NEW MEXICO ENVIRONMENT DEPARTMENT

Surface Water Quality Bureau
2025-2026 Middle Rio Grande and Santa Fe Watersheds
FIELD SAMPLING PLAN

3/31/2025

APPROVALS:

Lynette Guevara Digitally signed by Lynette Guevara
Date: 2025.04.03 15:11:26 -06'00'

Lynette Guevara
Program Manager, SWQB Monitoring, Assessment & Standards Section

Date

Emily Miller Digitally signed by Emily Miller
Date: 2025.04.03 15:02:37 -06'00'

Emily Miller
Quality Assurance Officer, SWQB

Date

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

Surface Water Quality Bureau

Our mission is to preserve, protect, and improve New Mexico's surface water quality for present and future generations.

Land Acknowledgment Statement

The Surface Water Quality Bureau acknowledges that this survey is on the traditional lands of the Tewa (Tano), Tiwa, and Keres speaking people, who have stewarded this land throughout the generations.

ACRONYMS / ABBREVIATIONS

AU	Assessment Unit
blw	below
bnd	boundary
ck	creek
confl	confluence
CWA	Clean Water Act
DM	Dissolved Metals
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
DW	Drink Water
d/s	downstream
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
hdwt	headwaters
Hg	Mercury
immed	immediately
IR	State of New Mexico Clean Water Act §303(d)/305(b) Integrated Report
JPA	Joint Powers Agreement
LTD	Long-term Deployment (Sondes, Thermographs, DO Loggers)
MASS	Monitoring, Assessment, and Standards Section
MPG	Miles per gallon
MRG	Middle Rio Grande
MRGESACP	Middle Rio Grande Endangered Species Act Collaboration Program
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point Source
PCBs	Polychlorinated biphenyls
PFAS	Per- and polyfluoroalkyl substances
PFOA	Perfluorooctanoic acid
PSRS	Point Source Regulation Section
PM	Program Manager
prt	part
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAD	Radionuclide
RGSM	Rio Grande silvery minnow
rsvr	reservoir
SBD	Stream Bottom Deposits
SC	Specific Conductance
SLD	Scientific Laboratory Division
SOP	Standard Operating Procedures
SQUID	Surface water QUality Information Database
STORET WQX	STOrage and RETieval Water Quality eXchange
SSTEMP	Stream Segment Temperature
SVOC	Semi-Volatile Organic Carbon
SWQB	Surface Water Quality Bureau
TDS	Total Dissolved Solids

TKN	Total Kjeldahl Nitrogen
TM	Total Metals
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Recoverable Chlorine
trib	Tributary
TSS	Total Suspended Solids
u/s	upstream
µm	micrometers
VOC	Volatile Organic Carbon
WPS	Watershed Protection Section
WQ	Water Quality
WQCC	Water Quality Control Commission
WQS	Water Quality Standard
WTU	Work Time Unit
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

The purpose of this Field Sampling Plan (FSP) is to provide a detailed description of the Middle Rio Grande (MRG), its tributaries, and the Santa Fe River water quality survey to be conducted in 2025-2026 by the New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB). It has been prepared in accordance with the most current SWQB *Standard Operating Procedure* (SOP) 2.1, FSP Development and Execution. The FSP describes project objectives and decision criteria and includes the sampling schedule with sampling locations, parameters, cost, and sampling frequencies for physical, chemical, and biological data. It may be amended as the need arises, and any amendments will be documented and justified in the survey report, which will be published after completion of the field sampling and verification and validation of data.

This plan is a companion document to the SWQB *Quality Assurance Project Plan* (QAPP) for *Water Quality Management Programs* (NMED/SWQB 2024). Data will be collected according to the QAPP and the most recent version of the applicable SOPs. The current versions of QAPP and SOPs are available on the SWQB website (https://www.env.nm.gov/surface-water-quality/qaqc/).

The 2025-2026 water quality survey of the MRG will include data collection along the main stem of the Rio Grande River and its tributaries. Permits in the Rio Grande River and Santa Fe watershed have necessitated the addition of the Santa Fe River watershed into the MRG survey for monitoring purposes. The most recent comprehensive water quality sampling campaign conducted by SWQB along the MRG, tributaries, and the Santa Fe River occurred in 2014. Prior to that, SWQB completed a comprehensive water quality survey of the Middle Rio Grande in 1991 and Middle Rio Grande tributaries and the Santa Fe River in 2005. The SWQB also collected water quality data from October 2006 to September 2007 in cooperation with the Middle Rio Grande Endangered Species Act Collaboration Program (MRGESACP). The purpose of the MRGESACP cooperative effort was to determine if poor water quality was contributing to the decline of the endangered Rio Grande silvery minnow (RGSM) populations in the MRG. These studies[1] resulted in impairment determinations along several reaches of the MRG for dissolved oxygen (DO), temperature, polychlorinated biphenyls (PCBs), turbidity, nutrients/eutrophication, sedimentation, aluminum, radionuclides, specific conductance (SC), and *E. coli*. Current impairments in the MRG are listed in Table 2.

SWQB conducts intensive watershed-based water quality surveys on a structured, rotating basis to identify Water Quality Standard (WQS) impairments, prioritize protection and restoration projects, guide National Pollutant Discharge Elimination System (NPDES) permitting, Total Maximum Daily Load (TMDL) development, and inform potential WQS revisions to meet goals and objectives of the Clean Water Act (CWA). The SWQB's mission is to preserve, protect, and improve New Mexico's surface water quality for present and future generations. The Bureau intends to collect appropriate, reliable, defensible, high quality surface water data to meet our mission. This is completed by adhering to quality

[1] Survey summaries are available at https://www.env.nm.gov/surface-water-quality/water-quality-monitoring/.

assurance and quality control protocols to ensure that defensible, reliable data are available to make informed policy decisions.

The streams and rivers within this survey are in central New Mexico, lying within Sierra, Socorro, Valencia, Bernalillo, Sandoval, and Santa Fe Counties. The project area (Figure 1) consists of streams and rivers in several HUC 8 watersheds in the listed counties. Historic and current land uses in the watersheds include ranching, silviculture, aquaculture, mining, recreation, as well as urban and residential development. Land cover in the watersheds range from Montane Pinyon – Juniper forests and Evergreen Woodlands to intermountain dry Shrub and grasslands, with both ephemeral and perennial waters and wetlands. Land ownership in the watersheds includes U.S. Forest Service, National Park Service, Bureau of Land Management (BLM), Tribal, U.S. Department of Defense, U.S. Fish and Wildlife Service, and State and Private parcels. Streams and rivers within this survey are in Omnerick Level III Ecoregions 21 (Southern Rockies), 22 (Arizona/New Mexico Plateau), 23 (Arizona/New Mexico Mountains), 24 (Chihuahuan Deserts), and 79 (Madrean Archipelago) (EPA 2006).

Streams within the watershed are divided into assessment units (AUs) based on differing geological and hydrological properties. Each AU is assessed individually using data from one or more monitoring sites located along the AU. For this survey, the framework for monitoring prioritization is discussed in the SWQB Monitoring and Assessment Strategy (available at https://www.env.nm.gov/surface-water-quality/protocols-and-planning/) (NMED/SWQB 2016 or current version). The NMED SWQB will sample selected monitoring locations for water quality constituents 4-5 times over two years, as well as deploying monitoring devices to gather long-term data sets and conduct physical habitat surveys where appropriate and warranted as resources allow. The total number of sampling events for each location is determined through the Clean Water Act (CWA) §303(d)/ §305(b) Integrated Report (IR) classification, presence of point source discharge(s), and TMDL status, among other considerations. The type of monitoring planned at each monitoring site is discussed and summarized in **Section 5.0,** Sampling Plan.

Data are publicly available to interested parties through the EPA Water Quality Portal (https://www.waterqualitydata.us/) after completion of data verification and validation.

