NEW MEXICO ENVIRONMENT DEPARTMENT

Surface Water Quality Bureau

Santa Fe River Microbial Source Tracking (MST) Special Project

FIELD SAMPLING PLAN

Prepared by

SWQB

April 18, 2023

Approvals

Lynette Guevara Digitally signed by Lynette Guevara Date: 2023.04.19 10:38:24 -06'00'

_____ _____

Lynette Guevara — Date
Monitoring, Assessment and Standards
Program Manager

Miguel Montoya Digitally signed by Miguel Montoya Date: 2023.04.19 10:48:11 -06'00'

_____ _____

Miguel Montoya — Date
Surface Water Quality Bureau
Quality Assurance Officer

Lucas Graunke Digitally signed by Lucas Graunke Date: 2023.04.19 10:16:42 -06'00'

_____ _____

Lucas Graunke — Date
Surface Water Quality Bureau
Project Coordinator

PURPOSE:

The purpose of this document is to provide details regarding the sampling and field data-gathering methods as well as funding requirements for the Santa Fe River microbial source tracking (MST) special project.

Refer to the SWQB Quality Assurance Project Plan (QAPP) (NMED/SWQB 2021) for information regarding the data quality objectives, analytical methodologies, specific quality assurance (QA) and quality control (QC) activities, and laboratory requirements designed to achieve the data quality goals.

OVERVIEW

The Surface Water Quality Bureau (SWQB) will investigate the sources of nutrient and fecal contamination in the Santa Fe River. The SWQB will collect MST and *E. coli* samples for analysis from different sites along the Santa Fe River within the City of Santa Fe. The SWQB will sample at three to five established SWQB monitoring locations. The SWQB will send MST water quality samples to a specialist laboratory (Microbial Insights Inc.) for MST analysis and process the *E. coli* samples in house. The SWQB will analyze the results and prepare a brief final report.

1.0 PROJECT PERSONNEL

1.1 Personnel Roles and Responsibilities

Table 1 details the responsibilities for this project. Each team member is responsible for implementing the assigned responsibilities. If an individual is unable to fulfill their duties, it is that individual's responsibility to find assistance and/or a replacement, in coordination with appropriate supervisors.

Table 1. Personnel Roles and Responsibilities

Team Member	Position/Role	Responsibilities
Lynette Guevara	Program Manager	Oversees planning efforts (reviews and approves field sampling plan and planning spreadsheet);
Lucas Graunke	Project Coordinator	Coordinates survey planning efforts (develops the field sampling plan); Coordinates and participates in the collection of data; Ships MST samples to contract laboratory for analysis; Manages data for study (forms, data entry and analysis); Performs validation and verification of data. Coordinates development of final report.

Bureau Technical Staff	Field Data Collectors	Participate in the collection of data.

1.2 Organization

For the responsibilities defined in this project, the Project Coordinators reports to the MASS Program Manager.

2.0 PROJECT DESCRIPTION

2.1 Background

Several reaches of the Santa Fe River are listed as impaired due to elevated *E. coli*. SWQB has contracted with analytical laboratories to provide specialized analysis of water. The SWQB will utilize MST data to identify potential sources of nutrient and fecal contamination and provide this information to local stakeholders. MST can detect pollution from multiple sources including humans, pets, livestock, and wildlife.

2.2 Objectives

1. Collect water chemistry samples for MST and E. coli analyses at three to five locations along the Santa Fe River within the City of Santa Fe.
2. Process *E. coli* samples at SWQB laboratory.
3. Send MST water chemistry samples to contract laboratory for analysis and evaluate the data results to better understand the sources of nutrient and fecal contamination in the Santa Fe River.

2.3 Schedule

SWQB staff will sample between late April 2023 and early May 2023. The SWQB will verify and validate data, perform data analysis, and prepare a summary report after the analysis laboratory provides the final MST data.

2.4 Location

The project area includes the Santa Fe River within the boundaries of the City of Santa Fe. The SWQB will collect three MST samples and three to five *E. coli* samples at established SWQB monitoring stations. The SWQB will sample upstream and downstream of Frenchy's Field Park and at the park itself. The SWQB will finalize specific surface water sample locations in the field depending on the availability of surface water.

Table 2. Potential SWQB Monitoring Stations

Site 1	Santa Fe River below Cerro Gordo Rd at Adam Gabriel Armijo Park, 30SantaF052.4
Site 2	Santa Fe River below St. Francis Dr., 30SantaF047.9
Site 3	Santa Fe River below Frenchy's Field, 30SantaF044.5
Site 4	Santa Fe River at Siler Rd, 30SantaF042.6
Site 5	Santa Fe River above HWY 599, 30SantaF035.9

