

PHASE I



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

TEXAS STREAM TEAM

Email to: TxStreamTeam@txstate.edu
Send to: Texas Stream Team
The Meadows Center - Texas State University
601 University Drive
San Marcos, TX 78666-4616

For Office Use Only

Partner ID: _____

Date Received: _____

Date Approved: _____

Approved by (name): _____

CORE ENVIRONMENTAL MONITORING FORM

PLEASE PRINT LEGIBLY

Sample Date

M	M	D	D	Y	Y	Y	Y
---	---	---	---	---	---	---	---

Sample Time (military)

H	H	M	M
---	---	---	---

Community Scientist's Name _____

Site Description Training

Group or Affiliation _____

Site ID #

1	0	0	0	1
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Sample Depth (meters)

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(not total depth)

**Core monitoring type
conducted**

☐ Standard Core ☐ Probe Core ☐ Other

Instrument Calibration: Conducted within 24 hours of sampling. *Store standard solutions and calibrate at room temperature.*

Calibration	Date	Time	Standard Value	Standard Temp (°C)	Pre-Test Calibration Initial Reading	Calibrated To	Post-Test Calibration Initial Reading
Conductivity/Salinity							
Dissolved Oxygen							
pH							

Field Observations:

<input type="checkbox"/>	FLOW SEVERITY: 1-no flow 2-low 3-normal 4-flood 5-high 6-dry
<input type="checkbox"/>	ALGAE: 1-absent 2-rare (<25%) 3-common (26-50%) 4-abundant (51-75%) 5-dominant (>75%)
<input type="checkbox"/>	WATER SURFACE: 1-clear 2-scum 3-foam 4-debris 5-sheen
<input type="checkbox"/>	WATER CONDITIONS: 1-calm 2-ripples 3-waves 4-white caps
<input type="checkbox"/>	PRESENT WEATHER: 1-clear 2-cloudy 3-overcast 4-rain
<input type="checkbox"/>	DAYS SINCE LAST SIGNIFICANT PRECIPITATION (runoff)
<input type="checkbox"/>	RAINFALL ACCUMULATION (inches within the last 3 days)
<input type="checkbox"/>	WATER COLOR: 1-no color 2-light green 3-dark green 4-tan 5-red 6-green/brown 7-black
<input type="checkbox"/>	WATER CLARITY: 1-clear 2-cloudy 3-turbid
<input type="checkbox"/>	WATER ODOR: 1-none 2-oil 3-acrid (pungent) 4-sewage 5-rotten egg 6-fishy 7-musky

Core Tests and Measurements:

<input type="checkbox"/>	AIR TEMPERATURE (°C)
<input type="checkbox"/>	SECCHI DISC TRANSPARENCY (meters)
Average	Disappears _____ Appears _____
<input type="checkbox"/>	TOTAL DEPTH (meters)
<input type="checkbox"/>	TRANSPARENCY TUBE (meters)
<input type="checkbox"/>	WATER TEMPERATURE (°C)
<input type="checkbox"/>	DISSOLVED OXYGEN (mg/L)
Average	1st titration _____ 2nd titration _____
<input type="checkbox"/>	CONDUCTIVITY (µS/cm)
<input type="checkbox"/>	pH (standard units)

Coastal Area Salinity Tests and Observations:

<input type="checkbox"/>	SALINITY (ppt)	<input type="checkbox"/>	TIDE STAGE: 1-low 2-falling 3-slack 4-rising 5-high
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Comments:

TOTAL TIME SPENT SAMPLING AND TRAVELING

<input type="checkbox"/>	Minutes
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TOTAL ROUNDTRIP DISTANCE TRAVELED

<input type="checkbox"/>	Miles
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TOTAL NUMBER OF PARTICIPANTS

<input type="checkbox"/>

I certify that all procedures, including the items listed in the Quality Control Checklist on the following page and in the manual, have been followed.

CERTIFIED COMMUNITY SCIENTIST'S SIGNATURE

DATE

Prepared in cooperation with the Texas Commission on Environmental Quality and the United States Environmental Protection Agency.
Revised February 07, 2024.

CORE FIELD QUALITY CONTROL CHECKLIST

Community scientists are required to check all applicable boxes for each monitoring event to verify the procedures are followed. If the monitoring event fulfills a Field Audit Session, the trainer must observe the community scientist conducting the monitoring event and document observations in the comments field. The trainer will also sign to verify Field Audit Session was conducted.

General Procedures

- ☐ Gloves were worn or hand sanitizer was applied throughout.
- ☐ No chemical reagents used for testing were expired and all chemical reagents were stored in an environment protected from extreme weather prior to use. Sampling was conducted at approximately the same time/day as previous sampling events at this site, preferably before noon or after 4pm. Monitoring sample was collected from the centroid of flow with minimal streambed disturbance.
- ☐ All equipment was rinsed 2X with sample water before the test was conducted.
- ☐ All equipment was rinsed 2X with deionized water after testing was conducted.

