Sample ID/Barcode. One barcode is placed on the Surface Water Chemistry Monitoring Record, one on the Chain of Custody, and one on each bottle. Use the same barcode numbers on all three. **Never use the same Barcode number on a different sample.** If there are no barcodes available please enter Sample ID using the following method, for example SampleID 0020802110001-1M would be identified as follows: Julian day (002), Year (08), Region (02), Forest Number (11), unique number derived from the field unit (0001)-depth from depth profile (1M) (only for depth profile).
8. Current Total Depth (m) can be entered if measuring from the deepest part of the lake.
9. Lake Strat. Circle lake stratification.
10. Circle observed Water Level.
11. Circle the Stream Stage. Not applicable (NA) for lakes.
12. Circle the Usual Collection Point? (Y or N). If no, briefly mention why.
13. Did the Sample Collection Deviate from the WO preferred Protocol? How?
14. Enter Field Notes and Observations. SE
15. Estimate the Snow Cover Percentage, if any, on the water body or in the catchment.

The following Field Measurements to be collected primarily while in the field.

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1. Find Water Temperature to tenth of a degree centigrade.
2. Enter Secchi Disk Disappearance, Reappearance, and the Mean of the two measurements, to the nearest m.
3. Enter the Specific Conductance @ 25 degrees C by using a probe into the water body to three significant figures of a uS/cm.
4. Enter Stage Height to the nearest hundredth of a meter, if available.
5. Estimate of Discharge (flow rate) can be determined many by different methods. A few common ways are by stage height using a predetermined rating equation connected to a surveyed elevation, current meter, weir, if available, to two significant figures of cfs.
6. Enter Discharge Method/Equipment that was used?
7. Float Method for Measuring Discharge should be used if other methods are not available. Width (W) is the width of the stream in feet; Length (L) is the length of the travel distance; Time (s) is the seconds the float travels from start to stop (repeat three times). Depth (D) is the average of the depths (min. ten depths but preferably more) measured along the cross section and Roughness coefficient (K) is a fix multiplier for Rough (0.8), Medium (0.85) and Smooth (0.9) flow. See the instructions for Stream Discharge using the Float Method.
8. Enter the Dissolved Oxygen concentration by using a probe into the water body to the nearest tenth of mg/L.
9. Enter the water pH by using a probe in the water body to the nearest tenth of a standard unit.
10. Enter pH Method and equipment make and model was used, if any?

The following Weather Conditions to be entered while in the field.

1. Enter the estimated Wind Speed to the nearest whole m/s using the attached table.
2. Estimate the nearest cardinal Wind Direction from which the wind is blowing using a compass.
3. Estimate the Cloud Cover percent to the nearest tenth of the sky dome.
4. Enter the Air Temperature to the nearest of a whole centigrade degree.
5. Was it Precipitating During the Data Collection?
6. Circle Precip. Type (rain/snow/sleet/hail/canopy drip/mixed).

The following measurements to be entered while in the Field Lab (FL)

1. Enter Sample ID/Barcode Number (Note: you will need to write this number from the bottle)
2. Date/Time SE
3. pH (See above explanation)
4. Conductivity @ 25 deg C (uS/cm) (See above explanation)
5. Was the sample filtered in the Field Lab (FL)? Yes or No

The following Surface Water Depth Profile Measurements should be collected in the field.

1. Obtain the Lake/Stream ID from the Alt_ID in the NRIS-Air database or the Location Identifier (Sta) in the ARM Lake and Stream Chemistry Database (contact Barbara Gauthier at 970-295-6012 or bgauthier@fs.fed.us). To determine a new identifier you will use the decimal degree Longitude and Latitude. It will consist of 13 digits where the first 7 digits are the decimal degree longitude and the last 6 digits will be the decimal degree latitude.

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2. Find the official USGS Lake/Stream Name on a Forest or topographic map
3. Alternative Name/FieldID is the field assigned name and or field ID assigned when no official USGS Lake/Stream Name is not available.
4. Select Latitude, Longitude, and Datum for the sampling point from a map or GIS layer. Enter in decimal degrees (xxx.xxxx).
5. Update of Lat/Long: circle Y or N.
6. Circle if this is a Long-term or Synoptic Study.
7. Find the National Forest, Wilderness or Other Administrative Name, if one exists, on the appropriate Forest map. Fill in appropriate blank.
8. Describe the Lake/Stream Location Description.
9. Date SE
10. Enter Sample ID. Barcode supplied by the laboratory.
11. Time. SE
12. Enter Measurement Sampling Depth to nearest the nearest tenth of a meter.
13. Find Water Temperature to nearest tenth of a degree centigrade.
14. Enter the Dissolved Oxygen concentration by using a probe into the water body to the nearest tenth of mg/L.
15. Enter the water pH by using a probe in the water body to the nearest tenth of a standard unit.
16. Enter the Specific Conductance by using a probe into the water body to three significant figures of uS/cm.
17. Other. Specify measurements and units taken.

