

BOSQUE ECOSYSTEM MONITORING PROGRAM

River or Ditch Water Quality Sampling

River or Ditch Sampling Materials

- lifejackets/personal flotation devices (PDFs) – 1 per person, always the brown/gray one because of pockets
- pH meter and calibration solutions
- waders – 1 per person
- conductivity meter
- 6 bottles for *E. coli*: 4 samples, 1 blank, 1 extra
- turbidimeter and extra vial
- glass bottle of deionized (DI) water for blank, 1 extra
- dissolved oxygen (DO) meter
- 2 plastic beakers, 1 marked with measurements
- pickle bucket
- 4 plastic tubes for water collection and small Ziplock bag for these
- small cooler with ice bath and thermometer
- small ziplock bag for MRGCD tubes
- air temperature thermometer (i.e. kestrel)
- 60 mL syringe without needle
- a few filters in a Ziplock bag
- small trash bag
- dry erase board for site photos
- clipboard and pen
- camera
- black Sharpie
- river chemistry data sheet and photo sheet
- dry erase board and marker
- instruction manuals for meters
- extra pencil
- City of Albuquerque Open Space permit and key
- BEMP car magnets if possible
- hand sanitizer
- rubber collecting gloves (wintertime)

Before going to the field, in the lab turn on DO meter and test meter to ensure it is calibrated, the membrane is not dried out and the sponge at the end of the calibration chamber is moist. The meter, while probe is in its calibration chamber, should read about 80%. Take readings with and calibrate pH meter if necessary. Test conductivity meter and calibrate if necessary. Once a month, obtain the 0-10, 0-100 and 0-1000

measurements for turbidimeter. Once a month, change out pH buffer solutions and conductivity solution.

Once arriving at the site, label *E. coli* bottle with "BEMP," site name and date (dd-mmm-yyyy). Label red tape with BEMP, site name, and date (dd-mmm-yyyy). Label sterile plastic bag with "BEMP," site name and date (dd-mmm-yyyy).

Record time of arrival at site, site name and data collectors' names on data sheet. Write date (dd-mmm-yyyy), "BEMP," site name and arrival time (24-hour time) on dry erase board and take a photo of that.

Put on waders and life jackets. Put pH, DO and conductivity probes, 2 plastic beakers, syringe, data sheet, clipboard and pencil into bucket. Put turbidity vial, *E. coli* sample bottle (and blank *E. coli* bottle and bottle of DI water if needed) into zipper pockets of brown pfd.

Go to the blue stake on the bank at the entry point into the river and take required photos. Photos are to be logged on the photo log sheet and taken in the same order as on the sheet (upstream, downstream, east bank, west bank and additional photos) (see data sheet). A person or object of known size (i.e., cooler) should be in each picture for scale. All of these methods are in the 2007 NMED/SWQB Standard Operating Procedures for Data Collection (<http://www.nmenv.state.nm.us/swqb/SOP/SWQB-MASStandardOperatingProcedures.pdf>) under section 16.0 Photographic Documentation.

Go into the center of the main flow of the river, as deep as you can while staying safe. Record data on the field data form, following methods found in section 5.2 "Field Data Documentation in the SOPs" (NMED/SWQB 2007). Once in stream, record specific conductance, conductivity and water temperature; dissolved oxygen (mg/L), percent saturation DO and temperature; pH and temperature (pH is measured and recorded three times and the mean is entered in the data sheet) (see data sheet). The DO probe must held in water away from people because of currents around people

BOSQUE ECOSYSTEM MONITORING PROGRAM

River or Ditch Water Quality Sampling

increase DO. Obtain water sample in turbidity vial and place vial back into PFD pocket snapped shut.

Record the following field observations: water appearance, weather, biological activity, unusual odors, watershed or in-stream activities, upstream waterfowl, specific sample information, and missing parameters.

Lastly, a sample collection will be taken for *E. coli* sampling following methods in section 11.0 "Bacteriological Sampling in the SOPs" (NMED/SWQB 2007). Take sample in front of you (upstream), and keep arms and equipment away from the upstream area where you are taking the sample so as not to contaminate the sample. Sample is to be taken from "centroid of flow, if the stream visually appears to be completely mixed from shore to shore. Centroid is defined as the midpoint of that portion of the stream width that contains 50 percent of the total flow" (NMED/SWQB 2007). "Do not rinse the containers and ... do not remove the lids until immediately before sampling" (NMED/SWQB 2007). The inside is sterile & contains the necessary sodium thiosulfate. Take one sample at "centroid", DO NOT RINSE BOTTLE, DO NOT OVERFILL: pour off any excess immediately so that the bottle is filled to just **below** the faint sample line (which is just below the shoulder of the bottle). "Fill containers by submersing in flowing water and fill exactly to the 100 ml line. Decant excess water immediately..." (NMED/SWQB 2007). Place bottle into snapped pocket of PFD and note time of collection.

If needed, obtain the blank sample. Open sample bottle and pour deionized water into bottle, just below sample line. Put bottles back into snapped pockets of PFD.

At the Shirk, Savannah and Badger sites, obtain water in un-marked beaker from the surface and throughout the water column across the river, filling marked beaker to 800 mL. Fill un-marked beaker with river water. Suck up water from un-marked beaker with syringe 2 times and expunge both times. Rinse vial in this beaker one last time to remove anything that your hands got on the syringe. Then suck up water from marked beaker. Take to car, place on filter and filter into tube. Label tube

"BEMP MRGCD" and site name, date, time, and your initials. Place in plastic bag and place in cooler.

