



## SWAMP DATA MANAGEMENT PLAN

### Bioassessment Field Data Entry

*Surface Water Ambient Monitoring Program*

March 28, 2012



[http://www.waterboards.ca.gov/water\\_issues/programs/swamp](http://www.waterboards.ca.gov/water_issues/programs/swamp)

## TABLE OF CONTENTS

<b>D. Field Data Entry</b> .....	<b>3</b>
<b>1. PROGRAMS NEEDED FOR SWAMP DATA ENTRY FORMS</b> .....	<b>3</b>
<b>5. ENTERING NEW BIOASSESSMENT, PHYSICAL HABITAT AND ALGAE DATA</b> .....	<b>3</b>
<i>a. Bioassessment and Physical Habitat Field Data Sheets</i> .....	3
<i>b. Entering New Bioassessment and Physical Habitat Data</i> .....	9
i. Database Linking for Data Entry .....	9
ii. Database Setup for Data Entry .....	10
iii. Add a New Record .....	12
iv. Complete the Reach Documentation Information .....	14
v. Enter Ambient Water Quality Measurements.....	16
vi. Enter Data Flags for the Ambient Water Quality Measurements.....	18
vii. Complete the Reach Length Information .....	20
viii. Enter Transect Data .....	21
ix. Enter Inter-Transect Data .....	26
x. Enter Slope and Bearing Data.....	27
xi. Enter Discharge Measurements, Notable Field Conditions and Additional Habitat Characterization Data .....	29
xii. Enter Algae, Water Quality and BMI Samples .....	33
xiii. Continue Entering a New Record.....	36
<i>c. Check and Edit Bioassessment Data Using Queries</i> .....	36
i. Using the SWAMP Bioassessment Field Data Entry Queries.....	36
ii. Using the Backend Database .....	40
<b>6. CHECKING DATA FOR QUALITY ASSURANCE</b> .....	<b>41</b>



## D. Field Data Entry

This section of the SWAMP Database Manual will address the suggested method of data submission to the SWAMP Database, which is by form entry. There are also form data entry [webinar trainings](#) available on the SWAMP DMT website.

### 1. PROGRAMS NEEDED FOR SWAMP DATA ENTRY FORMS

The programs needed for SWAMP Database data entry should be set up on the User's computer and can be organized under a folder titled SWAMP Database for ease of use.

For water quality and tissue field data entry, the three programs necessary to run the Database and Forms Entry Program are (1) the database itself **SW\_RegX\_v25\_DATE.mdb**, where X refers to the SWAMP regional board number or agency where applicable and DATE refers to the most recent date of the database, (2) the SWAMP Query file **SWAMP\_SQL\_Queries\_v2.5\_DATE**, where DATE refers to the most recent date of the query file, and (3) a file called **SWAMPsys\_v25\_DATE.mdw**, where DATE refers to the most recent date of the permissions file which is responsible for maintaining permissions access to the other programs.

For bioassessment field data entry, there are three programs necessary to run the Database and Forms Entry Program. If data entry is through a SWAMP replicated database, the user will need a SWAMP database itself (**SW\_RegX\_v25\_DATE.mdb**, where X refers to the SWAMP regional board number where applicable and DATE refers to the most recent date of the database) and a file called **SWAMPsys\_v25\_DATE.mdw** where DATE refers to the most recent date of the permissions file which is responsible for maintaining permissions access to the other programs. If data entry is through a non-replicated SWAMP shell database, the user only needs the shell database and not the permissions file. Both scenarios require the front-end SWAMP Bioassessment (BA) Field Entry forms (**SWAMP\_BA\_FieldForm\_X\_DATE** where X is the version of the forms and DATE refers to the most recent date of the forms).

When the SWAMP Database is initially installed on the user's computer, the SWAMP DMT liaison will ensure that User Permissions files are set up correctly. Each time an updated version of the database program is received, the user may need to perform some set-up activity, see [Database Usage - Microsoft Access Setup](#) for instructions.

**Until further notice: Please do not use the Microsoft Access 2007 or 2010 version with any SWAMP applications. There is difficulty syncing with databases that have used the 2007 or 2010 version.**

### 5. ENTERING NEW BIOASSESSMENT, PHYSICAL HABITAT AND ALGAE DATA

All SWAMP-funded bioassessment studies shall follow the field protocols outlined in the standard operating procedure (SOP), *Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California*, that was finalized and released in February 2007. The SOP stipulates official procedures for the collection of bioassessment samples and associated physical habitat data. It outlines the process for sampling benthic macroinvertebrate assemblages and describes a suite of measures for sampling associated physical habitat and chemical conditions. The SOP is available for download on the DMT/QAT website <http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/standard-operating-procedures#Bioassessment>.

If algae sampling is conducted, all SWAMP-funded bioassessment studies shall follow the field protocols outlined in the standard operating procedure (SOP), *Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessments in California*. The SOP stipulates official procedures for the collection of algae samples. The SOP is available for download on the DMT/QAT website <http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/standard-operating-procedures#Algae>.

#### a. Bioassessment and Physical Habitat Field Data Sheets

The purpose of the Field Data Sheets is to facilitate the recording of all pertinent data during sample collection. The SWAMP Data Management Team (DMT) has worked with the Department of Fish and Game Aquatic



Bioassessment Laboratory (DFG-ABL) and the Southern California Coastal Water Research Project (SCCWRP) to develop standard field data sheets for bioassessment, physical habitat, and algae sampling events. These data sheets correspond closely to the data entry forms and, therefore, should help to make data entry easier. Any changes or questions regarding the content of the data sheets as it pertains to the sampling protocol should be directed to the SWAMP Bioassessment Coordinator.



REACH DOCUMENTATION														
Project Name:		Date: / / 2012		Sample Collection Time:										
Stream Name:		Site Name/ Description:												
Site Code:		Crew Members:												
Latitude (actual - decimal degrees): °N		datum: NAD83		GPS Device:										
Longitude (actual - decimal degrees): °W														
AMBIENT WATER QUALITY MEASUREMENTS					Actual Reach Length (m) (see reach length guidelines at top of form)									
Water Temp (Deg C)	pH	Alkalinity (mg/L)	Turbidity (ntu)*	Oxygen Sat. (%)*										
Dissolved O <sub>2</sub> (mg/L)	Specific Conduct (uS/cm)	Salinity (ppt)	Silica (mg/L)*	Air Temp (Deg C)*	Explanation:									
* Turbidity, silica, oxygen saturation, and air temp are optional; calibration date required on page 24														
DISCHARGE MEASUREMENTS														
1 <sup>st</sup> measurement = left bank (looking downstream)			check if discharge measurements not possible (explain in field notes section) <input type="checkbox"/>											
VELOCITY AREA METHOD (preferred)			BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)											
Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)									
1		11												
2		12												
3		13												
4		14												
5		15												
6		16												
7		17												
8		18												
9		19												
10		20												
NOTABLE FIELD CONDITIONS (check one box per topic)														
Evidence of recent rainfall (enough to increase surface runoff)		NO	minimal	>10% flow increase										
Evidence of fires in reach or immediately upstream (<500 m)		NO	< 1 year	< 5 years										
Dominant landuse/ landcover in area surrounding reach		Agriculture	Forest	Rangeland										
		Urban/Industrial	Suburb/Town	Other										
ADDITIONAL COBBLE EMBEDDEDNESS MEASURES		1	2	3	4	5	6	7	8	9	10	11	12	13
(carry over from transect forms if needed to attain target count of 25; measure in %)		14	15	16	17	18	19	20	21	22	23	24	25	

Flow Habitat Type	DESCRIPTION	Size Class Code	Size Class Range	Size Class Description	Common Size Reference
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence	RS	> 4 m	bedrock, smooth	larger than a car
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock	RR	> 4 m	bedrock, rough	larger than a car
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles	XB	1 - 4 m	boulder, large	meter stick to car
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).	SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A step-run is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope	CB	64 - 250 mm	cobble	tennis ball to basketball
		GC	16 - 64 mm	gravel, coarse	marble to tennis ball
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)	GF	2 - 16 mm	gravel, fine	ladybug to marble
		SA	0.06 - 2 mm	sand	gritty to ladybug
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)	FN	< 0.06 mm	flines	not gritty
		HP	< 0.06 mm	hardpan (consolidated fines)	
		WD	NA	wood	
		RC	NA	concrete/ asphalt	
		OT	NA	other	

BANK STABILITY	
Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS	
CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle	
Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)	

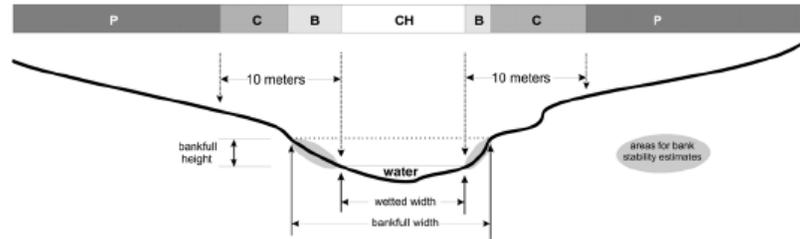


Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m



Site Code:	Site Name:	Date: ____ / ____ / 2012
Wetted Width (m):	Bankfull Width (m):	Bankfull Height (m):

Transect Substrates										
Position	Dist from LB (m)	Depth (cm)	mm/size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes	Microalgae Thickness Codes
Left Bank					P A		P A D	P A D	P A D	0 = No microalgae present, Feels rough, not slimy; Feels slimy;
Left Center					P A		P A D	P A D	P A D	1 = Present but not visible, Feels slimy;
Center					P A		P A D	P A D	P A D	2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
Right Center					P A		P A D	P A D	P A D	3 = 1-5mm;
Right Bank					P A		P A D	P A D	P A D	4 = 5-20mm;
										5 = >20mm;
										UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
										D = Dry, not assessed

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

RIPARIAN VEGETATION (facing downstream)			INSTREAM HABITAT COMPLEXITY				DENSIOMETER READINGS (0-17) count covered dots					
Vegetation Class	Left Bank	Right Bank	0 = Absent (0%)	1 = Sparse (<10%)	2 = Moderate (10-40%)	3 = Heavy (40-75%)	4 = Very Heavy (>75%)	0 = Absent (0%)	1 = Sparse (<10%)	2 = Moderate (10-40%)	3 = Heavy (40-75%)	4 = Very Heavy (>75%)
Upper Canopy (>5 m high)												
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4										
Lower Canopy (0.5 m-5 m high)												
All vegetation 0.5 m to 5 m	0 1 2 3 4	0 1 2 3 4										
Ground Cover (<0.5 m high)												
Woody shrubs & saplings <0.5 m	0 1 2 3 4	0 1 2 3 4										
Herbs/grasses	0 1 2 3 4	0 1 2 3 4										
Barren, bare soil/duff	0 1 2 3 4	0 1 2 3 4										

HUMAN INFLUENCE (circle only the closest to wetted channel)	BANK STABILITY (score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)		
	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B 0	Y N	0 B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0	Y N	0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0	Y N	0 B C P
Rice Crop	P C B 0	Y N	0 B C P
Pasture/ Range	P C B 0	Y N	0 B C P
Logging Operations	P C B 0	Y N	0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0	Y N	0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0	Y N	0 B C P

