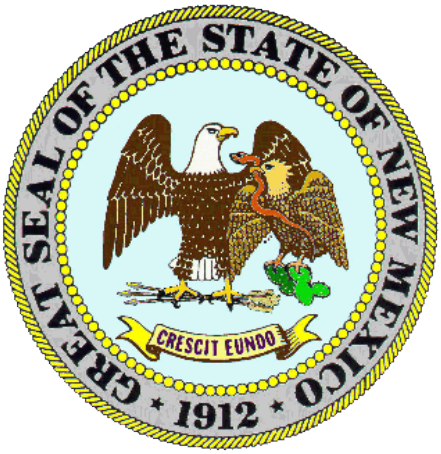
STATE OF NEW MEXICO

STATEWIDE WATER QUALITY MANAGEMENT PLAN
AND
CONTINUING PLANNING PROCESS



NEW MEXICO
WATER QUALITY CONTROL COMMISSION

P.O. Box 5469
Santa Fe, New Mexico 87502

https://www.env.nm.gov/surface-water-quality/wqmp-cpp/
public.facilitation@state.nm.us

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Copies of this document and the incorporated documents are available through the State library, the New Mexico Environment Department Surface Water Quality Bureau, Harold Runnels Building, 1190 St. Francis Drive, Santa Fe, NM 87502 in Santa Fe, or online at https://www.env.nm.gov/surface-water-quality/.

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LIST OF ACRONYMS AND ABBREVIATIONS

BPJ	Best Professional Judgment
BLM	Bureau of Land Management
BMPs	Best Management Practices
BOR	United States Bureau of Reclamation
CFR	Code of Federal Regulations
CPB	Construction Programs Bureau of NMED
CPP	Continuing Planning Process
CWA	Clean Water Act (33 U.S.C. 1251 et seq.)
CWSRF	Clean Water State Revolving Fund
DMA	Designated Management Agency
EMNRD	Energy, Minerals and Natural Resources Department
EPA	United States Environmental Protection Agency
GWQB	Ground Water Quality Bureau of NMED
LA	Load Allocation
MOS	Margin of Safety
NM	New Mexico
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMIP	Procedures for Implementing NPDES Permits in New Mexico
NMSA	New Mexico Statutes Annotated
NPDES	National Pollutant Discharge Elimination System
NPS	United States National Park Service
NPSMP	Nonpoint Source Management Program
OCD	Oil Conservation Division of EMNRD
ONRW	Outstanding National Resource Water
PIP	Public Involvement Plan
POTWs	Publicly Owned Treatment Works
QAPP	Quality Assurance Project Plan
RIP	Rural Infrastructure Revolving Loan Program
SDWA	Safe Drinking Water Act
SOP	Standard Operating Procedure
SWQB	Surface Water Quality Bureau of NMED
TAS	Treatment in a Similar Manner
TBEL	Technology Based Effluent Limit
TMDL	Total Maximum Daily Load
UAA	Use Attainability Analysis
UIC	Underground Injection Control
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
WLA	Waste Load Allocation
WQA	New Mexico Water Quality Act (Chapter 74, Article 6 NMSA 1978)
WQBEL	Water Quality Based Effluent Limit
WQCC	New Mexico Water Quality Control Commission
WQMP	Water Quality Management Plan
WQS	Water Quality Standards

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I. INTRODUCTION

A. Purpose

New Mexico's Statewide Water Quality Management Plan and Continuing Planning Process (WQMP/CPP) provides a concise summary of the water quality management system in New Mexico (NM) and the roles of the major participants in that system, as required by Sections 208 and 303 of the federal Clean Water Act (CWA) and New Mexico Statutes Annotated (NMSA) 1978, Section 74-6-4(B) of the New Mexico Water Quality Act (WQA).

In accordance with Section 303(e) of the CWA and 40 CFR 130.5, states are required to have a CPP which describes the processes used to manage the state's water quality programs. The state may determine the format of its CPP as long as it meets the minimum requirements, as described in Section 303(e)(3)(A)-(H) of the CWA and 40 CFR 130.5, but it may also include other processes at its discretion.

In accordance with 40 CFR 130.6(b), the WQMP is used to direct implementation and draw upon the water quality assessments to identify priority point and nonpoint water quality problems, consider alternative solutions and recommend control measures, including the financial and institutional measures necessary for implementing recommended solutions. The WQMP/CPP addresses nine (9) elements to implement water quality management planning, in accordance with 40 CFR 130.6(c) and as described under Section 205(j) of the CWA; areawide Waste Treatment Management under Section 208 of the CWA; and Water Quality Standards (WQS) and implementation plans as described under Section 303 of the CWA.

The Statewide WQMP/CPP is used to direct implementation of New Mexico's water quality programs. The WQMP/CPP is intended to provide a consistent approach to preserve, protect, and improve water quality by ensuring that WQS are established to protect designated uses, the quality of water in the environment is periodically assessed, and point and nonpoint pollution sources that may adversely impact water quality are identified, prioritized, and controlled.

B. Significant Challenges to Water Quality Management in New Mexico

There are many challenges in meeting the objectives of the CWA and the WQA. This section highlights some of the more significant surface water quality issues in New Mexico.

Climate Change

The impact of climate change on the state's water resources should be acknowledged because the science shows that these changes will lead to further problems and uncertainties. Droughts are predicted to increase in both frequency and severity in many regions of the world, including the southwestern U.S., due to climate change. In general, droughts and the immediate recovery period have substantial water quality effects on the waterbody and its watershed. For example, decreases in stream flow typically increase pollutant concentrations due to evaporation and less dilution. Other water quality impacts associated with climate change and drought include higher water temperatures, enhanced algal production, toxic algal blooms, and lower dissolved oxygen

levels, all of which are stressors to aquatic life. As temperature and precipitation patterns undergo extreme cycles, more frequent and more powerful storms will increase pollutant runoff from the watershed, physically modify and erode riparian habitat, and disrupt biological communities that depend on these habitats. In addition, shifting temperature and precipitation patterns affect vegetation composition and density and increase the propensity for wildfire in non-fire adapted ecosystems.

As waters become stressed by climate change, drought, wildfires, overuse, and groundwater mining, many perennial and intermittent streams and springs will fade. Currently, many perennial "rivers" and "tributaries" in New Mexico contain non-perennial sections. As a result of climate change, these "perennial" waters will likely diminish and the need for clean water will strain these systems even further.

To address some of these concerns, in 2019 Governor Lujan Grisham signed executive order 2019-003 on Addressing Climate Change and Energy Waste Prevention. EO 2019-003 directs all State agencies to evaluate the impacts of climate change on their programs and operations and integrate climate change mitigation and adaptation practices into their programs and operations. The WQMP/CPP ties in directly with various initiatives for resource management in the State of New Mexico, including EO 2019-003. The long-term water quality monitoring programs under the State's Water Quality Management Plan are designed to identify trends in water quality and evaluate project effectiveness. In addition, watershed restoration projects enhance the natural environment and improve watershed resilience to climate change.

Stormwater and MS4s

Controlling stormwater runoff and its impact is a serious issue facing communities across New Mexico. Urban and highway stormwater runoff is rainfall or snowmelt that runs off the ground or impervious surfaces such as buildings, roads, and parking lots, and drains into natural or man-made drainage systems. In most cases, it drains directly into streams, river, lakes, or wetlands without receiving any treatment to remove pollutants. Because of this, stormwater is a leading cause of water pollution.

Changes in land use have a major effect on both the quantity and quality of stormwater runoff. Urbanization, if not properly planned and managed, can dramatically alter the natural hydrology of an area because it increases impervious cover, decreases the amount of rainwater that can naturally infiltrate into the soil, and consequently increases the volume and rate of stormwater runoff. Stormwater runoff also typically contains elevated concentrations of a variety of constituents that exceed water quality standards (e.g., copper, lead, and zinc; polyaromatic hydrocarbons (PAHs) and pesticides; oil and grease; nutrients (nitrogen and phosphorus); sediment; and *E. coli* bacteria). Untreated stormwater entering our waterways can kill aquatic life and result in the contamination of fish tissue and drinking water supplies; prohibit or limit swimming, fishing or boating; present dangers to public health and safety; and increase the frequency and magnitude of flooding.

Polluted stormwater runoff also is commonly transported through municipal separate storm sewer systems (MS4s) in urbanized areas to local waterbodies. To prevent harmful pollutants from being washed or dumped into MS4s, certain operators are required to obtain National Pollutant Discharge Elimination System (NPDES) permits and develop stormwater management programs (SWMPs). The SWMP describes the stormwater control practices that will be implemented consistent with permit requirements to minimize the discharge of pollutants from the urbanized area. Furthermore, effective water quality protection requires the "treatment" of stormwater through the use of various preventive and control measures (e.g., best management practices, low impact development, structural controls) to reduce the impact of impervious surfaces and minimize increases in stormwater runoff.

The U.S. Environmental Protection Agency's (EPA) "Procedures for Implementing NPDES Permits in New Mexico – NMIP" establishes procedures to effectively incorporate state water quality standards and total maximum daily loads (TMDLs) into NPDES permits. EPA Region 6 is the NPDES permitting authority in New Mexico. As such, EPA R6 uses the NMIP to explain NPDES permitting decisions in New Mexico. The EPA developed the NMIP in coordination with the NMED Surface Water Quality Bureau. Specific measures to ensure permitting effectiveness and appropriate implementation of New Mexico's water quality standards and TMDLs are contained in the NMIP.

Navigable Waters Protection Rule and "Waters of the U.S."

In 2019, the EPA and the Department of the Army proposed the Navigable Waters Protection Rule to define "waters of the U.S." and delineate which waters are protected under the federal CWA. The rule was finalized in April 2020 and went into effect on June 22, 2020. The new rule interprets the term "waters of the U.S." to encompass the following four categories of waters:

1. Territorial seas and traditional navigable waters;
2. Perennial and intermittent tributaries to territorial seas and navigable waters;
3. Certain lakes, ponds and impoundments of jurisdictional waters; and
4. Wetlands adjacent to other jurisdictional waters.

The new rule identifies 12 categories that are not "waters of the U.S." and therefore, not federally regulated or protected under the CWA, including ephemeral features that flow only in response to rainfall, groundwater, wetlands that do not abut a jurisdictional water, many farm and roadside ditches, certain artificial lakes and ponds, and waste treatment systems.

Under the new rule, at least 89 percent of the state's rivers and streams and approximately 40 percent of the state's wetlands lose federal regulation and protection from pollution. New Mexico is one of three states in the U.S., and the only state in the West, that does not have authority (aka "delegation") from the EPA to administer and implement the NPDES program under Section 402 of the CWA. The NPDES program regulates facilities that discharge pollutants into "waters of the U.S." and includes permit issuance, compliance, and enforcement activities.

This federal rollback of environmental protections for streams and wetlands will put more burden on the State's water quality management agencies, especially the New Mexico Environment

Department (NMED), to ensure continued protection of surface waters of the state and adequate resources to maintain and improve water quality. Without a state permitting program to authorize discharges to surface waters of the state including waters of the U.S., NMED is unable to fill the regulatory gap created by the new rule.

Currently, NMED is actively investigating available options. This includes conducting a NPDES gap analysis that (1) evaluates statutory, regulatory, and programmatic gaps associated with potential pursuit of NPDES program authorization for the State of New Mexico and (2) identifies actions necessary to eliminate the gap and assume authority over the program.

Watershed Management and Water Quality

Interagency collaboration has always played a significant role in managing watersheds on public lands within New Mexico. There are many federal and state agencies with varying missions and priorities for utilizing and protecting New Mexico's natural resources. In part, these activities include habitat restoration, water quality management, water rights management, mining, grazing, silviculture, conservation management, wildlife management, outdoor recreation, hunting, and fishing. As discussed in further detail under subsection F of this Section, this Water Quality Management Plan identifies some of those entities the State engages with to ensure continued water quality protection for the State of New Mexico.

C. Cross-walk of Sections in the WQMP/CPP and the Federal Requirements

The nine (9) federal requirements of a WQMP are found in 40 CFR 130.6(c), and the nine (9) federal requirements of a CPP are found in 40 CFR 130.5(b). Table I-1 shows how this document is organized to incorporate requirements of both the WQMP and the CPP. Any reference to the State's WQMP or CPP in statutes, regulations, standards or other documents refers to this document.

Table I-1: Federal Requirements for WQMP and CPP

WQMP/CPP Section	40 CFR 130.6 WQMP Requirements	40 CFR 130.5 CPP Requirements
I. Introduction	Not required by 40 CFR 130.6	**40 CFR 130.5(b)(4)** *The process for updating and maintaining WQMPs, including schedules for revision;* **40 CFR 130.5(b)(5)** *The process for assuring adequate authority for intergovernmental cooperation in the implementation of the State's WQMP.*
II. Water Quality Standards	Not required by 40 CFR 130.6	**40 CFR 130.5 (b)(6)** *The process for establishing and assuring adequate implementation of new or revised water quality standards.*
III. Assessment, Monitoring and Reporting	Not required by 40 CFR 130.6	Not required under 40 CFR 130.5

WQMP/CPP Section	40 CFR 130.6 WQMP Requirements	40 CFR 130.5 CPP Requirements
IV. Total Maximum Daily Loads (TMDLs)	**40 CFR 130.6 (c)(1)** *A list of approved TMDLs.*	**40 CFR 130.5(b)(3)** *The process for developing TMDLs and individual water quality-based effluent limitations for pollutants.*
V. Effluent Limitations	**40 CFR 130.6 (c)(2)** *Effluent limitations including water quality-based effluent limitations and schedules of compliance.*	**40 CFR 130.5 (b)(1)** *The process for developing effluent limitations and schedules of compliance;* **40 CFR 130.5(b)(9)** *The process for determining the priority of permit issuance.*
VI. Municipal and Industrial Waste Treatment	**40 CFR 130.6 (c)(3)** *Identification of anticipated municipal and industrial waste treatment works; programs to provide necessary financial arrangements for such works; establishment of construction priorities and schedules for initiation and completion of such treatment works including an identification of open space and recreation opportunities from improved water quality.*	**40 CFR 130.5(b)(7)** *The process for assuring adequate controls over the disposition of all residual waste from any water treatment processing;* **40 CFR 130.5(b)(8)** *The process for developing an inventory and ranking, in order of priority of needs for construction of waste treatment works.*
VII. Nonpoint Source Management and Control	**40 CFR 130.6 (c)(4)** *The regulatory and non-regulatory programs, activities, and Best Management Practices (BMPs) to control nonpoint source pollution where necessary to protect or achieve approved water uses.*	Not required by 40 CFR 130.5
VIII. Management Agencies	**40 CFR 130.6 (c)(5)** *Identification of agencies necessary to carry out the WQMP and provision for adequate authority for intergovernmental cooperation.*	Not required by 40 CFR 130.5
IX. Implementation Measures	**40 CFR 130.6(c)(6)** *Identification of implementation measures necessary to carry out the WQMP.*	Not required by 40 CFR 130.5
X. Dredge and Fill Program	**40 CFR 130.6(c)(7)** *Identification and development of programs for the control of dredge and fill material.*	Not required by 40 CFR 130.5.
XI. Basin Plans	**40 CFR 130.6(c)(8)** *Identification of any relationship to applicable basin plans developed under Section 209 of the CWA.*	**40 CFR 130.5(b)(2)** *The process for incorporating elements of any applicable areawide waste treatment plans under Section 208, and applicable basin plans under Section 209 of the CWA.*
XII. Groundwater	**40 CFR 130.6(c)(9)** *Identification and development of programs for control of ground-water pollution.*	Not required by 40 CFR 130.5

WQMP/CPP Section	40 CFR 130.6 WQMP Requirements	40 CFR 130.5 CPP Requirements
XIII. Determination of Compliance with WQS – Human Health Criteria	Not required by 40 CFR 130.6 (required by 20.6.4 NMAC)	Not required by 40 CFR 130.5
XIV. Public Participation	Not required by 40 CFR 130.6	**40 CFR 130.5(b)(4)** *The process for updating and maintaining the WQMP.*

D. History and updates to the WQMP/CPP

The New Mexico Water Quality Control Commission (WQCC) first adopted the WQMP and the CPP in 1979, under the statutory authority of Section 74-6-4(B) of the WQA. Prior to 2011, the WQMP and the CPP were maintained independently of each other. Beginning in 2011, the New Mexico Environment Department's (NMED's) Surface Water Quality Bureau (SWQB) consolidated the WQMP and CPP into one document.