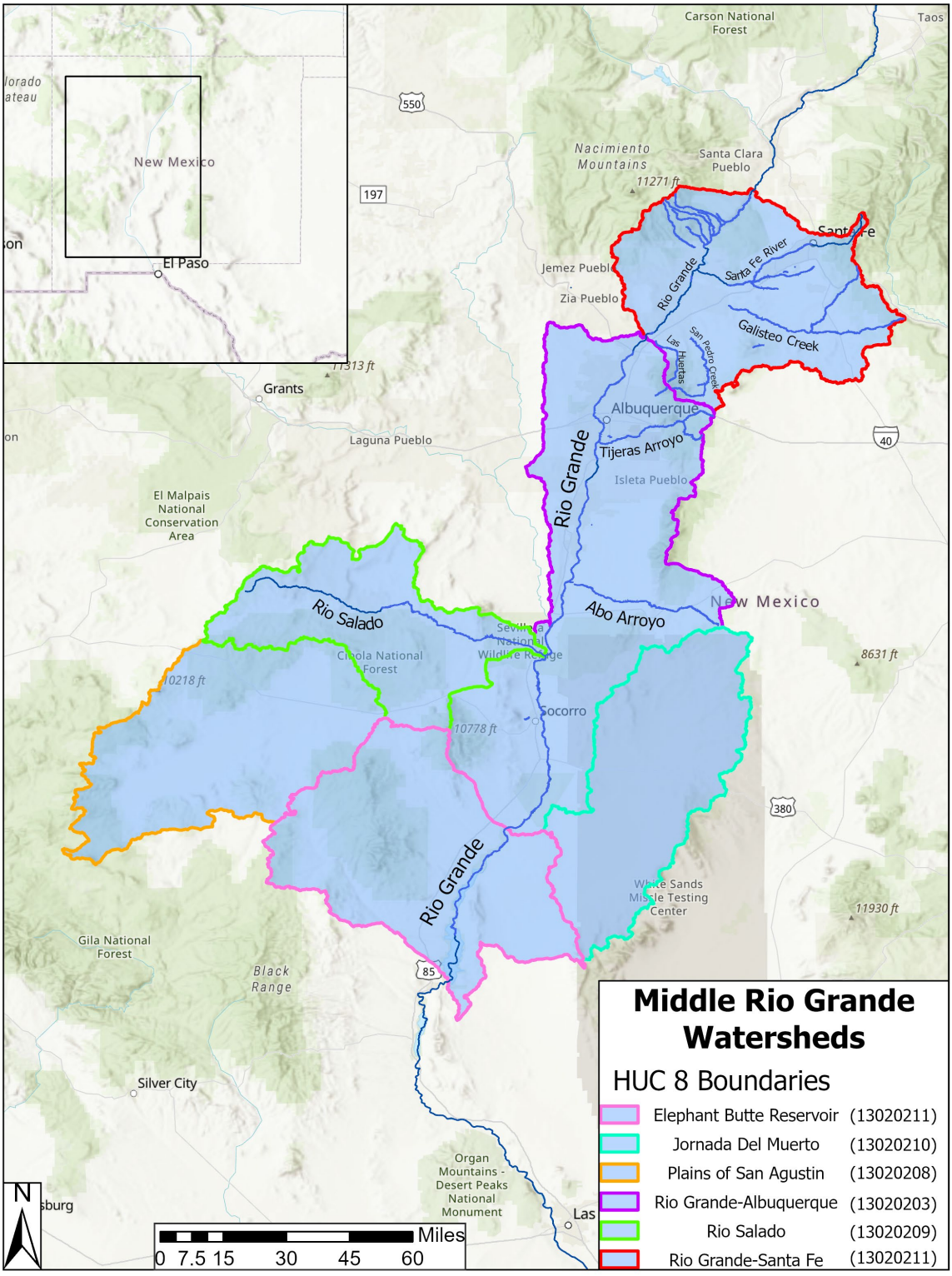

Figure 1. General Map of NM with the Survey area identified

2.0 PROJECT PERSONNEL

2.1 Personnel Roles and Responsibilities

Staff responsibilities for the 2025-2026 MRG project are listed in Table 1. Each team member is responsible for implementing their 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 staff.

Table 1. 2025-2026 MRG Personnel Roles and Responsibilities

Team Member	Position/Role	Responsibilities
Lynette Guevara Monitoring, Assessment, and Standards Section Program Manager Lynette.Guevara@env.nm.gov 505-629-8811	Program Manager	Program Manager responsibilities noted in this FSP are completed in coordination with the Project Manager. Approve FSP, directs staff to publish the FSP according to program and/or grant requirements. Manage project personnel and resources throughout the project in coordination with Project Manager(s) and Project Team. Provide oversight and coordinate with QAO and Project Manager(s) on data collection activities not conducted in accordance with the FSP, QAPP, or current SOPs. Conduct environmental data collection activities in accordance with the developed FSP, QAPP, and current SWQB SOPs.
Miguel Montoya Monitoring Team Supervisor and Project Manager Miguel.Montoya@env.nm.gov 505-819-9882	Acting Project Manager	Manage project resources throughout the project in coordination with Program Manager and Project Team. Conduct environmental data collection activities in accordance with the developed FSP, QAPP, and current SWQB SOPs. Data collection activities not conducted in accordance with the FSP, QAPP, or current SOPs will be documented and reported to the Program Manager and Quality Assurance Officer (QAO). Conduct mid-survey meeting with team to discuss any changes to the project plan. Coordinate and conduct post-survey meeting with team to discuss differences between planned and actual sampling and what data gaps, if any, exist. Ensure the progress of project is kept on track by running SQUID reports and discussing on-going data collection activities with Project Team. Write, coordinate, and assemble report and/or other grant deliverables required of the project.

Savannah Cutler Monitoring Team Scientist Savannah.Cutler@env.nm.gov 505-629-2443 Issac Martinez Monitoring Team Scientist Issac.Martinez@env.nm.gov 505-699-7101 Neal Denton Monitoring team Scientist Neal.Denton@env.nm.gov 505-531-7250 Hannah Burnham Monitoring team Scientist Hannah.Burnham@env.nm.gov 505-946-8808	Project Team	Coordinates survey planning efforts (integrates the documentation of various team members' information into the field sampling plan and planning spreadsheet). Coordinates and participates in the collection of chemical, biological, and habitat data including sonde and thermograph data collection efforts. Manages chemical, biological, and habitat data for study (forms, data entry and analysis). Provides chemical, biological, and habitat results for final report and writes appropriate portions of the survey report. Coordinates development of final survey report (integrates information from all team members into final survey report).
Emily Miller Emily.Miller@env.nm.gov 505-660-3534	Quality Assurance Officer (QAO)	Approve and ensure FSP is retained in accordance with 1.21.2 NMAC, Retention and Disposition of Public Records. Documents approved changes of FSP in QA project files. Conduct audits as needed to ensure compliance with FSP, QAPP and SOPs.
Michael Baca Michael.Baca1@env.nm.gov 505-946-8954	Standards, Planning and Reporting Team (SPRT) Liaison	Provides information and data needs pertaining to water quality standards development and refinement located within the study area.
Susan A. Lucas Kamat Susan.LucasKamat@env.nm.gov 505-946-8924	Point Source Regulation Section (PSRS) Liaison	Provides information and data needs pertaining to point source discharges located within the study area. Assists with development of final survey report, as needed.
Kate Lacey-Younge Kathryn.Lacey@env.nm.gov 505-946-8952	Watershed Protection Section (WPS) Liaison	Provides information and data needs pertaining to nonpoint sources of pollution and BMPs located within the study area.
Heidi Henderson Heidi.Henderson@env.nm.gov 505-819-9986	TMDL and Assessment Team (TAT) Liaison	Provides information and data needs pertaining to TMDL development and assessment to be conducted in the study area.
Maryann McGraw Maryann.McGraw@env.nm.gov 505-819-9891	Wetlands Program Liaison	Provide information and data needs pertaining to wetlands located within the study area.

2.2 Organization

For the responsibilities defined in this project, the Project Manager; Project Team; Standards, Planning and Reporting Team Liaison; and TMDL and Assessment Team Liaison report to the MASS Program Manager for the responsibilities defined in this project. The Wetlands Program Liaison reports to the Watershed Protection Section (WPS) Program Manager. The Point Source Regulation Section (PSRS) Liaison and the WPS Liaison are section Program Managers and report to the SWQB Bureau Chief. An organizational chart of the SWQB is available at https://www.env.nm.gov/surface-water-quality/contact-us-3/.

3.0 PROJECT DESCRIPTION

3.1 Background

Section 303(d) of the Federal Water Pollution Control Act, known as the Clean Water Act (CWA), requires that each state submit to the U.S. Environmental Protection Agency (EPA) a list of water quality limited segments that require load allocations, waste load allocations, and TMDLs. The current §303(d) Program in New Mexico consists of three major steps: monitoring of surface waters, assessing monitoring data against the WQS, and developing TMDLs for those waters not meeting water quality standards (i.e. impaired).

CWA §305(b) requires that each state also submit a biennial report to the U.S. Congress through the EPA. The two requirements are combined into The State of New Mexico §303(d)/§305(b) *Integrated List and Report* (IR) (NMED/SWQB 2024b). The IR also serves as a source of basic information on water quality and water pollution control programs in New Mexico.

In accordance with the above stated statutory requirements, the IR contains the following information:

- An assessment of surface water quality;
- An analysis of the extent to which the CWA §101(a) goal of surface water quality to provide for protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water is being achieved;
- An overview of progress in water pollution control and recommendations for further action; and
- A description of the nature of nonpoint source pollution and of programs for nonpoint source control.

The activities described in this Plan are focused toward meeting the goals of the most recent, EPA approved IR (NMED/SWQB 2024b). The impairments for AUs in this survey area listed in Table 2 were identified during SWQB's most recent survey of this watershed, conducted 2014, and include data from a variety of other investigations. The "IR Category" column provides the current AU's status in the IR (see **Appendix A** for definitions). "WQS Reference" provides the applicable Water Quality Standard reference as assigned to each AU and described in Section 20.6.4 New Mexico Administrative Code (NMAC) as governed by the New Mexico Water Quality Control Commission (WQCC) (NMAC 2022). The purpose of 20.6.4 NMAC is to establish WQS that consist of the designated uses of surface waters of the state, the water quality criteria necessary to protect those uses, and an antidegradation policy. The "TMDL Completed" column lists the EPA-approved TMDLs for the Assessment Unit.

Assessment of surface waters against the WQS occurs after the monitoring data have been verified and validated, using the most recent assessment protocols. Assessment protocols are updated every odd year (e.g., 2025, 2027) and are open for the EPA and the public to review and comment as part of the

update process (NMED/SWQB 2023a or current). Waterbodies determined to be impaired are reported as such every even year (e.g., 2026, 2028) on the State's IR List. TMDLs or TMDL alternatives are typically developed for listed AUs.