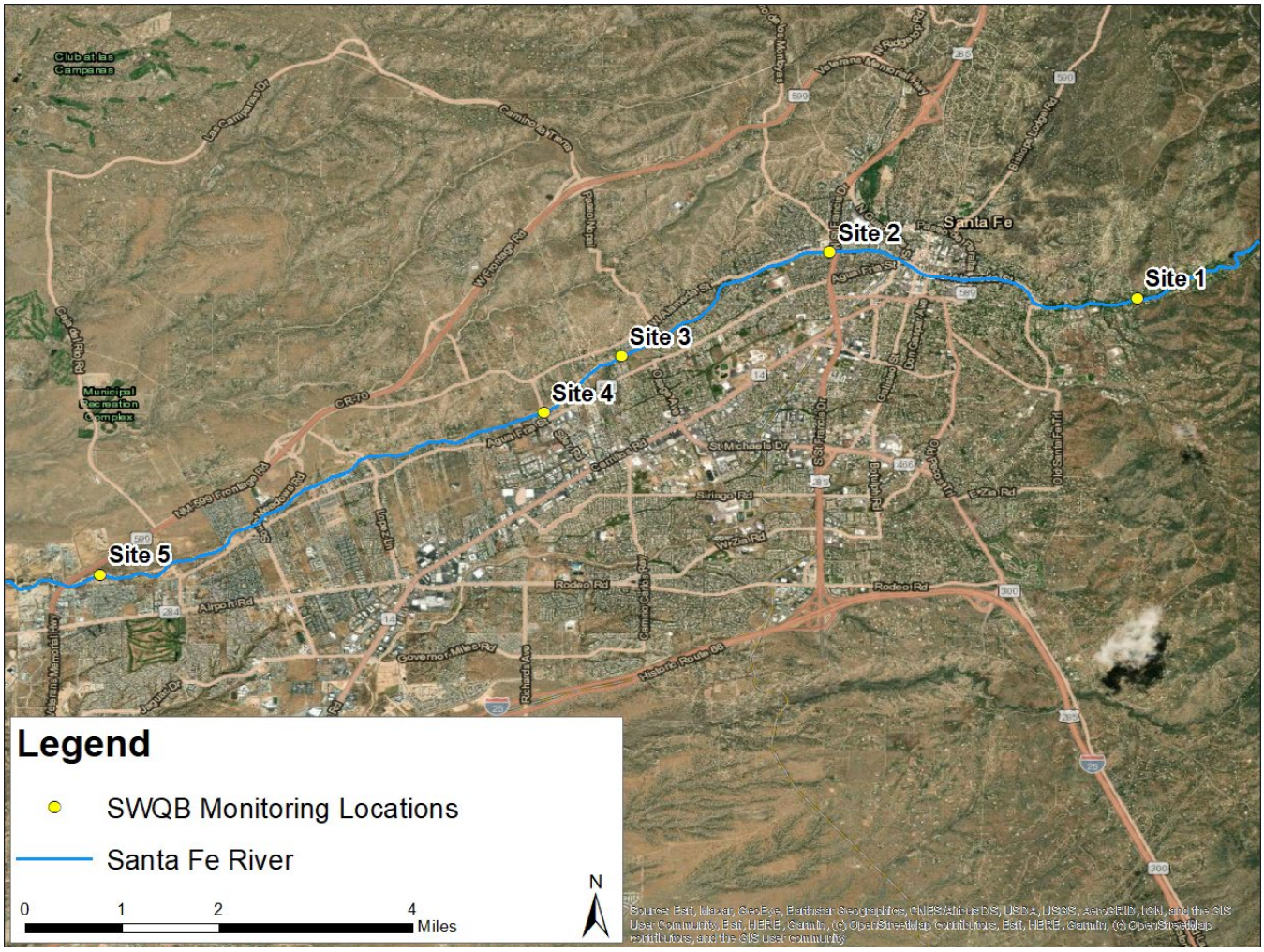

Figure 1. Potential SWQB monitoring sites for the Santa Fe River MST Special Project.

NOTE: Site 3 (Santa Fe River below Frenchy's Field) will be sampled and one site upstream and one downstream will also be sampled depending on water availability. Site descriptions are located above in **Table 2.**

3.0 DOCUMENTATION

Project documents include this field sampling plan, validation and verification records, sample collection data, records of analytical data in hard copy or in electronic form and QC records. The SWQB will maintain documents in accordance with the requirements of the QAPP (NMED/SWQB 2021). Project documentation will include coordinates and descriptions of final sampling locations including deviations from the original plan and issues that arise along with any associated corrective actions. The SWQB will document project activities in SWQB Monitoring Section Field Sheets and enter this information into the SWQB database (SQUID). The SWQB will upload verified and validated *E. coli* results to SQUID and the U.S. Environmental Protection Agency's (EPA) Water Quality Exchange (WQX). The SWQB will input MST summary results in related comments fields and will maintain electronic records of the results. The SWQB will utilize project data housed in the SQUID for report development and Clean Water Act 303(d) assessments to determine if water quality standards are attained.

4.0 SAMPLING PLAN

4.1 Microbial Source Tracking and *E. coli* Sampling

The SWQB will collect and analyze water quality samples in accordance with procedures as outlined in the SWQB Standard Operating Procedures for Data Collection (SOPs) (NMED/SWQB 2023).

The SWQB will preserve and submit MST samples to Microbial Insights Inc. laboratory in Knoxville, TN according to the procedures outlined in the SOPs.

Any deviations necessary from this Field Sampling Plan, the Department's QAPP, and/or the Departmental SOPs and associated methods adopted for this project require notification of the SWQB Quality Assurance Officer and Project Coordinator.

5.0 RESOURCE REQUIREMENTS

Costs for sample analysis are summarized in Table 3.

Table 3. MST Analysis Cost Summary

Analyte	Total # Samples	Cost per Sample	Total Expenditure
MST	3	$510.00	$1,530.00
E. coli	5	$8.53	$42.65
		Total expenditure	**$1,572.65**

Travel costs are minimal for this one-day sampling event around Santa Fe.

6.0 REPORTING

Following completion of the survey and verification and validation of all data collected during the project, a final report will be produced that summarizes the data collected and results.

7.0 REFERENCES

NMED/SWQB. 2021. *Quality Assurance Project Plan for Water Quality Management Programs 2021.* https://www.env.nm.gov/surface-water-quality/qapps/.

NMED/SWQB. 2023. *Standard Operating Procedures.* https://www.env.nm.gov/surface-water-quality/sop/