The chronological summary of the subsequent updates are as follows:

- March 1976 CPP initially adopted
- October 1978 WQMP initially adopted
- May 1979 WQMP
  - Initially adopted Work Elements 2.5 (Trout Hatcheries), 4.3 (Sediment Study) 8.0 (Industrial Waste Treatment System Needs: Toxic Substance Study) and 9.5 (Development of Statewide Groundwater Monitoring System)
- October 1979 WQMP
  - Updated Work Element 3 (Population Projections)
- October 1980 WQMP
  - Initially adopted Work Element 13 (Designation of Management Agencies)
  - Updated Work Element 3 (Population Projections)
- May 1982 WQMP
  - Updated Work Element 6 (Point Source Load Allocations)
- September 1983 WQMP
  - Updated Work Element 4.1 (Irrigated Agriculture)
- August 1984 WQMP
  - Initially adopted Work Element 14 (Implementation Schedules)
  - Updated Work Elements 4.1 (Irrigated Agriculture), 4.2 (Silviculture), 4.3 (Sediment Study), 13 (Designation of Management Agencies)
- October 1985 WQMP
  - Updated Work Elements 6 (Point Source Load Allocations) and 13 (Designation of Management Agencies)
- April 1986 WQMP
  - Updated Work Element 3 (Population Projections)
- September 1988 WQMP

- Updated Work Element 13 (Designation of Management Agencies)
- September 1989 WQMP
  - Updated Work Element 6 (Point Source Load Allocations)
- July 1998 CPP
- December 2002 WQMP
  - Approved December 17, 2002
  - Restructured for comprehensiveness, accessibility, and usability
  - Reorganized to track current federal requirements
  - Removed outdated or non-applicable elements
  - Consolidated partial updates
- May 2003 WQMP
  - Updated Introduction to provide background on how water quality is managed and Work Element 11 (Public Participation Program) (now Section XIV) to include outreach protocols and strategies
- December 2004 CPP
  - Initially adopted Antidegradation Policy Implementation Procedure
- November 2010 WQMP
  - Updated the Antidegradation Policy Implementation Procedure (Appendix A)
- May 2011 WQMP/CPP
  - Consolidated WQMP and CPP
  - Initially adopted the following new elements:
    - Developed Wetlands Program
    - Adopted Underground Injection Control (UIC) regulations
    - Created Water Cabinet for Water and Wastewater Infrastructure
    - Added Hydrology Protocol for determining water body type (ephemeral, intermittent, perennial)
  - Updated and revised:
    - References and citations
    - Program descriptions
    - WQS amendments
    - Completion of the TMDL settlement agreement requirements
    - Process for establishing TMDLs
    - Nonpoint Source Management Program
    - Provided a format that supported opportunity for future growth of the WQMP

The primary goals of this 2020 update include the following:

- Incorporate changes and new developments that have occurred since the last revision in 2011;
- Update the antidegradation policy implementation procedure (Appendix A);
- Incorporate the Wetland Program (Previously Section XV) into regulatory mandated portions of the WQMP/CPP primarily under the Nonpoint Source Management and Control (Section VII); and
- Update program descriptions and citations to referenced documents.

E. The process for updating and maintaining the WQMP/CPP including schedules for revision

[As required by 40 CFR 130.5(b)(4) for CPP]

To ensure that the WQMP/CPP continues to provide an effective framework for water quality management, updates may be developed for reasons such as: changes in population, economic development, changing water quality conditions, results of implementation activities, new and revised effluent limitations, and new requirements, including new laws, regulations, and standards.

The WQMP/CPP is periodically reviewed and revised in accordance with 40 CFR 130.5 and 40 CFR 130.6(e) to ensure the processes are current and adequately reflect the State's water quality management system. Any updates and revisions to the WQMP/CPP must be approved by the WQCC and the United States Environmental Protection Agency (EPA).

Following an identification for the need to update the WQMP/CPP, NMED proceeds with outreach efforts to Tribal counterparts in accordance with NMED's 2009 Tribal Collaboration and Communication Policy. Identification of potential stakeholders is also conducted to engage individuals or entities that may be impacted by the actions under the WQMP/CPP. Following outreach to Tribes and Stakeholders, the public notice process is driven primarily by various Federal and State regulations as well as NMED policies as outlined in Section XIV of this WQMP/CPP. After public comments are received, NMED reviews and incorporates necessary revisions, as applicable. NMED then presents the proposed revisions to the WQCC for consideration and approval. NMED may submit a proposed update to EPA for technical review before presentation to the WQCC. The WQCC considers the proposed update at one of its public meetings. At the WQCC meeting, the WQCC allows all interested persons reasonable opportunity to provide comment before deciding whether to approve the update.

After adopting an update, the WQMP/CPP is sent to the Governor or designee by the Department on behalf of the WQCC for review and certification that the update is consistent with all other parts of the plan. The WQCC sends the approved WQMP/CPP, along with the Governor's certification, to EPA Region 6 for approval. Once approved by EPA Region 6, the approved WQMP/CPP is maintained within NMED and filed as a State publication with the New Mexico State Library.

Updates to the appendices of the WQMP/CPP, including the Antidegradation Policy Implementation Procedure and the Hydrology Protocol for the Determination of Uses Supported by Ephemeral, Intermittent and Perennial Waters (Appendix A and C, respectively), are done in accordance with the process to update the WQMP/CPP. Updates to the TMDL List (Appendix B) are made once a TMDL has been adopted or removed in accordance with the process described in Section IV of this WQMP/CPP.

Several documents that relate to components of this WQMP/CPP are incorporated by reference. Documents incorporated by reference may be revised and updated independently, but in accordance with the WQMP/CPP. The context of each reference should be used to determine if a specific version or the most current version of the document is being referenced. The regulations and documents incorporated by reference into the WQMP/CPP include the following:

Ground and Surface Water Protection regulations *(20.6.2 NMAC)*

New Mexico Nonpoint Source Management Plan

Standards for Interstate and Intrastate Surface Waters regulations *(20.6.4 NMAC)*

State of New Mexico Integrated Clean Water Act §303(d)/§305(b) Integrated Report

Surface Water Quality Bureau Quality Management Plan (QMP)

Surface Water Quality Bureau Quality Assurance Project Plan for Water Quality Management Programs (QAPP)

F. Process for assuring adequate authority for intergovernmental cooperation in the implementation of the State's Water Quality Management Program

[As required by 40 CFR 130.5(b)(5) for CPP]

The creation of the WQCC as the control agency for all purposes of the WQA and, in turn, the federal CWA, are established under NMSA 1978, Section 74-6-3 of the WQA. The duties and powers of the WQCC under Section 74-6-4 of the WQA assure adequate authority for intergovernmental cooperation in the implementation of the WQMP/CPP.

Intergovernmental cooperation in the implementation of the WQMP/CPP programs is provided by four factors:

Factor 1: The composition of the WQCC.

The WQCC is the water pollution control agency for New Mexico. It is responsible for developing specific water quality policy in NM, in a manner that implements the broader policies set forth by the NM Legislature in the WQA. In accordance with Section 74-6-3 of the WQA, the WQCC is comprised of fourteen (14) members; nine (9) of which are representatives of State agencies involved in some aspect of water quality management; one (1) member is a representative of county or municipal government; and the other four (4) members are representatives of the public that are appointed by the Governor. Thus, the WQCC itself serves as a forum for exchange of information, coordination, and cooperation. The fourteen members of the WQCC include:

- Secretary of the Environment Department*
- Secretary of the Department of Health*
- Director of the Department of Game and Fish*

- State Engineer*
- Chair of the Oil Conservation Commission*
- Director of the State Park and Recreation Division of the Energy, Minerals and Natural Resources Department (EMNRD)*
- Director of the New Mexico Department of Agriculture*
- Chair of the Soil and Water Conservation Commission or a Soil and Water Conservation District Supervisor designated by him/her
- Director of the Bureau of Geology and Mineral Resources at the New Mexico Institute of Mining and Technology*
- Representative of County or Municipal Government
- Four representatives of the public to be appointed by the governor for terms of four years

*indicates that a Commissioner can appoint a designee.

The WQCC is the entity with authority to approve the WQMP/CPP, adopt WQS to protect waters of the State, as well as various regulations aimed at achieving compliance with those standards. In addition to its formal rulemaking role, the WQCC serves as a forum to facilitate and advance a statewide policy dialogue on a variety of important water quality topics. In accordance with NMSA 1978, Section 74-6-4(F), the WQCC shall also hear and decide disputes between constituent agencies as to jurisdiction concerning any matters within the purpose of the WQA. Additional duties and powers of the WQCC are defined in the WQA at NMSA 1978, Section 74-6-4.

Factor 2: The delegation of responsibilities to constituent agencies by the WQCC.

Under Section 74-6-4(F) of the WQA the WQCC has the authority to delegate responsibility for administering its regulations to constituent agencies to assure adequate coverage and prevent duplication of effort. The WQCC reviews, adopts, and records such delegations at its regular open meetings. As the WQCC has no staff of its own, responsibilities for administering its regulations are assigned among eight (8) constituent agencies identified in the WQA at NMSA 1978, Section 74-6-2(K). Those agencies, along with any applicable responsibilities pertaining to this WQMP/CPP, are as follows:

New Mexico Environment Department (NMED)

The Secretary of NMED is delegated as a member of the WQCC. Under the WQCC's delegation of Responsibilities to Environmental Improvement Division (now NMED) and Oil Conservation Division (OCD) dated July 21, 1989, NMED is the primary constituent agency responsible for administering and enforcing all programs implemented by the state under the CWA. Such actions include implementing the WQMP/CPP, as well as administering regulations adopted by the WQCC for discharges to surface and ground water. NMED is the principal source of technical expertise available to the WQCC in its rulemaking and other policy-setting activities. The WQCC, in accordance with NMSA 1978, Section 74-6-3(F), is administratively attached to NMED.

On July 21, 1989, through the Water Quality Control Commission's "Delegation of responsibilities to Environmental Improvement Division and Oil Conservation Division "the WQCC delegated NMED as the constituent agency to administer the following duties:

- Maintain, restore and improve the quality of the State's waters;
- Regulate discharges for compliance with regulations and standards;
- Develop water quality classifications and standards;
- Perform site application and design and specification reviews of new or expanding domestic wastewater treatment facilities;
- Undertake monitoring and enforcement of the statutes and permits;
- Coordinate water quality management planning;
- Manage state and federal construction grant and loan assistance programs which provide financial support to municipalities for construction or improvement of wastewater treatment facilities;
- Manage the groundwater quality protection program with the goal of protecting the public health and beneficial ground water uses; and
- Provide technical assistance to local governments regarding water and wastewater treatment.

Section 74-6-4(F) of the WQA also specifically assigns the following duties to NMED:

- Provide technical services, including certification of permits pursuant to the federal CWA, and
- Maintain a repository of the scientific data required by the WQA.

The following describes specific NMED bureaus and their responsibilities relating to the implementation of the WQMP/CPP. For additional information visit: https://www.env.nm.gov/.

Construction Programs Bureau (CPB): The CPB is involved in implementing portions of the WQMP/CPP as they pertain to prioritizing water, wastewater, and solid waste planning, design, and construction funding through the administration of the following programs: New Mexico Clean Water State Revolving Fund (CWSRF), also known as the Wastewater Facility Construction Loan Fund; Rural Infrastructure Program (RIP); and Capital Outlay Special Appropriations Program (SAP). As part of these programs, the CPB:

- Administers low interest loan and grant programs for water, wastewater and other environmental infrastructure projects that protect surface and groundwater;
- Manages the timely construction and administrative completion of publicly funded water, wastewater, and solid waste projects; and
- Ensures that projects are environmentally sound, of high quality, and free of waste, fraud, and abuse.

Ground Water Quality Bureau (GWQB): The GWQB protects the quality of NM's groundwater resources in accordance with the WQMP/CPP and as mandated by the WQA, the federal Safe

Drinking Water Act (SDWA), Ground and Surface Water Protection Regulations (20.6.2 NMAC), Ground Water Protection-Supplemental Permitting Requirements for Dairy Facilities (20.6.6 NMAC), and Ground Water Protection-Supplemental Permitting for Copper Mine Facilities (20.6.7 NMAC). The GWQB:

- Develops standards and regulations pertaining to groundwater quality;
- Issues groundwater pollution prevention discharge permits;
- Implements the Department's responsibilities under the New Mexico Mining Act to ensure that environmental issues are addressed, and standards are met;
- Implements NM's underground injection control (UIC) programs;
- Oversees groundwater investigation and remediation activities; and
- Identifies, investigates and remediates contaminated sites that pose significant risks to human health and the environment through implementation of the Bureau's Voluntary Remediation Program, Brownfields Program, and the federal Superfund program.

GWQB also strives to increase industry and public understanding and awareness of the importance of safe groundwater supplies in sustaining the quality of life in New Mexico for this and future generations, and the importance of protecting groundwater quality through pollution prevention initiatives.

Surface Water Quality Bureau (SWQB): The SWQB protects and improves NM's surface water quality by controlling pollution from both discrete point sources and dispersed nonpoint sources. The SWQB maintains and revises the WQMP/CPP and is the primary bureau within NMED that is responsible for implementing the majority of the sections under the WQMP/CPP. Operating under the CWA, the SDWA, the WQA, the Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC), and Ground and Surface Water Protection regulations (20.6.2 NMAC) the SWQB:

- Administers the Nonpoint Source (NPS) Program through the federally funded Program under Section 319 of the CWA and the state-funded River Stewardship Program;
- Administers the Wetlands Program;
- Certifies federal permits issued under Section 402 of the CWA pertaining to National Pollutant Discharge Elimination System (NPDES) and Section 404 of the CWA pertaining to Dredge and Fill;
- Assists the WQCC in developing surface WQS and regulations for the State;
- Conducts monitoring and assessment activities to report on water quality status and identify impairments of NM's surface waters; and
- Develops water quality planning documents identifying pollutant load reductions necessary to attain WQS.

Other NMED Bureaus and Programs: Other Bureaus and Programs also contribute to water quality protection and may work indirectly under the WQMP/CPP from time to time. Some of which are listed as follows:

- Utility Operator Certification Program ensures adequate training and certification for drinking water and wastewater operators.
- The Liquid Waste Program regulates individual on-site liquid waste systems to protect public health and to prevent contamination of ground and surface water.
- The Petroleum Storage Tank Bureau reduces, mitigates and eliminates the threats to the environment posed by petroleum products or released from underground and above ground storage tank systems.
- The Solid Waste Bureau assures that solid waste is managed in such a way as to minimize impact on the environment and public health.
- The Drinking Water Bureau assists communities in protecting the sources of their drinking water supplies from contamination.
- The Hazardous Waste Bureau regulates hazardous waste treatment, storage and disposal facilities, oversees cleanup of contaminated sites, and implements Federal Facility Compliance Orders at Los Alamos and Sandia National Laboratories.

Office of the State Engineer and Interstate Stream Commission

The State Engineer is delegated as a member of the WQCC. No other applicable responsibilities pertaining to this WQMP/CPP have been identified.

New Mexico Department of Game and Fish

The Director of the New Mexico Department of Game and Fish is delegated as a member of the WQCC. The Department of Game and Fish has also been delegated authority through the WQCC to enforce the regulation for disposal of refuse in a watercourse. No other applicable responsibilities pertaining to this WQMP/CPP have been identified.

New Mexico Oil Conservation Commission

The chair of the New Mexico Oil Conservation Commission is delegated as a member of the WQCC. In accordance with NMSA 1978, Section 70-2-4, the chair of the Oil Conservation Commission is elected from one of the three Commission members; a designee of the commissioner of public lands, a designee of the secretary of New Mexico's Energy, Minerals and Natural Resources Department (EMNRD), and the Director of the Oil Conservation Division (OCD).

In accordance with NMSA 1978, Section 70-2-6, the Oil Conservation Commission has concurrent jurisdiction and authority with the Oil Conservation Division (OCD). The WQCC's delegation of Responsibilities to Environmental Improvement Division (now NMED) and Oil Conservation Division (OCD), dated July 21, 1989, outlines the division of responsibilities between the agencies for administering WQCC regulations to protect water quality and abate water pollution (*see generally* 20.6.2 NMAC). The OCD administers these regulations as they pertain to "discharges from facilities for the production, refinement, pipeline transmission of oil and gas or products thereof, the oil field service industry as related to oil and gas production activities, oil field brine production wells, geothermal installations and carbon dioxide facilities" (*see* Subsection A(1) of 20.6.2.1201 NMAC).

The disposition by use of produced water not for drilling, completion, producing, secondary recovery, pressure maintenance or plugging of wells pursuant to 19.15.34 NMAC requires prior approval from the OCD (see Subsection A *of* 19.15.34.8 NMAC), and also requires the submission of a Notice of Intent to NMED and/or EPA if the use includes a potential discharge to ground or surface waters (*see* 20.6.2.1201 NMAC and Section 402 of the CWA, respectively). Discharges from other types of facilities that could affect groundwater quality are regulated by NMED's Ground Water Quality Bureau. No other applicable responsibilities pertaining to this WQMP/CPP have been identified.

New Mexico State Parks Division of the Energy, Minerals and Natural Resources Department

The Director of the New Mexico State Parks Division of the Energy, Minerals and Natural Resources Department is delegated as a member of the WQCC. The State Parks Division of the EMNRD has been delegated authority to enforce the WQCC regulation for disposal of refuse in a watercourse. No other applicable responsibilities pertaining to this WQMP/CPP have been identified.

New Mexico Department of Agriculture

The Director of the New Mexico Department of Agriculture is delegated as a member of the WQCC. No other applicable responsibilities pertaining to this WQMP/CPP have been identified.

New Mexico Soil and Water Conservation Commission

The Chair of the New Mexico Soil and Water Conservation Commission is delegated as a member of the WQCC. No other applicable responsibilities pertaining to this WQMP/CPP have been identified.