Field Observations

- ☐ **Algae:** Recorded algae observed on and below the water surface.
- ☐ **Water Color:** Observed water color in a plastic cup or bucket with a white background.
- ☐ **Water Clarity:** Observed the relative cloudiness of the water from bridge or banks.
- ☐ **Water Odor:** Tested by wafting from plastic cup or bucket.
- ☐ **Present Weather:** Marked cloudy if there is at least one cloud in the sky.

Instrument Calibration

- ☐ The instruments/meters were calibrated within 24 hours of monitoring and conducted in a temperature-controlled environment.
- ☐ All meters were held in center of beaker not touching the bottom or sides and stirred for 2 minutes before recording the reading.
- ☐ All meters were turned on/off while submerged in solution.
- ☐ Meters were rinsed with DI water and caps were replaced immediately after use.
- ☐ Pre- and post-test calibration were conducted and the difference between the "Calibrated To" value of the pre-test calibration and "Post-Test Calibration Initial Reading" is within the error limit listed below for each parameter:

Parameter	Error limit
Conductivity	± 20% of calibration standard solution
Salinity	± 1 ppt
Dissolved Oxygen (Standard Core)	± 0.5 mg/L
Dissolved Oxygen (Probe Core)	± 6% saturation
pH (Probe Core only)	± 0.5 s.u.

Core Tests and Measurements

- ☐ **Sample Depth:** The sample depth is either 0.3 m or 1/3 of the total depth.
- ☐ **Air Temperature:** Thermometer placed in shade.
- ☐ **Transparency Tube:** Be careful to not scrape the streambed or disturb or kick up sediment.
- ☐ **Secchi Disc Transparency:** Secchi lowered in water shaded from the sun. Record average then lower to bottom to get total depth reading.
- ☐ **Water Temperature:** If using thermometer, air temperature was measured first.

Dissolved Oxygen:

- ☐ Bottles rinsed 2X with sample water and titration vials rinsed 2X with fixed solution.
- ☐ Bottles filled so the meniscus is resting on the line.
- ☐ Lids capped underwater with no air bubbles.
- ☐ Duplicate sample conducted and titration values within 0.5 mg/L of each other.
- ☐ Chemical reagent bottles completely inverted when adding drops to prevent interference from air bubbles.

pH:

- ☐ The pH vial cap was removed and the tube was held up against a white background before viewing.
- ☐ The test tube was filled so the meniscus is resting on the line.

Refractometer (tidally-influenced saltwater only)

- ☐ Time was allowed for the temperature of the sample water to stabilize before the salinity measurement was recorded.
- ☐ Instrument was held up to a light source when gathering the salinity measurement.

Field Audit Session

This section should be filled out by a certified trainer ONLY if a Field Audit Session was conducted. Field Audit Sessions are required at a minimum every two years.

Legible Trainer Full Name: _____ Trainer Signature: _____

Trainer Comments: _____

PHASE II



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

TEXAS STREAM TEAM

Email to: TxStreamTeam@txstate.edu
Send to: Texas Stream Team
The Meadows Center - Texas State University
601 University Drive
San Marcos, TX 78666-4616

For Office Use Only

Partner ID: _____

Date Received: _____

Date Approved: _____

Approved by (name): _____

CORE ENVIRONMENTAL MONITORING FORM

PLEASE PRINT LEGIBLY

Sample Date

M	M	D	D	Y	Y	Y	Y
---	---	---	---	---	---	---	---

Sample Time (military)

H	H	M	M
---	---	---	---

Community Scientist's Name _____

Site Description Training

Site ID #

1	0	0	0	1
---	---	---	---	---

Sample Depth (meters)

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(not total depth)

Group or Affiliation _____

**Core monitoring type
conducted**

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Calibration	Date	Time	Standard Value	Standard Temp (°C)	Pre-Test Calibration Initial Reading	Calibrated To	Post-Test Calibration Initial Reading
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Dissolved Oxygen							
pH							

Field Observations:

<input type="checkbox"/>	FLOW SEVERITY: 1-no flow 2-low 3-normal 4-flood 5-high 6-dry
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<input type="checkbox"/>	WATER TEMPERATURE (°C)
<input type="checkbox"/>	DISSOLVED OXYGEN (mg/L)
Average	1st titration _____ 2nd titration _____
<input type="checkbox"/>	CONDUCTIVITY (µS/cm)
<input type="checkbox"/>	pH (standard units)

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Comments:

TOTAL TIME SPENT SAMPLING AND TRAVELING

<input type="text"/>	Minutes
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TOTAL ROUNDTRIP DISTANCE TRAVELED

<input type="text"/>	Miles
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TOTAL NUMBER OF PARTICIPANTS

<input type="text"/>

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Core Tests and Measurements

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Dissolved Oxygen:

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- ☐ Lids capped underwater with no air bubbles.
- ☐ Duplicate sample conducted and titration values within 0.5 mg/L of each other.
- ☐ Chemical reagent bottles completely inverted when adding drops to prevent interference from air bubbles.

pH:

- ☐ The pH vial cap was removed and the tube was held up against a white background before viewing.
- ☐ The test tube was filled so the meniscus is resting on the line.