BANK STABILITY (score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

**TAKE PHOTOGRAPHS**  
(check box if taken & record photo code)

Downstream (optional)

Upstream (required)

Inter-Transect: AB										Wetted Width (m):
Inter-Transect Substrates										
Position	Dist from LB (m)	Depth (cm)	mm/size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes	Microalgae Thickness Codes
Left Bank					P A		P A D	P A D	P A D	0 = No microalgae present, Feels rough, not slimy; Feels slimy;
Left Center					P A		P A D	P A D	P A D	1 = Present but not visible, Feels slimy;
Center					P A		P A D	P A D	P A D	2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
Right Center					P A		P A D	P A D	P A D	3 = 1-5mm;
Right Bank					P A		P A D	P A D	P A D	4 = 5-20mm;
										5 = >20mm;
										UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
										D = Dry, not assessed

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

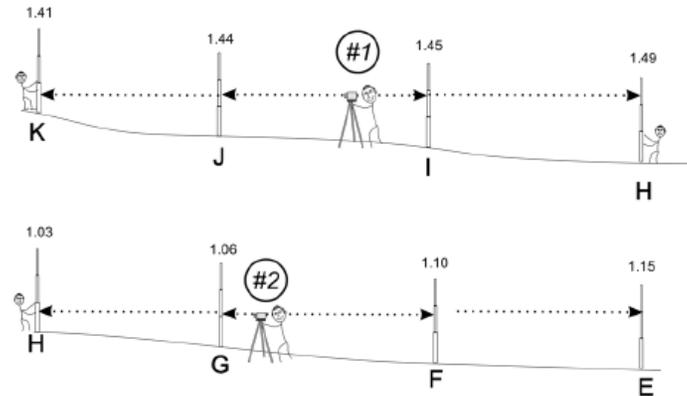
FLOW HABITATS (% between transects, total=100%)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	
Dry	

Transects A through K are similar in format. Only transects A, F, and K contain the "Take Photographs" box. The box is optional on the other transects and will appear if the box is checked. Also, transect K does not have an intertransect form.



Site Code:		Date: / / 2012		AUTOLEVEL		CLINOMETER		HANDLEVEL		OTHER			
<b>SLOPE and BEARING FORM (transect based - for Full PHAB only)</b>													
Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)							
	Stadia rod measurements	Slope (%) or Elevation Difference cm <input type="checkbox"/> % <input type="checkbox"/>	Segment Length (m)	Bearing (0°-360°)	Percent of Total Length (%)	Stadia rod measurements	Slope (%) or Elevation Difference cm <input type="checkbox"/> % <input type="checkbox"/>	Segment Length (m)	Bearing (0°-360°)	Percent of Total Length (%)			
K													
J													
I													
H													
G													
F													
E													
D													
C													
B													
A													
additional calculation area													
ADDITIONAL HABITAT CHARACTERIZATION										High Gradient <input type="checkbox"/>		Low Gradient <input type="checkbox"/>	
Parameter	Optimal	Suboptimal	Marginal	Poor									
Epifaunal Substrate/Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams), mix of submerged logs, undercut banks, cobble or other stable habitat.	40-70% mix of stable habitat (30-50% for low-gradient streams), well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams), substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams), lack of habitat is obvious, substrate unstable or lacking									
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0									
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment. 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars. 30-50% of the bottom affected (50-80% in low-gradient streams)	Heavy deposits of fine material, increased bar development, more than 50% of the bottom changing frequently (>80% in low-gradient streams)									
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0									
Channel Alteration	Channelization or dredging absent or minimal, stream with normal pattern	Some channelization present, (e.g., bridge abutments), evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoaling structures present on both banks. 40 to 80% of stream reach disrupted	Banks shoaled with gabion or cement. Over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.									
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0									

<b>SLOPE and BEARING FORM</b>										<b>EXAMPLE</b>		AUTOLEVEL <input checked="" type="checkbox"/>		CLINOMETER		HANDLEVEL	
Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)											
	Stadia rod measurements	Slope (%) or Elevation Difference cm <input type="checkbox"/> % <input type="checkbox"/>	Segment Length (m)	Bearing (0°-360°)	Percent of Total Length (%)	Stadia rod measurements	Slope (%) or Elevation Difference cm <input type="checkbox"/> % <input type="checkbox"/>	Segment Length (m)	Bearing (0°-360°)	Percent of Total Length (%)							
K	1.41																
J	1.44	3	15	140	100												
I	1.45	1	15	145	100												
H	1.49	1.03	4	15	150	100											
G		1.06	3	15	143	100											
F		1.10	4	15	187	100											
E		1.15	5	15	195	100											



- Level the autolevel at Position #1
- Place base of stadia rod at water level every time
- Sight to stadia rod at Transect K, then Transect J
- Rotate scope and sight to Transsects I and H.
- Move level to Position #2 and re-level
- Re-sight to stadia rod at Transect H, then Transect G
- Rotate scope and sight to Transsects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.



Site Code: _____		Date: ___/___/2012		Analyte		Equipment & Calibration Date						
<b>BENTHIC INVERTEBRATE SAMPLES</b>												
Collection Method (indicate standard or margin-center-margin)			Replicate	# Jars	pH	Cal date: / /						
RWB (standard)	RWB (MCM)	TRC	1		Wat temp	Cal date: / /						
RWB (standard)	RWB (MCM)	TRC	2		dissolved oxygen	Cal date: / /						
RWB (standard)	RWB (MCM)	TRC			oxygen sat	Cal date: / /						
RWB (standard)	RWB (MCM)	TRC			specific cond	Cal date: / /						
Field Notes/ Comments:					Salinity	Cal date: / /						
					Alkalinity	Cal date: / /						
					Turbidity	Cal date: / /						
					Silica	Cal date: / /						
					Air temp	Cal date: / /						
					Velocity	Cal date: / /						
					<b>ALGAE SAMPLES</b>							
					Collection Method (circle one or write new method if applicable)		SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	<b>Water and Sediment Chemistry Samples</b>		
					Collection Device (sum # of transects per device)		Rep. 1	Rep. 2	Rep.			
					Rubber Delimiter (area=12.6cm <sup>2</sup> )					Check if a WATER chemistry grab sample was collected (nutrients, SSC, etc.) <input type="checkbox"/>		
PVC Delimiter (area=12.6cm <sup>2</sup> )					Check if a DUPLICATE WATER chemistry grab sample was collected <input type="checkbox"/>							
Syringe Scrubber (area=5.3cm <sup>2</sup> )					Check if a SEDIMENT chemistry sample was collected <input type="checkbox"/>							
Other area=					Check if a DUPLICATE SED chemistry sample was collected <input type="checkbox"/>							
Number of transects sampled (0-11)					Sed. Coll Device: SCOOP CORE GRAB Material: Stainless Steel Polyethylene Polycarbonate Other							
Composite Volume (mL)					Sediment Collection Depth (cm): 2 or 5							
Assemblage ID volume (diatoms) (50 mL tube)					Create Lab Collection records for each checked box for integrated and grab water chemistry samples							
Assemblage ID volume (soft algae) (50 mL tube)												
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
Check if a water chem. integrated sample was collected (chl, AFDM)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
Chlorophyll a volume use GF/F filter (25 mL (preferred volume))												
Ash Free Dry Mass use GF/F filter (AFDM) volume (25 mL (preferred vol))												
<b>ADDITIONAL PHOTOGRAPHS</b>												
Description	Photo Code	Description	Photo Code									

Copies of the field data sheets are available online at <http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/database-management-systems/swamp-25-database/templates-25/field-data-sheets#BAFieldData>. Individual fields will be discussed below in the section entitled Entering New Bioassessment and Physical Habitat Data.



## b. Entering New Bioassessment and Physical Habitat Data

To begin entering bioassessment field data into the database, it is best to have completed Field Data Sheets available which contain the data to be entered. Data can also be entered into a field computer as sampling occurs as long as it has the SWAMP Bioassessment Field Data Entry forms and a SWAMP v2.5 backend (either replicated or non-replicated shell) database loaded onto it. These data entry forms are used primarily to record sample, probe, physical habitat, benthic macro invertebrates (BMI), and algae data.

Some important things to keep in mind when entering bioassessment and physical habitat data:

- Field data cannot be added via the SWAMP Steam Habitat database forms if a sample record already exists for the same station and date in the SWAMP v2.5 backend database. Doing so will result in an error message.
- For SWAMP samples, field data should be entered via the SWAMP Bioassessment Field Data Entry forms and synced to the SWAMP Master database prior to sending BMI samples to DFG-ABL for processing/sorting and before water chemistry data are loaded.

## i. Database Linking for Data Entry

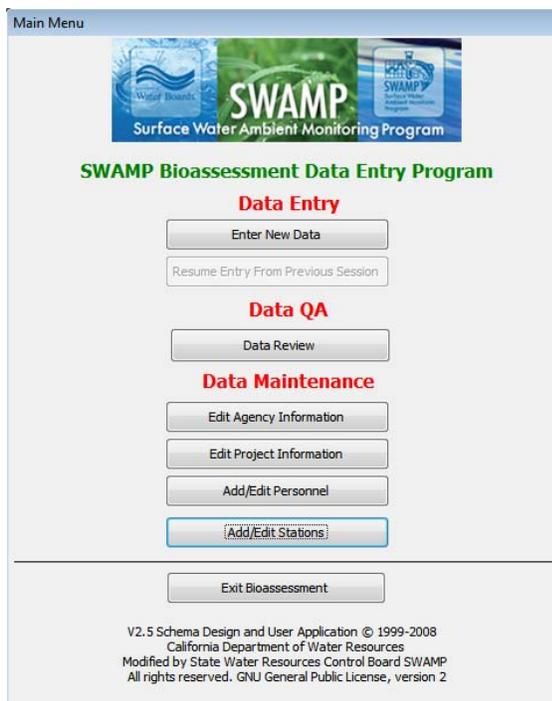
If it is the first time using a SWAMP replicated database, follow the steps under [Database Usage - Microsoft Access Setup](#) to link the SWAMP v2.5 backend database to a SWAMP permissions (SWAMPsys) file. If not, open the most recent SWAMP Bioassessment Field Data Entry forms and, if necessary login using your assigned information. The Menu screen should appear as follows:

The screenshot shows a web browser window titled "Switchboard : Form" displaying the "SWAMP Bioassessment Field Data Entry and Query File" interface. The page is divided into several sections:

- Introduction:** A text box explaining that the page creates a link between the front-end file and the back-end SWAMP database, located in the folder C:\BioassessmentShortForm. It instructs users to follow Steps 1-3 and contact Regional Liaison or Marco Sigala for questions.
- Step 1:** Instructs users to use the "Browse Database" button to select the SWAMP back-end database and then click the "Re-Link" button. Below this is a text input field for "Location of SW\_ MDB:" and two buttons: "Browse Database" and "Re-Link".
- Step 2:** Instructs users to click the "Refresh Tables" button to create static tables used in the queries. After data is entered, this step may need to be re-run to view specific data in some queries. Click Yes to delete existing tables and create new ones. Below this is a "Refresh Tables" button.
- Step 3:** Instructs users to click on the "Close Form" button to open the Main Menu for entering data and/or reviewing data through queries. Below this is a "Close Form" button.
- SWAMP Data on the Web:** A link to go to the CEDEN website.
- SWAMP Contact Information:** A list of contact information for Marco Sigala, Cassandra Lamerdin, Stacey Swenson, Susan Mason, Kyle Reynolds, and Mark Pranger, including phone numbers and email addresses.
- Data Entry Tool created by:** Southern California Coastal Water Research Project, with a logo for ECCWRP.