New Mexico Bureau of Geology and Mineral Resources at the New Mexico Institute of Mining and Technology

The Director of the Bureau of Geology and Mineral Resources at the NM Institute of Mining and Technology is delegated as a member of the WQCC. No other applicable responsibilities pertaining to this WQMP/CPP have been identified.

Factor 3: The authority of the WQCC to enter into or authorize its constituent agencies to enter into agreements with federal or state agencies for purposes consistent with the WQA.

Under the WQA at NMSA 1978, Section 74-6-4(G), the WQCC has the authority to enter into, or authorize constituent agencies to enter into, agreements with the federal government or other state governments. This provides the WQCC with a means of formally coordinating with agencies outside of the WQCC and allows the WQCC to use the expertise of those agencies in fulfilling its responsibilities.

Factor 4: The designation of management agencies to carry out specific responsibilities under the WQMP/CPP.

The WQCC designates management agencies to carry out specific responsibilities. Designated Management Agencies (DMAs) are generally municipal or public entities that must satisfy the requirements of 40 CFR 130.6(c)(5), including demonstration that the agencies have the legal, institutional, managerial, and financial capability, as well as programmatic capacity, to carry out the designated responsibilities. The designation must be formally accepted by the management agency and adopted by the WQCC before it is certified by the Governor.

Pursuant to Section 208 of the CWA, the governor of a state must identify areas of the state which, as a result of urban or industrial concentration or other significant factors, have substantial water quality problems. The governor may designate regional planning agencies for these areas, after consultation with local governmental officials having jurisdiction over the area, to conduct the planning required by Section 208. As specified at 40 CFR 130.12(b), Section 201 of the CWA funding can only be awarded to DMAs that are in conformance with the statewide WQMP/CPP. A list of approved DMAs can be found in Section VIII of this WQMP/CPP.

G. Other Entities participating in water quality management

A multi-agency approach is implemented to carry out the directives of the CWA, the State's WQA and the mission of NMED. Numerous entities at the local, state and federal level participate in water quality management. The following describes the entities and their identified roles and responsibilities as they pertain to water quality management and planning in New Mexico.

Other State Agencies

Several other state agencies conduct activities that impact water quality and are considered in the coordination and implementation of this WQMP/CPP as appropriate. These include, but are not limited to:

- Department of Transportation
- Department of Health
- State Forestry Division
- State Land Office
- Energy, Minerals and Natural Resources Department (specifically, Mining and Minerals Division)

Other Watershed-Based Water Quality Authorities/Associations/Forums

Increasing interest in a watershed-based approach to water quality management has led to the development of a number of local and regional initiatives in NM. These initiatives reflect a great diversity of organizational models and functional roles. The various initiatives focus on a number of different priorities such as: implementation of site-specific control regulations adopted by the WQCC, information sharing (outreach and education), or implementation of remediation and restoration projects. The number and nature of these local and regional watershed initiatives in New Mexico is evolving rapidly. No effort is made in this WQMP/CPP to comprehensively catalogue or describe such initiatives.

U.S. Environmental Protection Agency (EPA)

In addition to providing a significant amount of programmatic funding through CWA grant programs, EPA has several roles with respect to NM's water quality control programs:

- WQS In accordance with Section 303(c)(3) of the CWA, EPA is required to review state water quality standards and either approve WQS as being compliant with the federal act, or to disapprove and promulgate classifications and standards for NM.

- TMDLs - EPA reviews and approves the State's CWA §303(d) List of Impaired Waters. States are required to develop TMDLs for impaired waterbodies (Per Section 303(d) of the CWA, 33 U.S.C. §1313). TMDLs that are first adopted by the WQCC are then reviewed and approved by EPA under the CWA.

- Discharge Permits - EPA issues NPDES discharge permits in New Mexico which are certified by SWQB under Section 401 of the CWA.

- EPA is responsible for approving Section 208 of the CWA plans (regional WQMPs) submitted by states, as well as state CPPs prepared in accordance with Section 303(e) of the CWA.

- Guidance - In addition to adopting regulations establishing water quality program requirements that must be met by states, EPA frequently issues guidance documents or policy statements on a variety of water quality topics.

Other Federal Agencies

Several other federal agencies involved in water quality management in NM, including the U.S. Forest Service (USFS), U.S. Bureau of Land Management (BLM), and National Park Service (NPS), consider water quality protection in their management programs. The U.S. Army Corps of Engineers (USACE) administers the permit program under Section 404 of the CWA, which regulates the discharge of dredged and fill material that may adversely impact waters of the United States, including wetlands. The U.S. Bureau of Reclamation (BOR) has increasingly included environmental protection considerations into its management of federal water projects. The U.S. Department of Agriculture (USDA) administers an Environmental Quality Incentive Program under the federal Farm Bill. The U.S. Fish and Wildlife Service (USFWS) consults with other federal agencies under Section 7 of the Endangered Species Act regarding activities that may adversely impact threatened or endangered species. EPA consults with USFWS to evaluate potential impacts from water quality program activities on threatened and endangered species. The U.S. Geological Survey (USGS) undertakes a variety of studies regarding water quality, including the National Water Quality Assessment program.

Tribes

Although the State's water quality regulations are not applicable to tribal waters within the exterior boundaries of a tribe or those lands to which the Tribe has incorporated into federal

trust; many waters cross boundaries and jurisdictional protections, and as such there is a shared interest in the protection of water quality between the Tribes and the State of New Mexico. The State recognizes the importance of communication and collaboration with Tribes to ensure water quality across boundaries.

The State has memorialized this sentiment through Executive Order 2005-004, The State-Tribal Collaboration Act, NMSA 1978, Section 11-18-1, and subsequently NMED's *Tribal Consultation and Collaboration Policy* (NMED Office of the Secretary 2020). It is through the *Tribal Consultation and Collaboration Policy* that NMED engages Tribes during any action(s) that may impact the natural, cultural and environmental resources of a Tribe. Tribes are recognized as sovereign entities. Therefore, the State interacts accordingly with them in a government-to-government capacity. These actions with Tribes are independent of stakeholder and public outreach efforts.

The 23 federally recognized Tribes throughout the State of New Mexico include:

- *Acoma Pueblo
- Pueblo de Cochiti
- *Pueblo of Isleta
- Jemez Pueblo
- *Laguna Pueblo
- *Nambe Pueblo
- *Ohkay Owingeh
- *Picuris Pueblo
- *Pojoaque Pueblo
- *Pueblo of Sandia
- Pueblo of San Felipe
- Pueblo de San Ildefonso
- *Pueblo of Santa Ana
- *Santa Clara Pueblo
- Santo Domingo Pueblo
- *Taos Pueblo
- *Pueblo of Tesuque
- Pueblo of Zia
- Zuni Pueblo
- Mescalero Apache
- Jicarilla Apache
- Fort Sill Apache
- *Navajo Nation

*Indicates that as of the approval date of this WQMP/CPP, tribe was identified by EPA to have Treatment in a Similar Manner as a State ("TAS") under Section 303(c) of the CWA allowing them to develop their own water quality standards for waters within the exterior boundaries of their Tribe. Please note this is a designation through the EPA and is independent of the State of New Mexico and the status, as listed here, may change at any time. For current status of TAS and WQS for tribes refer to EPA's website (https://www.epa.gov/wqs-tech/epa-actions-tribal-water-quality-standards-and-contacts).

In addition, the State also recognizes the Ysleta del Sur Pueblo near El Paso, Texas which also has critical interest in the protection of water quality along the Rio Grande as it enters Texas from New Mexico. The State also recognizes the Southern Ute Indian Tribe of the Southern Ute Reservation and Ute Mountain Ute Tribe in Colorado along the New Mexico Colorado border.

Stakeholders and the General Public

Stakeholder and public participation are an integral part of water quality management in NM. All regulatory actions of the WQCC and NMED are required to follow appropriate public comment, notice, and hearing requirements. In addition, with respect to policy-related and non-regulatory activities of the WQCC and NMED, an opportunity for public input is often provided through informational public meetings.

II. SURFACE WATER QUALITY STANDARDS

A. Extent of Authority

New Mexico's Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC) establish surface WQS that consist of designated uses for surface waters of the State, the water quality criteria necessary to protect the designated uses, and an Antidegradation Policy. These standards are not applicable to tribal waters within the exterior boundaries of a tribe or those lands to which the tribe has incorporated into federal trust. Section 518 of the CWA authorizes EPA to treat eligible Indian tribes with reservations in a similar manner to states (TAS) for administering each of the principal CWA regulatory programs. Therefore, protection of these waters is administered under the individual tribe's WQS as approved by EPA or by EPA for those tribes that have not received TAS under Section 518(e) of the CWA. The State of New Mexico does not have jurisdiction to adopt or impose WQS for tribal waters within NM's borders.

B. Objective

The Standards for Interstate and Intrastate Surface Waters state the following objective:

> *The State of New Mexico is required under the New Mexico Water Quality Act … and the federal Clean Water Act … to adopt water quality standards that protect the public health or welfare, enhance the quality of water, and are consistent with and serve the purposes of the New Mexico Water Quality Act and the federal Clean Water Act. It is the objective of the federal Clean Water Act to restore and maintain the chemical, physical, and biological integrity of the nation's waters, including those in New Mexico. This part is consistent with Section 101(a)(2) of the federal Clean Water Act, which declares that it is the national goal that wherever attainable, an interim goal of water quality that provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983. Agricultural, municipal, domestic and industrial water supply are other essential uses of New Mexico's surface water; however, water contaminants resulting from these activities will not be permitted to lower the quality of surface waters of the state below that required for protection and propagation of fish, shellfish and wildlife and recreation in and on the water, where practicable.* (20.6.4.6(B) NMAC).

C. Components of New Mexico's Surface Water Quality Standards

The federal WQS regulation (40 CFR 131) establishes the requirements for states and tribes to review, revise and adopt WQS. It also establishes the procedures for EPA to review, approve, disapprove and promulgate WQS pursuant to Section 303 (c) of the CWA. As such, WQS are designed to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act. New Mexico's WQS (20.6.4 NMAC), as required under the CWA, define water quality goals by designating uses for surface waters of the State, setting criteria to protect those uses, and establishing an Antidegradation Policy and implementation plan to preserve water quality. Each of these components is described in more detail below.

Designated Uses

In accordance with 40 CFR 131.10, the State is required to specify goals and expectations for how each water body is used. The system for designating these uses is through development of surface WQS. Numeric criteria are adopted to protect each designated use. It is through the designation of a use for a specific waterbody that water quality protections are implemented.

Designated uses include fish culture, public water supply, industrial water supply, domestic water supply, irrigation and irrigation storage, primary contact, secondary contact, livestock watering, wildlife habitat, and several aquatic life subcategories. The full list of designated uses is specified in 20.6.4.900 NMAC.

Within each river basin, waters are divided into individual "segments" for classification and standard-setting purposes (20.6.4.101 through 20.6.4.899 NMAC). Most of the state's perennial water segments and many non-perennial segments have designated uses listed under 20.6.4.101 to 899 NMAC. All other "non-classified" waters are assigned default designated uses under 20.6.4.98 to 99 NMAC; however, some waters that have been characterized through a use attainability analysis have designated uses specified under 20.6.4.97 NMAC.

Water Quality Criteria

Water quality criteria are established to sustain and protect designated uses of surface waters of the State. States typically adopt both narrative criteria (e.g., general criteria that describe the desired condition of a surface water) and numeric criteria (e.g., maximum allowable pollutant concentration in a surface water).

The State of New Mexico has adopted narrative, or general, criteria under 20.6.4.13 NMAC. General criteria apply to all surface waters of the state and declare that:

> *"…surface waters of the State shall be free of any water contaminant in such quantity and of such duration as may, with reasonable probability, injure human health, animal or plant life or property, or unreasonably interfere with the public welfare or the use of property."*

As identified under Subsections A to M of 20.6.4.13 NMAC, New Mexico's general criteria include: bottom deposits and suspended or settleable solids; floating solids, oil and grease; color; organoleptic quality (odor and taste of fish and water); plant nutrients; toxic pollutants; radioactivity; pathogens; temperature; turbidity; total dissolved solids (TDS); dissolved gases; and biological integrity.

Numeric criteria are specific quantitative limits for pollutants established to protect specific designated uses and specific WQS segments. Use-specific numeric criteria are provided in 20.6.4.900 NMAC and apply to all waters with the applicable designated uses, unless otherwise specified in 20.6.4.101 through 20.6.4.899 NMAC as segment-specific criteria. The WQS also include numeric "human health-organism only" criteria established to protect human health when aquatic organisms are consumed from waters containing pollutants.

Antidegradation Policy

New Mexico's Antidegradation Policy, which is based on requirements in 40 CFR 131.12, describes how waters are to be protected from degradation (Subsection A of 20.6.4.8 NMAC). At a minimum, the policy protects existing instream uses. Water quality that exceeds the levels necessary to support the propagation of fish, shellfish, and wildlife, and recreation in and on the water is to be maintained unless the WQCC finds that allowing lower water quality is necessary to accommodate important economic and social development. Waters designated as Outstanding National Resource Waters (ONRWs) are to receive the highest level of antidegradation protection. Designated ONRWs are listed in 20.6.4.9 NMAC.

D. Process for Establishing and Updating Water Quality Standards

[As required by 40 CFR 130.5(b)(6) for CPP]

General Process for Establishing or Revising Water Quality Standards

Under the State's WQA, NMSA 1978, Section 74-6-2(H), the duties and powers of the WQCC include adoption of standards for surface and groundwaters of the state. Anyone may propose new or revised standards to the WQCC at any time in accordance with the rulemaking procedures for the WQCC (20.1.6 NMAC) and the State's WQS (20.6.4 NMAC). These regulations specify requirements for pre-hearing procedures and petitions for regulatory changes, hearing notices, hearing participation, post-hearing actions and appeals. It is recognized that notification and engagement of the public prior to petition is vital to the rule-making process and, therefore, additional requirements have been identified under this WQMP/CPP to encourage participation, allow effective presentation of evidence and points of view, allow participants an opportunity to submit information, and assure that hearings are conducted in a fair and equitable manner. For all proposed changes to the State's WQS, the WQCC bases its decision on evidence presented at the public hearing.

The process to adopt new or amended surface WQS conforms to requirements under numerous federal and state acts including, but not limited to, the CWA (33 U.S.C. § 1251 *et seq)*, the Endangered Species Act (16 U.S.C. §1531 *et seq*), the Civil Rights Act (18 U.S.C. § 241 *et seq*), the Americans with Disabilities Act (42 U.S.C. 12101 *et seq*), the Freedom of Information Act 5 U.S.C. § 552, the WQA (NMSA 1978, Section 74-6-4), the New Mexico State Rules Act (NMSA 1978, Section 14-4-1), and the New Mexico Open Meetings Act (NMSA 1978, Section 10-15-1).

New or amended WQS codified under 20.6.4 NMAC, as adopted by the WQCC, are filed with the State Records Center pursuant to the regulatory provisions under the State's WQA (NMSA 1978, Section 74-6-1 *et seq*.) and the State Rules Act (NMSA 1978, Section 14-4-1 *et seq*.), and in accordance with the State's regulations for rules filed under 1.24.1 NMAC. The new or amended standards become effective for state purposes thirty (30) days after filing.

New or revised surface WQS adopted by the WQCC are certified by the State Attorney General as being duly adopted pursuant to state laws and then submitted by the WQCC to the EPA Region

6 Administrator. In accordance with the CWA Section 303(c)(3), the EPA Administrator must determine, within sixty days of submission, if the new or amended WQS meet the requirements of the CWA. If the Administrator determines that any such revised or new standard is not consistent with the applicable requirements of the CWA, the Administrator shall notify the State and specify the changes to meet such requirements no later than the ninetieth day after the date of submission. If the State does not remedy the deficiencies, EPA will publish proposed regulations and promulgate a standard to supersede the disapproved State standard.

Establishing or Revising Water Quality Standards through the Triennial Review

Section 303(c)(1) of the CWA requires the State to hold public hearings for the purpose of reviewing WQS including standards that do not include the uses specified in section 101(a)(2) of the Clean Water Act and, as appropriate, amend and adopt standards at least once every three years. This review is referred to as a "Triennial Review." The WQCC conducts a Triennial Review of the State's surface WQS as required by Section 303(c)(1) of the CWA and 20.6.4.10 NMAC. NMED is delegated the responsibility for organizing and presenting the Triennial Review at the required intervals. The general process for establishing or revising water quality standards described above are followed for Triennial Review proceedings.

Establishing or Revising a Designated Use through a Use Attainability Analysis

The process for establishing or revising a designated use occurs through the development of a Use Attainability Analysis (UAA). The UAA is a scientific study that assesses the factors affecting the attainment of a designated use. In accordance with 20.6.4.15 NMAC, the UAA is required to be conducted before a designated use specified in Section 101 (a)(2) of the CWA may be removed or changed to a subcategory requiring less stringent criteria. The uses specified in Section 101(a)(2) of the CWA "provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in and on the water." The established designated uses meeting this goal in the State's WQS include the wildlife habitat use, the primary and secondary contact use, and all aquatic life use subcategories except the limited aquatic life use.