Table 2. Existing MRG Impairments and TDML status of Survey Assessment Units[1]

Assessment Unit	WQS[2] Segment	Impairments	IR Category	Completed TMDLs
Rio Grande (Arroyo de las Canas to Rio Puerco)	20.6.4.105	Copper, Dissolved Aluminum, Total Recoverable Escherichia coli (E. coli)	5/5A 4A 4A	 2018 2010
Rio Salado (Rio Grande to Alamo Navajo bnd)	20.6.4.112	Temperature	5/5C	
Abo Arroyo (Rio Grande to headwaters)	20.6.4.112			
Rio Grande (Rio Puerco to Isleta Pueblo bnd)	20.6.4.105	Temperature Escherichia coli (E. coli)	5/5A 4A	 2010
Rio Grande (Isleta Pueblo boundary to Tijeras Arroyo)	20.6.4.105	Dissolved Oxygen PCBS - Fish Consumption Advisory Mercury - Fish Consumption Advisory Escherichia coli (E. coli)	5/5C 5/5C 5/5C 4A	 2010
Rio Grande (Tijeras Arroyo to Alameda Bridge)	20.6.4.105	Temperature Dissolved Oxygen PCBS - Fish Consumption Advisory Mercury - Fish Consumption Advisory Escherichia coli (E. coli)	5/5A 5/5A 5/5C 5/5C 4A	 2010
Tijeras Arroyo (Four Hills Bridge to headwaters)	20.6.4.99	Nutrients	4A	2017
Rio Grande (non-pueblo Alameda Bridge to HWY 550 Bridge)	20.6.4.106	Gross Alpha Particles PCBS - Fish Consumption Advisory Polychlorinated Biphenyls (PCBs) Mercury - Fish Consumption Advisory Escherichia coli (E. coli)	5/5A 5/5C 5/5A 5/5C 4A	 2010
Rio Grande (non-pueblo HWY 550 Bridge to Angostura Div)	20.6.4.106	Escherichia coli (E. coli)	4A	2010
Las Huertas Ck (Perennial prt Santa Ana bnd to hdwtrs)	20.6.4.111	Flow Regime Modification	4C	
San Pedro Creek (San Felipe bnd to headwaters)	20.6.4.125			
Rio Grande (non-pueblo Angostura Div to Cochiti Rsrv)	20.6.4.110	Temperature Gross Alpha Particles Polychlorinated Biphenyls (PCBs)	5/5A 5/5A 5/5A	
Galisteo Ck (Perennial prt Kewa bnd to San Cristobal Ck)	20.6.4.139	Temperature	4A	2017
Galisteo Ck (Perennial prt 2.2 mi abv Lamy to hdwts)	20.6.4.121	Temperature	4A	2017

Assessment Unit	WQS[2] Segment	Impairments	IR Category	Completed TMDLs
Apache Canyon (perennial prt Galisteo Creek to headwaters)	20.6.4.121			
Deer Creek (Galisteo Creek to headwaters)	20.6.4.98			
Arroyo Hondo (south of Old Pecos Trail to headwater)	20.6.4.98			
Santa Fe River (Cochiti Pueblo bnd to Cienega Creek)	20.6.4.113	Nutrients	5/5A	
Cienega Creek (Perennial prt of Santa Fe R to headwaters)	20.6.4.113			
Santa Fe River (Cienega Creek to Santa Fe WWTP)	20.6.4.113	Nutrients Escherichia coli (E. coli)	5/5A 4A	2017
Santa Fe River (Santa Fe WWTP to Guadalupe St)	20.6.4.136	Aluminum, Total Recoverable Escherichia coli (E. coli)	5/5A 4A	2017
Santa Fe River (Guadalupe St to Nichols Rsvr)	20.6.4.137	Aluminum, Total Recoverable Polychlorinated Biphenyls (PCBs) Escherichia coli (E. coli)	5/5A 5/5A 4A	2017
Santa Fe River (Nichols Reservoir to headwaters)	20.6.4.121	Aluminum, Total Recoverable	5/5B	
Rio Grande (Cochiti Reservoir to San Ildefonso bnd)	20.6.4.114	Gross Alpha Particles Mercury - Fish Consumption Advisory Temperature Polychlorinated Biphenyls (PCBs) Aluminum, Total Recoverable Turbidity	5/5A 5/5C 5/5A 5/5A 5/5A 5/5C	

NOTES:

[1]Based on the 2024-2026 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated List and Report. Santa Fe, NM (NMED/SWQB 2022. Available at: https://www.env.nm.gov/surface-water-quality/303d305b/)

[2] WQS = Water Quality Standards

3.2 Objectives

Table 3 outlines the project objectives identified to meet the various SWQB needs. Data needs have been determined based on core parameters needed to complete assessments according to the Comprehensive Assessment and Listing Methodology (CALM), impairments from previous studies, identified data gaps, and consultation with the SWQB MASS, PSRS, and WPS staff as well as other state agencies, federal agencies, tribes, local watershed groups, and interested parties.

Table 3. MRG Project Goals, Desired Outcomes and Criteria

	Data Collection Goal	Question to be answered	Products/ Outcomes	Decision Criteria
Primary Objective	Assess designated use attainment for the IR and provide information to the public on the condition of surface water	Are sampled waterbodies meeting WQS criteria?	Survey Report; IR	WQS as interpreted by the APs[1]
Secondary Objectives	Develop load and waste load allocations for TMDLs	What is the maximum pollutant load a waterbody can receive and meet the requirements of the WQS?	TMDL loading calculations and NPDES[2] permit limits	WQS as interpreted by the APs
	Evaluate restoration and mitigation measures implemented to control NPS pollution	Have watershed restoration activities and mitigation measures improved water quality?	Project Summary Reports, NPS[3] Annual Report, IR (De-Listing)	WQS as interpreted by the APs
	Develop or refine surface WQS	Are the existing uses appropriate for the waterbody?	UAA[4]; Amendments to New Mexico WQS	Are data sufficient to support a petition to the WQCC[5] to revise WQS?
	Obtain data for ambient/baseline water quality upstream of NPDES outfall	What is the water quality above the NPDES outfall?	Survey chemical, physical and biological data	NPDES Permits / Certifications

[1] APs = Assessment Protocols
[2] NPDES = National Pollutant Discharge Elimination System
[3] NPS = Non-Point Source
[4] UAA = Use Attainability Analysis
[5] WQCC = Water Quality Control Commission

3.3 Monitoring Strategy

SWQB monitoring of surface waters across the State currently occurs, on average, every 8-10 years using a rotational watershed sampling approach. Monitoring occurs during the non-winter months from March through November and focuses on physical, chemical, and biological conditions, mostly in perennial waters, including sampling for most pollutants that have numeric and/or narrative criteria in the WQS.

To achieve the goals outlined in Section 3.2, the NMED SWQB utilizes a targeted monitoring design to address data needs identified for assessment, TMDLs, potential standards revisions, and point source monitoring. Monitoring sites are selected based on the data needs for an assessment unit, accessibility, and representation of and within the assessment unit. Each assessment unit is represented by one or

more monitoring stations, each of which will receive 4-5 site visits during the survey. The goal of the project is to visit and collect at least the minimum number of data points for assessment. Requirements for assessment can be found in the most recent version of the CALM.

3.4 Project Schedule

As part of the survey planning process, the NMED SWQB holds a 21-day public comment period to solicit input on any areas of concern within the AUs surveyed and to inform interested parties about the SWQB water quality survey process, the specific sampling plans in the watershed, and the assessment and TMDL processes.

For this survey, the NMED SWQB held a virtual public meeting in March 2025 and considered information received from the public input process to the FSP.

Water chemistry results typically take several months to return from the State analytical laboratory, Scientific Laboratory Division (SLD). The NMED SWQB has incorporated the lag time to receive results into the schedule. When sample results are received, they undergo verification and validation according to the most up to date SWQB SOPs. The final step of the project is the publication of a survey report on the SWQB website that summarizes the data collection effort and documents changes to the original and revised FSP. The final survey report will be made available at: https://www.env.nm.gov/surface-waterquality/water-quality-monitoring/.

Following project completion, the data will be assessed for incorporation into the 2028-2030 IR List. Once the assessments are complete, the TMDL development process will begin for identified impairments.

The progress of this project will be documented and tracked from its inception through implementation to ensure all sampling and analytical activities are performed in accordance with all applicable requirements and in a cost-effective manner. The proposed project timeline for the 2025-2026 MRG survey is shown in Table 4. Significant developments, changes, or events will be documented in the Final report.

Table 4. MRG Project Schedule

Activity	Winter '24-25	Spring '25-26	Summer '25-26	Fall '25-26	Winter '25-26	Spring '27
Survey Planning, Site Reconnaissance, and Public Input Period	==========▶					
Data Collection & Submittal of WQ Samples to SLD		==========▶				
Final Data Verification & Validation Procedures, Assessment of data				==========▶		
Publication of Survey Report						====▶

3.5 Location

The project area includes the MRG and tributaries from the Buckman Diversion to below Elephant Butte, and the Santa Fe River (Table 5, Figure 1-3). Sampling will also occur on several tributaries to the MRG, including Rio Galisteo, Las Huertas Creek, San Pedro Creek, Tijeras Arroyo, Abo Arroyo, Rio Salado, Apache Canyon, Deer Creek, and possibly others if time and resources allow. The two major reservoirs within the MRG watershed – Elephant Butte and Caballo - are included in the 2025-2026 **Lake Monitoring Survey** that will be conducted concurrently with the MRG survey.