- Link the SWAMP Bioassessment Field Data Entry forms to the SWAMP v2.5 backend database through the Switchboard.
  - Click on the BROWSE DATABASE button on the left of the Switchboard.
  - Browse to the backend database **SW\_RegX\_v25\_DATE.mdb** file or to the non-replicated shell database.
  - Click RE-LINK.
  - Click OK.
- Refresh the static tables to create the necessary static tables.
  - Click the REFRESH TABLES button on the left of the Switchboard.
  - A window will appear to verify this action. Click YES to continue.
  - A message confirming a successful refresh should appear. Click OK.
- Click the CLOSE FORM button on the bottom of the Switchboard.
- After a successful link to the SWAMP v2.5 backend database and refresh tables, the following SWAMP Bioassessment Data Entry Program Main Menu screen should appear:



## ii. Database Setup for Data Entry

The SWAMP Bioassessment Data Entry Program Main Menu includes Data Entry, Data QA, and Data Maintenance sections. The Data Entry section is where the user begins entering new records through the forms or accessing suspended data entries if applicable. Details of this process will be addressed in the next section. The Data QA section is used to check and review the data after it has been entered. This will be addressed later in this document. The Data Maintenance section assists the user in setting up the forms to edit and, if applicable, add information for Agency, Project, Personnel, and Stations.

It is highly recommended that the forms be customized for specific data entry prior to entering data. This makes data entry much more efficient. There are pull-down boxes in the forms that are used to add new records to the backend database. These pull-down boxes only show values that are checked as 'Active' and have the correct 'Type' (e.g., BA or Ben) in the individual tables. The Data Maintenance section assists the user to add/edit information for Agency, Project, Personnel, and Stations including making sure the applicable values are 'Active'.



**Personnel LookUp**

PersonnelCode: McBride, S.  
 FirstName: Shawn  
 LastName: McBride  
 AgencyCode: DFG-ABL  
 Email:   
 Telephone:   
 Active:   
 PersonnelComments:   
 Return to Main Menu

Record: 117 of 230

**Names in red are required fields**

Existing Agencies, Projects, Personnel, and Stations can be made 'Active' through the Data Maintenance section.

**Editing StationLookUp and Geometry tables**

**STATIONS** ADD NEW SAVE EXIT

Station Code: 000BS1729 <== WARNING!!!!!!  
 Changes to this code will be propagated to the entire database. Find (in current field) Find Next

Active?  Station Name: Beaver Slough Description:   
 Event Type1: BA Event Type2: Event Type3: Geometry Shape: Point  
 Local Watershed:   
 Local Waterbody:   
 SWRCB Waterbody Type: R\_W Last Update Date: 9/27/2011  
 Add Date: 3/14/2009  
 Gage Station ID:   
 Station Source: DFG-ABL Processed DMT:   
 Upstream Area:   
 State: CA Verified By:   
 Verification Date:   
 Verification Comments:   
 General Comments:   
 Directions to Station

Station Detail Station Alias Station GIS

**Coordinates and Geometry Details**

Source: NR No. 1 Lat: -88 Long: -88  
 Datum: NR Elev. Units  
 Verification By: Verification Date:   
 Comments:   
 Record: 1 of 1

Record: 1 of 5998

Also, studies following a probabilistic (random) design may not have all possible stations in the database and new stations may need to be entered on the fly. New Stations and Personnel can be added, but all fields highlighted yellow for new stations (red text for personnel) are required and the user should populate as many other fields as



possible including the Station Detail, Station Alias and Station GIS tabs. All current, valid LookUp list values are available at [http://checker.swamp.mpsl.mlml.calstate.edu/SWAMP\\_Checker/LookUpLists.php](http://checker.swamp.mpsl.mlml.calstate.edu/SWAMP_Checker/LookUpLists.php). Any other changes or additions to existing Agencies, Projects, and other lookup tables (e.g., CollectionDevice, Protocol, etc.) must occur through the appropriate SWAMP Liaison. If a non-replicated SWAMP shell database is used, new values can be entered into this database and they will be reviewed by the CEDEN Regional Data Center (RDC) when the data is submitted. If other lookup tables (other than those shown in the Main Menu) need active button checks, see the [Customizing SWAMP Data Entry Forms](#) section or your SWAMP or CEDEN RDC Liaison.

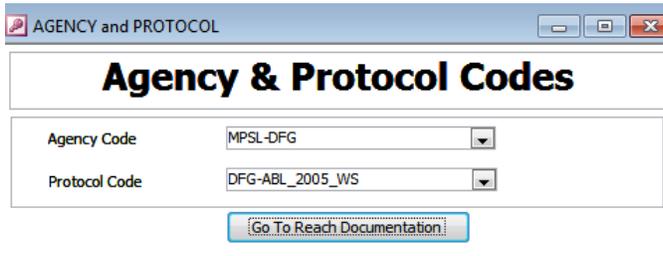
### iii. Add a New Record

Once the forms are customized for a particular data entry set, there are two options. A user may add a new record or continue entering a record that was not finished. In this section, add a new record will be discussed.

When entering a new record, it is important to first be sure that the record has not already been entered into the database through local knowledge or by using the Data Review button and the Sample BA Information query under the BA Field Queries section. If the sample record is already in the backend database for a particular station and date, bioassessment data entry cannot occur using these forms unless one of the primary fields is changed. Doing so will result in an error message.

The forms move through the general sampling sequence of station information, probe measurements, transects, slope, discharge (velocity), and collections (BMI, algae, water chemistry). Most, if not all, fields on the forms are required even though they may not be required in the SWAMP database. If the form is saved without all of the required fields populated, an error message will appear and the required cells will be highlighted red. Cells will not be required if a flag (*ResQualCode*) of **NR**, **ND**, or **NA** and the appropriate *QACode* are chosen. In general, flags are applied to the adjacent cell or cells depending on the form layout. If a flag is applied to a row, the user must use the appropriate query or form to go into the backend database and update all affected analytes so the flag is applied to the correct analyte.

To begin entering a new record, all sample information on the Reach form must be entered first. The sample information is used to describe a unique sampling event taken in the field and/or analyzed in a laboratory. It refers to the unique combination of *EventCode*, *ProtocolCode*, *StationCode*, *SampleDate*, *ProjectCode* and *AgencyCode*. Click the ENTER NEW DATA button at the top of the Main Menu under Data Entry.



AGENCY and PROTOCOL

### Agency & Protocol Codes

Agency Code: MPSL-DFG

Protocol Code: DFG-ABL\_2005\_WS

[Go To Reach Documentation!](#)

Use the pull down list to enter the Agency Code and Protocol Code of the sampling event. Then click GO TO REACH DOCUMENTATION.



Form Name	LookUpList	Description & Business Rules
<b>Agency Code</b>	<u>AgencyLookUp</u>	<p>AgencyCode refers to the organization or agency that collected the sample. This should be listed on the Chain of Custody (COC) document that accompanies the samples from the field.</p> <p>BR: If an environmental sample is used to perform laboratory QC, i.e. a matrix spike or lab duplicate, the AgencyCode still refers to the agency that collected the native sample, not the agency that created the QC sample.</p> <p>See 'Special Circumstances' for LABQA business rules.</p>
<b>Protocol Code</b>	<u>ProtocolLookUp</u>	<p>ProtocolCode represents the sampling protocol used, which includes the set of methods, methodology, and/or specifications; e.g. MPSL-DFG_Field_v1.0 or SWAMP_WS_2007. Established protocols may be used or Regions may document their own sampling protocols.</p> <p>BR: It is preferable to combine protocols per StationCode and date so that all WaterQuality, Bioassessment, and Tissue data are combined under the same EventCode and Protocol. For example, if Tissue and WaterQuality are sampled at a station, the EventCode would be TI. If the protocols are different for Tissue and WaterQuality, the Tissue protocol would be used and the WaterQuality protocol would be listed in the SampleComments. If that is not preferable, separate EventCodes may be used with each individual protocol.</p> <p>Not Recorded is only used for historic data. All non-historic SWAMP projects require a true protocol reference. Not Applicable is used for LABQA and 000NONPJ samples only.</p>



iv. Complete the Reach Documentation Information

To enter the reach documentation information, tab through and enter data into the fields as follows:

Reach Documentation				Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m		Alternate: Reach Length (wetted width > 10 m) = 250 m Distance between transects = 25 m	
Project Name: SWAMP RWB4 Stormwater Monitoring Council C			Date: 06/01/10	Time: 14:00			
Site Name: Lockwood Creek			Site Description:				
Site Code: 403501883							
GPS Device: MP5L-DFG Garmin 5		datum: NAD83		Crew Members:			
				1	McBride, S.	2	Jakl, B.
				3	Negrey, J.	4	
				5			
Latitude: °N		GPS: 34.71631	TARGET: 34.71629	Distance from Target (m)		18.41	
Longitude: °W		-119.01870	-119.01890				

- Select the *ProjectName* from the pull-down next to ProjectName.
- Select the appropriate *StationCode* from the pull-down next to Site Code. This will populate the Site Name and Site Description if one exists in the StationLookUp.
- Select the *GPS Device* from the pull-down and the appropriate datum if it is not the default NAD83.
- Enter the actual *Latitude* and *Longitude* where the sample was collected. Check the Distance from Target field. If the distance of the actual Lat/Long is greater than 100 meters, the field will turn red. Double check the data entry for accuracy.
- Enter the *SampleDate*, expressed as mm/dd/yy and the Start Time, expressed in military time as hh:mm. The current Date or Time can be added by double-clicking the cell. The Time should reflect the start time of the entire bioassessment sampling event.
- Select the appropriate *Personnel* from the pull-down next to each cell for Crew Members. A minimum of two personnel are required.