In order for a state to designate a use, or remove a use that is not an existing use, the UAA must demonstrate that attainment of the use is not feasible based on one of the factors identified at 40 CFR 131.10(g):

(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or

(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

(6) Controls more stringent than those required by sections 301(b) and 306 [technology-based effluent limitations] of the Act would result in substantial and widespread economic and social impact.

A UAA may be conducted by the Department or, in accordance with Subsection D of 20.6.4.15 NMAC, by any person who submits notice to the Department with intent to conduct a UAA. A UAA must rely on a scientifically defensible method and the result, should it support a designated use change under one of the six factors under 40 CFR 131.10(g), must undergo the same administrative review and hearing process as that for the Triennial Review.

Prior to commencement of any investigation, third-parties seeking to conduct a UAA, shall submit a work plan to the Department and EPA for review. Upon approval of the work plan by the Department, the proponent may then conduct the UAA. Upon completion, data, findings and conclusions will be submitted to the Department and either the proponent or the Department may proceed with the administrative review and hearing process for the designated use change. As with the Triennial Review process, the change shall not be considered effective for State purposes until approved by the WQCC and published with an effective date in the New Mexico Register. For CWA purposes, the designated use change shall only be considered effective following EPA review and approval process described above.

For a designated use change that is being proposed based on evidences of the natural, ephemeral, intermittent or low flow conditions as identified under 40 CFR 131.10(g)(2), the *Hydrology Protocol* method under Appendix C of this WQMP/CPP is recommended. The *Hydrology Protocol* was designed as a multi-parameter evaluation to determine the natural hydrologic conditions of a waterbody and the associated designated uses that should be attainable. For studies investigating a possible designated use change due to hydrologic conditions under 40 CFR 131.10(g)(2), consideration must be taken for any supplemental flows attributed to permitted effluent discharges.

Existing uses, defined in the WQS as "a use actually attained in a surface water of the state on or after November 28, 1975, whether or not it is a designated use", may not be removed regardless of the outcome of a UAA unless a use with more stringent criteria is added. (40 CFR 131.10(h) and Subsection A of 20.6.4.15 NMAC).

Establishing or Revising a Designated Use using the *Hydrology Protocol*

There are three primary types of hydrologic conditions defined under the WQS in New Mexico, each of which has established designated uses for protections under Section 101(a)(2) of the CWA. These include listed ephemeral waters (20.6.4.97 NMAC), general intermittent waters (20.6.4.98 NMAC), and general perennial waters (20.6.4.99 NMAC). In addition, the State's WQS also identify many classified waters by their hydrology, e.g., "perennial tributaries to" or "perennial reaches of" (20.6.4.101 to 899 NMAC).

The *Hydrology Protocol,* attached as Appendix C, is primarily used to provide scientific technical support for a designated use change through a UAA based on natural, ephemeral, intermittent or low flow conditions or water levels that prevent the attainment of the designated use. Since the *Hydrology Protocol* is done in support of a UAA, it can be conducted either by the Department, or by an entity other than the Department. If an entity other than the Department conducts this type of analysis, a UAA workplan for the use of the *Hydrology Protocol* must be submitted to the Department for review and approval in accordance with Subsection D of 20.6.4.15 NMAC before proceeding with the survey.

For waterbodies that are classified under 20.6.4.101 to 899 NMAC, the State asserts protections for these waters under the classified segment. A survey using the *Hydrology Protocol* can be used to confirm or delineate segment-specific hydrological regimes that may or may not lead to a revision to the State's WQS. For example, numerous classified segments in the WQS include only perennial waters, without specifically identifying which reaches are perennial (e.g., "perennial reaches of…", "perennial tributaries to…"). In such cases, the *Hydrology Protocol* can be used to determine whether a waterbody in whole, or a segment of the waterbody is perennial and therefore included in the classified segment, or non-perennial and therefore subject to the designated uses and criteria for general non-perennial waters in 20.6.4.98 NMAC. Such determinations do not require a UAA or a hearing because they do not change the designated uses or criteria but merely allow for the applicable uses to be properly identified. However, if a revision to incorporate the results of the *Hydrology Protocol* survey are needed to further refine, delineate or re-classify a waterbody under 20.6.4.101 to 899 NMAC this must be done through the UAA process.

For waterbodies that are perennial but have not been classified under 20.6.4.101 to 899 NMAC, the State asserts perennial protections for these waters under 20.6.4.99 NMAC. A survey using the *Hydrology Protocol* may be used to verify the hydrological regime for these unclassified perennial waters. A revision to incorporate the results of the *Hydrology Protocol* survey to classify a waterbody under 20.6.4.101 to 899 NMAC is done through the UAA process.

For the waterbodies in the State that are non-perennial but have not undergone an in-depth investigation to determine the hydrologic regime (i.e., intermittent, ephemeral), the State asserts intermittent protections for these waters under 20.6.4.98 NMAC, consistent with the goals in Section 101(a)(2) of the CWA. If the results of the *Hydrology Protocol* survey indicate that the waterbody is in fact intermittent, no further action is required because it is protected, by default, under 20.6.4.98 NMAC for intermittent waters.

For those cases in which the results of the *Hydrology Protocol* survey demonstrate that an unclassified non-perennial waterbody is ephemeral, designated uses that are not existing uses may only be changed if a UAA is conducted according to 40 CFR 131.10(g) and 20.6.4.15 NMAC in order for the State to assert protections for the ephemeral waterbody under 20.6.4.97 NMAC.

In some cases, an expedited UAA process outlined under Subsection C of 20.6.4.15 NMAC and illustrated in Figures II-1 and II-2 may be pursued. The expedited UAA process is not applicable for entities other than the Department. However, this does not preclude third-parties from developing and executing a workplan for the use of the *Hydrology Protocol* and submitting the UAA to the Department for use in the expedited process. The expedited UAA process facilitates the efficient application of the limited aquatic life and secondary contact uses to ephemeral waters where appropriate. As described under Subsection C of 20.6.4.15 NMAC, it is the Departments' role and responsibility to post the use attainability analysis on its water quality standards website, notify its interested parties of a 30-day public comment period, submit to EPA and if given technical approval, petition and testify regarding the standards changes before the WQCC periodically.

The *Hydrology Protocol* can also be used to support other factors under 40 CFR 131.10(g), such as those attributed to hydrological modifications, and provide additional evidence that "it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use." 40 CFR 131.10(g)(4).

Persons or entities proposing to conduct a UAA using the *Hydrology Protocol* must submit a UAA workplan for the use of the *Hydrology Protocol* to the SWQB for review and approval before proceeding (Subsection D of 20.6.4.15 NMAC). Such an approach will help ensure that the *Hydrology Protocol* and UAA process proceed smoothly, without delay, and that the study will comply with applicable statutes and rules.

Figure II-1. The *Hydrology Protocol* can be used to evaluate an unclassified water, an unnamed waterbody within a classified segment, or a classified waterbody. This flow chart depicts the primary pathways to determining or amending the applicable water quality standards based on the *Hydrology Protocol* results.

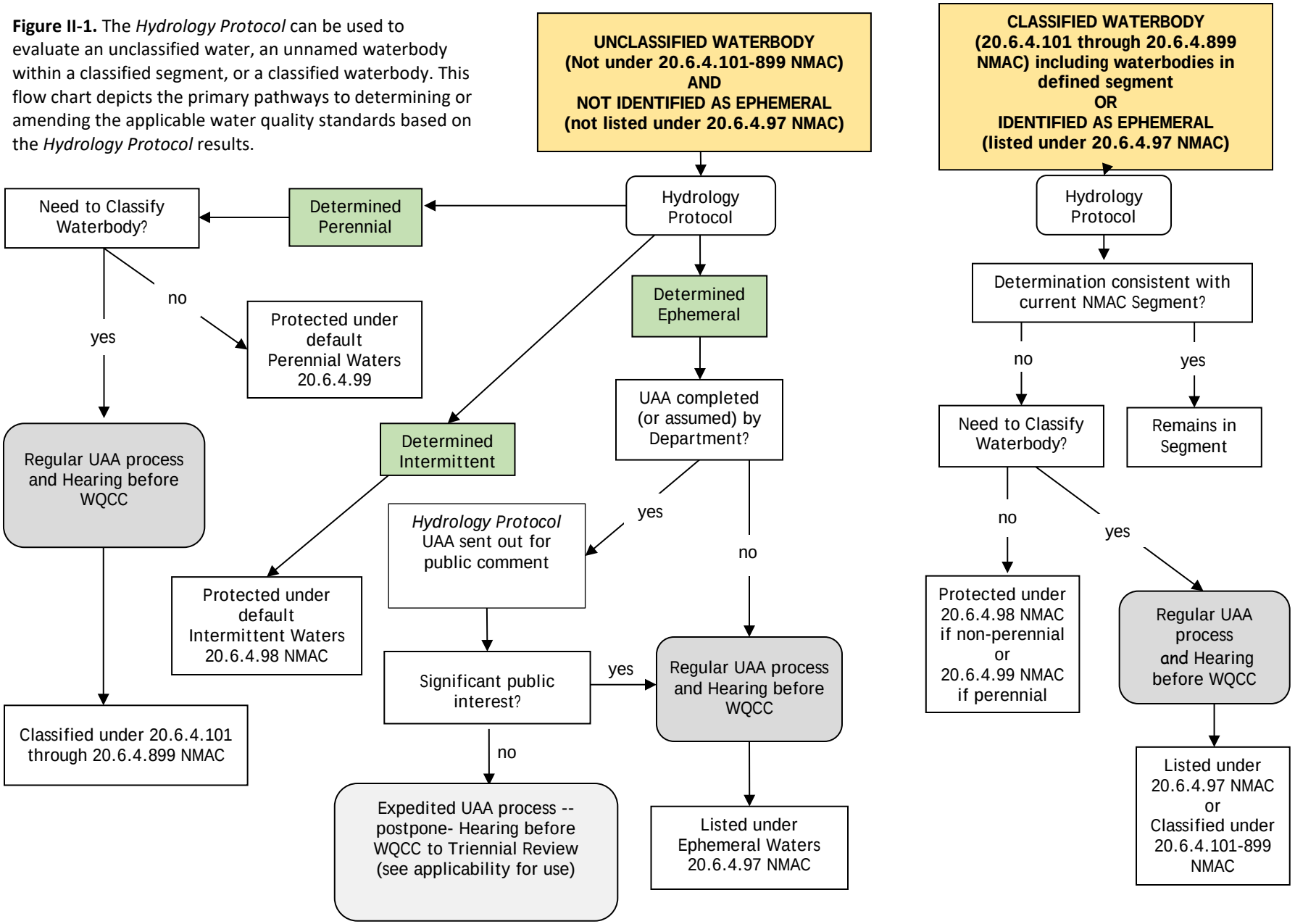
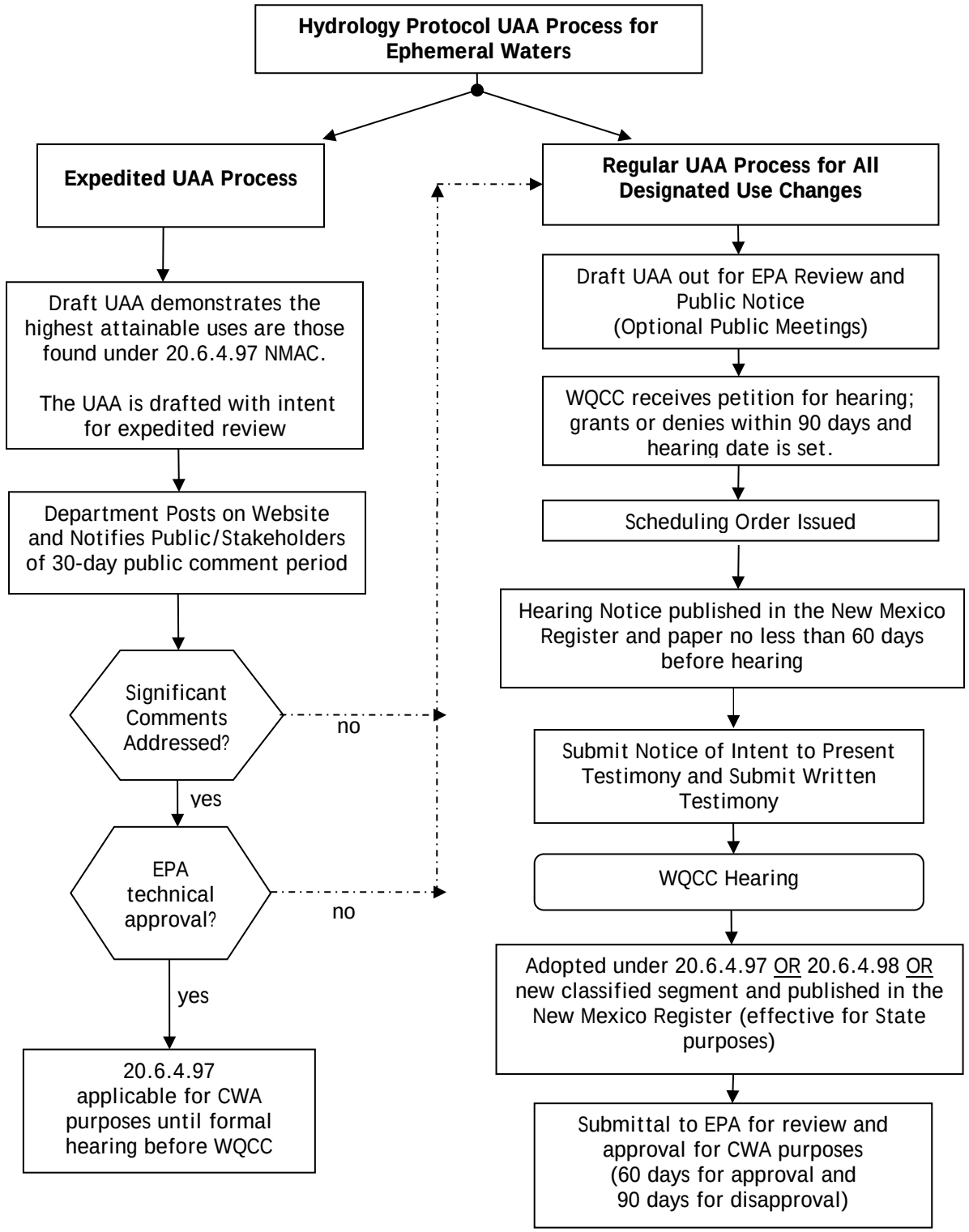


Figure II-2. Flow chart compares the expedited UAA process for an ephemeral stream determined through a hydrology protocol with the UAA process.



Establishing or Revising a Site-Specific Standard

In accordance with 20.6.4.10 NMAC, there are circumstances such as species sensitivity; site specific physical, chemical or biological conditions that alter bioaccumulation of a chemical; or natural background concentrations that exceed a particular numeric criterion for an established designated use that warrants inclusion or updating due to site specific conditions. The commission may adopt site-specific numeric criteria based on relevant site-specific conditions pertaining to those conditions listed under 20.6.4.10(D)(1).

Any person may petition the commission to adopt site-specific criteria, giving a thorough explanation of the rational for the proposal that justifies the proposed criteria and relying on scientifically defensible methods that demonstrate the site-specific criteria fully protects the designated use, such as those listed under Subsection D(4) of 20.6.4.10 NMAC. In the same process for establishing or revising designated uses for waterbodies, establishing site-specific standards requires the petitioner (the State or other party) to submit demonstration of the supporting evidence for the standard. The process to petition for a site-specific criteria is a rulemaking under 20.6.4 NMAC and requires adherence to rulemaking processes by the WQCC under 20.1.6 NMAC.

Process for Establishing or Revising a Temporary Standard

When a waterbody has been determined to have the appropriate designated use, but specific limiting conditions prevent the attainment of that use in the short-term, the WQCC may adopt a temporary standard. A temporary standard is a time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) that reflects the highest attainable condition during the term of the temporary standard. A temporary standard is a change in a designated use, and therefore, must be adopted by the WQCC and EPA under rule-making procedures, just as with any other water quality standard amendment. A temporary standard may be granted if the petitioner can meet the applicability and demonstration requirements identified under 20.6.4.10(F) NMAC. .

Water Quality Standards for Wetlands

Wetlands in New Mexico are protected as "surface waters of the state." However, wetland-specific designated uses and criteria associated with those uses have not been developed. Wetlands designated and protected as ONRWs are identified in the *Maps and List of Wetlands Within United States Forest Service Wilderness Areas Designated as Outstanding National Resource Waters* (Subsection D(3)(h) of 20.6.4.9 NMAC). Other wetlands not identified as ONRWs and not identified as a classified water in sections 20.6.4.101 through 20.6.4.899 NMAC are protected through the designated uses identified in 20.6.4.98 and 20.6.4.99 NMAC, depending on their hydrology.

SWQB is working toward increasing wetlands protection through monitoring and strengthening WQS that pertain to the State's wetlands resources. To achieve these goals the SWQB is currently:

- developing a Rapid Assessment Methodology for New Mexico (NMRAM) for a range of environments and wetland types;
- mapping wetland resources in New Mexico; and,
- ranking the condition of existing wetlands.