Return to vehicle

Label red tape with *E. coli* sampling time and sampler's initials. Be careful not to tear red tape. Sample will not be accepted if red tape is torn. Seal bottle with red sample tape: place red tape on bottle without covering label written on it, covering the entire cap on both sites. Label sterile bag and bottle with sample time, place bottle into sterile, labeled Ziplock bag and seal well. Place in ice slurry for transport. Keep thermometer in ice slurry to record max and min temperatures. Samples must be kept at 4 degrees C. [edited 8-26-10: 35 degrees F or 1 degree C]

After first sample is placed into ice bath, obtain temp of ice bath in degrees C and note on data sheet.

Take air temp reading in shade.

Obtain turbidity reading from vial, making sure to wipe vial with cloth to remove fingerprints. Turbidimeter must be set on "AutoRng" and "SigAvg." Record final reading after numbers have stopped flashing.

Visit all sample sites, repeating all procedures as necessary.

Samples need to be delivered to John Craig in the Biology Annex by 3:00 p.m. **Samples need to be delivered to state lab within 6 hours of collection.** Label samples: BEMP Shirk, BEMP Savannah, BEMP Badger, and BEMP Coronado. Each sample is handed over with the appropriate chain of custody form, signed and dated, as specified in the SOPs (NMED/SWQB 2007) and QAPP (NMED/SWQB 2010).

Directions to sites:

Shirk: From UNM, take I-25 south and get off at the Rio Bravo exit and head right or west. Turn south or left at the light at 2nd Street. Pass the City of Albuquerque Wastewater Treatment Plant, and just after passing a school, turn right onto Shirk Ln. Pass a few houses and



BOSQUE ECOSYSTEM MONITORING PROGRAM

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turn right onto the ditch – use either road. Follow this road to mile marker 10. Just past this mile marker, take a right into the bosque. You will pass a small fenced area (where an ET tower used to be). Park near the river.

Savannah: From I-25 north, take I-40 west and get off at the Coors exit. Go north. Take a right onto Learning Road – Bosque School. Go to the farthest north parking lot that is dirt and go to the farthest east of the lot and then cross the ditch. Follow the main road, going straight to the river where Montano crosses the river. You will have to veer left off the main road to go straight to the river.

Badger: From Savannah, continue north on Coors. Past Paseo del Norte, connect to Alameda Blvd. At the light at Alameda, turn right/east. Cross the river, and just past that, take a right onto the levee road. Follow the spur off the main road to the right and curve around the first pond, going to the north near the parking area for the structure that's there.

Coronado: From Badger, go east on Alameda to I-25 and then head north. Get off at the second Bernalillo exit (Hwy 550) and head west through Bernalillo. After crossing the river, enter into the Coronado State Park area. Follow directions to boat launch area.

BOSQUE ECOSYSTEM MONITORING PROGRAM

River or Ditch Water Quality Sampling

**AMAFCA/BEMP Storm Water Education Program
In-situ Water Quality Parameter Values and Environmental Observations**

In-situ Water Quality Parameters (Units)	Sample Location	Sample Location	Sample Location	Sample Location
lat/long	BEMP SHIRK	BEMP SAVANNAH	BEMP BADGER	BEMP 550
Date (dd-mmm-yyyy)				
Time of site arrival (24 - hour clock)				
Time sample taken (24 - hour clock)				
Dissolved Oxygen (mg/L)				
Dissolved Oxygen (%)				
D.O. Water Temp (°C)				
pH (SU)				
pH Water Temp (°C)				
Specific Conductance (µS/cm or mS/cm)				
Conductivity (µS/cm or mS/cm)				
Conductivity Water Temp (°C)				
Turbidity (NTU)				
Water Appearance				
Air Temp (°C)				
General Weather Conditions				
Upstream Waterfowl (#)				
Unusual Odors				
Watershed or In-stream Activities				
Specific Sample Information				
Missing Parameters				
MRGCDWater Sample(s) Taken?				
	pH 1:	pH 1:	pH 1:	pH 1:
	pH 2:	pH 2:	pH 2:	pH 2:
	pH 3:	pH 3:	pH 3:	pH 3:
	notes	notes	notes	notes
Ice Bath Temperatures (°C)				
Minimum:				
Maximum:				

Entered by: _____

Verified by: _____

Data collected by: _____



BOSQUE ECOSYSTEM MONITORING PROGRAM

River or Ditch Water Quality Sampling

Bosque Ecosystem Monitoring Program:

River Monitoring

Collection Date: _____ Collected By: _____

Photo log		Comments
Station ID		
Upstream		
Downstream		
Left bank (E)		
Right bank (W)		
Additional	(high flow, disturbance, algal growth...)	
Photo log		Comments
Station ID		
Upstream		
Downstream		
Left bank (E)		
Right bank (W)		
Additional	(high flow, disturbance, algal growth...)	
Photo log		Comments
Station ID		
Upstream		
Downstream		
Left bank (E)		
Right bank (W)		
Additional	(high flow, disturbance, algal growth...)	
Photo log		Comments
Station ID		
Upstream		
Downstream		
Left bank (E)		
Right bank (W)		
Additional	(high flow, disturbance, algal growth...)	