Form Name	LookUpList	Description & Business Rules
Project Name	ProjectLookUp	<p>ProjectCode is a unique code referencing a project which includes data from a single study design; e.g. RWB5_StS_FY0708, RWB2_Status_YR1, RWB7_Trend_2003, SWB_RCMP_2008.</p> <p>BR: ProjectCodes with FY in the name indicate samples were collected in a fiscal year calendar cycle, e.g. FY0708 would indicate fiscal year 2007-2008 which is July 1, 2007 through June 30, 2008. ProjectCodes without FY indicate samples were collected in a calendar year, e.g. 2003 would indicate calendar year 2003 which is January 1, 2003 through December 31, 2003. Each Project must have an associated QAPrP or Project QAPP listed. SWAMP moves data to the permanent side of the database by ProjectCode.</p>



Form Name	LookUpList	Description & Business Rules
Site Code	StationLookUp	<p>StationCode represents a unique sampling site in a sampling design. A single waterbody may have multiple stations.</p> <p>BR: StationCode should represent a geographic location not a geographic location combined with a replicate reference. There cannot be multiple StationCodes and/or StationNames in the StationLookUp with the same target latitude/longitude coordinates.</p> <p>The format for the unique alphanumeric description of the station is ###ABC123, where ### is the Hydrologic Unit number and ABC123 is an alphanumeric description of the Station. An example is 111EELBRN which is Hydrologic Unit 111 and an abbreviated code to indicate "Eel River - South Fork near Branscomb".</p> <p>If the correct Hydrologic Unit is not known, populate the first number with the regional board number; i.e. the station is known to be in California Regional Water Board 3, the StationCode would be 300#####. If the station is not in California, the Hydrologic Unit is 000.</p>
Site Name		<p>StationName is the name of the StationCode and must be unique within the StationLookUp table.</p> <p>BR: Where possible, spell out symbols such as ~ and @.</p> <p>On randomly generated sites, use the waterbody name and location in the station name to create a meaningful name, i.e. 'San Gabriel at Random Site 3' is not as descriptive as 'San Gabriel approximately 0.2 mi above West Fork'.</p>
Site Description		<p>StationDescr is the description of the StationCode which is used to help further describe the station location.</p>
Date		<p>SampleDate refers to the date the sample was collected in the field.</p> <p>BR: The format for date in the templates is dd/mmm/yyyy, such as 10/Nov/2007. When entering data using the forms, the format is mm/dd/yy.</p> <p>For WQ samples with collection times that last longer than one day, like autosamplers, the sample date is the date sample was retrieved. For transplanted bivalves, the SampleDate is the date the transplanted organisms were collected, removed, or retrieved from the field. For overnight tissue collections, the SampleDate is the date the sample was retrieved.</p>



Form Name	LookUpList	Description & Business Rules
<b>Time</b>		<p>CollectionTime refers to the time when the first field measure of a sampling event at a specific station was recorded in the field.</p> <p>BR: If the sampling crew collects 18 field measurements at a single station, the CollectionTime for each would be the time of the first measurement recorded. By doing so, the samples can easily be linked and any holding time issues will be consistent, and conservative, for laboratory work.</p> <p>The CollectionTime format should be expressed as hh:mm in 24 hour time, such as 13:30 for 1:30 pm.</p> <p>For BA sampling events, the CollectionTime should reflect the start time for the entire bioassessment sampling event. The field CollectionTime may be different than other CollectionTimes (e.g., Lab, Habitat, Benthic) if the time is changed on the last form due to holding time considerations.</p>
<b>GPSDevice</b>	<u>GPSDeviceLookUp</u>	GPSDeviceName refers to the GPS device used to record the GPS measurements.
<b>Datum</b>	<u>VariableCodesLookUp</u>	The Datum field records the datum that was used to record the coordinate source (e.g., GPS or Map); NAD83 recommended; from DatumList in VariableCodesLookUp
<b>Latitude</b>		Latitude is the actual Latitude (>31 and <42.5 or -88) in decimal degrees to five decimal places.
<b>Longitude</b>		Longitude is the actual Longitude (>-125 and <-113 or -88) recorded in decimal degrees as a negative number to 5 decimal places.
<b>Crew Members</b>	<u>PersonnelLookUp</u>	<p>PersonnelCode is a unique code referencing the person or personnel that collected the sample. A single or multiple personnel may be entered.</p> <p>BR: For bioassessment sampling at least two personnel must be entered. If adding multiple personnel into the template, multiple rows with the same sample information but different personnel codes are needed.</p>

#### v. Enter Ambient Water Quality Measurements

The *Ambient Water Quality Measurements* section refers to the discrete probe measurements recorded in the field at a sampling event, e.g., Temperature, pH, Dissolved Oxygen.

To enter the ambient water quality measurements, tab through and enter data for each analyte into the fields as follows:



Ambient Water Quality Measurements					
	Water Temperature (Deg C)	pH	Alkalinity (mg/L)	Turbidity (ntu) (optional)	Oxygen Saturation (%) (optional)
Collection Device	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG Titration - LaMotte Field Kit	MPSL-DFG 2020 LaMotte #2	
Calibration Date	06/01/10	06/01/10	01/01/50	06/01/10	01/01/50
Measurement	22.62	8.38	170	0.78	
Flag					
	Dissolved O <sub>2</sub> (mg/L)	Specific Cond. (uS/cm)	Salinity (ppt)	Silica (mg/L) (optional)	Air Temperature (Deg C) (optional)
Collection Device	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG YSI Meter 600 XL #2		MPSL-DFG Hand Held Thermometer
Calibration Date	06/01/10	06/01/10	06/01/10	01/01/50	01/01/50
Measurement	12.20	1003	0.5		15.8
Flag					

- Select the correct *Collection Device* from the pull-down. If the device does not show up, go back to the Database Setup section to determine how to add and/or make LookUp values available.
- Enter the *Calibration Date* of the collection device. The current date can be added by double-clicking the cell. If unknown, leave the date as the default of 1/1/1950.
- Enter the probe or meter result in the *Measurement* field. When typing the result, include the correct amount of significant figures. For example, if the result is 7.0, the only way to communicate the significance of the '.0' in the SWAMP database is to type 7.0 and essentially have a trailing 0. If a required *Measurement* was not recorded, leave the *Measurement* field blank and enter a *Flag* of **NR** for *ResQualCode* and select the appropriate *QACode*; see the next section for how to apply flags to data. The *CollectionDevice* will revert to **None**. This should be changed back to the correct *CollectionDevice*.
- Repeat the above steps for each measurement to be entered. Turbidity, Oxygen Saturation, Silica, and Air Temperature are optional measurements and can be left blank if they were not recorded.

Form Name	LookUpList	Description & Business Rules
Collection Device	CollectionDeviceLookUp	<p>CollectionDeviceCode refers to the specific device used in the collection of the sample.</p> <p>BR: If the collection device failed, still enter the CollectionDevice with the appropriate QACode. If an intended analyte was not taken but is entered for consistency, enter None. If the analyte was collected but the CollectionDevice is not known, enter Not Recorded.</p> <p>When using the SWAMP Bioassessment Field Data Entry forms for BA sampling, if a ResQualCode of NR or ND is selected, the CollectionDeviceCode will default to None. The user may then change the CollectionDevice as appropriate, especially for ND results.</p>



Form Name	LookUpList	Description & Business Rules
Calibration Date		CalibrationDate is the date of the most recent instrument calibration in the dd/mmm/yyyy format.  BR: Default value is 01/01/1950.
Measurement		Result is the final numeric result of a given analyte, stored as text to retain trailing zeros.  BR: The field Result is expressed as a real number rather than a calculation. The result should be reported with the appropriate number of significant figures.  A result of 3.7266945 with 3 significant figures should be reported as 3.73.  A result of 1.350 with 4 significant figures must display 1.350 in the Access form. If you only see 1.35, that is the result that will be loaded to the database and the 4th significant figure will be dropped.

vi. Enter Data Flags for the Ambient Water Quality Measurements

Flags such as *ResQualCode* and *QACode* can be applied to the data as necessary. To enter the flags for the ambient water quality measurements, tab through and enter data into the fields as follows:

Ambient Water Quality Measurements					
	Water Temperature (Deg C)	pH	Alkalinity (mg/L)	Turbidity (ntu) (optional)	Oxygen Saturation (%) (optional)
Collection Device	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG Titration - LaMotte Field Kit	MPSL-DFG 2020 LaMotte #2	
Calibration Date	06/01/10	06/01/10	01/01/50	06/01/10	01/01/50
Measurement	22.62	8.38	170	0.78	
Flag					
	Dissolved O <sub>2</sub> (mg/L)	Specific Cond. (uS/cm)	ResQual	ResQualName	Air Temperature (Deg C) (optional)
Collection Device	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG YSI Meter 600 XL #2	<	Less Than	MPSL-DFG Hand Held Thermometer
Calibration Date	06/01/10	06/01/10	<=	Less than or equal to	01/01/50
Measurement	12.20	1003	=	Equal To	15.8
Flag			>	Greater Than	
			>=	Greater than or equal to	
			JF	Field Estimated	
			ND	Not Detected	
			NR	Not Recorded	

- Select the first flag, *ResQualCode*, using the pull-down menu under the appropriate measurement. If a required measurement is blank because it was not collected, record the *ResQualCode* as *NR*.



Form Name	LookUpList	Description & Business Rules
Flag (Not Required)	ResQualLookUp	<p>The ResQualCode is the result qualifier code that qualifies the analytical result of the sample.</p> <p>BR: This field should have an equal sign (=) for results that are considered detected. The (=) sign does not show in the forms but it is defaulted to this value in the background and will be recorded properly in the database. When a result is Not Detected (ND), Greater Than (&gt;), Field Estimated (JF), etc. a ResultQualCode is required and the appropriate code would be applied.</p> <p>When the result is null, a ResultQualCode is required. If the ResultQualCode value is NR for Not Recorded, then a reason for this code must be written into the FieldResultComments field and/or an appropriate QACode would be applied. When using the SWAMP Bioassessment Field Data Entry forms for BA sampling, there is no FieldResultComments field on the Reach form so an appropriate QACode should be applied.</p>

**Select QA Code**

QACode	QADescr
FCL	Field calibration not performed within 24 hours before use
FCL_FLV	FCL_FLV;see individual QADescr for complete definition
FCL_H	FCL_H;see individual QADescr for complete definition
FDC	Drift check not acceptable
FDR	Dry Channel
FEU	Equipment Unavailable
FIA	Location was inaccessible to obtain a measurement
FIF	Instrument/Probe Failure
FIF_LST	FIF_LST;see individual QADescr for complete definition
FLV	Velocity too low to be measured
FNM	no documentation of the field measurement collection exists
FS	Too Shallow for probe measurement
FTD	Location was too deep to obtain a measurement
FUD	Unable to deploy instrument
J	Estimated value - EPA Flag
LST	Sample was lost or destroyed
NG	The reported result is a negative value
None	None - No QA Qualifier
NR	Not Recorded

- Select the second flag, *QACode*, using the pull-down menu in the pop-up box. If a required measurement is blank because it was not collected, record the appropriate *QACode* as detailing the reason.





Form Name	LookUpList	Description & Business Rules
Flag (Not Required)	QALookUp	<p>QACode is applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the analysis to achieve the result.</p> <p>BR: The default code, indicating no special conditions, is None. If more than one code should be applied to a record, the convention is to list them in alphabetical order separated by commas and no spaces; e.g. GB,SC.</p>

Ambient Water Quality Measurements					
	Water Temperature (Deg C)	pH	Alkalinity (mg/L)	Turbidity (ntu) (optional)	Oxygen Saturation (%) (optional)
Collection Device	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG Titration - LaMotte Field Kit	MPSL-DFG 2020 LaMotte #2	
Calibration Date	06/01/10	06/01/10	01/01/50	06/01/10	01/01/50
Measurement	22.62	8.38	170	0.78	
Flag			JF~FCL		

- In this section and the example above, the JF~FCL flag would only apply to the Alkalinity measurement.