Table 5. SWQB Water Quality Stations in the 2025-2026 MRG WQ Survey (Stations ordered downstream to upstream)

Map #	AU ID	Station ID	Station Name	Station Rationale
1	NM-2105_11	32RGrand342.5	Rio Grande @ Socorro - 32RGrand342.5	Bottom of AU
2	NM-2103.A_10	38RSalad044.0	Rio Salado at County Rd 12 - 38RSalad044.0	New Station established 2025 for better access from 38RSalad030.0
3	NM-2103.A_40	32AboArr037.7	Abo Arroyo blw Hwy 60 - 32AboArr037.7	Only station in AU
4	NM-2105_40	32RGrand391.9	Rio Grande at US 60 near Bernardo - 32RGrand391.9	Bottom of AU
5	NM-2105_40	32RGrand446.9	Rio Grande abv Bosque Farms WWTP - 32RGrand446.9	Site is above Bosque Farms WWTP; Brackett NPDES discharge
6	NM-2105_50	32RGrand463.6	Rio Grande at Los Padillas - 32RGrand463.6	Below Albuquerque WWTP, and South AMAFCA Channel
7	NM-2105_51	32RGrand466.5	Rio Grande above Rio Bravo Bridge - 32RGrand466.5	Station is above Albuquerque WWTP; Proposed discharge

Map #	AU ID	Station ID	Station Name	Station Rationale
				ABCWUA WWTP 2030
8	NM-9000.A_001	32Tijera026.0	Tijeras Arroyo at Cripple Creek Rd near Carnuel - 32Tijera026.0	Lowest extent of the perennial reach; Updated in 2014 for better access from 32Tijera027.2
9	NM-2105.1_00	32RGrand488.9	Rio Grande above Alameda Bridge - 32RGrand488.9	Bottom of AU. Downstream of Rio Rancho WWTP #2
10	NM-2105.1_00	32RGrand499.2	Rio Grande above Rio Rancho WWTF No. 2 - 32RGrand499.2	Station is above Rio Rancho WWTP #2 discharge
11	NM-2105.1_02	32RGrand508.0	Rio Grande abv Hwy 550 Bridge - 32RGrand508.0	Station is downstream of Jemez River Confluence and Above Bernalillo WWTP; bottom of AU
12	NM-2105.1_02	30RGrand517.3	Rio Grande Below Angostura Diversion Works - 30RGrand517.3	Upstream of Jemez confluence
13	NM-2108.5_00	30LHuert019.0	Las Huertas Creek blw Caves - 30LHuert019.0	This site is low on the perennial portion of the AU
14	NM-9000.A_004	30SanPed011.1	San Pedro Creek at Conservation Easement - 30SanPed011.1	This is the only site in the AU
15	NM-2108_00	30RGrand542.2	Rio Grande @ Pena Blanca - 30RGrand542.2	New site established for 2014 MRG survey. Only station in the AU on a ~0.8 mile Rio Grande btw Cochiti and Santo Domingo pueblos.
16	NM-2118.A_10	30Galist030.9	Galisteo Creek at Hwy 14 near Cerrillos - 30Galist030.9	Lowest station in AU
17	NM-2118.A_12	30Galist071.4	Galisteo Creek at Cougar Cny Rd in Canoncito - 30Galist071.4	Only station in AU
18	NM-2118.A_14	30Apache001.0	Apache Canyon above I25 - 30Apache001.0	Only station in AU
19	NM-2118.A_13	30DeerCr000.7	Deer Creek above I25 - 30DeerCr000.7	Only station in AU
20	NM-2110_11	30AHondo018.4	Arroyo Hondo 0.5 mile below I25 - 30AHondo018.4	Only station in AU
21	NM-2110_02	30SantaF015.3	Santa Fe River 0.5 mi upstream Lonestar Mine - 30SantaF015.3	Bottom of AU
22	NM-2110_10	30Cieneg002.1	Cienega Creek 0.3 miles downstream of bridge in La Cienega - 30LaCien002.1	Site on non-Pueblo portion of AU
23	NM-2110_00	30SantaF028.4	Santa Fe River above CRd 56 d/s of river preserve - 30SantaF028.4	Perennial reach of Santa Fe River, below NPDES discharge
24	NM-9000.A_061	**30SantaF044.5	Santa Fe River blw Frenchies Field-30SantaF047.9	Site is near parks heavily used by pet owners, above stormwater outfalls
25	NM-9000.A_062	30SantaF050.5	Santa Fe River ~75m u/s of Sandoval St - 30SantaF050.5	Lowest station in AU for this survey, above stormwater outfall
26	NM-2118.A_21	30SantaF061.2	Santa Fe River 100 m above Wilderness Area Boundary - 30SantaF061.2	Inlet to McClure Reservoir, reference site, DW Intake

Map #	AU ID	Station ID	Station Name	Station Rationale
27	NM-2111_00	30RGrand586.5	Rio Grande at Buckman Road - 30RGrand586.5	Historical station u/s of intake
28	NM-2111_00	30RGrand586.2	Rio Grande at Buckman Diversion d/s of BDD intake - 30RGrand586.2	New station created 2025 d/s of intake