Refractometer (tidally-influenced saltwater only)

- ☐ Time was allowed for the temperature of the sample water to stabilize before the salinity measurement was recorded.
- ☐ Instrument was held up to a light source when gathering the salinity measurement.

Field Audit Session

This section should be filled out by a certified trainer ONLY if a Field Audit Session was conducted. Field Audit Sessions are required at a minimum every two years.

Legible Trainer Full Name: _____ Trainer Signature: _____

Trainer Comments: _____

PHASE III

For Phase III you will conduct the protocols without a trainer and enter all your data into the electronic Core Environmental Monitoring Form. Please follow the instructions below.

1. Open the form via the direct [link](#), through the [Texas Stream Team website](#), or scan the QR code to the right with your mobile device.
2. Begin filling out the form. Please note the following:
 - In the Site ID - Description field, open the dropdown menu and select **10001 - Training** (it will be the first option - this should be selected for trainings only)
 - Fields marked with a red asterisk (*) must be entered to submit the form.
 - Certain fields will be required and appear based on the answers to prior fields. It is recommended to fill out the form in the order presented to ensure all relevant questions are visible.
3. When all required questions have been answered, click Submit. A message appears indicating that your data was sent successfully.
4. Moving forward, the electronic Core Environmental Monitoring Form will be used to submit your data directly to Texas Stream Team. Be sure to have the link ready when you begin monitoring and make sure to input your monitoring site ID and description into the Site ID - Description field (not the 10001-Training option).
5. For questions or assistance, contact Texas Stream Team at TxStreamTeam@txstate.edu or 512-245-1346.



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

TEXAS STREAM TEAM



TEXAS STREAM TEAM

PROBE CORE FIELD GUIDE – MONITORING PROCEDURES

Equipment Needed

- Probe Core Kit
- Sample Bucket
- Deionized (DI) Water
- Waste Container
- Secchi Disc
- Gloves or Hand Sanitizer
- pH Buffer Solution (4.00, 7.00, or 10.00)
- Conductivity Standard Solution (600 or 1413 μS)
- Transparency Tube (optional for shallow water)

At Site

1. Record *Field Observations* and *Comments* on Core Environmental Monitoring Form.
2. Hang thermometer out of direct sunlight, wait 2-3 minutes; record *Air Temperature* to nearest 0.5 °C.
3. Measure *Transparency* by selecting the method most applicable to your monitoring site:
 - A. Secchi Disc Transparency for deeper water, lower disc until it disappears, mark depth, then raise disc until barely visible, and mark depth again. Average depth readings and record to nearest 0.1 m.
 - B. Transparency Tube for shallow water:
 1. Rinse bucket and tube 2X with sample water.
 2. Standing in the centroid of flow of the waterbody and downstream of the tube, dip the tube into the water facing upstream to fill.
 - a. If centroid is not accessible, or the waterbody is unsafe to stand in, use a bucket to collect sample water and pour into the tube immediately after collection to prevent settling of suspended materials.
 3. Hold the tube vertically, look down the tube to see if the disc at the bottom is visible. If disc is not visible, release water until visible and record the water level in meters on Monitoring Form.
 - a. If the tube is filled to the top and the disc is completely visible, record the measurement as > the maximum tube length (>1.2 m or >0.6 m).
4. Measure *Total Depth* by lowering Secchi disc into water until cord becomes slack, then raise until straight. Mark and record to 0.1 m.
5. Conduct bucket grab, rinse bucket 2X with sample water and discard water downstream.
6. Measure *Water Temperature* in the bucket sample with thermometer for 1-1/2 minutes. Read thermometer while in water to the nearest 0.5 °C.

Dissolved Oxygen

Leave the *Standard Value* in the Dissolved Oxygen row on Monitoring Form blank.

