Water Quality Probes: Installation, Operation, Calibration, and Maintenance

Monday

8:00 **Welcome/Introductions** — Janice Fulford, Instructors/Students

8:45 **Water Temperature (WT)** — Evans

Units of measure
How is it measured
What do temperature probes look like ?
Normal measurement range
Calibration and checkout of temperature probes
How temperature affects other parameters

9:15 **Conductivity (SC)** — Bennett

What is it ?
What are the units of measure ?
How is it measured ?
What do the probes look like ?
What are "normal" numbers for different types of water ?
What affects conductivity ?
Conductivity versus specific conductance
Calibration methods and solutions
Cell constants – What are they ?
Relationship to salinity

9:45-10:00 Break

10:00 **pH** — Bennett

What is it ?
What are the units of measure ?
How is it measured ?
What do the probes look like ?
What are "normal" numbers for different types of water ?
What affects pH ?
Calibration methods and solutions

10:30 <u>Dissolved Oxygen (DO)</u> Fountain/ Snazelle

What is it ?
What are the units of measure ?
How is it measured ?
- Clark cell
- Optical
- Other

Dependence on stirring of solution
Barometric pressure effects
What do the probes look like ?
What are "normal" numbers for different types of water ?
What affects DO ?
Calibration methods and solutions
- Winkler titration
- Aeration to saturation
- Measuring with another instrument

USGS DO Table (will show web site and how to use) Evans

11:00 <u>Turbidity (TBY)</u> Evans

What is it ?
What are the units of measure ?
- FTU, FNU, JTU

How is it measured ?
- Secchi disk
- Optical absorption
- Optical scatter

What do the probes look like ?
What are "normal" numbers for different water clarities ?
What affects Turbidity ?
Suspended solids
Calibration methods and solutions

<u>11:30 LUNCH</u>

12:30 <u>YSI Sonde Setup (using the 650/computer)</u> Bennett, Fountain

Classroom Exercise/Demonstration

1:00 <u>YSI Sondes</u> Garcia, Evans,
-4:30 Sonde construction Bennett

Probe installation and removal
Care and maintenance
Common problems **(Student Group #1 in QW Lab)**
Troubleshooting hints
Calibration of probes
Antifouling methods and practices
Cleaning of sensors in a Lab
Using handheld "readers" with Sondes
Prepare field kits (each team please prepare your field kits)

1:00 -4:30 **Interfacing YSI Sondes with Data Collection Platforms** — Pardee, Fountain, DarDar

Sonde setup for internal logging
Timing issues for internal versus external logging
Cabling
Connections to the DCP — **(Student Group #2 in Classroom)**
Programming the DCP
Checking the Sonde for proper operation
Logging data in the DCP
Data retrieval and review

4:30 Dismissed

Tuesday

8:00 -11:30 **YSI Sondes** — Garcia, Evans, Bennett

Sonde construction
Probe installation and removal
Care and maintenance
Common problems — **(Student Group #2 in QW Lab)**
Troubleshooting hints
Calibration of probes
Antifouling methods and practices
Cleaning of sensors in a Lab
Using handheld "readers" with Sondes
Prepare field kit (each team please prepare your field kits)

8:00 -11:30 **Interfacing YSI Sondes with Data Collection Platforms** — Pardee, Fountain, DarDar

Sonde setup for internal logging
Timing issues for internal versus external logging
Cabling
Connections to the DCP — **(Student Group #1 in Classroom)**
Programming the DCP
Checking the Sonde for proper operation
Logging data in the DCP
Data retrieval and review

11:30 LUNCH

"Weather Option: Do Wednesday Morning here"

12:30 **Introduction to Eco-Watch Lite** — Bennett, Evans, Fountain

Downloading files from 650 to PC
Looking at data and graphs
Exporting files
Exercise

1:30 **New Instrument- Xylem-EXO** — Snazelle

Testing results

2:00-2:15 Break

2:15 **Xylem EXO** Snazelle,Bennett

Sonde construction
Probe installation and removal
Care and maintenance
Common problems **(All students- Lab)**
Software
Calibration of probes
Antifouling methods and practices
Cleaning of sensors in a Lab
Using handheld "readers" with Sondes

4:30 **Discussion of Field Deployment at Pearl River Site** Evans, Fountain

QW field form
Field Kits

5:00 **Dismissed**

Wednesday

8:00 **Travel to Pearl River test facility** ALL

8:15 **Installation and Setup of QW Probes with DCPs in Pearl River** Instructors

Field Calibration Check
Side-by-Side Checks with Field Sondes
Recording Calibration & Installation Data (Paper Forms)
Installing QW Probes and Wiring to DCPs
Programming the DCP
Checking for Proper Operation
Remove/download of YSI Sonde after 1 month deployment

11:30 LUNCH

12:30 **Recap of Installation Session; Questions and Answers** Instructors

12:45 **New Trends and New Instruments** Fulford

1:15 **Site Selection for QW Probes** Evans, Bennett

Classroom Discussion of Installation Issues Fountain
Slideshow of Various Installations/Deployments
Profiling, Etc… with QW Probes

1:45 **HIF Programs and Issues** Henry

The HIF rental program Jones
Issues with rental probes
HIF Instrument News

Wednesday con't

2:15 Break

2:30 Introduction to CHIMP software Evans

Input data from field deployment (from QW form)
QW Tools
Follow along exercise with your PDA

5:00 Dismissed

Thursday

8:00 Discuss Plans for Servicing Visit at Pearl River Instructors

8:15 Travel to Pearl River Test Facility ALL

8:30 Field Servicing and Data Retrieval Practices Instructors

Full Sonde Inspection Students
Downloading Data (Internal and DCP)
Recording Site Visit Information
- Paper Forms
- PDAs (Chimp)

11:30 LUNCH

12:30 Tour of HIF Hydraulics Lab

1:45 Data Post-Processing from field site Instructors

Failure and Fouling Issues
Watching for Trends in Data
Good QW Records versus Erroneous Data

3:30 Field Equipment and Toolkits Instructors

Student Toolkits
Suggestions from Instructors
General Discussion and Idea Sharing

4:00 Question/Answer Session Instructors/Students

Suggestions for improvements to class
Class evaluation

4:15 Box up materials for sending home Students

4:30 Dismissed

Instructors:

Jon Evans	Hydrologic Technician	Norcross, GA
Trudy Bennett	Supervisory Hydrologic Technician	Wichita, KS
James Fountain	Hydrologic Technician	Baton Rouge, LA
		Stennis Space Center, MS (HIF)
Lisa Garcia	Engineering Technician	"
Richard Pardee	Electronics Technician	"
Janice Fulford	Testing Section Chief	"
Teri Snazelle	Lead Chemist	"
Keith DarDar	Electronics Technician	"

Other Speakers:

Janice Fulford	Chief, HIF and Testing Section Chief	Stennis Space Center, MS (HIF)
Frank Henry	Asst Chief, HIF	"
Joanne Jones	Technical Info Specialist	"