** Requested access from Cochiti Pueblo – alternative site will be 30SantaF015.3 if access is not granted*

*** Alternate site will be 30SantaF047.9 if 30SantaF044.5 is dry during sampling events*

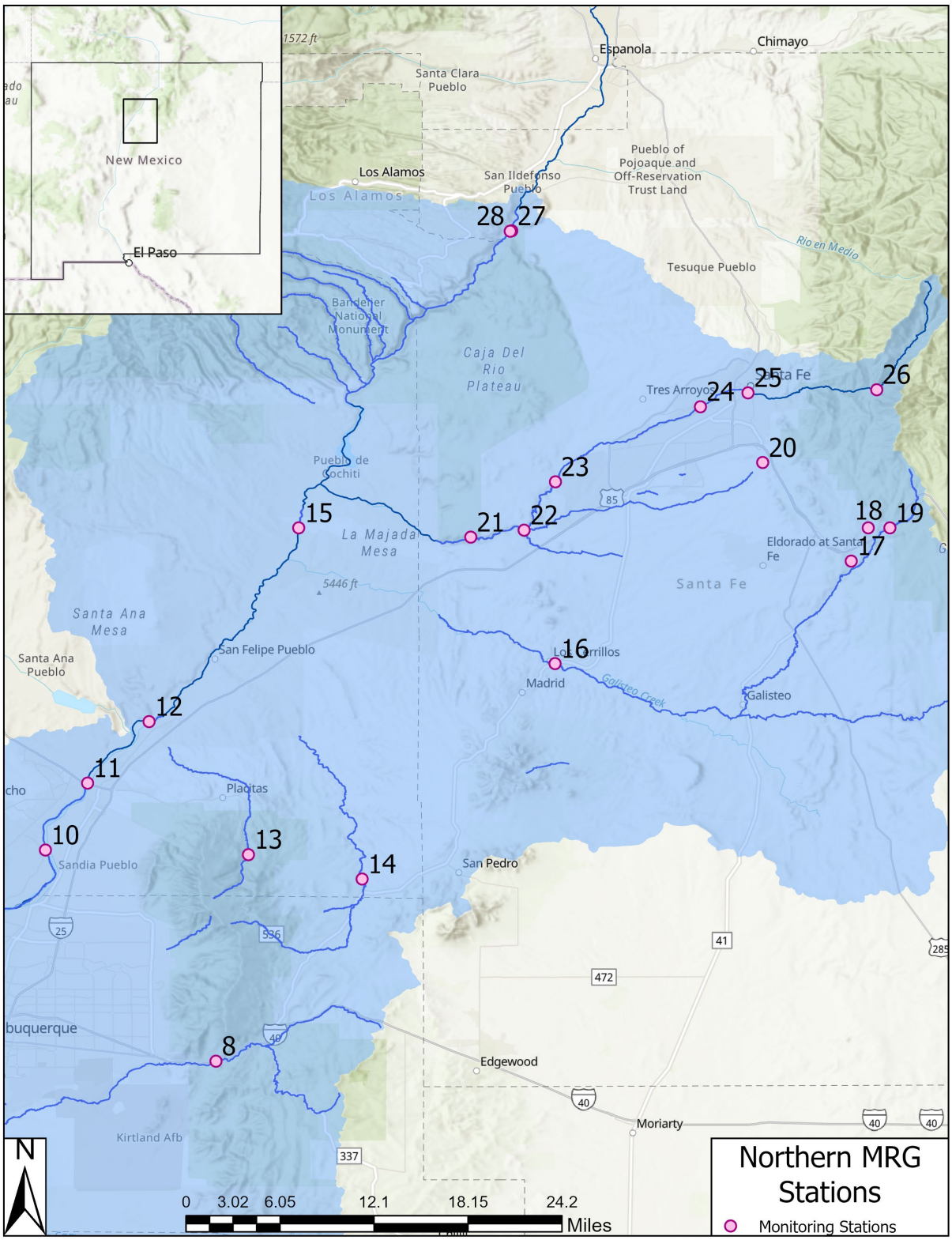

Figure 2. Project area and sampling locations, Northern Stations

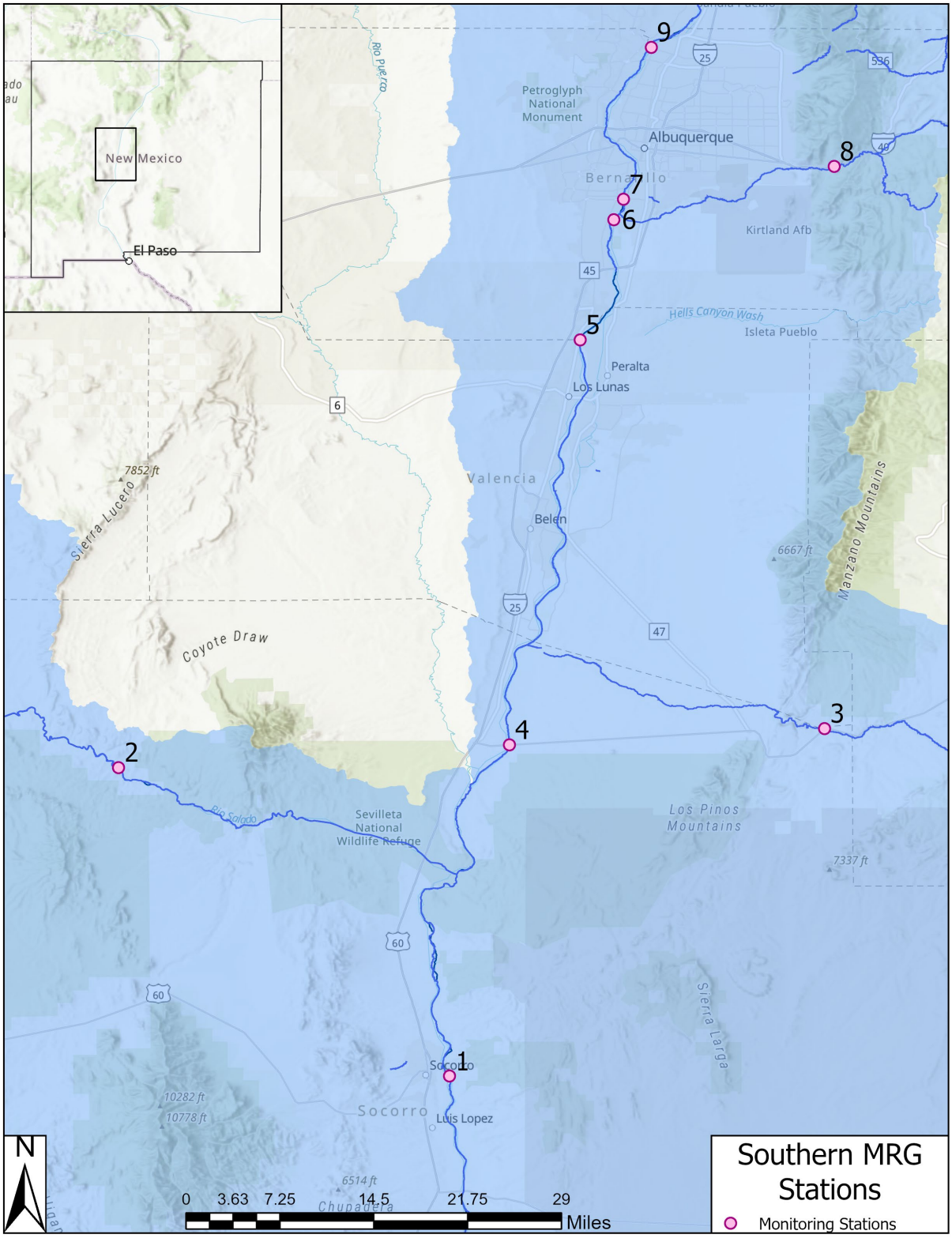

Figure 3. Project area and sampling locations, Southern Stations

4.0 DOCUMENTATION

Project documents include this field sampling plan, calibration records, sonde and logger download data, validation and verification records, sample collection data, records of analytical data in hard copy or in electronic form and quality control (QC) records. Documents will be maintained in accordance with the requirements of the SWQB QAPP for Water Quality Management Programs (NMED/SWQB 2024).

The survey data will be organized within the following project folder in the SWQB network:

- Middle Rio Grande and Santa Fe River Survey 2025-2026

Project documentation will include narrative descriptions of progress throughout the life of the project relating to planning and implementation efforts, including deviations from the original plan and issues that arise along with any associated corrective actions. Deviations from FSP and corrective actions will be documented in the mid-survey revised FSP and final Survey Report.

Project activities will be documented in SWQB MASS Section Field Sheets. Information from field sheets are entered and organized in the SWQB's network server and data results are uploaded to the *Surface water Quality Information Database* (SQUID). Most results are electronically transferred into the SQUID database and eventually uploaded to the U.S. Environmental Protection Agency's (EPA) ***W**ater **Q**uality E**x**change* (WQX). All data are verified and validated for completeness and accuracy. Project data housed in SQUID are organized in reports and assessed by the SWQB Assessment Coordinator to determine if water quality standards are being attained. A survey report summarizing the MRG 2025-2026 Water Quality Survey is tentatively planned for completion in April 2027.

5.0 SAMPLING PLAN

5.1 Chemistry Sampling

Sample collection techniques, preservation and acidification requirements, equipment, and quality control activities associated with the sampling of surface water for analytes listed in **Table 6** will be conducted in accordance with SWQB SOP 8.1 Chemical Sampling – Equipment Cleaning Procedure, SOP 8.2 Chemical Sampling in Lotic Environments, SOP 8.4 PFAS Sample Collection, and SOP 9.1 Bacteriological Sampling.

Water quality samples will be submitted to SLD for analysis, processed in the SWQB laboratory, or sent to a contract laboratory for analysis. All data will be collected and handled in accordance with procedures prescribed in the most up to date SWQB SOPs and quality assurance-related documents.

The water quality parameters to be measured and the sampling frequency are listed in Table 6. The number of samples collected at each monitoring station depends on the available time and resources. At a minimum the SWQB will collect a sufficient number of samples for assessment purposes according to the requirements of the most up to date CALM. Currently, the SWQB plans to collect at least 4 samples (5 if resources allow) of core parameters (i.e., metals, nutrients and *E. coli*) at each monitoring location detailed in Table 6. In addition to the parameters listed, ambient water quality parameters (temperature, specific conductance, salinity, dissolved oxygen concentration, dissolved oxygen saturation, pH, and turbidity) will be measured at each site using a multi-parameter sonde in accordance with the most up to date SWQB SOP 6.1 Sondes. Where United States Geological Survey (USGS) flow data are unavailable, primarily on tributaries, flow will be measured where possible. SWQB plans to

conduct PCB sampling within AUs that have an existing impairment for PCBs, pending sufficient resources and funding. PFAS sampling is also planned at surface water locations that may be relevant to drinking water intake sources, pending sufficient funding, resources, and dependent on laboratory equipment.

Chemistry sampling sites are in each AU with additional sites chosen based on existing or potential point or non-point sources of pollution. Existing and potential sources of pollution are identified from point source permits, historical data, information from other agencies, and residents. Sampling stations were selected at locations that bracket potential pollution sources, allow access to the waterbody and represent each of the assessment units. Where possible, established stations will be utilized to allow for examination of trends.

SWQB is working with other government agencies, municipalities, Pueblos, watershed groups, and other organizations to collaboratively maximize sampling and monitoring efforts. Data sharing opportunities benefit all groups by providing larger spatial and temporal coverage. Any data collected from outside groups are subjected to the SWQB QAPP, SOPs, and any other applicable QA/QC procedures prior to assessment.

Table 6. MRG Water Chemistry Sampling Summary

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients [1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2*]	Total Organic Carbon[3]	Dissolved Organic Carbon[3*]	*E. coli*	PCBs[4]	PFAS / PFOA[5*]	Volatile Organic Compounds[6*]	Semi-volatile Organics[6]	Radionuclides[7]
1	32RGrand342.5	Rio Grande (Arroyo de las Canas to Rio Puerco)		4	4	4	4	4	4	4					
2	38RSalad044.0	Rio Salado (Rio Grande to Alamo Navajo bnd)	4		4	4	4	4	4	4					
3	32AboArr037.7	Abo Arroyo (Rio Grande to headwaters)	4		4	4	4	4	4	4					
4	32RGrand391.9	Rio Grande (Rio Puerco to Isleta Pueblo bnd)		4	4	4	4	4	4	4					
5	32RGrand446.9	Rio Grande (Rio Puerco to Isleta Pueblo bnd)		4	4	4	4	4	4	4					

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients [1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2*]	Total Organic Carbon[3]	Dissolved Organic Carbon[3*]	*E. coli*	PCBs[4]	PFAS / PFOA[5*]	Volatile Organic Compounds[6*]	Semi-volatile Organics[6]	Radionuclides[7]
6	32RGrand463.6	Rio Grande (Isleta Pueblo boundary to Tijeras Arroyo)		4	4	4	4	4	4	4					
7	32RGrand466.5	Rio Grande (Tijeras Arroyo to Alameda Bridge)		4	4	4	4	4	4	4		4	2	2	4
8	32Tijera026.0	Tijeras Arroyo (Four Hills Bridge to headwaters)	4		4	4	4	4	4	4					4
9	32RGrand488.9	Rio Grande (non-pueblo Alameda Bridge to HWY 550 Bridge)		4	4	4	4	4	4	4					
10	32RGrand499.2	Rio Grande (non-pueblo Alameda Bridge to HWY 550 Bridge)		4	4	4	4	4	4	4	4	4			4
11	32RGrand508.0	Rio Grande (non-pueblo HWY 550 Bridge to Angostura Div)		4	4	4	4	4	4	4					
12	30RGrand517.3	Rio Grande (non-pueblo HWY 550 Bridge to Angostura Div)		4	4	4	4	4	4	4					
13	30LHuert019.0	Las Huertas Ck (Perennial	4		4	4	4	4	4	4					

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients [1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2*]	Total Organic Carbon[3]	Dissolved Organic Carbon[3*]	*E. coli*	PCBs[4]	PFAS / PFOA[5*]	Volatile Organic Compounds[6*]	Semi-volatile Organics[6]	Radionuclides[7]
		prt Santa Ana bnd to hdwtrs)													
14	30SanPed011.1	San Pedro Creek (San Felipe bnd to headwaters)	4		4	4	4	4	4	4					
15	30RGrand542.2	Rio Grande (non-pueblo Angostura Div to Cochiti Rsrv)	4		4	4	4	4	4	4	4				4
16	30Galist030.9	Galisteo Ck (Perennial prt Kewa bnd to San Cristobal Ck)	4		4	4	4	4	4	4					
17	30Galist071.4	Galisteo Ck (Perennial prt 2.2 mi abv Lamy to hdwts)	4		4	4	4	4	4	4					
18	30Apache001.0	Apache Canyon (perennial prt Galisteo Creek to headwaters)	4		4	4	4	4	4	4					
19	30DeerCr000.7	Deer Creek (Galisteo Creek to headwaters)	4		4	4	4	4	4	4					
20	30AHondo018.4	Arroyo Hondo (south of Old Pecos Trail to headwater)	4		4	4	4	4	4	4					
21	30SantaF015.3	Santa Fe River (Cochiti Pueblo bnd	4		4	4	4	4	4	4					