The following Site Summary should be collected in the office.

1. Enter Lake/Stream ID, Official USGS Lake/Stream Name, Alternative Name/Field ID and Forest Region. (see explanations above)
2. Select Latitude, Longitude, and Datum for the sampling point from a map or GIS layer. Enter in decimal degrees (xxx.xxxx).
3. Find the Elevation (meter) of the sampling point on a topographic contour map.
4. Estimate Gradient (%) of the sampling point.
5. Estimate Lake Size (hectare) from a topographic map.
6. The Stream Order is determined as follows: Expressed numerically the smallest permanent streams are called "first order" or #1 streams. Two first order streams join to form a larger stream are second order streams or #2 streams; two second order streams join to form a third order stream or #3 streams, and so on. Smaller streams entering a higher-ordered stream do not change its order number.
7. Find the Lithology by consulting with the Regional Geologist or Ecologist.
8. Estimate the average Catchment Aspect (e.g. N – North, SW – Southwest, NE – Northeast, etc.)
9. Estimate the average Catchment Slope by dividing the elevational distance by the distance from the water's edge to the top of the farthest catchment ridge.
10. Estimate Catchment Size, that is, the area that forms the watershed for the lake or stream.
11. Enter Cover Type of landscape that is predominate in the area of the sampling site.
12. Use an aerial photo, if available, to estimate the percentage of surface cover that is Hardwoods, Conifers, Exposed Bedrock/Shale, Meadows/Shrubs, Talus, and Other.

PLEASE NOTE: SEND COPY OF ALL FORMS WITH BOTTLES TO LABORATORY TO BE ENTERED IN THE ARM DATABASE.

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Wind Speed Scale

Mean Speed (m/s)	Description	Land Specifications Use at streams	Water Specifications Use at lakes
0	Calm	No leaf movement	Water like glass
0.8	Light air	Leaves quiver	Water ripples
2.4	Light breeze	Leaves rustle	Small wavelets: crests have glassy appearance
4.3	Gentle breeze	Leaves and small twigs in constant motion	Large wavelets: crests begin to break
6.7	Moderate breeze	Small braches move	Small waves: frequently white caps
9.3	Fresh breeze	Small leafed trees sway	Moderate waves: Many white caps
12.3	Strong breeze	Large branches move	Large waves: spray off white caps
15.5	Near gale	Whole trees sway	White foam blown from breaking waves
> 18.9	Gale or stronger	Twigs break of trees	Very high waves

Sample Measurement Location Type Table

Type	Description
BANK	Bank – Stream waters edge
CENT	Lake centroid – Center of the Lake
CHLC	Channel center- Center of a stream channel
DEEP	Over deepest spot of the Lake or Stream
INLT	Inlet - A stream flowing into a lake or pond
OUTL	Outlet - A stream flowing out of a lake or pond
POOL	Stream Pool - An area of the stream with greater than average depth and slower than average flow. Pools typically occur where the river bends or meanders.
RIFL	Stream Riffle - A raised area of the active channel that results in an increase in flow velocity. Riffle areas are typically preceded by pools and represent the fastest current in a given river or stream.
SHOR	Shore – Lake waters edge

Sample Depth Zone Type Table

Type	Description
EPLZ	Epilimnion - The layer of water in a thermally stratified lake that lies above the thermocline, is circulating, and remains perpetually warm.
HYPZ	Hypolimnion – The layer of water in a thermally stratified lake that lies below the thermocline, is noncirculating, and remains perpetually cold.
TERZ	Thermocline Zone - The zone where the temperature change marks the transition between warm surface water (Epilimnion) and the cold deep water (Hypolimnion).
TLWG	Thalweg - The line defining the lowest points along the length of a stream bed.
WTRS	Lake/Stream Water surface
WUBT	Lake/Stream Water bottom