Reset Field mcrHourGlassOff

Ambient Water Quality Measurements					
	Water Temperature (Deg C)	pH	Alkalinity (mg/L)	Turbidity (ntu) (optional)	Oxygen Saturation (%) (optional)
Collection Device	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG YSI Meter 600 XL #2	MPSL-DFG Titration - LaMotte Field Kit	MPSL-DFG 2020 LaMotte #2	
Calibration Date	06/01/10	06/01/10	01/01/50	06/01/10	01/01/50
Measurement	22.62	8.38	170	0.78	
Flag			JF~FCL		

- A flag can be removed by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button listed above on the Bioassessment toolbar.
- If an incorrect flag is chosen, it must first be removed prior to selecting the drop-down box again and choosing the appropriate flag.

vii. Complete the Reach Length Information

To enter the reach length, tab through and enter data into the fields as follows:

<b>Reach Length</b> <small>(see reach length guidelines at top of form)</small>	<b>Actual Length (m)</b>	150	<b>Explanation:</b>	
<input type="button" value="Save &amp; Goto Transect"/>				

- Enter the *Reach Length* in meters.

- If the reach length is not 150 m, an explanation regarding the reach length is required.
- Once all required fields are entered, click on the SAVE & GOTO TRANSECT button. If any required fields are missing, they will be highlighted red after clicking the button. A box will appear after the data has been saved, click OK. This will save the data on this form and switch to the first transect form for data entry. After this button is pressed, you will not be able to go back to this form to review the data. Any changes to the data after it is saved will need to be done through the queries in the Data Review section.

### viii. Enter Transect Data

The *Site Code* (StationCode), *Site Name* and *Date* fields are pre-populated based on the previous form. If the channel was dry at the Transect, check the *Dry Channel* box to indicate that no data was collected within the wetted margins for this transect. The Human Influence, Densimeter Canopy Cover, Riparian Vegetation, Bank Stability, and, if applicable, Photograph sections should still be populated.

To enter transect data, tab through and enter data into the fields as follows:

- Enter the *Wetted Width* in meters. This will automatically populate the *Distance from LB* below. Check that the Left Bank measurement is 0 and the Right Bank measurement matches the Wetted Width. If the numbers do not match what was performed in the field, the user will need to correct the values through the corresponding transect query under the Data Review section.
- Enter the *Bankfull Width* and *Bankfull Height* in meters.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode* for each analyte. If a ResQualCode flag of **NR** or **ND** is chosen for wetted width, existing values will be cleared for wetted width and the Distance from LB will be cleared.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

Transect Substrates											
Position	Dist from LB (m)	Depth (cm)	mm/Size Class Code	Cobble Embeddedness (%)	CPOM	Flag	Microalgae (thickness Code)	Macroalgae Attached	Macroalgae Unattached	Macrophytes	Flag
Left Bank	0	0	SA		P A			P A D	P A D	P A D	
Left Center	4.275	37	CB	0	P A			P A D	P A D	P A D	
Center	8.55	35	14		P A			P A D	P A D	P A D	
Right Center	12.825	58	64	20	P A			P A D	P A D	P A D	
Right Bank	17.1	0	SA		P A			P A D	P A D	P A D	

- If algae parameters are not being measured, check the box above the Flag field in the Transect Substrates section.
- Tab through and enter Transect Substrates data for the Left Bank. Keep tabbing through to enter the algae parameters data for the Left Bank if applicable.
- Repeat the process for each Position.



- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to the data preceding it on the left for the Position but not the entire Position. Thus, a data flag on the Left Center Transect Substrate would not apply to the Left Center Algae Parameters. If only one of the measurements requires a flag, the flags that don't belong can be removed using the appropriate Data Review query after this transect form has been saved. This will change the data in the backend database and update all affected measurements so the flag is only applied to the correct measurement.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

HUMAN INFLUENCE		(LR Bank - select only the closest to wetted channel, Channel - recorded presence) 0=Not Present B=On Bank C=Between Bank and 10 m from Channel P=>10m and <50 M of Channel			
<input checked="" type="checkbox"/> Check to default all values to 0 or N	<input checked="" type="checkbox"/>	Left Bank	Channel	Right Bank	Flag
Walls/Rip-rap/Dams	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0	<input type="checkbox"/> Y <input checked="" type="radio"/> N	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Buildings	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0	<input type="checkbox"/> Y <input checked="" type="radio"/> N	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Pavement/Cleared Lot	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0		<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Road/Railroad	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0	<input type="checkbox"/> Y <input checked="" type="radio"/> N	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Pipes (Inlet/Outlet)	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0	<input type="checkbox"/> Y <input checked="" type="radio"/> N	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Landfill/Trash	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0	<input type="checkbox"/> Y <input checked="" type="radio"/> N	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Park/Lawn	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0		<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Row Crops	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0		<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Pasture/Range	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0		<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Logging Operations	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0		<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Mining Activity	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0	<input type="checkbox"/> Y <input checked="" type="radio"/> N	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Vegetation Management	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0		<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Bridges/ Abutments	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0	<input type="checkbox"/> Y <input checked="" type="radio"/> N	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		
Orchards/ Vinyards	<input type="checkbox"/> P <input type="checkbox"/> C <input type="checkbox"/> B <input checked="" type="checkbox"/> 0		<input checked="" type="checkbox"/> 0 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> P		

- Enter the Human Influence data for the corresponding locations. There is a check box available that will default all values to 0 or N.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to the entire row for all three locations. If only one of the measurements requires a flag, the flags that don't belong can be removed using the appropriate Data Review query after this transect form has been saved. This will change the data in the backend database and update all affected measurements so the flag is applied to the correct measurement.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.



Instream Habitat Complexity	0 = Absent (0%) 1 = Sparse (< 10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (> 75%)					Flag
	0	1	2	3	4	
Filamentous Algae	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Aquatic Macrophytes/ Emergent Vegetation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boulders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NR~NR
Woody Debris > 0.3m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Woody Debris < 0.3 m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Undercut Banks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Overhanging Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Live trees or roots	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Artificial Structures	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- Enter the Instream Habitat Complexity data. If these measurements were not recorded, a flag of **NR** (*ResQualCode*) and the corresponding *QACode* should be applied to each row. In this section, the flag applies only to the corresponding instream habitat complexity.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

Densimeter Readings (0-17)		
Collection Device		
Densimeter (Convex)		
count covered dots	Flag	
Center Left	8	
Center Upstream	10	
Center Right	10	
Center Downstream	0	
Left Bank (optional)	7	
Right Bank (optional)	5	

- Enter the *Collection Device* if the default value is not correct.
- Enter the Densimeter readings for each position. Note that the Left and Right Bank readings are optional and a flag is not needed if they are not populated.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies only to the corresponding densimeter reading.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.



Riparian Vegetation	0 = Absent (0%)      3 = Heavy (40-75%) 1 = Sparse (<10%)    4 = Very Heavy (>75%) 2 = Moderate (10-40%) select one		
Vegetation Class	Left Bank (facing downstream)	Right Bank (facing downstream)	Flag
<b>Upper Canopy (&gt;5 m high)</b>			
Trees and saplings >5 m high	<input checked="" type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="checkbox"/> 0 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="text"/>
<b>Lower Canopy (0.5 to 5 m high)</b>			
All Vegetation 0.5 m to 5 m	<input type="checkbox"/> 0 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="checkbox"/> 0 <input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="text"/>
<b>Ground Cover (&lt;0.5 m high)</b>			
Woody Shrubs & Saplings, <0.5 m	<input type="checkbox"/> 0 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="text"/>
Herbs/ grasses	<input type="checkbox"/> 0 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="checkbox"/> 0 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="text"/>
Barren, Bare soil/ duff	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4	<input type="text"/>

- Enter the Riparian Vegetation measurements for each bank.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to the entire row, both the Left Bank and Right Bank. If only one of the measurements requires a flag, the flags that don't belong can be removed using the appropriate Data Review query or form after this transect form has been saved. This will change the data in the backend database and update all affected measurements so the flag is applied to the correct measurement.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

Bank Stability	(score zone 5m up and 5m downstream of transect between bankfull - wetted width)			Flag
Left Bank	<input type="radio"/> eroded	<input checked="" type="radio"/> vulnerable	<input type="radio"/> stable	<input type="text"/>
Right Bank	<input type="radio"/> eroded	<input checked="" type="radio"/> vulnerable	<input type="radio"/> stable	<input type="text"/>

- Enter the Bank Stability data for both the Left and Right Bank.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies only to the corresponding bank stability measurement.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.



TAKE PHOTOGRAPHS			
Flag <input type="text"/>			
Enter Photo File Name			
Downstream		Upstream	
Picture 1	Picture 3	Picture 1(required)	Picture 3
<input type="text"/>	<input type="text"/>	060110_001	<input type="text"/>
Picture 2	Picture 4	Picture 2	Picture 4
<input type="text"/>	<input type="text"/>	060110_002	<input type="text"/>

- Enter the picture codes for all photographs taken. Photographs are required at the following transects and directions: Transect A upstream, Transect F upstream and downstream, and Transect K downstream. Photographs taken at other transects are optional.
- The Comment box is limited to 255 characters and should be used to store comments regarding that transect only.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to all pictures. If only one of the pictures requires a flag, the flags that don't belong can be removed using the appropriate Data Review query or form after this transect form has been saved. This will change the data in the backend database and update all affected measurements so the flag is applied to the correct measurement. If a photograph was not taken for the required transect and direction, a flag (*ResQualCode* = **NR** and the appropriate *QACode*) is required.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

Microsoft Office Access

The record could not be saved because the following fields are not completed:  
tblViewUpPic1

TAKE PHOTOGRAPHS			
Flag <input type="text"/>			
Enter Photo File Name			
Downstream		Upstream	
Picture 1	Picture 3	Picture 1(required)	Picture 3
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Picture 2	Picture 4	Picture 2	Picture 4
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

- Once all required fields are entered, click on the SAVE button. If any required fields are missing, they will be highlighted red as in the above example. After the missing fields are filled out or the appropriate flag (*ResQualCode* = **NR** or **ND** and the appropriate *QACode*) is entered, click on the SAVE button again. A box will appear after the data has been saved, click OK. This will save the data on this form in the backend database and switch to the intertransect form for data entry. After this button is pressed, you will not be

able to go back to this form to review or edit data. Any changes to the data after it is saved will need to be done through the queries.

### ix. Enter Inter-Transect Data

The *Site Code* (StationCode), *Site Name* and *Date* fields are pre-populated based on the Reach form. If the channel was dry at the Inter-Transect, check the *Dry Channel* box to indicate that no data was collected within the wetted margin for Inter-Transect substrates. The Flow Habitat section will still need to be populated.