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients [1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2*]	Total Organic Carbon[3]	Dissolved Organic Carbon[3*]	*E. coli*	PCBs[4]	PFAS / PFOA[5*]	Volatile Organic Compounds[6*]	Semi-volatile Organics[6]	Radionuclides[7]
		to Cienega Creek)													
22	30Cieneg002.1	Cienega Creek (Perennial prt of Santa Fe R to headwaters)	4		4	4	4	4	4	4					4
23	30SantaF028.4	Santa Fe River (Cienega Creek to Santa Fe WWTP)	4		4	4	4	4	4	4					
24	30SantaF044.5	Santa Fe River (Santa Fe WWTP to Guadalupe St)	4		4	4	4	4	4	4					
25	30SantaF050.5	Santa Fe River (Guadalupe St to Nichols Rsvr)	4		4	4	4	4	4	4	4				
26	30SantaF061.2	Santa Fe River (Nichols Reservoir to headwaters)	4		4	4	4	4	4	4					
27	30RGrand586.5	Rio Grande (Cochiti Reservoir to San Ildefonso bnd)		4	4	4	4	4	4	4	4	4	2	2	4
28	30RGrand586.2	Rio Grande (Cochiti Reservoir to San Ildefonso bnd)		4	4	4	4	4	4	4					

Map #	Station ID	Assessment Unit	TDS/TSS	TDS/TSS + Chloride, Sulfate	Nutrients [1]	Total Metals (Hg, Se, Al)	Dissolved Metals[2*]	Total Organic Carbon[3]	Dissolved Organic Carbon[3*]	*E. coli*	PCBs[4]	PFAS / PFOA[5*]	Volatile Organic Compounds[6*]	Semi-volatile Organics[6]	Radionuclides[7]
	QC*	Equipment Blanks, and Field blanks collected per SWQB SOPs	-	-	-	-	12	-	12	12		**	**		-
	Totals		68	44	112	112	124	112	124	112	16	12	4	4	16

Notes:

[1] Suite includes total Kjeldahl nitrogen, nitrate+nitrite, ammonia and total phosphorus.

[2] Suite includes aluminum, antimony, arsenic, barium, boron, cadmium, chromium, cobalt, copper, iron, manganese, molybdenum, nickel, silicon, silver, tin, vanadium and zinc PLUS calcium and magnesium.

[3] Standard Method 5310C Total Organic Carbon (TOC and DOC)

[4] PCBs analyses utilizing EPA Method 1668 Congeners – See Appendix B, list may change dependent on laboratory.

[5] PFAS analyses utilizing EPA Method 1633 or 537.1 (or equivalent); See SLD PFAS analyte list in SWQB SOP 8.4 for details on specific compounds. List may change dependent on laboratory.

[6] See Appendix B, list may change dependent on laboratory capabilities.

[7] Radionuclide samples will include gross alpha and gross beta and depending on detections may include Uranium mass and Radium 226 + 228.

* Frequency of blanks are collected according to SWQB SOPs. https://www.env.nm.gov/surface-water-quality/sop/

** Blanks provided by Laboratory see SOP 8.2 for Chemical Sampling in Lotic Environments (VOCs) and SOP 8.4 for PFAS.

5.2 Physical Habitat, Biological Sampling, and Datalogger Deployment

Measuring biological response indicators concurrent to physical habitat and chemistry gives an overall interpretation of the biological integrity of the reach represented and provides more complete information on characteristics of sediment and nutrients currently cycling through the stream. SWQB is currently collecting fish, periphyton, macroinvertebrates, and physical habitat data at select sites to assess waterbodies for potential impairment from increased temperatures, sediment deposition, nutrient enrichment and toxic pollutants. Sampling methods are conducted in accordance with the most current SWQB SOPs. The sampling detailed in the FSP will also be completed in coordination with the 2025-2026 Probabilistic Monitoring survey and the SWQB Fish Consumption Advisory Program.

Benthic macroinvertebrate data collection is conducted within a biological index period, August 15 through November 15, for appropriate comparability of samples and life history requirements.

Resources, such as staff and budgets, and other issues, such as property ownership may not allow for collection of biological and habitat data at all stations. Stations are selected for biological and habitat monitoring based on 1) current Integrated List status; 2) results of the Nutrient Assessment; and 3) observational results of the surrounding land use including upland and riparian habitat conditions,

including results of the Site Condition Class Verification & Probable Source Field Sheet. Additional sites determined, or considered, to be in "reference" or "best available condition" will also be selected for biological and habitat monitoring for inclusion in development and refinement of biological and habitat criteria, pending sufficient resources and funding. The biological and habitat sampling that is planned for this survey is listed in Table 7. Biological and habitat sampling will be conducted if sufficient funding, resources, and time is available.

Sites in this survey requiring biological data collection are in the Southern Rockies (Ecoregion 21) and Arizona and New Mexico Mountains (Ecoregions 23), as such they will be compared to a mountain reference condition for assessment purposes (Jacobi et al. 2006). See Reference Condition Approach in the most current CALM for information on Mountain Stream Condition Index (M-SCI).

Sondes and DO loggers are deployed at select sites for a minimum of three days to record field variables in at least one-hour intervals to document dissolved oxygen, pH, temperature, conductivity, and turbidity fluctuations. Requirements of data for assessment purposes are detailed in the most current CALM. DO data loggers are deployed at applicable monitoring stations to capture diurnal patterns and dissolved oxygen changes to assess the relationship for nutrient impairments. Thermographs (data logging thermometers) are typically deployed from May through September at select sites throughout the survey to measure temperature fluctuations, see SOP 6.3 Thermographs. Table 7 summarizes locations requiring long-term data (LTD) monitoring.

SWQB is working with other government agencies, municipalities, Pueblos, watershed groups, and other organizations to collaboratively maximize sampling and monitoring efforts. Data sharing opportunities benefit all groups by providing larger spatial and temporal coverage. Any data collected from outside groups are subjected to the SWQB QAPP, SOPs, and any other applicable QA/QC procedures prior to assessment.

Table 7. MRG Biological and Habitat Sampling Summary

#	Station ID	Assessment Unit	Sonde Deployment[1]	DO Logger[2]	Thermograph	Physical Habitat	Flow[3]	Benthics[4]
1	32RGrand342.5	Rio Grande (Arroyo de las Canas to Rio Puerco)						
2	38RSalad044.0	Rio Salado (Rio Grande to Alamo Navajo bnd)			1		4	
3	32AboArr037.7	Abo Arroyo (Rio Grande to headwaters)			1		4	1
4	32RGrand391.9	Rio Grande (Rio Puerco to Isleta Pueblo bnd)			1			
5	32RGrand446.9	Rio Grande (Rio Puerco to Isleta Pueblo bnd)						
6	32RGrand463.6	Rio Grande (Isleta Pueblo boundary to Tijeras Arroyo)		1	1			

#	Station ID	Assessment Unit	Sonde Deployment[1]	DO Logger[2]	Thermograph	Physical Habitat	Flow[3]	Benthics[4]
7	32RGrand466.5	Rio Grande (Tijeras Arroyo to Alameda Bridge)		1	1			
8	32Tijera026.0	Tijeras Arroyo (Four Hills Bridge to headwaters)		1	1	1	4	1
9	32RGrand488.9	Rio Grande (non-pueblo Alameda Bridge to HWY 550 Bridge)		1	1			
10	32RGrand499.2	Rio Grande (non-pueblo Alameda Bridge to HWY 550 Bridge)						
11	32RGrand508.0	Rio Grande (non-pueblo HWY 550 Bridge to Angostura Div)		1	1			
12	30RGrand517.3	Rio Grande (non-pueblo HWY 550 Bridge to Angostura Div)						
13	30LHuert019.0	Las Huertas Ck (Perennial prt Santa Ana bnd to hdwtrs)		1	1		4	1
14	30SanPed011.1	San Pedro Creek (San Felipe bnd to headwaters)		1	1		4	1
15	30RGrand542.2	Rio Grande (non-pueblo Angostura Div to Cochiti Rsrv)						
16	30Galist030.9	Galisteo Ck (Perennial prt Kewa bnd to San Cristobal Ck)		1	1	1	4	
17	30Galist071.4	Galisteo Ck (Perennial prt 2.2 mi abv Lamy to hdwts)			1	1	4	1
18	30Apache001.0	Apache Canyon (perennial prt Galisteo Creek to headwaters)			1	1	4	1
19	30DeerCr000.7	Deer Creek (Galisteo Creek to headwaters)			1	1	4	1
20	30AHondo018.4	Arroyo Hondo (south of Old Pecos Trail to headwater)						
21	30SantaF015.3	Santa Fe River (Cochiti Pueblo bnd to Cienega Creek)		1	1	1	4	
22	30Cieneg002.1	Cienega Creek (Perennial prt of Santa Fe R to headwaters)			1	1	4	

#	Station ID	Assessment Unit	Sonde Deployment[1]	DO Logger[2]	Thermograph	Physical Habitat	Flow[3]	Benthics[4]
23	30SantaF028.4	Santa Fe River (Cienega Creek to Santa Fe WWTP)		1	1	1	4	
24	30SantaF044.5	Santa Fe River (Santa Fe WWTP to Guadalupe St)					4	
25	30SantaF050.5	Santa Fe River (Guadalupe St to Nichols Rsvr)				1	4	
26	30SantaF061.2	Santa Fe River (Nichols Reservoir to headwaters)				1		1
27	30RGrand586.5	Rio Grande (Cochiti Reservoir to San Ildefonso bnd)	1		1			
28	30RGrand586.2	Rio Grande (Cochiti Reservoir to San Ildefonso bnd)						
	QC	Field, equipment, reagent and bacterial blanks collected per QAPP.	-	-	-	2	-	0
	Totals		1	10	18	12	56	8

NOTES:

[1] Sondes are deployed at sites that indicate elevated turbidity or nutrient enrichment or have been previously listed for turbidity or nutrients.