SWQB will utilize the information gathered from the monitoring effort to propose wetland-specific state WQS to the WQCC. This information and data will also be used to assess the effectiveness of wetland restoration and mitigation activities.

E. Process for Assuring Adequate Implementation of Water Quality Standards

[As required by 40 CFR 130.5(b)(6) for CPP]

NMED, acting under the authority delegated by the WQCC, implements the WQS by establishing and maintaining controls on the discharge of point source and non-point source pollutants to surface waters of the state. This occurs through ongoing monitoring and assessment of water quality to the State's approved WQS (*see* Section III of this WQMP/CPP); evaluation of proposed discharges in accordance with the Implementation Plan described at Subsection B of 20.6.4.8 NMAC and the State's *Antidegradation Policy Implementation Procedure* (Appendix A of this WQMP/CPP); establishment of controls on point source pollutant discharges as described under Section V of this WQMP/CPP; and through Best Management Practices (BMPs) applied to nonpoint sources of pollution, as outlined under the State's Nonpoint Source Management Program (NPSMP) and Section VII of this WQMP/CPP. Violations of the WQS are enforceable through civil and/or criminal actions pursuant to the WQA at NMSA 1978, Section 74-6-10.

III. SURFACE WATER QUALITY MONITORING, ASSESSMENT & REPORTING

Monitoring, assessment, and reporting are ongoing throughout the state. This WQMP/CPP relies upon these activities to identify priorities and recommend control measures.

A. Monitoring

Monitoring of surface water quality is an important component of the State's Water Quality Management Program and is essential to identify and characterize water quality problems, revise WQS, and develop and evaluate the results of control actions. Additionally, water quality monitoring data can be used for pollutant allocation computer modeling and as evidence for enforcement actions. The goal of the Monitoring Program is to provide information to assess the quality of surface waters and direct water quality management activities. The surface water monitoring strategy implemented by SWQB focuses on collecting chemical, physical, and biological data from rivers, streams, lakes, reservoirs, and other aquatic habitats. The comprehensive strategy is described in the *State of New Mexico Surface Water Quality 10-Year Monitoring and Assessment Strategy* (NMED SWQB 2016 or most current revision). In the last major revision to the *Strategy*, the state incorporated wetlands monitoring and assessment. The monitoring goal of the New Mexico Wetlands Program is to provide the information and data necessary to create a baseline inventory and condition of existing wetlands, facilitate wetland protection, develop WQS for wetlands, assess wetland mitigation activities, and monitor wetland restoration activities for efficacy.

The monitoring strategy establishes methods of identifying and prioritizing water quality data needs, specifies procedures for acquiring and managing water quality data, and describes how these data are used toward three basic monitoring objectives. These objectives include conducting water quality assessments, developing water quality-based controls to minimize pollutants, and evaluating the effectiveness of such controls. From approximately 1998 to present, the SWQB has primarily utilized a rotating basin system approach to water quality monitoring similar to several other states. Using this approach, a select number of watersheds are monitored for two years with an approximate return frequency of eight to ten years depending on available staff, watershed conditions, and financial resources. SWQB will continue to pursue additional funding to increase the frequency of monitoring in New Mexico's surface waters. The rotating basin strategy is supplemented with other data collection efforts and external data sources that meet SWQB's quality assurance and quality control requirements.

The SWQB has established sampling and analytical techniques under 20.6.4.14 NMAC and maintains a Quality Management Plan (QMP), Quality Assurance Project Plans (QAPPs), Field Sampling Plans (FSPs) and Standard Operating Procedures (SOPs) that cover all monitoring activities. The Bureau's QMP and QAPPs must be approved by EPA prior to work being conducted under them. The QAPPs and SOPs are key elements in implementing this WQMP/CPP. SWQB staff conducting activities specified in the QAPP and SOPs must sign acknowledgement pages indicating they are familiar with the processes outlined in the document and will adhere to its procedures.

B. Assessment

Assessment is the process by which water quality data are analyzed to determine if WQS are being attained. Assessments are based on surface water quality data collected by the SWQB and also by other federal, state, and local agencies and groups, when available. All data used for assessment must meet the Bureau's quality assurance and quality control requirements.

Water quality data are assessed every other year according to the most recent version of the Comprehensive Assessment and Listing Methodology (CALM) and associated appendices, which are reviewed and updated as appropriate. The water quality assessment results are then used as a basis for water quality management decisions, such as:

- Determining whether proposals to make changes to the standards are needed;
- Identifying the need for water quality-based effluent limitations in NPDES permits;
- Conducting an antidegradation review of proposed new or increased permitted discharges as prescribed in the *Antidegradation Policy Implementation Procedure*, found in Appendix A of this WQMP/CPP;
- Developing TMDLs that identify pollutant reduction targets designed to improve water quality and meet standards;
- Developing source water protection plans designed to reduce pollutants and provide safe drinking water quality;
- Determining efficacy of projects for watershed protection and restoration under Section 319 of the CWA; and,
- Certifying federal permits under Section 401 of the CWA.

C. Reporting

The CWA has two primary requirements for reporting water quality in a state: The "303(d) List," and the "305(b) Report." These requirements have been combined into the *State of New Mexico CWA §303(d)/§305(b) Integrated Report* (IR; NMED SWQB 2018, or most recent approved version), which is incorporated into this WQMP/CPP by reference. The IR is designed to satisfy the statutory requirements of Section 303(d), Section 305(b), and Section 314 of the CWA, and must be approved by the WQCC and EPA. The two elements are described below. An explanation of assessment and listing methods, as well as definitions of Integrated Reporting categories, can be found in the current version of the CALM, available at: https://www.env.nm.gov/surface-water-quality/calm/.

303(d) List

Section 303(d) of the CWA requires states to submit to EPA a list of water bodies that do not meet applicable WQS. Waterbodies and segments are included on the 303(d) list of impaired waters, based on an evaluation of biological, chemical and/or physical data that demonstrate nonattainment of applicable numeric or narrative standards resulting in designated use impairment. Once a water body is listed as impaired, several management decisions can be made to improve water quality including development of TMDLs or watershed-based plans (WBPs); proposing changes to the standards; identifying appropriate effluent limits in NPDES permits; and prioritizing where restoration projects should be implemented. If the data indicate that a

previously impaired stream segment is meeting applicable WQS, the waterbody would be delisted, i.e., removed from the 303(d) list.

305(b) Report

Section 305(b) of the CWA requires states to prepare and submit a report biennially to EPA on the status of water quality within the state. The report provides an assessment of water quality in a state, a summary of water quality management programs, and an estimate of the environmental, social, and economic impacts associated with achieving the objectives of the CWA. EPA uses the information contained in the Section 305(b) Report to update the U.S. Congress on: progress toward meeting the goals of the CWA; the costs and benefits of working towards these goals; program plans and needs in areas such as permits, grants, effluent guidelines, etc.; and mechanisms to implement needed changes.

IV. TOTAL MAXIMUM DAILY LOADS (TMDLs)

[As required by 40 CFR 130.6(c)(1) for WQMP]

A. Background

Pursuant to Section 303(d) of the CWA, TMDLs or TMDL alternatives must be developed for water quality limited segments (also known as "impaired" waterbodies). Water quality limited segments are those segments where water quality does not meet, or is not expected to meet, applicable WQS. TMDLs are established on a pollutant by pollutant basis for each assessment unit or watershed. A TMDL establishes the amount of a pollutant a waterbody can assimilate without causing a violation of WQS. The target load is generally determined by multiplying the applicable water quality criterion by the critical flow and a pollutant-specific conversion factor.

Per 40 CFR §130.2(i), TMDLs are the sum of the following three components: 1) the individual Waste Load Allocations (WLA) for point sources; 2) the Load Allocations (LA) for nonpoint sources and background conditions; and 3) the Margin of Safety (MOS) to account for uncertainty:

$$TMDL = \Sigma WLA + \Sigma LA + MOS$$

Where Σ= sum

In practical terms, a TMDL is a water quality planning document that establishes specific goals to meet surface WQS. Once the required TMDL calculations are documented, probable sources of pollutants are examined, and a brief outline of a potential implementation plan is described.

B. TMDL Prioritization

From 1997 to 2007, the development of TMDLs was prioritized according to the terms and schedule set forth in a consent decree and settlement agreement negotiated between EPA and Forest Guardians/Southwest Environmental Center. The consent decree TMDLs have been completed, and the consent decree was dismissed in 2009.

Following completion of the settlement agreement schedule, SWQB prioritizes TMDL development based on the results of ongoing monitoring and assessment. SWQB developed the *Prioritization Framework and Long-Term Vision for Water Quality in New Mexico* (NMED SWQB 2015a), and as a result the TMDL program in New Mexico was revised to allow a greater focus on state water quality priorities, encourage TMDL alternatives, and emphasize the value of protecting waterbodies that are not impaired. Additionally, SWQB will develop TMDLs as outlined under the current Section 106 and 604(b) of the CWA work plans. TMDLs may also be developed, reviewed, and updated in response to changed conditions, new data, or revised standards.

C. Process for TMDL Development

[As required by 40 CFR 130.5(b)(3) for CPP]

TMDLs are incorporated into the WQMP/CPP upon approval by EPA. The process SWQB uses for developing a TMDL is as follows:

- Develop a list of Category 5 assessment units and pollutants from the most recent *State of New Mexico CWA §303(d)/§305(b) Integrated Report* . Identify those Category 5 assessment units that may be candidates for TMDL alternatives, such as a Watershed Based Plan.
- Collate all existing and readily available data necessary to draft TMDLs, including field and laboratory data (chemical, physical and biological) from the assessment process, and critical flow data. In addition, identify point sources covered by individual and general NPDES permits, NPDES permit numbers, and expiration dates.
- Plan a sampling effort to collect any additional data that are needed.
- Draft the TMDL document; solicit and incorporate comments from SWQB, NMED Office of General Counsel, and EPA staff.
- Conduct public participation for the TMDL in accordance with Section XIV of the WQMP/CPP. This includes a public comment period of at least 30 days. SWQB issues a public notice for distribution via email and the SWQB website. The public notice must include:
    - a description of the watershed and parameters for which the TMDL is proposed;
    - a brief explanation of the TMDL;
    - the start and end dates of the public comment period;
    - how and where to submit comments for inclusion in the record;
    - a description of the process for requesting approval of the TMDL before the WQCC;
    - how to obtain a copy of the TMDL document or request additional information;
    - the location, date, time, purpose, and format of any proposed public meeting or other forum for obtaining information;
    - contact information for persons with disabilities to obtain assistance in participating in the public process.
- After the public comment period closes, collate all comments, prepare a response to comments, and make appropriate changes to the draft TMDL based on those comments. The response to comments is added as an appendix to the draft TMDL and provided to those stakeholders who submitted written comments.
- Post the final draft TMDL on NMED website no less than 10 days before the WQCC meeting.
- Present the final draft TMDL at a WQCC meeting and request approval. WQCC comments are incorporated into the TMDL as necessary.
- Following adoption by the WQCC as an amendment to Appendix B of the WQMP/CPP, submit the TMDL to EPA Region 6 for approval. The submittal to EPA shall be certified by the Governor or the Governor's designee (e.g., NMED Secretary) that the WQMP/CPP update is consistent with all other parts of the plan as required by 40 CFR 130.6(e).

- Post the approved TMDL document, the response to comments, the WQCC approval document, and EPA approval document on SWQB's website, and update the administrative record accordingly.
- Update Appendix B of this WQMP/CPP to include the approved TMDL. (Available at https://www.env.nm.gov/surface-water-quality/wqmp-cpp/)

TMDLs may be revised as necessary, following the process outlined above, based on changes to WQS or other factors influencing the TMDL calculation or distribution between the WLA and LA in the TMDL. TMDLs may be removed from the WQMP with WQCC approval if the waterbody is no longer impaired and meets the requirements for TMDL removal.

D. TMDL Implementation

As TMDLs are developed and approved, they are incorporated into Appendix B-1 of this WQMP/CPP and used as the basis for implementation of water pollution control activities. For point sources, TMDLs are implemented through NPDES permits (see Section V), whereas for nonpoint sources, TMDLs are implemented through the Nonpoint Source Management Program (NPSMP; see Section VII).

Point Sources

The process for incorporating WLAs as individual effluent limitations in NPDES permits is described in Section V.B of this WQMP/CPP.

Nonpoint Sources

The NPSMP seeks voluntary solutions to address nonpoint source water quality problems and provides funding opportunities for implementation projects. The NPSMP, funded through Section 319 of the CWA, prioritizes watershed-based planning and on-the-ground implementation projects where TMDLs have been developed. Priority watersheds for watershed-based planning are defined in the current NPS management plan as 12-digit hydrologic unit codes (HUCs, or watersheds) (see https://www.env.nm.gov/surface-water-quality/nps-plan). The large majority of these priority watersheds are where TMDLs have been developed. Watershed-based plans (WBPs) are, in essence, TMDL implementation plans (US EPA 2013). Completed WBPs are available at https://www.env.nm.gov/surface-water-quality/accepted-wbp/.

V. EFFLUENT LIMITATIONS

[As required by 40 CFR 130.6(c)(2) for WQMP]

A. Introduction

The primary mechanism for controlling point source discharges to "waters of the United States" (as defined under 40 CFR 122.2) in New Mexico is the NPDES permit program established under Section 402 of the CWA. The State of NM is not currently delegated authority for issuing NPDES permits; therefore, EPA Region 6 is the permitting authority responsible for issuing NPDES permits in New Mexico and specifying the amount and concentration of pollutants (i.e. effluent limitations) that a permittee may discharge to a surface water. The permitting authority is also responsible for the enforcement of effluent limitations stipulated by NPDES permits.

Two types of effluent limitations are developed by EPA for NPDES permits: technology based effluent limitations (TBELs) and water quality-based effluent limitations (WQBELs). TBELs are defined in federal regulations and are applicable across a category of effluent discharge. The applicability of effluent limitations is summarized in Table V-1.

Table V-1. Effluent Limitations for NPDES Permits

Technology Based		Water Quality Based	
Publicly Owned Treatment Works (POTWs) – Secondary Treatment (40 CFR 133)	Industry – Effluent Limitation Guidelines (40 CFR Subchapter N, or Best Professional Judgment (BPJ))	WLA from approved TMDL	If there is no TMDL or WLA, a WQBEL may be developed on a case by case basis to protect water quality
Additional State-adopted control strategies for protection of public health or environment		WQBELs may be expressed as chemical specific limitations (e.g., phosphorus), narrative limitations (e.g., visible sheen, BMPs, etc.), or as whole effluent toxicity requirements (e.g., biomonitoring).	

Federal regulations require that NPDES permits include TBELs and other necessary effluent limitations for toxic pollutants and sewage sludge. EPA is responsible for development and promulgation of TBELs pursuant to Sections 301, 304, 306, 307, and 316 of the CWA. Federally promulgated TBELs for each industry are published by EPA in 40 CFR Chapter I Subchapter N - *Effluent Guidelines and Standards*. If TBELs have not been established by regulation for a particular industry, a permit writer may establish effluent limitations based on "best professional judgment" with the rationale should be documented in the permit's fact sheet (major facilities) or statement of basis (minor facilities).

If TBELs are not adequate to protect applicable WQS, then NPDES permits must contain WQBELs (40 CFR 122.44(d)). WQBELs may be calculated as part of a WLA in a TMDL (see Section IV) and

incorporated into an NPDES permit; WQBELs may be based on reasonable potential calculations drafted by EPA; or WQBELs may be based on an antidegradation review in accordance with the *Antidegradation Policy Implementation Procedure* in Appendix A of this WQMP/CPP. EPA will evaluate all three scenarios and, in coordination with NMED through the 401 Certification process, choose the most protective effluent limitation.

If a WLA has been developed in a TMDL, the permitting authority is required to incorporate it into the NPDES permit. A TMDL details the assumptions and processes used to develop the WLA. EPA's Technical Support Document (TSD) procedures should be used by the permitting authority to incorporate the WLA into the NPDES permit. However, if no TMDL has been established, the permitting authority reviews effluent discharge data to ensure that NPDES permits are protective of WQS. For all pollutants that have a reasonable potential to cause or contribute to a violation of a water quality standard, the permitting authority performs calculations or modeling to determine effluent limitations for those pollutants. This review is done in accordance with applicable federal regulations and guidance. Specific evaluations for NPDES permits issued in New Mexico are discussed in the EPA Region 6 document *Procedures for Implementing NPDES Permits in New Mexico* (NMIP) developed by EPA in consultation with NMED.

In addition, the WQCC previously adopted additional control strategies for the protection of public health and the environment. This strategy was originally adopted by the WQCC in 1989 in the WQMP's Work Element 6 and retained in the 2002 WQMP update in Work Element 2. In the 2011 update, the previously included fecal coliform limitation of 500 colony forming units (cfu)/100 milliliters (mL) was dropped because the WQS now apply *E. coli* bacterial criteria to all waters. These strategies are as follows:

- NMED will review NPDES permit actions for purposes of state certification in accordance with Section 401 of the CWA, WQA NMSA 1978, 74-6-5(E), and 20.6.2.2001 NMAC. NMED will assure through appropriate review and communication with the permitting authority that permit requirements and effluent limitations are compatible with appropriate state law, protect WQS and implement this WQMP/CPP.