To enter inter-transect data, tab through and enter data into the fields as follows:

frmInterTranPhoto : Form

**SWAMP Stream Habitat Characterization Form** FULL VERSION Revision Date: March 2012

Site Code:  Site Name:  Date:

**Inter-Transect: A-B** Wetted Width (m):  Flag:   Dry Channel  Check before starting if Dry Channel

- Enter the *Wetted Width* in meters. This will automatically populate the *Distance from LB* below. Check that the Left Bank measurement is 0 and the Right Bank measurement matches the Wetted Width. If the numbers do not match what was performed in the field, the user will need to correct the values through the corresponding transect query.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to only the Wetted Width.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

frmInterTranPhoto : Form

**SWAMP Stream Habitat Characterization Form** FULL VERSION Revision Date: March 2012

Site Code:  Site Name:  Date:

**Inter-Transect: A-B** Wetted Width (m):  Flag:   Dry Channel  Check before starting if Dry Channel

**Inter-Transect Substrates**  
(measure in mm or use size class)  Check if Algae Parameters are not being measured

Position	Dist from LB (m)	Depth (cm)	mm/Size Class Code	Cobble Embedment (%)	CPOM	Flag	Microalgae (thickness Code)	Macroalgae Attached	Macroalgae Unattached	Macrophytes	Flag
Left Bank	0.00	0	SA		<input type="radio"/> P <input checked="" type="radio"/> A	<input type="text"/>	0	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="text"/>
Left Center	4.25	35	SA		<input type="radio"/> P <input checked="" type="radio"/> A	<input type="text"/>	1	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="text"/>
Center	8.50	40	GC		<input type="radio"/> P <input checked="" type="radio"/> A	<input type="text"/>	3	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="text"/>
Right Center	12.75	62	SA		<input type="radio"/> P <input checked="" type="radio"/> A	<input type="text"/>	2	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="text"/>
Right Bank	17.00	0	SA		<input type="radio"/> P <input checked="" type="radio"/> A	<input type="text"/>	0	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="radio"/> P <input checked="" type="radio"/> A <input type="radio"/> D	<input type="text"/>

**Note:** Substrate sizes can be recorded either as direct measurements of the median axis of each particle or one of size class categories listed on the supplemental page (direct measurements are preferred)

- If algae parameters are not being measured check the box above the Flag field.
- Tab through and enter Inter-Transect Substrates data for the Left Bank. Keep tabbing through to enter the algae parameters data for the Left Bank if applicable.
- Repeat the process for each Position.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to the data preceding it on the left for the Position but not the entire Position. Thus, a data flag on the Left Center



Transect Substrate would not apply to the Left Center Algae Parameters. If only one of the measurements requires a flag, the flags that don't belong can be removed using the appropriate Data Review query after this transect form has been saved. This will change the data in the backend database and update all affected measurements so the flag is only applied to the correct measurement.

- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

Flow Habitats		Channel Type	Cascade/Falls	Rapid	Riffle	Run	Glide	Pool	Dry
(% between transects, total = 100%)									
Flag	<input type="text"/>	%	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="100"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Comments									
<input type="button" value="Save"/>									

- Enter the Flow Habitats data. The total percentage must equal 100.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to all of the Flow Habitats.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.
- Once all required fields are entered, click on the SAVE button. If any required fields are missing, they will be highlighted red. After the missing fields are filled out or a *ResQualCode* of **NR** or **ND** and the appropriate *QACode* is applied, click on the SAVE button again. A pop up box will appear after the data has been saved, click OK. This will save the data on this form in the backend database and switch to the next transect form for data entry. After this button is pressed, you will not be able to go back to this form to review or edit data. Any changes to the data after it is saved will need to be done through the queries.
- Continue filling out all Transect and Inter-Transect data.

#### x. Enter Slope and Bearing Data

The *Site Code* (StationCode) and *Date* fields are pre-populated based on the Reach form. If slope was unable to be measured, check the box under the Slope and Bearing Form title and select the corresponding *ResQualCode* (**NR**) and appropriate *QACode* to indicate that no data was collected. This will allow the user to move on to the next form when the Save button is selected.

To enter slope and bearing data, tab through and enter data into the fields as follows:



Site Code: 403501883

Date: 06/01/2010

Slope and Bearing Form (transect based - for Full PHAB only)

Collection Device

Check if Slope is unable to be measured.

Flag

AutoLevel

Starting Transect	MAIN Segment record percent of inter-transect distance in each segment if supplemental segments are used					SUPPLEMENTAL Segment record percent of inter-transect distance in each segment if supplemental segments are used					
	Stadia rod Measurements	Slope(%) or Elevation Difference	Segment Length (m)	Bearing 0-359	Percent of Total Length	Stadia rod Measurements	Slope(%) or Elevation Difference	Segment Length (m)	bearing 0-359	Percent of Total Length	Flag
<b>K</b>	<input type="text"/>	<input type="text"/> cm <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>J</b>	<input type="text"/>	<input type="text"/> 3	<input type="text"/> 15	<input type="text"/> 140	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>I</b>	<input type="text"/>	<input type="text"/> 1	<input type="text"/> 15	<input type="text"/> 145	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>H</b>	<input type="text"/>	<input type="text"/> 4	<input type="text"/> 15	<input type="text"/> 150	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>G</b>	<input type="text"/>	<input type="text"/> 3	<input type="text"/> 15	<input type="text"/> 143	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>F</b>	<input type="text"/>	<input type="text"/> 4	<input type="text"/> 15	<input type="text"/> 187	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>E</b>	<input type="text"/>	<input type="text"/> 5	<input type="text"/> 15	<input type="text"/> 195	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>D</b>	<input type="text"/>	<input type="text"/> 2	<input type="text"/> 15	<input type="text"/> 192	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>C</b>	<input type="text"/>	<input type="text"/> 3	<input type="text"/> 10	<input type="text"/> 190	<input type="text"/> 66.7	<input type="text"/>	<input type="text"/> 1	<input type="text"/> 5	<input type="text"/> 110	<input type="text"/> 33.3	<input type="text"/>
<b>B</b>	<input type="text"/>	<input type="text"/> 1	<input type="text"/> 15	<input type="text"/> 115	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>A</b>	<input type="text"/>	<input type="text"/> 0	<input type="text"/> 15	<input type="text"/> 115	<input type="text"/> 100	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

- Enter the *CollectionDevice* used to measure slope or elevation difference.
- Enter Main Segment data by tabbing through. Under the Slope (%) or Elevation Difference column, choose either cm or % using the pull-down.
- If the transect segment needs to be divided, use the Supplemental segment. Keep in mind the sum of Segment Length should equal the Transect Length (e.g., 15 meters) and the Percent of Total Length should sum to 100%.
- Values can be entered in the Stadia Rod columns for reference, but these values will not be recorded in the database.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to the entire row, thus the entire transect. If only one of the measurements requires a flag, the flags that don't belong can be removed using the appropriate Data Review query or form after this transect form has been saved. This will change the data in the backend database and update all affected measurements so the flag is applied to the correct measurement.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.



Additional Cobble Embeddedness Measurement <small>(carry over from transect forms if needed; measure in %)</small>	1	2	3	4	5	6	7	8	9	10	11	12	13
	0	0	5	20	20	10	10	0	5	10	20	0	60
14	15	16	17	18	19	20	21	22	23	24	25	Cobble Count	
20	0	20	60	5	10	60	50	0	5	10	40	25	

Save and GoTo Discharge

- Enter the Cobble Embeddedness Measurements. The Cobble Count box records the number of embeddedness values during the transect assessments. If <25 cobbles were encountered, additional cobbles should be assessed and entered in this section until 25 total have been assessed.
- Once all required fields are entered, click on the SAVE AND GOTO DISCHARGE button. If any required fields are missing, they will be highlighted red. After the missing fields are filled out or a *ResQualCode* of **NR** or **ND** and the appropriate *QACode* is applied, click on the button again. A box will appear after the data has been saved, click OK. This will save the data on this form in the backend database and switch to the next form for data entry. After this button is pressed, you will not be able to go back to this form to review and edit data. Any changes to the data after it is saved will need to be done through the queries.

xi. Enter Discharge Measurements, Notable Field Conditions and Additional Habitat Characterization Data

The *Site Code* (StationCode), *Site Name*, and *Date* fields are pre-populated based on the Reach form. If discharge was unable to be measured, check the box under the Discharge Measurements title and select the corresponding *ResQualCode* (**NR**) and *QACode* to indicate that no data was collected.

To enter discharge measurements data, tab through and enter data into the fields as follows:



Site Code **403S01883** Site Name: **Lockwood Creek** Date: **06/01/10**

### Discharge Measurements

1st measurement = left bank (looking downstream)

Select Measurement Type

- Velocity Area
- Buoyant Object Method

Check if Discharge is unable to be measured

Flag

Velocity Collection Device

Calibration Date

MPSL-DFG Marsh McBurney Flow Meter

06/01/10

Velocity Area Method (preferred)

Transect Width: (m)

13.7

Flag

	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)	Flag		Distance from Bank (cm)	Depth (cm)	Velocity (ft/sec)	Flag
1	0	10	0.08		11				
2	200	14	0.37		12				
3	300	16	0.85		13				
4	400	17	1.31		14				
5	500	20	1.62		15				
6	600	21	1.52		16				
7	700	18	1.12		17				
8	800	10	0.05		18				
9	900	7	0.02		19				
10	1000	3	0.41		20				

- Select Measurement Type, either Velocity Area or Buoyant Object Method. Only one section can be populated.
- The following steps are for the Velocity Area measurement type.
- Select the appropriate *Collection Device* for the velocity meter and enter the *Calibration Date*. If the calibration date is unknown, leave the default of 1/1/1950.
- Enter the Transect Width in meters.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies only to the Transect Width.
- Tab through to enter the Discharge Measurements data for each row.
- Velocity should be recorded in feet per second (ft/sec) rather than meters per second. The other parameters are measured in centimeters.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to the entire row. If only one of the measurements requires a flag, the flags that don't belong can be removed using the appropriate Data Review query after this form has been saved. This will change the data in the backend database and update all affected measurements so the flag is applied to the correct measurement.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.



Buoyant Object Method					Float Reach Cross Section				
(use ONLY if velocity area method not possible)									
	Float 1	Float 2	Float 3	Flag	width (m) depth(cm)	Upper Section	Middle Section	Lower Section	Flag
Distance(m)	7	7	7		Width	0.9	1.3	1.4	
Float Time (sec)	19.7	20.2	21.6		Depth 1	1	1	1	
					Depth 2	0	3	1	
					Depth 3	6	2	2	
					Depth 4	1	3	15	
					Depth 5	1	1	1	

- The following steps are for measuring Discharge Measurements using the Buoyant Object Method.
- Tab through to enter the Discharge Measurements data.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies to the entire row. If only one of the measurements requires a flag, the flags that don't belong can be removed using the appropriate Data Review query after this form has been saved. This will change the data in the backend database and update all affected measurements so the flag is applied to the correct measurement.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.

Notable Field Conditions (check one box per topic)				Flag
<b>Evidence of recent rainfall (enough to increase surface runoff)</b>	No <input checked="" type="checkbox"/>	minimal <input type="checkbox"/>	>10% flow increase <input type="checkbox"/>	
<b>Evidence of fires in reach or immediately upstream (&lt; 500 m)</b>	No <input checked="" type="checkbox"/>	< 1 Year <input type="checkbox"/>	< 5 Years <input type="checkbox"/>	
<b>Dominant Landuse/ Landcover in area surrounding reach</b>	Agriculture <input checked="" type="checkbox"/>	Forest <input type="checkbox"/>	Rangeland <input type="checkbox"/>	
	Urban/Industrial <input type="checkbox"/>	Suburb/Town <input type="checkbox"/>	Other <input type="checkbox"/>	

- Complete the Notable Field Conditions section by clicking in the box to record the appropriate condition for each parameter.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies only to the single notable field condition.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.





