MBNEP Science Advisory Committee Meeting
January 17, 2017
The River (Delta) State

- 14 Basins
- 629 Subwatersheds
- 129,769 river/stream miles
- 490,472 acres in 43 reservoirs and lakes
- 3,600,000 acres of freshwater wetlands
- 610 mi² of estuaries, tidal waterways, and bays (Mobile Delta: Second largest intact river delta system in US)
Alabama Water Resources
Municipal, Industrial, Agricultural Uses
Alabama Water Resources
Recreation
Alabama Water Resources
Aquatic Biodiversity: #1 in North America
ADEM
Water Quality Monitoring
Rivers and Streams Monitoring Program (RSMP)
Rivers and Reservoirs Monitoring Program (RRMP)
Fish Tissue Monitoring Program (FTMP)
ADEM Coastal Monitoring Programs
ADEM Coastal Water Quality Monitoring Programs

- Coastal Waters Monitoring Program (CWMP)
- Alabama Coastal Nonpoint Pollution Control Program (ACNPCP) (6217)
- Coastal Alabama Recreational Waters Program
  - Beach Monitoring
- EPA National Coastal Condition Assessment
Wetlands Monitoring Program
From Basin Rotation to Statewide Monitoring 1996-2015

Statewide monitoring over a 5-year period
ADEM’s 2015 Monitoring Strategy
Statewide Monitoring

- **Advantages**
  - More frequent, intensive monitoring
    - NPS and TMDL “success” stories
    - Trends in water quality
  - Address different data needs of basins
    - Refine reference conditions
    - Respond to data needs more quickly
  - Dataset less impacted by weather
  - Program planning
    - Even resource needs year-to-year
    - Smaller basin plans that can be implemented by basin teams
ADEM’s 2016 and 2017 Monitoring Plan

- 2016: 308 Monitoring Locations, statewide
  - 39 in Baldwin and Mobile Counties

- 2017: Approx 300 locations statewide
  - Approx. 40 in Baldwin and Mobile Counties
Objective: determine background conditions in different waterbody types

• Blackwater streams in South Alabama
  • 36 sites in south Alabama
    • Color and DOC
• Riverine wetlands
  • 9 sites in east central Alabama
    • Cubahatchee, Calabee, and Line
• Study-specific reference reaches
Riverine Wetlands: Site Surveys 2017

- Vegetation Surveys: May 2017
  - Five 100 m² plots per site

- Soil surveys: May 2017
  - Soil pit with an on-site description of the soil profile and survey of hydric soil field indicators

- Water Table Monitoring Wells: 2017
  - Continuous data logger deployed in each well

- Water Chemistry Data (Monthly Apr-Nov)
  - Collected from a stream on each site
  - Affected by drought: Will extend into Spring, 2017

- Habitat Assessment (RAM): May 2017

- Amphibian Surveys: May 2017
Siltation Monitoring Indicators

Three types:
- **Visual Habitat Assessment**
  - Availability/quality of habitat to support aquatic communities
- **Siltation Survey**
  - Estimate sediment movement during high flow events
- **Real-Time Sediment Loading**
  - Measure TSS and turbidity through an entire high flow event
Siltation Surveys: 2016-2017

- Corer method
- 24 stations within AL
  - Habitat assessment/siltation data sheet
  - Stream flow measurement
  - Background turbidity sample
  - 5 instream suspended sediment samples
- Currently processing and analyzing data
- Working along with Water Division TSS study
- Problems encountered:
  - Drought
  - Stream size limited by depth of corer

- Plans for 2017
  - 20 stations within AL
2016-2017 CWMP Coastal Monitoring

CWMP: revised 2015-16
- 3-year monitoring cycle
- All stations sampled 8x
  - Growing season
2016: West
2017: Mobile Bay
2018: East

Estuary nutrient criteria development
MBNEP Request:
D’Olive and Tiawasee Monitoring 2016-2017

2016
- 4 study reaches established
- 2 study-specific reference reaches established

2017
- Same as above
- DOCB-1 moved to DOCB-1a, based on USGS recommendation
- 2 additional reference reaches monitored

• Sampling Summary:
  • Monthly water quality sampling (Mar-Oct)
  • Macroinvertebrate Surveys
  • 2017: Siltation surveys and real-time flow/TSS monitoring added at DOCB-1a and TWCB-1
MBNEP Request for Monitoring
MBNEP Request for Monitoring
ADEM WQ Monitoring
Data and Reports

http://www.adem.state.al.us/programs/water/waterquality.cnt
Thank you!
RSMP Information

Lisa Huff
Environmental Indicators Section, Chief
ADEM Field Operations–Montgomery
esh@adem.state.al.us
334-260-2752
RRMP Information

Gina Curvin
Air/Facilities Section, Chief
ADEM Field Operations–Montgomery
GCurvin@adem.state.al.us
334-260-2783
Coastal Monitoring Contacts