- NMED will use a pH limitation of 6.0-9.0 for state certifications of NPDES permits except when:
    a. more stringent effluent limitations are needed to meet the antidegradation policy and implementation plan of the New Mexico WQS, (20.6.4 NMAC);
    b. the WQCC has adopted a more stringent effluent limitation in a point source WLA.

  In all cases, state-certified effluent limitations for pH shall be stringent enough so that receiving waters meet WQS.

For effluent discharges that are not addressed by an NPDES permit or that are in extended violation of an NPDES permit, Sections 20.6.2.2100 through 2102 NMAC of the *Ground and*

Surface Water Protection regulations specify additional effluent limitations for the protection of surface water quality.

Compliance schedules for NPDES permits are allowed by 20.6.4.12 NMAC and 40 CFR 122.47. Compliance schedules are established by EPA per the NMIP. Compliance schedules may be included in NPDES permits at the time of renewal or modification and are written to require compliance at the earliest practicable time. Compliance schedules include milestone dates and provisions for submitting progress reports and a final report detailing activities conducted toward meeting compliance schedule provisions. Other uses of compliance schedules by the NPDES permitting authority may also be allowable.

The permitting authority may not issue an NPDES permit that is in conflict with this WQMP/CPP (40 CFR 130.12(a)). Effluent limitations, including WQBELs and compliance schedules where applicable, are contained in NPDES permits, which can be viewed at: https://www.env.nm.gov/surface-water-quality/npdes-permits/.

B. Process for Development and Certification of Effluent Limitations and Schedules of Compliance for NPDES Permits

[As required by 40 CFR 130.5(b)(1) for CPP]

As the current NPDES permitting authority for NM, EPA Region 6 develops effluent limitations and schedules of compliance in accordance with the NMIP, which is based on applicable federal regulations and guidance. NPDES permits may not be issued until the State is provided an opportunity to review and certify the permit. The WQA assigns the responsibility for certifying permits issued under the CWA to NMED (NMSA 1978, Section 74-6-4(F)), and also specifies the conditions under which a certification shall be denied (NMSA 1978, Section 74-6-5(E)). NPDES regulations at 40 CFR § 124.53(e) require that state certification shall include conditions which are necessary to assure compliance with the applicable provisions of CWA and appropriate requirements of state law. For each more stringent condition, NMED must cite WQA or State law references upon which the condition is based. Failure to provide such a citation waives the right to certify (and require) the condition.

Section 20.6.2.2001 NMAC of the *Ground and Surface Water Protection* regulations sets forth procedures for state certification of NPDES permits. The procedures specify public notice requirements, a public comment period, the content and distribution of a certification or denial, timeframes, and appeal requirements. NMED also evaluates outreach needs for the affected community during the process of permit reissuance and evaluates the need for document translation and other access needs during the public comment period. A public involvement plan (PIP) will be developed for each action and a link posted on NMED's website. If an affected party or the public needs additional assistance to participate in the permitting process, they must make the request to the Point Source Regulation Program Manager - contact information is listed at: https://www.env.nm.gov/surface-water-quality/point-source-regulation-section/.

C. Incorporating TMDL Waste Load Allocations into NPDES Permits

Pursuant to 40 CFR 130.12(a), NPDES permits must be consistent with the WQMP. Each NPDES permit issued must contain requirements necessary to achieve WQS (40 CFR 122.4(d)). Therefore, where a WLA has been assigned through the TMDL process, the WLA must be incorporated into the permit as specific effluent limitations. All WLA (original and revised) are documented in Appendix B-2 of this WQMP/CPP.

If an application for a new or revised permit is received for a discharge into an impaired waterbody with an approved TMDL but with no previously developed WLA, the permit may be issued without revision of the TMDL provided the discharge is at or less than the in-stream TMDL target concentration. In the case of a new permit, the WLA will be calculated using the TMDL target concentration and applicable flow value as specified in EPA's NMIP. In the case of a revised permit for which there is already an existing WLA but there has been a change to the design flow, the TMDL will be revised to include a revised WLA calculated using the TMDL target concentration and the change in design or production flow. In the case of a new or revised stormwater WLA, the jurisdictional area approach will be used to calculate the WLA unless another method is determined to be more appropriate. All new and revised WLA will be tracked in Appendix B-2 of this WQMP/CPP and the associated TMDL will be revised during the next scheduled TMDL development.

D. Process for Determining the Priority of Permit Issuance

[As required by 40 CFR 130.5(b)(9) for CPP]

As the current permitting authority for New Mexico, EPA Region 6 determines the priority of NPDES permit issuance.

E. Process for Deriving WQBELs based on Narrative Standards in NPDES Permits

[As required by 40 CFR 130.5(b)(1) for CPP]

EPA derives numeric permit limitations from effluent limitations guidelines in the federal regulations at 40 CFR 405 through 471, or from numeric WQS at 20.6.4 NMAC. New Mexico also has narrative water quality standards at 20.6.4 NMAC, but because of the difficulty of deriving permit limits from narrative standards, this issue has largely been unaddressed. However, circumstances may arise that require narrative standards to be addressed in NPDES permits due to the issuance of a TMDL or the presence of a 303(d) impairment in the facility's receiving water.

Nutrients

There are no technology-based effluent limits for nutrients in EPA's *Effluent Guidelines and Standards* in the code of federal regulations (40 CFR Ch. 1 Sub. N), which has resulted in much discussion nationwide about the process for incorporating nutrient limits into NPDES permits. SWQB's listing methodology uses thresholds to determine what background levels of nutrients are expected in a healthy, reference stream. Consequently, these thresholds are also used in TMDL development, which has led to stringent effluent limitations in NPDES permits. The WQS

have provisions for temporary standards, or Use Attainability Analyses, but these tools may not apply in some situations.

When SWQB reviews draft permits in accordance with the 401 Certification process, the approach that will be taken with respect to nutrient effluent limitations is the following:

- When an impairment exists in the waterbody without a TMDL and there are no data, SWQB will first require monitoring of effluent to collect nutrient data.

- When an impairment exists in the waterbody without a TMDL and there are available effluent data, SWQB will analyze the effluent data to determine an effluent limit that will be protective of the receiving waterbody based on the frequency of collection and confidence of the data. This approach is consistent with Tier One protection of SWQB's antidegradation policy, which states that no further degradation of existing water quality is permitted in a surface water where the existing water quality does not meet applicable WQS.

SWQB will evaluate other methods for deriving numeric nutrient limits as necessary.

TDS Salinity

As outlined in the Colorado River Salinity Control Forum, SWQB will adhere to the monitoring frequency outlined in that document for both municipal and industrial facilities.

Other Narrative Standards

As future numeric translators are developed, SWQB will utilize those translators as appropriate to evaluate protective water quality-based effluent limitations in the appropriate NPDES permits.

VI. MUNICIPAL AND INDUSTRIAL WASTE TREATMENT

[As required by 40 CFR 130.6(c)(3) for WQMP]

A. Clean Watersheds Needs Survey

Every four years EPA conducts the Clean Watersheds Needs Survey and submits a report to Congress in compliance with Section 516 of the CWA. The report is a comprehensive assessment of the capital needs to meet the water quality goals set in the CWA. The states and EPA collect information about publicly owned wastewater collection and treatment facilities; stormwater and combined sewer overflows control facilities; nonpoint source pollution control projects; and decentralized wastewater management.

The State of New Mexico participates in these surveys by collecting information and submitting it to EPA. The current version of the report is available at: http://www.epa.gov/cwns/.

B. Clean Water State Revolving Fund

The CWA, as amended in 1987, authorized EPA to make capitalization grants to the states to establish revolving loan funds with the condition that the states make 20% matching contributions. The Clean Water State Revolving Fund (CWSRF) provides affordable loans for the construction of wastewater treatment facilities and other water quality projects to prevent or abate water pollution. CWSRF monies can also be used for nonpoint source control (see Section VII). Combination loan/grants are available for projects that meet the criteria described in the CWSRF regulations. A portion of the available CWSRF funding may be targeted for projects that support green infrastructure, water or energy efficiency, and environmentally innovative projects.

NMED's CPB administers the loan program under 20.7.5, 20.7.6 and 20.7.7 NMAC and WQA NMSA 1978, Sections 74-6A-1 to 74-6A-15. In the 2018 session of the New Mexico Legislature, the CWSRF authorizing state statute (Wastewater Facility Construction Loan Act, WQA NMSA 1978, Sections 74-6A-1 to 15) was amended to expand the types of eligible projects and borrowers to bring it into alignment with the CWA and the 2014 Water Resources Reform and Development Act. The 2018 statutory change affected 20.7.5.6 NMAC and was therefore amended by the WQCC in August of 2018. The remaining NMAC sections are planned to be administratively amended within a year of approval of this document.

C. Process for Priority Rating of Wastewater Construction Loans Projects and Management of the Priority List

[As Required by 40 CFR 130.5(b)(8) for CPP]

As part of its administration of the CWSRF program, CPB follows a priority rating system compliant with 40 CFR 35.2015. The Priority Rating System Guidance document is available on CPB's website at: https://www.env.nm.gov/construction-programs/clean-water-state-revolving-fund-cwsrf/. The document establishes a systematic, fair and consistent approach for ranking

funding applications. The results of each application cycle are published on the website above as the Integrated Project Priority list and the corresponding Intended Use Plan.

The priority rating process is summarized as follows:

- Determine the time frame for opening the priority list per federal requirements.
- Send out an invitation to eligible entities to apply.
- Receive applications.
- Review the applications for eligibility.
- Inform applicants if they are not eligible for the CWSRF and if they may be eligible for other funding programs.
- Perform a technical review of each application using the Priority Rating System.
- Compile the CWSRF Integrated Projects Priority List.
- Prepare the draft Intended Use Plan that identifies the intended uses of the CWSRF and describe how those uses support the goal of the fund and incorporates the Integrated Projects Priority List.
- Publish the draft Intended Use Plan and associated Integrated Projects Priority List on its website at: https://www.env.nm.gov/construction-programs/clean-water-state-revolving-fund-cwsrf/ for public comment.
- Submit the draft Intended Use Plan to EPA for comment and approval.

CPB reviews the Priority Rating System periodically and proposes any amendments deemed necessary for effective program implementation. Any revisions to the Priority Rating System are presented to WQCC for approval. The amended system must then be approved by EPA.

As part of the funding process, CPB reviews preliminary engineering reports or technical memorandum for projects requesting CWSRF funding. CPB follows USDA Guidance 1780-2 for preliminary engineering reports.

D. Rural Infrastructure Revolving Loan Program

The New Mexico Rural Infrastructure Act (NMSA 1978, Sections 75-5-1 to -6) created the Rural Infrastructure Revolving Loan Program (RIP) in 1988. The purpose of the RIP is to provide financial assistance to local authorities for the construction or modification of water supply facilities. The Rural Infrastructure Act was amended in 2001 to include construction or modification of wastewater facilities and solid waste facilities.

Any incorporated city, town, village, mutual domestic association, or water and sanitation district whose water supply facility serves a population of less than twenty thousand persons or a county that serves a population of less than two hundred thousand may be eligible. These types of projects can be financed through RIP:

- Eligible water, wastewater and water pollution control projects
- Water pipelines
- New sewer interceptors and collectors
- Infiltration/inflow correction
- Water and sewer system rehabilitation
- Treatment plant improvements
- Nonpoint source projects (e.g., septic tanks)
- Cost of water rights acquisition
- Eligible solid waste facilities including collection, disposal, storage and recycling
- Engineering studies and design
- Project inspection
- Easement and right-of-way
- Project legal costs
- Purchase of equipment

E. Special Appropriations Program

CPB provides oversight for water, wastewater and other environmental infrastructure construction projects funded through the Special Appropriations Program. These are state grants for special projects issued annually when authorized by the New Mexico Legislature during the legislative session and approved by the Governor. Since 1973 NMED has managed over $542 million in Special Legislative Appropriations for construction of community water supplies, wastewater facilities and other environmentally related projects.

F. Process for Controlling Disposition of Residual Waste from Wastewater Treatment Processing

[As required by 40 CFR 130.5(b)(7) for CPP]

Proper biosolids management to prevent ground and surface water pollution is important. State regulations allow several methods for the disposal of municipal sludge:

- The disposal of dry sludge in landfills, or composting and reuse, regulated under 40 CFR 503 and NM's *Solid Waste Management* regulations at 20.9.1 – 20.9.10 NMAC.
- Land application, including the injection of liquid sludge into subsurface soil, regulated under 40 CFR 503, Subpart B and NM's *Ground and Surface Water Protection* regulations under 20.6.2 NMAC.
- Surface disposal within an approved disposal unit, regulated under 40 CFR 503, Subpart C and NM's *Ground and Surface Water Protection* regulations under 20.6.2 NMAC.

VII. NONPOINT SOURCE MANAGEMENT AND CONTROL

[As required by 40 CFR 130.6(c)(4)]

A. Nonpoint Source Management Program

Nonpoint sources of water pollution are recognized as major contributors to water pollution in New Mexico as well as the nation. Principal sources of surface water nonpoint source pollution in New Mexico include on-site liquid waste disposal, roads, recreation, urban storm water run-off, erosion from rangelands, agricultural activities, construction, silviculture, wildfires, resource extraction and land disposal. Hydromodification may affect attainment of designated uses by diverting water out of stream channels, impounding waters, and channelizing or otherwise disturbing streambeds. Principal known sources of nonpoint source groundwater pollution in rural and suburban areas include household septic tanks, cesspools, hard rock mines, and agricultural activities.

B. Nonpoint Source Management Plan

NM's plan for management of nonpoint source pollution is described in the *New Mexico Nonpoint Source (NPS) Management Plan*. The purpose of the NPS Management Plan is to describe the regulatory and non-regulatory programs, programmatic actions, and best management practices (BMPs) necessary to reduce pollutants from nonpoint sources entering surface water and groundwater. Included in the plan are six objectives that facilitate achievement of program goals. Implementation of the plan will help New Mexico succeed in attainment of surface water quality criteria that will fully protect designated uses as described in the State's WQS, meet the goals of the federal CWA and ensure adequate groundwater quality for municipal, domestic, and agricultural uses.

The NPS Management Plan has established a process to develop programs and activities within watersheds that will facilitate the achievement of surface WQS. Watershed-based planning is emphasized as a means of coordinating watershed restoration efforts, fostering watershed associations, and encouraging partnership among agencies, nongovernmental organizations, and the public. The Plan supports local watershed-based implementation of TMDLs and also coordinates with other land and resource management agencies that have established resource protection programs and activities.

The NPS Management Plan uses a voluntary approach to achieve water quality improvements. Incentives to voluntarily implement projects and restoration efforts include competitive grant funding through Section 319(h) of the CWA and technical support and guidance through SWQB. EPA has provided watershed planning guidance in the *Nonpoint Source Program and Grants Guidelines for States and Territories* (USEPA 2013). Completion of watershed planning per the guidelines is a requirement for Section 319 funds to be used for water quality restoration activities.

In order to fund water quality improvement projects, SWQB issues annual requests for applications for projects to be considered for funding from the federal NPS program grant under

Section 319(h) of the CWA. The requests identify impaired waters with TMDLs describing the impairments, and a smaller category of impaired waters which do not require TMDL development because the impairments are thought to be caused by insufficient flow rather than excessive pollutant loading (Category 4C waters). Proposed projects must address impairment issues in these waters through planning or implementation.

Low-interest loans through the CWSRF are another potential source of funding for nonpoint source control projects. Both public and private entities as defined in the CWA are eligible for funding for non-point source projects.

SWQB has reviewed, upgraded, and will continue to implement all Section 319(b) management program components. These components include:

- Identification of BMPs appropriate to nonpoint source pollution problems in NM, as well as appropriate application and implementation of these BMPs;
- A schedule of milestones that provides focus, traceable events, and deadlines for program implementation;
- Identification of funding sources and potential partnerships based on available funding programs; and
- Identification of federal financial assistance programs and development projects.

Another important element of the NPS Management Plan is coordination with government agencies. Many of the stream segments which have been or are water quality limited due to nonpoint source pollution pass through public lands. A number of the federal agencies involved have agreed, formally or informally, to ensure that all new and renewed land use authorizations, easements, rights-of-way documents, allotment management plans, term-grazing permits, and other agreements involving permitted activities on properties administered by the federal agency would have enforceable provisions for compliance with WQS. Efforts under these agreements have resulted, and are expected to continue to result, in the implementation of BMPs and mitigation measures at many sites.

C. Wetlands Program

The SWQB Wetlands Program administers wetland restoration and program development grants received from EPA under Section 104(b)(3) of the CWA. The overall goals of the Wetlands Program are to protect and restore NM's wetlands and riparian areas and to increase self-sustaining and naturally functioning wetlands and riparian areas. The Wetlands Program emphasizes the role of wetlands in prevention and reduction of water quality impairments and providing habitat for aquatic life and wildlife.

