Site Selection

• Dependent on biological monitoring objective(s)
• Biological Monitoring Fact Sheets, details sampling requirements for each of the four monitoring categories for wadeable freshwater streams
  • Aquatic Life Monitoring
  • Aquatic Life Assessment
  • Receiving Water Assessment
  • Use Attainability Analysis
• Special studies
• Quality assurance document (QAP/QAPP):
  • Sampling objectives
  • Biological monitoring requirements
  • Ensure quality/comparability of data
Where to sample?

• Site selection depends on monitoring objectives
  • ALM: routine, representative site to provide baseline data or determine if ALU is attained; data used in IR
  • RWA: unclassified water bodies, sampling located in relation to discharge point; sample to determine appropriate ALU and DO criteria; may also require sampling of downstream tributaries; coordinate with WQSIT
  • UAA: purpose to determine if existing designated ALU and DO criteria are appropriate. Multiple sites often necessary to adequately characterize ALU for the study area; coordinate with WQSG
  • ALA: essentially UAA on unclassified water bodies, or those not in Appendix D of the Surface Water Quality Standards, and do not support presumed ALU; sample to determine if presumed ALU is appropriate. Multiple sites may be necessary; coordinate with WQSG
Where to sample?

- Site should be representative of biology and water quality
  - Avoid areas with major tributary confluence or contaminant sources
  - 30-100m upstream of bridge
- Reconnaissance trips to assess access, appropriate reaches for sampling, site stability
- Obtain landowner permissions if site must be accessed on private property
- Check for existing SWQM monitoring station
  - Station Location (SLOC) form for new Monitoring Station ID may be required
  - See SWQM Data Management Reference Guide for instructions
- Best available habitat type for benthic macroinvertebrates
  - Riffles
    1. Cobble/gravel
    2. Debris jams
    3. Emergent vegetation
    4. Root wads
    5. Sand
    6. Bedrock
  - Runs and Glides
  - Pools (least preferable habitat)
  - Snags
- Diversity of habitat types for fish
  - Riffles, runs, glides, pools, undercut banks, snags, brush piles
Google it

• Google street view for initial desktop analysis
• Potential site access issues/locations
• Historical imagery
When to sample?

- **Index Period:**
  - Minimize variability, maximize efficiency/accessibility, address critical low-flow/temperature conditions
  - Critical period: minimum flow and DO, maximum temperatures

- **Exceptions:**
  - Special studies with specific seasonal objectives

- Refer to Biological Monitoring Fact Sheets

![Index Period Table]

**Figure 2.1.** The index period.
When to sample?

- Collect biological samples during “stable, unscoured flow conditions”
- Significant scouring events: biological samples should be collected after a minimum of two weeks of normal flow
- Extreme weather conditions: one month of normal flow
What to sample?

• In addition to fish, benthic macroinvertebrate, habitat, 24-hour dissolved oxygen and flow data...
  • General information: monitoring station ID, location, sampling date, time, and depth
    • Coordinates for each end of the reach strongly encouraged
  • Water appearance
  • Water odors
  • Weather
  • Biological activity (e.g. excessive macrophyte or algal growth, presence of fish, birds, amphibians, reptiles and mammals)
  • Stream uses (e.g. swimming, wading, boating, fishing, pumping)
  • Watershed activities (construction, mowing, livestock)
  • Sample information (e.g. number of replicates)
  • Missing parameter(s)
Trip Planning Considerations

• Field sampling crew: 4-6 people usually sufficient
  • Fish, benthic, habitat expertise
• Gather required field gear:
  • Nets, seines, physical habitat equipment, flow meters, electroshocking equipment, boats, etc.
  • First aid kits
  • Labels, field forms (see “Biological Data Summary Packet”)
  • Equipment and Materials list located in Appendix A of SWQM Procedures Manual
• Vehicle maintenance checks
• Trip plan
## Trip Plan

### Monitoring & Assessment Section Trip Plan

**Trip Lead:** Bill Harrison  
**Contact #:**  
**Alt Contact #:**

<table>
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<th>Passengers-Vehicle #3</th>
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<th>License #</th>
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**Purpose of Trip:**  
- Meeting  
- Training  
- Field  
- Benthic Sampling

### Trip Itinerary

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<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Hotel Name</th>
<th>Hotel Phone #</th>
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<tr>
<td>7/1/2015</td>
<td>11:00 am</td>
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<td>Mayan Ranch</td>
<td>(830) 460-3036</td>
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<td>Bandera</td>
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### Trip Plan (continued)

#### FLIGHT INFORMATION

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<th>Other Local Transportation</th>
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#### FIELD PLAN

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<thead>
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<th>Date</th>
<th>Time</th>
<th>Location (nearest town)</th>
<th>Water Body Name</th>
<th>Launch or Access Point</th>
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- **Arrive**: 7/1, 12:00 pm, Medina, North Prong Medina River, SWQM Station 18447 @ SH 16
- **Depart**: 7/1, 5:00 pm, Medina, North Prong Medina River, SWQM Station 18447 @ SH 16
- **Arrive**: 7/2, 9:00 am, Bandera, Medina River, Mayan Ranch
- **Depart**: 7/2, 3:00 pm, Bandera, Medina River, Mayan Ranch

#### Name of Nearest Medical Facility

<table>
<thead>
<tr>
<th>Name of Nearest Medical Facility</th>
<th>Location/Directions</th>
<th>Phone #</th>
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<tbody>
<tr>
<td>Methodist Boerne Emergency Center</td>
<td>134 Menger Springs Ste 2000 Boerne, TX</td>
<td>(830) 331-3000</td>
</tr>
</tbody>
</table>
Trip Planning Considerations

• Meeting/conference call/email to field sampling crew before trip to provide:
  • Contact information
  • Map/directions to sampling site(s)
  • Overview of general sampling plan
  • Let field crew know field sampling assignment so they can review procedures manual if needed prior to sampling
  • Fish crew should be on the TPWD permit
  • Adequate sampling gear for field crew
• Logistical considerations
  • Lunch in field, groceries needed
  • Hotels/lodging arrangements
  • Meeting location

• Field work often requires improvisation!