- Supervisor: Mark Ornelas
  - 251-450-3400
  - meo@adem.state.al.us

- CWMP and NCCA: Joie Horn
  - mjhorn@adem.state.al.us

- ACNPCP: Randy Shaneyfelt
  - rcs@adem.state.al.us

- Beach Monitoring: Suzi Rice
  - srice@adem.state.al.us
FTMP Information

- Michael Len
  334-267-2787
  mlen@adem.state.al.us

- ADPH (Consumption advisories)
  Dr. John Guarisco
  State Toxicologist
  John.Guarisco@adph.state.al.us
  334-206-5973
Wetlands Information

Bonnie Coleman
Aquatic Assessment Unit, Chief
ADEM Field Operations–Montgomery
bcoleman@adem.state.al.us
334-260-2737
**MBNEP Request for Monitoring**

- Requested sites reconnned December 2015
- Macroinvertebrate assessments appropriate at five study locations
  - DAE (UDOB-1) 0.04 sq mi 65f
  - JBO (JOBB-1) 0.9 sq mi 75a
  - D4-D6 DS (DOCB-2) 2.46 sq mi 65f
  - TC7 DS (TWCB-1) 4.85 sq mi 65f
  - DCB (DOCB-1) 5.34 sq mi 75a
- Two reference reaches (Folley Cr & Gunnison Cr)
  - FYCE-1 3.55 sq mi 65f
  - GNNM-1 11.46 75a
MBNEP Request for Monitoring: Map of ADEM sampling sites
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MBNEP Request for Monitoring
MBNEP Request for Monitoring
Siltation

- Still in the developmental stage
- Goal: to determine sediment movement within a stream by rain events/high flow conditions
Siltation

- Simulate high flow conditions
- Quorer method
Siltation

- 24 stations within AL
- Habitat assessment/siltation data sheet
- Stream flow measurement
- Background turbidity sample
- 5 instream suspended sediment samples
Siltation

- Currently processing and analyzing data
- Working along with Water Division TSS study
- Problems encountered:
  - Weather cooperation
  - Stream depth limitations
Bonnie Coleman
Field Operations Division, Montgomery Branch
Phone: (334) 260-2737
Email: bcoleman@adem.alabama.gov
2015 Monitoring Strategy
Priorities and objectives

Assess water quality
• Monitor waters in all 5 assessment categories

Evaluate program effectiveness
• Estimate trends after BMP implementation
• Estimate trends after TMDL implementation

Develop criteria & indicators
• Refine reference conditions and site classes
• Nutrient criteria
• Siltation indicators
• Biological indicators

• Collaborate with agency partners and stakeholder groups to meet common goals
• Lay groundwork for 2020 Monitoring Strategy
2016 SWQMP Priorities
Assess waters in all categories

1: fully meeting all use classifications
5: not meeting one or all use classifications (303d list)

2: Insufficient data
2a: available data indicate impairment
2b: available data do not indicate impairment
3: No data available

4: Waterbody impaired but remediation plan in place
4a: Approved TMDL
4b: Other action expected to result in attainment
4c: impairment not caused by pollutant
ADEM 2016 Monitoring Plan

- 308 Monitoring locations statewide
- 39 in Baldwin and Mobile Counties
- Coastal Monitoring Program revised
  - Development of nutrient criteria for estuaries
  - Coastal area divided into 3 zones
    - West (2016)
    - East
    - Mobile Bay
2016-2017
RRMP and Nutrient Embayment Studies

2016 RRMP
- 3-year monitoring cycle
- 2016: Coosa and Tombigbee

2017 RRMP: Black Warrior, Escatawpa, SE

Nutrient Embayment Studies:
- Concentrate monitoring efforts in embayments during intensive RRMP sampling
  - slower flows, open canopy=good conditions for expression of nutrient enrichment issues
- Additional indicators: Diurnal DO studies
CWMP 2016: Monitoring Zones*

*Intensive monitoring stations only.
WQ Planning Projects

- **Tributary Embayment Surveys**
  - 72 hour deployments
  - DO, temp, pH, cond, turb, chla
  - Use a buoy/anchor system to deploy anywhere vs. being dependent on near-shore structure such as piers & docks
  - Provides valuable data for nutrient criteria development and for assessment/listing

- **Sediment/Turbidity Research**
  - Teaming up with USGS in FY16
  - Funding 4 new stream gages
  - Little Coon Creek, Estill Fork – Tennessee Basin
  - Line Creek, Cubahatchee Creek – Tallapoosa Basin
  - Stations will report continuous “real-time” flow, temp, turbidity, rain
  - Stations will be equipped to “remotely” sample TSS, Nutrients and other parameters using various triggers such as flow, stage or turbidity to capture storm events.