[2] DO Loggers are deployed at sites that indicate dissolved oxygen supersaturation, depletion, or nutrient enrichment.

[3] Flow will be collected according to SWQB SOP 7.0 when a USGS gage is not within same AU.

[4] Benthic Macroinvertebrate sampling will be dependent on time, resources, and allocation of funds.

6.0 RESOURCE REQUIREMENTS

Sample analysis costs include: SLD work-time units (WTUs) for chemical analysis performed at SLD and provided to SWQB through a Joint Powers Agreement between the State agencies; analysis costs for chemical and biological samples sent to contract laboratories; and equipment costs for E. coli analysis performed by qualified SWQB staff. Sample analysis expenses are summarized in **Table 8**.

Approximate monthly fuel expenses are summarized in **Table 9**. Vehicles will require standard preventative maintenance, and unforeseen costs may arise at any time

Water quality sampling trips will require two staff per monthly survey to stay up to two nights out of Santa Fe. Biological survey crew maximum requirements are three to four staff surveying one to two sites per day. Therefore, twelve biological survey sites may take up to ten days, or over two weeks (**Table 10**).

Staff receive $166 per night per diem for travel costs. Costs not included below may involve general sampling supplies such as water quality sample containers and preservatives, ice, sonde calibration solutions, and periphyton, macroinvertebrate, fish, and habitat sampling/monitoring equipment.
A summary of total cost for the survey is detailed in **Table 11**.

Table 8. MRG Estimated Biological and Chemical Cost Summary

Analyte	Total # Samples	Cost per Sample (WTU or $)	Total Expenditure (WTU or $)
TDS/TSS	68	45	3,060
TDS/TSS, Chloride, Sulfate	44	105	4,620
Nutrients	112	95	10640
Total Metals	112	185	20720
Dissolved Metals + Ca, Mg	124	140	17360
Total Organic Carbon (TOC)	112	30	3360
Dissolved Organic Carbon (DOC)	124	30	3720
Volatile Organic Compounds	4	150	600
Semi-volatile Organics	4	235	940
Radionuclides	16	610	9760
PFAS (external)	12	$500	$6,000
E. coli (in-house)	120	$8.58	$1,029.60
PCBs (external)	16	$990	$15,840
Benthic Macroinvertebrates (external)	8	$375	$3,000
10 µm Filters (est.)	90	$11.83	$2,129.40
0.45 µm Filters (est.)	260	$14.79	$3,845.40
Total Samples	**871**	**Total WTUs**	**74,780**
Total Dollars for Chemistry (excluding *E. coli)*		**Dollars**	**$24,840**
Additional Cost (filters)			**$4,910.10**

Costs are in WTUs, unless otherwise specified by table.

Table 9. MRG Estimated Vehicle Costs

Month	Approximate Miles	Estimated MPG	EIA Projected Cost of Gasoline per Gallon	Total Fuel Costs
March	800	17	$2.92	$137
April	800	17	$2.92	$137
May	1000	17	$2.92	$172
June	1000	17	$2.92	$172
July	1200	17	$2.92	$206
August	1200	17	$2.92	$206
September	1000	17	$2.92	$172
October	1000	17	$2.92	$172
TOTAL	**8,000**	-	-	**$1,374**

Table 10. MRG Estimated Per Diem Costs

Expense	Water Chemistry Surveys	Biological and Habitat Surveys	Data Logger Deployments	Per diem rate	Total
Per Diem (number of nights out per year)	5	0	2	$166	$2,324
Field Staff Days (number of days per year)	50	11	54	-	115

Table 11. MRG Estimated Total Survey Costs

WTUs	Samples $	Fuel $	Per Diem $	Staff Field Days
74,780	**$24,840**	**$1,374**	**$2,324**	**115**

Note: Sample dollars($) do not include the cost of filters, or *E. coli.*

7.0 REPORTING

Following completion of the survey and verification and validation of data for the project (following the most current version of SWQB SOP 15.0 Verification and Validation), a final survey report will be produced in April 2027 that summarizes the data collected during the survey and describes any deviations from the original or amended FSP. Progress during the survey will be documented in biannual progress reports to EPA for the CWA 106 grant. Other reports and documents that may use information collected during this survey include TMDL reports, proposals for water quality standards revision, and/or NPDES permits.

8.0 REFERENCES

Environmental Protection Agency (EPA). 2006. Level III ecoregions of the continental United States (revision of Omernik, 1987): Corvallis, Oregon, USEPA – National Health and Environmental Effects Research Laboratory, Map M-1, various scales.

Griffith, G.E., Omernik, J.M., McGraw, M.M., Jacobi, G.Z., Canavan, C.M., Schrader, T.S., Mercer, D., Hill, R., and Moran, B.C. 2006. Ecoregions of New Mexico (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,400,000).

Jacobi, G.Z., M.D. Jacobi, M.T. Barbour, E.W. Leppo. 2006. Benthic macroinvertebrate stream condition indices for New Mexico wadeable streams. Jacobi and Associates and Tetra Tech, Inc. for New Mexico Environment Department, Surface Water Quality Bureau. Santa Fe, NM.

New Mexico Environment Department/Surface Water Quality Bureau (NMED/SWQB). 2016. Surface Water Quality 10-Year Monitoring and Assessment Strategy. Santa Fe, NM. Available at: https://www.env.nm.gov/surface-water-quality/protocols-and-planning/

New Mexico Administrative Code (NMAC). 2022. *State of New Mexico Standards for Interstate and Intrastate Surface Waters; 20.6.4.* New Mexico Water Quality Control Commission. Santa Fe, NM. Available at: https://www.env.nm.gov/surface-water-quality/wqs/

NMED/SWQB. 2023a. *Procedures for Assessing Water Quality Standards Attainment for the State of New Mexico §303(d) /§305(b) Integrated Report: Comprehensive Assessment and Listing Methodology (CALM)*. Santa Fe, NM. Available at: https://www.env.nm.gov/surface-water-quality/calm/

NMED/SWQB. 2024. *Quality Assurance Project Plan for Water Quality Management Programs*. Santa Fe, NM. Available at: Available at: https://www.env.nm.gov/surface-water-quality/protocols-and-planning/

NMED/SWQB. 2024b. *2024-2026 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated List and Report*. Santa Fe, NM. Available at: https://www.env.nm.gov/surface-water-quality/303d-305b/

NMED/SWQB. Standard Operating Procedures (SOPs). The most current version of the SOP will be utilized for SWQB data operations. All SOPs are available at: https://www.env.nm.gov/surface-water-quality/sop/

NMED/SWQB. 2023. *SOP 2.1 for Field Sampling Plan Development and Execution.*

NMED/SWQB. 2023. *SOP 5.0 Physical Habitat.*

NMED/SWQB. 2024. *SOP 6.1 for Sondes.*

NMED/SWQB. 2024. *SOP 6.2 for DO and Conductivity Loggers.*

NMED/SWQB. 2019. *SOP 6.3 for Thermographs.*

NMED/SWQB. 2021. *SOP 6.4 for Long-term Deployment Data Logger QA.*

NMED/SWQB. 2022. *SOP 8.1 for Chemical Sampling – Equipment Cleaning Procedure.*

NMED/SWQB. 2024. *SOP 8.2 for Chemical Sampling in Lotic Environments.*

NMED/SWQB. 2023. *SOP 8.4 for PFAS Sample Collection.*

NMED/SWQB. 2023. *SOP 9.1 for Bacteriological Sampling*.

NMED/SWQB. 2025. *SOP 12.1 for Lake Sampling.*

NMED/SWQB. 2023. *SOP for Data Verification and Validation.*

APPENDIX A

IR (Integrated Report) Category: Overall water quality standards attainment category for each assessment unit as determined by combining individual designated use support decisions. The unique assessment categories for New Mexico are described as follows:

IR Category (AU)	Overall water quality standards attainment category for each assessment unit as determined by combining individual designated use support decisions. The unique IR categories for New Mexico are described as follows as follows:
IR Category (Parameter)	Water quality standards attainment category for each listed cause of impairment. The unique IR categories for New Mexico are described as follows as follows:
IR Category 1	Attaining the water quality standards for all designated and existing uses. AUs are listed in this category if there are data and information that meet all requirements of the assessment and listing methodology and support a determination that the water quality criteria are attained.
IR Category 2	Attaining some of the designated or existing uses based on numeric and narrative parameters that were tested, and no reliable monitored data is available to determine if the remaining uses are attained or threatened. AUs are listed in this category if there are data and information that meet requirements of the assessment and listing methodology to support a determination that some, but not all, uses are attained based on numeric and narrative water quality criteria that were tested. Attainment status of the remaining uses is unknown because there is no reliable monitored data with which to make a determination.
IR Category 3/3A	Insufficient of no reliable monitored data and/or information to determine if any designated or existing use is attained. No data available -- AUs are listed in this subcategory when there are no available data to assess. These are considered high priority for follow up monitoring.
IR Category 3/3B	Insufficient monitored data and/or information to determine if any designated or existing use is attained. Limited data (n = 1 to 3) available, no exceedances -- AUs are listed in this subcategory when there are no exceedances of any applicable criteria in the limited data set. Their priority for follow up monitoring depends on the parameter and concentration (for example, measurements near the criteria would increase the priority for additional sampling).
IR Category 3/3C	Insufficient monitored data and/or information to determine if any designated or existing use is attained. Limited data (n = 1 to 3) available, exceedance(s) -- AUs are listed in this subcategory when there