Pre-Test Calibration

1. Remove the probe cap and moisten but don't soak the sponge inside the cap with DI water. Replace the cap on the probe, but don't tighten it.
2. Turn meter on and press the MODE/HOLD button until the percent saturation mode (%) is displayed. Allow 2-3 minutes for the meter to fully polarize, or until the tiny asterisk is visible on the bottom right portion of the screen.
3. Once stable, record *Standard Temperature* and *Pre-Test Calibration Initial Reading* on Monitoring Form.
4. Next, press and hold the CAL/RECALL button until CAL is shown in the lower display. The readings will blink "101.7" and "SA" will appear. When the calibration is complete, "END" will appear. Record the *Calibrated To* value 101.7 on Monitoring Form. Turn the meter off.

Measurement

1. Rinse sample cup and probe 2X with sample water.
2. Turn on meter and press the MODE/HOLD button until the DO – mg/L unit is displayed.
3. Fill sample cup to 20 mL with sample water, insert probe, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter ½ inch off bottom, record *Dissolved Oxygen (mg/L)*.
4. Rinse sample cup and probe 2X with DI water before storing.

Post-Test Calibration

1. Remove then replace the cap on the probe, but don't tighten it.
2. Turn the meter on and press the MODE/HOLD button until the percent saturation mode (%) is displayed. Allow 2-3 minutes for the probe to fully polarize, or until the tiny asterisk is visible on the bottom right portion of the screen.
3. Once stable, record *Post-Test Calibration Initial Reading* on Monitoring Form. The difference between the *Calibrated To* value and the *Post-Test Calibration Initial Reading* should be within $\pm 6\%$ saturation.
4. Turn meter off, then rinse sample cup and probe 2X with DI water before storing.

Conductivity

Record the Conductivity Standard Solution value under *Standard Value* on Monitoring Form.

Pre-Test Calibration

1. Rinse sample cup and conductivity probe 2X with Conductivity Standard Solution.
2. Fill sample cup to 20 mL with conductivity solution, insert probe and stir to remove bubbles.
3. Turn meter on while submerged and stir for 2 minutes.
4. Make sure the meter is in conductivity mode. A small “ μS ” (microsiemens) symbol will appear. If not in μS , press and hold the MODE/HOLD button and toggle until “ μS ” appears. Once the CON symbol is shown at the bottom of the screen and the “ μS ” symbol appears at the top, release the button.
5. Record the *Standard Temp. ($^{\circ}\text{C}$)* and *Pre-Test Calibration Initial Reading* on Monitoring Form.
6. Press and hold the CAL/RECALL button until “CAL” appears in the lower display. Release button. When calibration is complete, the meter displays “SA,” then “End” and returns to normal mode. The meter is now calibrated and should display the calibration standard value. Record the reading under *Calibrated To* on Monitoring Form.
7. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.

Measurement

1. Rinse sample cup and probe 2X with sample water.
2. Fill sample cup to 20 mL with sample water, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter 1/2 inch off bottom and record *Conductivity ($\mu\text{S}/\text{cm}$)* and *Water Temperature ($^{\circ}\text{C}$)* on Monitoring Form.
3. Turn meter off while submerged and rinse sample cup and probe 2X with distilled water before storing.

Post-Test Calibration

1. Rinse sample cup and probe 2X with conductivity solution.
2. Fill sample cup to 20 mL with conductivity solution, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter 1/2 inch off bottom, record *Post-Test Calibration Initial Reading*. The difference between the *Calibrated To* and *Post-Test Calibration Initial Reading* values should be within $\pm 20\%$ of the calibration solution.
3. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.

pH

Record the pH buffer value under *Standard Value* on Monitoring Form.

Pre-Test Calibration

1. Rinse sample cup and probe 2X with the pH buffer.
2. Fill sample cup to 20 mL with pH buffer, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes.
3. Make sure the probe is in pH mode. A small pH symbol will appear. If not, press and hold the MODE/HOLD button and toggle until pH is displayed.
4. Record *Standard Temperature* and *Pre-Test Calibration Initial Reading* on Monitoring Form.
5. Press and hold the CAL/RECALL button until “CAL” appears in the lower display. Release button. When calibration is complete, the probe displays “SA,” then “End” and returns to normal operation mode. The probe is now calibrated and should display the pH buffer value. Record the reading under *Calibrated To* on Monitoring Form.
6. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.

Measurement

1. Rinse sample cup and probe 2X with sample water.
2. Fill sample cup to 20 mL with sample water, insert probe, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter 1/2 inch off bottom, record reading under *pH* on Monitoring Form.
3. Turn probe off while submerged, rinse probe and sample cup 2X with DI water before storing.

Post-Test Calibration

1. Rinse sample cup and probe 2X with pH buffer.
2. Fill sample cup with 20 mL, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter 1/2 inch off bottom, record *Post-Test Calibration Initial Reading*. The difference between the *Calibrated To* value and the *Post-Test Calibration Initial Reading* should be within ± 0.5 s.u.
3. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.