**Additional Habitat Characterization**

Check if using **High Gradient** (i.e., Riffle/Run) thresholds  
 Check if using **Low Gradient** (i.e., Glide/Pool) thresholds

Check High Gradient if unknown

PARAMETER	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
<b>Epifaunal Substrate/ Cover</b>	<b>High Gradient:</b> Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of submerged logs, undercut banks, cobble or other stable habitat.	<b>High Gradient:</b> 40-70% mix of stable habitat; well suited for full colonization	<b>High Gradient:</b> 20-40% mix of stable habitat; substrate frequently disturbed or removed.	<b>High Gradient:</b> Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	Flag <input type="text"/>	<b>Low Gradient:</b> Threshold is greater than 50%	<b>Low Gradient:</b> Threshold is 30-50%.	<b>Low Gradient:</b> Threshold is 10-30%.
Score:	<b>20 19 18 17 16</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>15 14 13 12 11</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>10 9 8 7 6</b> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>5 4 3 2 1 0</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Sediment Deposition</b>	<b>High Gradient:</b> Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	<b>High Gradient:</b> Some new increases in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected.	<b>High Gradient:</b> Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected.	<b>High Gradient:</b> Heavy deposits of fine material, increased bar development; greater than 50% of the bottom changing frequently.
	Flag <input type="text"/>	<b>Low Gradient:</b> Threshold is less than 20%.	<b>Low Gradient:</b> Threshold is 20-50%.	<b>Low Gradient:</b> Threshold is 50-80%.
Score:	<b>20 19 18 17 16</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>15 14 13 12 11</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>10 9 8 7 6</b> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>5 4 3 2 1 0</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Channel Alteration</b>	<b>High Gradient:</b> Channelization or dredging absent or minimal; stream width normal pattern.	<b>High Gradient:</b> Some channelization present (e.g., bridge abutments); evidence of past channelization (>20 yrs) may be present, but recent channelization is not present.	<b>High Gradient:</b> Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	<b>High Gradient:</b> Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	Flag <input type="text"/>	<b>Low Gradient:</b> Threshold is the same.	<b>Low Gradient:</b> Threshold is the same.	<b>Low Gradient:</b> Threshold is the same.
Score:	<b>20 19 18 17 16</b> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>15 14 13 12 11</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>10 9 8 7 6</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<b>5 4 3 2 1 0</b> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

- In the Additional Habitat Characterization section, check the box to indicate whether High or Low Gradient thresholds were used. Then select the appropriate value for each analyte.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies only to the single habitat characterization analyte.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.
- Once all required fields are entered, click on the SAVE button. If any required fields are missing, they will be highlighted red. After the missing fields are filled out or a *ResQualCode* of **NR** or **ND** and the appropriate *QACode* is applied, click on the SAVE button again. A box will appear after the data has been saved, click OK. This will save the data on this form and switch to the next form for data entry. After this button is pressed, you will not be able to go back to this form to review or edit data. Any changes to the data after it is saved will need to be done through the queries.

xii. Enter Algae, Water Quality and BMI Samples

The *Site Code* (StationCode), *Site Name*, and *Date* fields are pre-populated based on the Reach form. If no algae, water chemistry, and/or BMI samples were collected and no comments need to be recorded, click the CLOSE (NO DATA COLLECTED) button at the bottom of the screen to complete the data entry for this sample. No other data can be entered for this sample except through queries in the Data Review form.

To enter algae, water quality and/or BMI sample information, tab through and enter data into the fields as follows: Note that not every section needs to be completed. For example, if algae samples were not collected, skip that section and start with water chemistry.

Algae Samples & Comments

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: March 2012

Site Code: 403501883 Site Name: Lockwood Creek Date: 06/01/2010

ALGAE SAMPLES								
Collection Method	Algae_SWAMP							
Replicate	1							
Collection Device  Select the # of transects per device for each Collection Method/ Replicate Combination	Rubber Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 1	Rubber Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 0	Rubber Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 0	Rubber Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 0
	PVC Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 10	PVC Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 0	PVC Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 0	PVC Delimiter <small>(area = 12.6cm<sup>2</sup>)</small>	# Transects 0
	Syringe Scrubber <small>(area = 5.3cm<sup>2</sup>)</small>	# Transects 0						
	Transect Total	11	Transect Total	0	Transect Total	0	Transect Total	0
Check if other collection devices were used	Other	<input type="checkbox"/>						
Collection Device selected	RubDelim & PVCDelim		Not Recorded		Not Recorded		Not Recorded	

- If Algae samples were collected:
  - Select the appropriate *Collection Method* for the algae sampling.
  - Select *Replicate* number.
  - Enter the *Number of Transects* where the corresponding *Collection Device* was used. Note, the Transect Total should not be greater than 11.
  - Check the box if Other collection devices were used and note in the Algae Comments the device, number of transects where this device was used, and the sample area of the device.



Volumes (mL)	Volume	Flag	Volume	Flag	Volume	Flag	Volume	Flag
Composite	905							
Diatom Taxonomy	45							
Algae Taxonomy	45							
Chlorophyll	25							
Biomass/ AFDM	25							
Qualitative sample is required to be collected if a soft/diatom sample is collected even if macroalgae is not visible	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Algae Comments								

- Enter the volumes collected in milliliters (mL) for each sample type.
- If necessary, enter the appropriate Flag, *ResQualCode* and *QACode*. In this section, the flag applies only to the single volume and method/replicate combination.
- If an incorrect flag is chosen or if a flag needs to be removed, it can be cleared by double-clicking the cell or putting the cursor in the cell and selecting the Reset Field button from the Bioassessment toolbar.
- Check the next box to indicate whether a qualitative sample was collected. If one was not collected, a pop-up box will appear where a comment can be recorded as to why it was not collected.
- Repeat the above steps for each method/replicate combination collected without duplicating the combination.
- Enter any comments about the algae sampling and collection.

Water Samples	15:30	If Water Chemistry collection time differed from time entered on first form, please update the collection time here (note: initial time shown as FYI unless changed). This time should be used on COCs for all benthic, algae, and water samples collected if applicable.
	<input checked="" type="checkbox"/>	Check if a Water Chemistry Grab sample (e.g., nutrients, SSC/TSS) was collected.
	<input type="checkbox"/>	Check if a DUPLICATE Water Chemistry Grab sample (e.g., nutrients, SSC/TSS) was collected.
Water Chemistry Comments		

- If Water Chemistry samples were collected:
  - If the collection time for the water chemistry samples differs from the bioassessment collection start time, enter the water chemistry collection time here. This is important for assessing holding time requirements.
  - Check the next box if a Water Chemistry Grab Sample was collected. This will be replicate one.
  - Check the next box if a duplicate Water Chemistry Grab Sample was collected. This will be replicate two.
  - Enter any comments regarding the water chemistry sampling and collection.

Sediment Samples	Sediment Collection Device	scoop, polycarbonate	Collection Depth (cm)	2
	<input checked="" type="checkbox"/>	Check if a Sediment Chemistry Integrated sample was collected.		
	<input type="checkbox"/>	Check if a DUPLICATE Sediment Chemistry Integrated sample was collected.		
Sediment Comments				



- If Sediment Chemistry samples were collected:
  - If the collection time for the sediment chemistry samples differs from the bioassessment collection start time and there is no water chemistry collection, enter the sediment chemistry collection time above in the Water Samples section. This is important for assessing holding time requirements.
  - Select the appropriate Sediment Collection Device from the list. The check boxes below will then be available for editing.
  - Enter a Collection Depth of 2 or 5 centimeters (cm) or type in an alternate value.
  - Check the next box if a Sediment Chemistry Integrated Sample was collected. This will be replicate one.
  - Check the next box if a duplicate Sediment Chemistry Integrated Sample was collected. This will be replicate two.
  - Enter any comments regarding the sediment chemistry sampling and collection.

BMI SAMPLES					
Replicate	Collection Method	Collection Device	Number of Transects	Sieve Size (mm)	Number of Jars
1	BMI_RWB	D-Frame Kick Net	11	0.5mm	1
		D-Frame Kick Net	11	0.5mm	1
		D-Frame Kick Net	11	0.5mm	1
		D-Frame Kick Net	11	0.5mm	1
<b>BMI Comments</b>					
<b>Field Notes/ Comments</b>					

Save

Close (no data collected)

- If Benthic Macroinvertebrate (BMI) samples were collected:
  - Select the *Replicate* for the BMI sampling.
  - Select the *Collection Method*.
  - The Collection Device is defaulted to D-Frame Kick Net but a different device can be selected if applicable.
  - The Number of Transects represents the number of transects sampled to attain that BMI sample (e.g., 11 for BMI RWB, 8 for BMI TRC).
  - The Sieve Size represents the mesh size of the collection device and is defaulted to 0.5mm..
  - The Number of Jars represents the number of jars that the sample was put into. If >4 jars were used, type in the number.
  - Repeat the above steps for each method and replicate combination collected.
  - Enter any comments regarding the BMI sampling and collection.
- Enter any general comments regarding the sampling event in the Field Notes/Comments section.
- Once all required fields are entered, click on the SAVE button. If any required fields are missing, they will be highlighted red. After the missing fields are filled out or a *ResQualCode* of **NR** or **ND** and the appropriate *QACode* is used, click on the SAVE button again. A box will appear after the data has been saved, click OK. This will save the data on this form and the data entry for this sample will be complete. After this button is pressed, you will not be able to go back to this form to retrieve or edit data. Any changes to the data after it is saved will need to be done through the queries.



### xiii. Continue Entering a New Record

When entering a new record, the process can be stopped at the end of each form after the SAVE button is clicked and it can be continued at a later time. Note, if the form is not completely populated and saved, that particular data within that form will be lost and data entry will resume on that form with blank fields. To continue entering a suspended data entry record, click the RESUME ENTRY FROM PREVIOUS SESSION button at the top of the Main Menu under Data Entry.

The screenshot shows a web application window titled "Suspended Data Entry". At the top left, there is a date input field containing "6/14/2011". The main title "Suspended Data Entry" is centered at the top, with a clock showing "7:51 PM" on the right. Below the title is a table with the following columns: Data Entry ID, UserID, Data Entry Start Date, SiteID, Sample Date, Last Completed Form Name, Last Form Completion Date, Next Form Name, Last Transect, and Next Transect. A red text prompt "Click on ID to RESUME" is located above the table. The table contains one record with the following values: Data Entry ID: 1, UserID: (blank), Data Entry Start Date: 06/13/2011, SiteID: 403501883, Sample Date: 06/01/2010, Last Completed Form Name: frmdischarge, Last Form Completion Date: 06/14/2011, Next Form Name: frmAlgae-GeneralComments, Last Transect: (blank), and Next Transect: (blank). Below the table is a "Close" button. At the bottom of the window, there is a record navigation bar showing "Record: 1 of 1" with navigation icons.

- All previous suspended data entry sessions will be listed.
- Click on the Data Entry ID to resume a particular data entry session where it was stopped.