	are exceedances of one or more applicable criteria in the limited data set. These are considered high priority for follow up monitoring.
IR Category 4A	Impaired for one or more designated uses but does not require development of a TMDL because TMDL has been completed. AUs are listed in this subcategory once all TMDL(s) have been developed and approved by USEPA that, when implemented, are expected to result in full attainment of the standard. Where more than one pollutant is associated with the impairment of an AU, the AU remains in IR Category 5A (see below) until all TMDLs for each pollutant have been completed and approved by EPA.
IR Category 4B	Impaired for one or more designated uses but does not require development of a TMDL because other pollution control requirements are reasonably expected to result in attainment of the water quality standard in the near future. Consistent with the regulation under 40 CFR 130.7(b)(i), (ii), and (iii), AUs are listed in this subcategory where other pollution control requirements required by local, state, or federal authority are stringent enough to implement any water quality standard (WQS) applicable to such waters.
IR Category 4C	Impaired for one or more designated uses but does not require development of a TMDL because impairment is not caused by a pollutant. AUs are listed in this subcategory if a pollutant does not cause the impairment. For example, EPA considers flow alteration to be “pollution” vs. a “pollutant.”
IR Category 5/5A	Impaired for one or more designated or existing uses and a TMDL is underway or scheduled. AUs are listed in this category if the AU is impaired for one or more designated uses by a pollutant. Where more than one pollutant is associated with the impairment of a single AU, the AU remains in IR Category 5A until TMDLs for all pollutants have been completed and approved by EPA.
IR Category 5/5B	Impaired for one or more designated or existing uses and a review of the water quality standard will be conducted. AUs are listed in this category when it is possible that water quality standards are not being met because one or more current designated use is inappropriate. After a review of the water quality standard is conducted, a Use Attainability Analysis (UAA) will be developed and submitted to EPA for consideration, or the AU will be moved to IR Category 5A and a TMDL will be scheduled.
IR Category 5/5C	Impaired for one or more designated or existing uses and Additional data will be collected before a TMDL is scheduled. AUs are listed in this category if there is not enough data to determine the pollutant of concern or there is not adequate data to develop a TMDL. For example, AUs with biological impairment will be listed in this category until

	further research can determine the particular pollutant(s) of concern. When the pollutant(s) are determined, the AU will be moved to IR Category 5A and a TMDL will be scheduled. If it is determined that the current designated uses are inappropriate, it will be moved to IR Category 5B and a UAA will be developed. If it is determined that "pollution" is causing the impairment (vs. a "pollutant"), the AU will be moved to IR Category 4C.
IR Category 5-R (previous 5-ALT)	Advance restoration approach is in progress or under development. EPA created this optional subcategory as an organizing tool to clearly articulate which impaired waterbodies have or will have alternative approaches to attain WQS (EPA 2015). The advance restoration approach needs to clearly demonstrate how the WQS will be achieved. The description of the advanced restoration approach and the waters to which it applies will be included during public review of the draft Integrated Report, so that the public has an opportunity to view the proposed advance restoration approaches. Additional details on what must be included in the description are found in EPA's listing guidance (EPA 2015).

APPENDIX B

Organics (semi-volatiles)	Organics (volatiles)	Organics (PCBs)
1,2,4-Trichlorobenzene	1,1,1,2-Tetrachloroethane	2-Chlorobiphenyl
1,2-Dichlorobenzene	1,1,1-Trichloroethane	2,3-Dichlorobiphenyl
1,2-Dinitrobenzene	1,1,2,2-Tetrachloroethane	2,2',5-Trichlorobiphenyl
1,3-Dichlorobenzene	1,1,2-Trichloroethane	2,4',5-Trichlorobiphenyl
1,3-Dinitrobenzene	1,1-Dichloroethane	2,2'3,5'-Tetrachlorobiphenyl
1,4-Dichlorobenzene	1,1-Dichloroethene	2,2',5,5'-Tetrachlorobiphenyl
1,4-Dinitrobenzene	1,1-Dichloropropene	2,3',4,4'-Tetrachlorobiphenyl
1-Methylnaphthalene	1,2,3-Trichlorobenzene	2,2',3,4,5'-Pentachlorobiphenyl
2,3,4,6-Tetrachlorophenol	1,2,3-Trichloropropane	2,2',4,5,5'-Pentachlorobiphenyl
2,3,5,6-Tetrachlorophenol	1,2,4-Trichlorobenzene	2,3,3',4',6-Pentachlorobiphenyl
2,4,5-Trichlorophenol	1,2,4-Trimethylbenzene	2,2',3,4,4',5'-Hexachlorobiphenyl
2,4,6-Trichlorophenol	1,2-Dibromo-3-chloropropane	2,2',3,4,5,5'-Hexachlorobiphenyl
2,4-Dichlorophenol	1,2-Dibromoethane (EDB)	2,2',3,5,5',6-Hexachlorobiphenyl
2,4-Dimethylphenol	1,2-Dichlorobenzene	2,2',4,4',5,5'-Hexachlorobiphenyl
2,4-Dinitrophenol	1,2-Dichloroethane	2,2',3,3',4,4',5-Heptachlorobiphenyl
2,4-Dinitrotoluene	1,2-Dichloropropane	2,2',3,3',4,4',5-Heptachlorobiphenyl
2,6-Dinitrotoluene	1,3,5-Trimethylbenzene	2,2',3,4,4',5,5'-Heptachlorobiphenyl
2-Chloronaphthalene	1,3-Dichlorobenzene	2,2',3,4,4',5',6-Heptachlorobiphenyl
2-Chlorophenol	1,3-Dichloropropane	2,2',3,4',5,5',6-Heptachlorobiphenyl
2-Methylnaphthalene	1,4-Dichlorobenzene	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl
2-Methylphenol	1,4-Dioxane	
2-Nitroaniline	2,2-Dichloropropane	
2-Nitrophenol	2-Butanone (MEK)	
3,3'-Dichlorobenzidine	2-Chloroethyl vinyl ether	
3- & 4-Methylphenol	2-Chlorotoluene	
3-Nitroaniline	2-Hexanone	
4,4'-DDD	4-Chlorotoluene	
4,4'-DDE	4-Isopropyltoluene	
4,4'-DDT	4-Methyl-2-pentanone	
4,6-Dinitro-2-methylphenol	Acetone	
4-Bromophenyl Phenyl Ether	Acetonitrile	
4-Chloro-3-methylphenol	Acrolein	
4-Chloroaniline	Acrylonitrile	
4-Chlorophenyl Phenyl Ether	Allyl chloride	
4-Nitroaniline	Benzene	
4-Nitrophenol	Bromobenzene	
Acenaphthene	Bromochloromethane	
Acenaphthylene	Bromodichloromethane	
Alachlor	Bromoform	
Aldrin	Bromomethane	
alpha-BHC	Carbon disulfide	
Aniline	Carbon tetrachloride	
Anthracene	Chlorobenzene	
Atrazine	Chloroethane	
Azobenzene	Chloroform	

Organics (semi-volatiles)	Organics (volatiles)	Organics (PCBs)
Benzidine	Chloromethane	
Benzo(a)anthracene	Chloroprene	
Benzo(a)pyrene	cis-1,2-Dichloroethene	
Benzo(b)fluoranthene	cis-1,3-Dichloropropene	
Benzo(g,h,i)perylene	cis-1,4-Dichloro-2-butene	
Benzo(k)fluoranthene	Dibromochloromethane	
Benzyl alcohol	Dibromomethane	
beta-BHC	Dichlorodifluoromethane	
bis(2-Chloroethoxy)methane	Ethyl methacrylate	
bis(2-Chloroethyl)ether	Ethylbenzene	
bis(2-Chloroisopropyl)ether	Hexachlorobutadiene	
bis(2-Ethylhexyl)adipate	Iodomethane	
bis(2-Ethylhexyl)phthalate	Isobutyl alcohol	
Butyl Benzyl Phthalate	Isopropylbenzene	
Carbazole	m- & p-Xylenes	
Chrysene	Methyl methacrylate	
cis-Chlordane	Methylacrylonitrile	
Cyanazine	Methylene chloride (Dichloromethane)	
delta-BHC	Naphthalene	
Dibenz(a,h)anthracene	n-Butylbenzene	
Dibenzofuran	Nitrobenzene	
Dieldrin	o-Xylene	
Diethylphthalate	Pentachloroethane	
Dimethylphthalate	Propionitrile	
Di-n-butyl Phthalate	Propylbenzene	
Di-n-octyl phthalate	sec-Butylbenzene	
Endosulfan I	Styrene	
Endosulfan II	tert-Butyl methyl ether (MTBE)	
Endosulfan sulfate	tert-Butylbenzene	
Endrin	Tetrachloroethene	
Endrin aldehyde	Tetrahydrofuran (THF)	
Endrin ketone	Toluene	
Fluoranthene	Total trihalomethanes	
Fluorene	Total xylenes	
gamma-BHC (lindane)	trans-1,2-Dichloroethene	
Heptachlor	trans-1,3-Dichloropropene	
Heptachlor epoxide	trans-1,4-Dichloro-2-butene	
Hexachlorobenzene	Trichloroethene	
Hexachlorobutadiene	Trichlorofluoromethane	
Hexachlorocyclopentadiene	Vinyl acetate	
Hexachloroethane	Vinyl chloride	
Indeno(1,2,3-cd)pyrene		
Isophorone		
Methoxychlor		
Metolachlor		
Metribuzin		

Organics (semi-volatiles)	Organics (volatiles)	Organics (PCBs)
Naphthalene		
Nitrobenzene		
N-nitrosodimethylamine		
N-nitroso-di-n-propylamine		
N-nitrosodiphenylamine		
Pentachlorophenol		
Phenanthrene		
Phenol		
Prometryne		
Pyrene		
Pyridine		
Simazine		
trans-Chlordane		