EPA identified four core components critical to effective, comprehensive wetland programs (EPA 2009). The components are regulatory actions; monitoring and assessment (*see* Section III of this WQMP/CPP); restoration and protection; and WQS (*see* Section II of this WQMP/CPP). A description of these components in NM's Wetlands Program are found in the *Wetlands Program*

Plan for New Mexico (NMED SWQB 2019). Regulatory actions/controls and restoration and protection are described in further detail below.

Regulatory Controls

The State's regulatory program, which applies to all surface waters of the state including wetlands, is described in Dredge and Fill Program and Effluent Limitations sections of this WQMP/CPP (Section X and V, respectively). Specifically, NPDES permits under Section 402 of the CWA regulate discharges to wetlands, and the Dredge and Fill Program under Section 404 of the CWA regulates other activities affecting wetlands.

Restoration and Protection

SWQB encourages wetland protection on a watershed basis. This approach involves assisting watershed groups throughout the state to develop "Wetland Action Plans" as a component of watershed-based plans. A Wetland Action Plan is a planning document designed specifically to address wetlands and riparian resources within the boundaries of a specific watershed. Participating watershed groups assess wetlands and riparian areas in their watershed and develop proposals to protect, restore, and create wetlands locally. This effort helps watershed groups incorporate wetland issues into their mission and promotes stewardship of wetlands through cooperative approaches involving agencies, local governments, tribes, nonprofit organizations, and the public.

In addition, SWQB promotes wetland restoration as an integral part of watershed restoration and health. A number of restoration projects are occurring statewide and are funded by EPA Region 6 Program Development grants under Section 104(b)(3) of the CWA. Project activities include restoration of wet meadows and waterfowl habitat on the Rio Grande along the central flyway, restoration of Bosque on private land parcels, re-establishment of natural flooding, increasing wetland plant diversity and habitat diversity, removal of exotic vegetation, restoration of springs, planning for open-space and conservation easements to protect wetlands resources including buffer zones, restoring beaver habitat, restoring high mountain fen wetlands, river restoration to address transportation maintenance issues, and conservation of playas and closed basin wetlands. The Wetlands Program maintains the New Mexico Statewide Wetlands Roundtable, consisting of state and federal agency and tribal participation. The wetland restoration and protection program also includes provisions for technical assistance to landowners or organizations carrying out wetland restoration projects, active research regarding effective wetland restoration techniques and methods to measure the success of restoration activities, and training and capacity-building for organizations interested in joining restoration partnerships.

VIII. MANAGEMENT AGENCIES

[As required by 40 CFR 130.6(c)(5) for WQMP]

A. Designated Management Agencies for Wastewater Management

Under Section 208 of the CWA, WQMPs are to include identification of Designated Management Agencies (DMAs) necessary to implement the WQMP and provisions for adequate authority for intergovernmental cooperation. DMAs must demonstrate legal, institutional, managerial, and financial capability, and specific activities necessary to carry out their responsibilities. Incorporated municipalities, counties, sanitation districts, and water and sanitation districts have the necessary authorities under state law to satisfy the requirements of Section 208(c)(2) of the CWA, which include the authority to:

- carry out appropriate portions of an areawide waste treatment management plan developed under Section 208(b)of the CWA;
- manage effectively waste treatment works and related facilities serving such area in conformance with any plan required by subsection (b) of this section;
- directly or by contract, design and construct new works, and to operate and maintain new and existing works as required by any plan developed pursuant to subsection (b) of this section;
- accept and utilize grants, or other funds from any source, for waste treatment management purposes;
- raise revenues, including the assessment of waste treatment charges;
- incur short- and long-term indebtedness;
- assure in implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs;
- refuse to receive any wastes from any municipality or subdivision thereof, which does not comply with any provisions of an approved plan under this section applicable to such area; and
- accept, for treatment, industrial wastes.

State law provides the designated agencies with the necessary authority to design, construct, operate, and maintain wastewater treatment plants and to accept and utilize state and/or federal funds for these purposes. As specified at 40 CFR 130.12(b), Section 201 of the CWA funding can only be awarded to DMAs that are in conformance with the statewide WQMP.

B. Process for Designating Wastewater Management Agencies

The WQCC has the responsibility of designating management agencies which are then certified by the Governor (40 CFR 130.6(e)). DMAs must demonstrate legal, institutional, managerial and financial capability necessary to carry out the entity's responsibilities in accordance with Section 208(c) of the CWA. EPA shall accept such designations unless it is found that the DMAs do not have adequate specified authorities required in Section 208(c)(2) of the CWA (40 CFR 130.9(d)).

As economic development and growth continue in NM, or as the need arises, additional DMAs for wastewater will be considered. The WQCC will consider new DMAs upon presentation of a petition requesting such designation. The petitioning DMA must demonstrate legal, institutional, managerial, and financial capability necessary to carry out the entity's responsibilities in accordance with Section 208(c) of the CWA. Designation of a management agency will occur only after appropriate public participation and presentation of relevant authorities by the petitioner.

C. Management Agencies for Point Source Management

The Governor certified the designation of ninety-seven (97) wastewater management agencies in 1980. Additional management agencies were certified in September 1983, August 1984, October 1985, April 1999, and May 2001. A total of eighty-four (84) municipalities, two (2) counties, eleven (11) sanitation or water and sanitation districts, four (4) state agencies, and two (2) Native American tribal entities have been designated wastewater management agencies.

Designated wastewater management agencies are listed in Table VIII-1. Each agency that has accepted this designation shall be responsible for wastewater management in its facility planning area and shall, if the agency satisfies applicable federal regulations, be able to receive construction program funding under Section 201 of the CWA.

D. Management Agencies for Nonpoint Source Management

The NPS Management Plan identifies specific federal, state and local agencies with a role in implementing nonpoint source pollution management and control. Unlike with the Wastewater Designated Management Agencies, a nonpoint source management agency can be entered into through interagency agreements, which are developed as needed to outline management responsibilities unique to each agency's area of responsibility and expertise.

For nonpoint source management, agencies or organizations participating through formal agreements under the NPS Management Plan will be considered a management agency for purposes of the WQMP/CPP.

Table VIII-1. Designated Management Agencies for Wastewater Management.

INCORPORATED MUNICIPALITIES Agency Designated	Accepted	Rejected
Alamogordo	X	
Albuquerque	X	
Artesia	X	
Aztec	X	
Bayard	X	
Belen	X	
Bernalillo	X	
Bloomfield	X	
Capitan	X	
Carlsbad	X	
Carrizozo	X	
Causey	X	
Chama	X	
Cimarron	X	
Clayton	X	
Cloudcroft	X	
Clovis	X	
Columbus	X	
Corona	X	
Cuba	X	
Deming	X	
Des Moines	X	
Dexter	X	
Dora	X	
Eagle Nest	X	
Elida	X	
Encino	X	
Espanola	X	
Estancia	X	
Eunice	X	
Farmington	X	
Floyd	X	
Folsom	X	
Fort Sumner	X	
Gallup	X	
Grady	X	
Grants	X	

INCORPORATED MUNICIPALITIES Agency Designated	Accepted	Rejected
Grenville		X
Hagerman	X	
Hatch	X	
Hobbs	X	
Hope		X
House	X	
Jal	X	
Jemez Springs	X	
Lake Arthur	X	
Las Cruces	X	
Las Vegas	X	
Logan	X	
Lordsburg	X	
Los Alamos County	X	
Los Lunas	X	
Loving	X	
Lovington	X	
Magdalena	X	
Maxwell	X	
Melrose	X	
Moriarty	X	
Mosquero	X	
Mountainair	X	
Pecos	X	
Portales	X	
Questa	X	
Raton	X	
Red River	X	
Reserve	X	
Rio Rancho	X	
Roswell	X	
Roy	X	
Ruidoso	X	
San Jon	X	
San Ysidro	X	
Santa Fe	X	
Santa Rosa	X	

INCORPORATED MUNICIPALITIES Agency Designated	Accepted	Rejected
Silver City	X	
Socorro	X	
Springer	X	
Sunland Park	X	
Taos	X	
Tatum	X	
Texico	X	
Truth or Consequences	X	
Tucumcari	X	
Tularosa	X	
Vaughn	X	
Virden		X
Wagon Mound	X	
Willard		X

COUNTIES Agency Designated	Accepted	Rejected
Valencia	X	
Dona Ana	X	

SANITATION DISTRICTS / WATER & SANITATION DISTRICTS Agency Designated	Accepted	Rejected
Alpine Village Sanitation District	X	
Anthony Sanitation District	X	
Bluewater Water & Sanitation District		X
El Valle de los Ranchos Water & Sanitation District	X	
Lakeshore City Sanitation District	X	

SANITATION DISTRICTS / WATER & SANITATION DISTRICTS Agency Designated	Accepted	Rejected
Pena Blanca Water & Sanitation District	X	
Ranchos de Placitas Sanitation District	X	
San Rafael Water & Sanitation District	X	
Thoreau Water & Sanitation District	X	
Twining Water & Sanitation District	X	
Williams Acres Water & Sanitation District	X	
Yah-ta-hey Water & Sanitation District	X	

STATE AGENCIES Agency Designated	Accepted	Rejected
Corrections Dept.	X	
Dept. of Finance and Administration	X	
Health and Environment Dept.	X	
Natural Resources Dept.	X	

NATIVE AMERICAN TRIBAL ENTITIES Agency Designated	Accepted	Rejected
Navajo Tribal Utility Authority (interim wastewater management agency)	X	
Pueblo of Pojoaque	X	

IX. IMPLEMENTATION MEASURES

[As required by 40 CFR 130.6(c)(6) for WQMP]

A. Overview

This section addresses implementation measures necessary to carry out those programs that are listed in this Statewide WQMP/CPP. Schedules that specify when pollution control programs are expected to be implemented are useful in tracking the progress of control programs incorporated into the WQMP/CPP. Implementation schedules inform management agencies responsible for the programs, and other interested or affected parties, when significant milestones leading to implementation are expected to occur.

Where appropriate or required, individual documents also contain additional implementation procedures specific to a program. For example, Appendix A describes the implementation procedure for the State's Antidegradation Policy. Another example is the NPS Management Plan that identifies implementation and financing of measures for nonpoint source pollution control.

Implementation schedules may also be affected by statutory or Court imposed orders. An example of a statutory schedule is Section 303(c) of the CWA which requires States to review their WQS every three years. An example of a Court imposed schedule is the consent decree and settlement agreement that resulted from *Forest Guardians and Southwest Environmental Center v. Carol Browner, Administrator, U. S. Environmental Protection Agency* (1997) and the resultant MOU between EPA and NMED for the development of TMDLs (see Section IV of this WQMP/CPP).

Measures for financing these programs arise from a variety of sources including federal grants (e.g., Sections 106, 201, and 319 of the CWA), state budgets authorized by the NM Legislature, state revolving funds, local governments, cost sharing with stakeholders (public and private) or other means as appropriate to the task.

B. Planning Strategy for Implementation Measures

Implementation measures will be completed by:

- Using the process descriptions in this WQMP/CPP as a reference guide to program implementation and scheduling.
- Adhering to statutory, regulatory and court sanctioned schedules.
- Using funding sources appropriate to the task.
- Posting on NMED's website anticipated or tentative review schedules. Examples include but are not limited to: Triennial Review of WQS and biennial review of the *State of New Mexico CWA §303(d)/§305(b) Integrated Repor*t.

X. DREDGE AND FILL PROGRAM

[As required by 40 CFR 130.6(c)(7) for WQMP]

A. Description of the Dredge and Fill Program

The U.S. Army Corps of Engineers (USACE) is responsible for issuing permits for activities involving the discharge of dredged or fill materials to waters of the U.S. pursuant to Section 404 of the CWA. New Mexico is not delegated authority for the issuance or enforcement of Section 404 permits, but NMED does review the permits for purposes of state certification or denial under Section 401 of the CWA.

In addition to the certification of permits, the Dredge and Fill Program includes consultation with applicants and USACE as needed, compliance site inspections, education, and outreach activities.

B. Process for Certification of Dredge and Fill Permits under Section 401 of the CWA

In accordance with Section 401 of the CWA, USACE may not issue permits for the discharge of dredged or fill materials to waters of the U.S. until the State is provided an opportunity to review and certify the permit. The WQA assigns the responsibility for certifying permits issued under the CWA to NMED (NMSA 1978, Section 74-6-4(F)), and also specifies the conditions under which a certification shall be denied (Section 74-6-5(E)).

Section 20.6.2.2002 NMAC of the *Ground and Surface Water Protection* regulations sets forth procedures for the state certification of dredge and fill permits. The procedures specify public notice requirements, a public comment period, the content and distribution of a certification or denial, timeframes, and appeal requirements.

C. Planning Strategy for the Dredge and Fill Program

NMED, through the SWQB, will review the Dredge and Fill Program annually to determine if improvements are required. SWQB will also review and certify, certify with conditions, or deny USACE individual, regional and nationwide permits under Section 404 of the CWA.

XI. BASIN PLANS

[As required by 40 CFR 130.6(c)(8) for WQMP]

A. Introduction

Basin plans were initially developed by the State for water quality planning in the early and mid-1970s. In the 1980s the State shifted to planning on a statewide basis rather than basin-by-basin. According to 40 CFR 130.6(c)(8), a WQMP must identify "any relationship to applicable basin plans developed under Section 209" of the CWA. Because New Mexico has chosen to do its planning on a statewide basis, no such basin plans are applicable to NM. For the same reason, the CPP requirement in 40 CFR 130.5(b)(2) to describe "the process for incorporating elements of any applicable areawide waste treatment plans under section 208, and applicable basin plans under section 209" does not apply to NM.

Although the State conducts water quality planning on a statewide level, implementation and restoration efforts focus on the watershed level. A successful watershed protection approach must be founded on cooperative interaction between the federal, state, and local levels of government, and between the public and private sectors.

Throughout the state, local government organizations and citizens are working to address local water issues relating to both quantity and quality. These organizations include voluntary watershed groups, soil and water conservation districts, county and municipal governments, and concerned citizens.

B. Strategy

The WQCC will continue water quality management planning on a statewide basis via this WQMP/CPP. SWQB will work with and encourage participation by local, state and federal organizations, watershed groups, other nongovernmental organizations, and concerned citizens in the development and implementation of strategies to address specific regional or watershed concerns.

XII. GROUNDWATER

[As required by 40 CFR 130.6(c)(9)]

A. Groundwater Pollution Prevention Program

The WQCC has adopted comprehensive regulations (20.6.1 through 20.6.7 NMAC), including ground WQS and a discharge permitting program, for the protection of groundwater quality under the authority of the WQA. The *Ground and Surface Water Protection* regulations are codified at 20.6.2 NMAC, with supplemental permitting requirements for dairy facilities at 20.6.6 NMAC and for copper mines at 20.6.7 NMAC. In accordance with the WQA at NMSA 1978, Section 74-6-4, the WQCC has delegated responsibility for administering its regulations regarding groundwater protection to NMED and OCD. The WQCC reviews and changes its regulations as it deems appropriate.

The GWQB reviews and approves discharge permits for discharges that have the potential to impact groundwater quality. Ground water discharge permits address discharges from a wide variety of facilities, including large and small-scale domestic wastewater treatment plants, septic tank/leachfields, industrial facilities, power generating plants, mining facilities, dairies, food processing plants, commercial landfarms for remediation of contaminated soil, UIC wells and groundwater remediation systems. The program also addresses unauthorized discharges such as spills; performs enforcement actions to ensure compliance with permit requirements; and requires abatement of groundwater contamination related to permitted facilities. The discharge permitting process includes public notification, a public comment period and a public hearing in situations where there is substantial public interest. Permits are issued for five-year terms and must be renewed to provide continuous coverage. Currently, GWQB manages approximately 675 active permits.

The Underground Injection Control (UIC) Program is a federal groundwater protection program established by the SDWA. The purpose of the UIC Program is to prevent groundwater contamination by regulating the discharge of wastes into UIC wells. New Mexico has authority for administration of the UIC Program, which is jointly implemented by GWQB and OCD. These divisions administer the UIC Program under authority granted by the WQA (NMSA 1978, Section 74-6-4), the *Ground and Surface Water Protection* regulations (20.6.2 NMAC), the New Mexico Oil and Gas Act (NMSA 1978, Section 70-2-12(B)), OCD's *Oil and Gas Injection* regulations (19.15.26 NMAC), and the New Mexico Geothermal Resources Act (NMSA 1978, Sections 71-9-1 to 71-9-11).

UIC wells include:

- Any dug hole or well that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids,
- Any septic tank or cesspool used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste, or

- Any subsurface distribution system, cesspool or other well which is used for the injection of wastes.

EPA has grouped UIC wells into five classes (Class I, II, III, IV and V), according to the type of fluid they inject and where the fluid is. *See* https://www.epa.gov/uic.

New Mexico administers the federal UIC Program through the groundwater discharge permits required by 20.6.2 NMAC. Facilities that discharge fluids into UIC wells are required to have groundwater discharge permits approved by either GWQB or OCD, depending on the type of operation. Discharge permits contain operational, monitoring, contingency, and closure plans with specific requirements to prevent and remediate any negative impacts that UIC wells may have on groundwater quality. GWQB permits and oversees the operation, monitoring, and closure of Class I, III, IV, and V wells. OCD regulates Class II wells, and also Class I, III, and V wells related to oil and gas development activities, geothermal activities, and brine solution mining.