### c. Check and Edit Bioassessment Data Using Queries

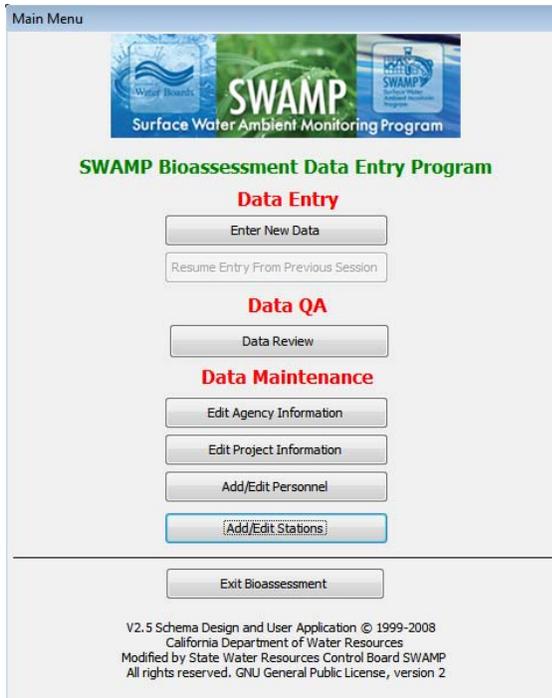
It is important to review the data that was just entered into the database to check the results and add any missing information and/or to change any *ResQualCodes* or *QACodes* if necessary. The SWAMP Bioassessment Field Data Entry forms only record data to the backend database. Data cannot be viewed in the forms once it is saved. The Data QA section is used to check records after they have been entered.

The most efficient way to do this is to use the pre-built queries in the SWAMP Bioassessment Field Data Entry file where specific queries can be chosen. Some fields need to be updated using the Main Menu WQ forms in the SWAMP backend database. This option is best when making certain edits, but a good knowledge of Location Codes and the SWAMP protocol is required when checking data. Experience will let you know which option is best for the task.

### i. Using the SWAMP Bioassessment Field Data Entry Queries

To link the SWAMP Bioassessment Field Data Entry forms to a backend database follow the instructions under [Database Linking for Data Entry](#). After linking, the SWAMP Bioassessment Data Entry Program Main Menu screen should appear as follows:





- Click on the Data Review button under the Data QA header to open a list of queries used to view and edit data.
- There are some fields in the queries that are not editable. If a field says 'EDITHERE\_...', that cell may be edited. If the field says 'DONOTEDIT\_...', that cell should not be edited.



**SWAMP Bioassessment Data Entry QA Review**

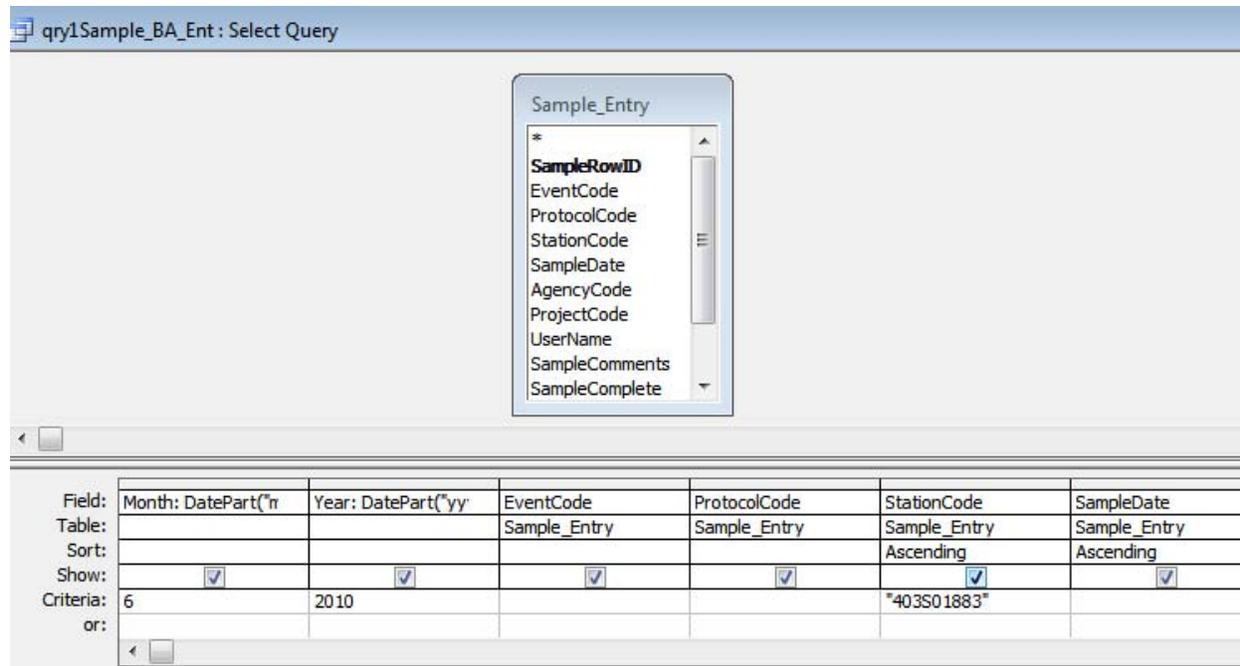
BA Queries		WQ Queries	
<input type="button" value="Run Query"/>	<input type="text" value="Algae Sample Information"/>	<input type="button" value="Run Query"/>	<input type="text" value="Water Chemistry Collection"/>
<input type="button" value="Run Query"/>	<input type="text" value="Benthic/Algae Collection Information"/>		
<input type="button" value="Run Query"/>	<input type="text" value="Distance Calculations"/>		
BA Field Queries			
<p><b>Open and view Sample BA Information and Sample Information in Design view to add specific criteria (e.g., Station code) to limit the other queries</b></p>		<input type="button" value="Run Query"/>	<input type="text" value="Transect"/> <input type="button" value="InterTran"/>
<input type="button" value="Run Query"/>	<input type="text" value="Sample BA Information"/>	<input type="button" value="Run Query"/>	<input type="text" value="Taxa Template"/>
<input type="button" value="Design View"/>		<input type="button" value="Run Query"/>	<input type="text" value="COC Template Information"/>
<input type="button" value="Run Query"/>	<input type="text" value="Sample Information"/>		
<input type="button" value="Design View"/>			
<input type="button" value="Run Query"/>	<input type="text" value="Probe and Velocity"/>		
<input type="button" value="Run Query"/>	<input type="text" value="Discharge"/>		
<input type="button" value="Run Query"/>	<input type="text" value="Slope"/>		
<input type="button" value="Run Query"/>	<input type="text" value="Notable Field Conditions&lt;br/&gt;Additional Habitat Characteristics"/>		

Wednesday, July 20, 2011

12:37:58 PM

- Click the Design View button for Sample BA Information query.





- Enter the Criteria in the appropriate fields.
  - Enter the *StationCode* of the sample to limit the subsequent queries. For example, if the user wants to limit queries to the station that was recently entered into the database, enter that station code in the Criteria cell under the field *StationCode*.
  - Enter the month and/or year in *DatePart* of the previously entered data if desired.
  - To enter a date range in the criteria instead of a single month and year, type ">#mm/dd/yyyy# and <#mm/dd/yyyy#" in the *SampleDate* criteria to find samples that are greater than date one and less than date two. For example, to query all records in March and April of 2010 enter ">#02/29/2010# and <05/01/2010#".
  - Save the query. This will save the criteria just entered and will limit subsequent queries to these samples.
  - Run the query to check that the criteria selected is narrow enough for future queries.
  - Check the data in this query for data entry errors relating to the Sample.
- Repeat the above steps for the Sample Information query.
  - Check the sample information.
  - Check for completeness of results.
- Under the BA Queries header, run query Algae Sample Information.
  - Check the sample details relating to Algae.
  - Check for completeness of results.
- Run query Benthic/Algae Collection Information.
  - Check the collection details relating to BMI and Algae samples.
  - Check for completeness of results.
- Run query Distance Calculations.
  - Check the distance from the actual lat/longs to the target lat/longs. Note, this query is not based on the Sample BA Information query and the user will need to re-enter the criteria for limiting the query output by going into the design view of the Distance Calculations query.
- Under WQ Queries, run query Water Chemistry Collection.
  - Check the collection details (e.g. time) relating to the water chemistry collection.
  - Check for completeness of results.



- Under BA Field Queries, run query Probe and Velocity.
  - Check accuracy of *CollectionDevice*.
  - Check results including ranges, significant figures, and trailing 0's.
  - Check *ResQualCodes* and *QACodes* to be sure they were entered correctly.
- Run query Discharge.
  - Check accuracy of *CollectionDevice*.
  - Check results including ranges, significant figures, and trailing 0's.
  - Check *ResQualCodes* and *QACodes* to be sure they were entered correctly.
- Run query Slope.
  - Check accuracy of *CollectionDevice*.
  - Check results including ranges, significant figures, and trailing 0's.
  - Check *ResQualCodes* and *QACodes* to be sure they were entered correctly.
- Run query Notable Field Conditions Additional Habitat Characteristics.
  - Check variable results for the appropriate values.
  - Check *ResQualCodes* and *QACodes* to be sure they were entered correctly.
- Run queries, Transect A through Transect K.
  - Check results and variable results including ranges, significant figures, and trailing 0's.
  - Check *ResQualCodes* and *QACodes* to be sure they were entered correctly and applied to the appropriate analyte and location code.
- Run queries, InterTransect AB through InterTransect JK.
  - Check results and variable results including ranges, significant figures, and trailing 0's.
  - Check *ResQualCodes* and *QACodes* to be sure they were entered correctly.
- After all the data entry is cleaned up and complete, run the following queries.
  - Run query Taxa Template to output the sample and benthic collection information necessary to export into the SWAMP Taxonomy template prior to sending BMI and/or Algae samples to the lab(s).
  - If the SWAMP eCOC template is used, run query COC Template Information to provide the basic information needed to populate the eCOC.

## ii. Using the Backend Database

Several fields need to be populated using the WQ forms in the SWAMP backend database after Bioassessment form entry is complete.

- Open the SWAMP 2.5 backend database.

The screenshot shows the SWAMP 2.5 backend database interface. At the top, there is a 'Main Menu' header with logos for Water Boards, SWAMP, and the State Water Resources Control Board. Below the header, there are several sections: 'Data Sets' with a yellow-bordered 'ENTRY' button and a 'PERMANENT' button; 'Data' with a dropdown menu set to 'BA', 'Add / Edit', and 'Grouping' buttons; 'Database Procedures' with 'Commit' and 'Export' buttons; 'Lookup Tables' with a dropdown menu set to 'Lab Batch', 'View / Edit', and 'Print' buttons; and 'Reports' with a dropdown menu set to 'Export logs' and a 'Preview' button. A large red-bordered 'EXIT Database' button is located at the bottom right. Copyright information and a 'Last Modified' date are also visible.



- When the Main Menu opens, select BA under the Data drop-down field and click on the ADD/EDIT button.

- In the Editing Entry BA Data form, perform the following steps:
  - Select **BA** event.
  - Select the correct *Protocol* (should be SWAMP\_2007\_WS in most cases).
  - Select the *Station* and *Date* of interest.
  - Click on the RETRIEVE button.
  - Once the correct Station is selected, click on the Edit button and make the following additions if necessary:
    - In the sample table (upper section) complete the following fields:
      - FundingID
      - GroupSample
    - Changes can also be made to other data if the correct Location is retrieved.
  - Click on the SAVE button.
  - Click on the MAIN MENU button to exit.

## 6. CHECKING DATA FOR QUALITY ASSURANCE

It is necessary to verify accuracy of the entered data periodically after it is entered. Although there is no official SWAMP guidance at this time, the recommended method for doing so is through the Data Review queries within the forms (see [Check and Edit Bioassessment Data Using Queries](#) section) or through the SWAMP Query Database.