B. Planning Strategy for Groundwater Protection

The WQCC will update its water protection regulations as necessary to address emerging issues. NMED and OCD will continue to administer the state regulations for groundwater protection in accordance with the WQCC's delegation of responsibilities.

XIII. DETERMINATION OF COMPLIANCE WITH WATER QUALITY STANDARDS FOR THE PROTECTION OF HUMAN HEALTH CRITERIA

[As required by 20.6.4.12 NMAC]

A. Background

In accordance with 20.6.4.12(D) NMAC:

> *Compliance with the human health-organism only criteria shall be determined from the analytical results of representative grab samples, as defined in the water quality management plan. Human health-organism only criteria shall not be exceeded.*

The procedures and methods used in the scientific studies necessary to make compliance determinations are found in several documents developed by SWQB. These documents include the WQS (20.6.4 NMAC) and the Surface Water Quality Bureau's QAPP for Water Quality Management Programs, which are reviewed and approved by EPA. The Water Quality Management Programs QAPP specifically addresses both laboratory and field procedures, including data interpretation approaches and field sampling techniques. The 2002 action by WQCC concerning human health priority toxic pollutants relies on grab sample techniques to determine standards compliance. Accordingly, specification of this technique is appropriate.

SWQB interprets a grab sample as a discrete, individual sample taken within a short period of time (usually less than 15 minutes) and is representative of the conditions at the time of sampling. This definition is operationally sufficient for perennial, intermittent and ephemeral waters. As stated in the Bureau's QAPP, SWQB relies on standard procedures and laboratory quality assurance to ensure the repeatability of the data. Procedures used for the evaluation of quality assurance and quality control are found in the QAPP. The analytical results of the representative grab samples shall be used for the determination of compliance with applicable human health criteria.

B. Process for Determination of Compliance

The following procedures apply to determining compliance for enforcement purposes; they do not apply for purposes of determining attainment of designated uses. Sampling for determination of compliance with WQS human health criteria shall be accomplished as follows:

- A minimum of three individual grab samples, separated in time by no less than 15 minutes each, shall be taken during the same sampling/storm event from the same location. For the purpose of determining non-compliance, the analytical results of two or more of these samples must be greater than the applicable human health criteria. Results of all grab samples shall be recorded and reported.

Sampling and analysis shall be in accordance with SWQB's current QAPP and SOPs.

XIV. PUBLIC PARTICIPATION

A. Requirements for Public Participation

This section applies to the CWA and WQA programs administered by SWQB described herein.

General public awareness and stakeholder involvement is crucial to the successful implementation of CWA programs. By seeking and considering invaluable public input and involvement, SWQB can more effectively promote best management practices and increase public involvement to produce better decisions, as well as greater public acceptance and support for these decisions.

Public participation requirements under the CWA are specified in 40 CFR 25.4. The rule requires agencies to "…conduct a continuing program for public information and participation in development and implementation of activities…" and includes the following provisions:

- Design informational documents and activities to encourage and facilitate public participation for meaningful involvement (40 CFR 25.4(b)(1));
- Provide at least one central location of reports, studies, plans, and other documents (40 CFR 25.4(b)(3));
- Develop and maintain a list of potentially affected and interested parties and engage with them under public consultation as outlined under 40 CFR 25.4(d) (40 CFR 25.4(b)(5);
- Provide notification generally within no less than 30 days of any action to allow time for public response (40 CFR 25.4(c)).

The specifics for adhering to these requirements are outlined in greater detail for each section in Table XIV-1. In addition to the federal requirements identified above, the agency has additional outreach requirements, which include:

- Tribal engagement in accordance with NMED's *Tribal Consultation and Collaboration Policy* (NMED Office of the Secretary 2020),
- Development of PIPs in accordance with *NMED's Limited English Proficiency (LEP) Accessibility and Outreach Policy 07-11, Non-Employee Disability Accessibility and Outreach Policy 07-10* and *Public Participation Policy 07-13*.
- Provide public notification consistent with the public participation and outreach activities outlined in the associated PIP.

Table XIV-1. Public Participation Requirements

Program Element	Public Participation Actions
WQMP/CPP - All Updates	• Stakeholder identification and outreach to gather information and identify potential updates • Conduct public meetings (Optional*) • Minimum 30-day public comment period • Publish notice of public comment period and meetings in newspaper(s) or alternative media in affected area(s) (Optional*) • Email notice to SWQB mailing list (Optional*) • Post on NMED website (Optional*) • Present updates/revisions at a WQCC meeting which is open to public participation • Post WQCC and EPA approved WQMP/CPP on NMED website
Water Quality Standards at 20.6.4 NMAC & Ground and Surface Water Protection regulations at 20.6.2 NMAC	• Stakeholder identification and outreach to gather information and identify potential updates • Conduct public meetings (Optional*) • Minimum 30-day public comment period for draft proposal • Petition the WQCC at a public meeting to request a hearing for the proposed changes to the regulations (NMSA 1978, Section 74-6-6(A)) • Publish hearing notice in the New Mexico Register, in one newspaper of general circulation, in one newspaper in the affected area (as applicable) and mailed to the WQCC mailing list (NMSA 1978, Section 74-6-6(C)) 60 days prior to hearing date; (45-day notice requirement in 40 CFR 25.5, 30-day notice requirement in NMSA 1978, Section 74-6-6, 60-day notice requirement in 20.1.6.201 NMAC) • Publish hearing notice in additional newspapers or through alternative media in affected area(s) (Optional*) • Email hearing notice to SWQB mailing list (Optional*) • Post rulemaking information on NMED website (State Rules Act, NMSA 1978, § 14-4-2(E)) • Post rulemaking information on State's Sunshine Portal (State Rules Act) • Provide electronic mail notification of hearing notice with links to supporting documentation for proposed rulemaking to NMED's district managers to make available at NMED field offices (State Rules Act) • Send rulemaking information and notice of hearing by electronic mail (if provided) to persons who have identified as a stakeholder, participated in the rulemaking, or specifically made a request for notice (State Rules Act)

Program Element	Public Participation Actions
	• Send written notice that includes, at a minimum, an internet and street address where the information may be found to persons who provide a postal address (State Rules Act) • Provide notice of hearing to the New Mexico legislative council for distribution to appropriate legislative committees (State Rules Act) • Public hearing before WQCC (20.1.6 NMAC) • Publication of approved regulation in the New Mexico Register with effective date of rule (1.24.10 NMAC) • Post WQCC and EPA approved regulations on NMED website •
Water Quality Surveys	• Conduct pre-monitoring community meetings prior to conducting the study to inform stakeholders in affected area about upcoming study plan, obtain contacts, and obtain watershed specific information from those living/working within the watershed (Optional*) • Post field sampling plans on NMED website (Optional*)
TMDL Documents	• Minimum 30-day public comment period (40 CFR 130.7) • Conduct public meeting(s) in affected watershed(s) (Optional*) • Publish notice of public comment period and meetings in newspaper(s) and/or alternative media in affected area(s) (Optional*) • Email notice to SWQB mailing list (Optional*) • Post on NMED website (Optional*) • Present updates/revisions at WQCC meeting which is open to public participation • Post WQCC and EPA approved TMDL on NMED website
Appendix B-2 of this WQMP/CPP	• Post on NMED website as new TMDLs with WLA are approved, existing WLA are revised, or new WLA are added to existing TMDLs.
State of New Mexico CWA §303(d) List (Appendix A of the §303(d)/§305(b) Integrated Report)	• Minimum 30-day public comment period (40 CFR 130.7) • Publish notice of comment period in newspaper(s) or alternative media in affected area(s) (Optional*) • Email notice to SWQB mailing list (Optional*) • Post on NMED website (Optional*) • Public participation at WQCC meeting • Post WQCC and EPA approved Integrated Report on NMED website

Program Element	Public Participation Actions
CWA §303(d)/§305(b) Listing Methodology	• Minimum 30-day public comment period (Optional*) • Publish notice of comment period in newspaper(s) or alternative media in affected area(s) (Optional*) • Email notice of comment period to SWQB mailing list (Optional*) • Post final listing methodology on NMED website (Optional*)
Nonpoint Source Management Plan	• Stakeholder identification and outreach to gather information and identify potential updates • Conduct public meetings (Optional*) • Minimum 30-day public comment period • Publish notice of public comment period and meetings in newspaper(s) or alternative media in affected area(s) (Optional*) • Email notice to SWQB mailing list (Optional*) • Post on NMED website (Optional*) • Present updates/revisions at public WQCC meeting • Post WQCC and EPA approved NPSMP on NMED website
Request for Proposals (RFPs)	• Publish notice in at least three newspapers of general circulation within the state at least 20 calendar days before proposals are due (1.4.1 NMAC). • NMED Press Release (Optional*) • Post on NMED website (Optional*) • Email notice to SWQB mailing list (Optional*)
Competitive Sub-Grant Awards: Solicitation for Applications (SFAs)	• NMED Press Release (Optional*) • Post on NMED website (Optional*) • Email to SWQB mailing list (Optional*)

Program Element	Public Participation Actions
401 Certifications of 402 Federal Permits (NPDES)	Joint Notice with EPA Region 6 (40 CFR 124.10(c) and 20.6.2.2001 NMAC): • Minimum 30-day public comment period • Publish notice in one newspaper of general circulation (in area of discharge if individual permit) • Send notice to the applicant; appropriate local, state, tribal and federal agencies; and all parties who have specifically requested copies of public notices. • Post notice on NMED website • Email notice to SWQB mailing list (Optional*) When joint notice is impractical, NMED shall provide notice according to 20.6.2.2001 NMAC: • Minimum 30-day public comment period • Publish notice in one newspaper of general circulation (in area of discharge if individual permit) • Post notice on NMED website • Email notice to applicant (except for general permits), SWQB mailing list, and affected government agencies or interested parties
401 Certifications of 404 Federal Permits (Dredge and Fill)	Joint Notice with US Army Corps of Engineers (33 CFR 325.3; 33 CFR 330.5; 20.6.2001 NMAC): • Minimum 15-day public comment period • Send notice to the applicant; adjoining property owners; affected local, state, tribal and federal agencies; and all parties who have specifically requested copies of public notices. • Post notice on NMED website • Email notice to SWQB mailing list (Optional*) When joint notice is impractical, NMED shall provide notice according to 20.6.2.2002 NMAC: • Minimum 15-day public comment period • Publish notice in one newspaper of general circulation (in area of discharge if individual permit) • Post notice on NMED website • Email notice to applicant (except for general permits); SWQB mailing list; and affected government agencies or interested parties

B. Planning Strategy for Fulfilling Public Participation Requirements

SWQB will satisfy public participation requirements in accordance with appropriate law/regulation/policy by:

- Developing PIPs that take into consideration the composition and English language proficiency of the affected community or area.
- Accommodating persons with a disability that desire to participate in NMED activities.
- Providing the public with the information necessary for meaningful involvement and informing the public of how they can obtain pertinent documents/information. This information is provided in public notices, at public meetings or hearings, available upon request, or can be obtained from the SWQB website at www.nmenv.state.nm.us/swqb. Brochures, newsletters, fact sheets, press releases, and other media are also utilized, as appropriate, to provide the public with the pertinent documents/information. This information includes appropriate information and documents as well as guidelines on how public meetings or hearings will be conducted.
- Providing a central location of reports, studies, plans, and other documents. SWQB maintains an administrative record, including all study plans and associated documentation (i.e. data, field sheets, etc.). A library of all intensive water quality survey reports is maintained, and reports are available to the public upon request.
- Maintaining a stakeholder list of affected/interested parties. SWQB maintains a database of affected/interested parties. This list includes the WQCC mailing list, environmental organizations, the regulated community, watershed groups, and numerous individuals who sign up to receive information. The list is currently operated through Govdelivery and individuals can subscribe to SWQB News at the bottom of every SWQB webpage.
- Properly notifying stakeholders and interested parties in accordance with laws/statutes/policies of any upcoming program activities. SWQB uses a variety of tools to disseminate information to the public, including publishing notices in the required newspapers (and the New Mexico Register, if necessary), emailing notices to the Bureau's interested parties list and encouraging them to post and/or forward to other interested parties, issuing NMED press releases, and posting pertinent documents and public notices on SWQB's website (https://www.env.nm.gov/surface-water-quality/).

Whenever practical and possible, SWQB will expand outreach efforts to maximize public participation by seeking out innovative ways of informing and involving the public such as through social media, webinars, etc. SWQB will provide the public with information on their role in the public participation process by documenting public input and providing a response to public input by explaining how the input was taken into consideration through the public participation process. This information is attached to final documents and provided individually to those who participated in the public comment process.

XV. REFERENCES

The following documents and regulations may be updated more frequently than the WQMP/CPP. The context of each reference should be used to determine if a specific version or the most current version of the document is being referenced.

A. Federal and State Acts

- Federal Clean Water Act (CWA), 33 U.S.C. 1251 *et seq*., (2002). https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf. (last visited May 20, 2020)

- Federal Safe Drinking Water Act, 42 U.S.C. 300f to 300j, (2010). https://www.gpo.gov/fdsys/pkg/USCODE-2010-title42/pdf/USCODE-2010-title42-chap6A-subchapXII.pdf (last visited May 20, 2020)

- New Mexico Water Quality Act, NMSA 1978, §§ 74-6-1 through 74-6-17 (2009). https://laws.nmonesource.com/w/nmos/Chapter-74-NMSA-1978#!fragment/zoupio-_Toc40794290/BQCwhgziBcwMYgK4DsDWszIQewE4BUBTADwBdoAvbRABwEtsBaAfX2zgBYAGAdgE4OAJj5cAlABpk2UoQgBFRIVwBPaAHI14iHFzYANnoDCSNNACEyLYTC4ECpao1WbCAMp5SAIVUAlAKIAMn4AagCCAHKGfuKkYABG0KTsoqJAA. (last visited May 20, 2020)

- New Mexico Oil and Gas Act, NMSA 1978, §§ 70-2-1 through 70-2-38 (2004). https://laws.nmonesource.com/w/nmos/Chapter-70-NMSA-1978#!fragment//BQCwhgziBcwMYgK4DsDWszIQewE4BUBTADwBdoByCgSgBpltTCIBFRQ3AT0otokLC4EbDtyp8BQkAGU8pAELcASgFEAMioBqAQQByAYRW1SYAEbRS2ONWpA. (last visited May 20, 2020)

- New Mexico Geothermal Resources Development Act, NMSA 1978 §§ 71-9-1 to 71-9-11 (2016). https://laws.nmonesource.com/w/nmos/Chapter-71-NMSA-1978#!fragment//BQCwhgziBcwMYgK4DsDWszIQewE4BUBTADwBdoByCgSgBpltTCIBFRQ3AT0otokLC4EbDtyp8BQkAGU8pAELcASgFEAMioBqAQQByAYRW1SYAEbRS2ONWpA. (last visited July 16, 2019)

B. Federal and State Regulations

- Federal Water Quality Planning and Management 40 CFR § 130 (2019). https://www.ecfr.gov/cgi-bin/text-idx?SID=60c392d68c0ca8cec151679b1bce4b05&mc=true&tpl=/ecfrbrowse/Title40/40CIsubchapD.tpl. (last visited May 20, 2020)

- Federal Water Quality Standards, 40 CFR § 131, (2019). https://www.ecfr.gov/cgi-bin/text-idx?SID=60c392d68c0ca8cec151679b1bce4b05&mc=true&tpl=/ecfrbrowse/Title40/40CIsubchapD.tpl. (last visited May 20, 2020)

- New Mexico Ground and Surface Water Protection, 20.6.2 NMAC, December 21, 2018. http://164.64.110.134/parts/title20/20.006.0002.html. (last visited May 20, 2020)

- New Mexico Ground Water Protection-Supplemental Permitting for Copper Mine Facilities, 20.6.6 NMAC. December 1, 2013. http://164.64.110.134/parts/title20/20.006.0007.html. (last visited May 20, 2020)

- New Mexico Ground Water Protection-Supplemental Permitting Requirements for Dairy Facilities, 20.6.6 NMAC. January 31, 2011. http://164.64.110.134/parts/title20/20.006.0006.html. (last visited May 20, 2020)

- New Mexico Standards for Interstate and Intrastate Surface Waters, 20.6.4 NMAC. February 28, 2018. http://164.64.110.134/parts/title20/20.006.0004.html. (last visited May 20, 2020)

C. Federal Guidance

- U.S. EPA. 2009. *Core Elements of an Effective State and Tribal Wetlands Program*. https://www.epa.gov/wetlands/core-elements-effective-state-and-tribal-wetlands-programs. (last visited May 20, 2020)

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D. NMED Policies

- NMED Office of the Secretary. 2020. *Tribal Consultation and Collaboration Policy*. https://www.env.nm.gov/general/wp-content/uploads/sites/10/2016/08/2020-01-27-NMED-Tribal-Policy-2020-final-signed.pdf. (last visited May 20, 2020)

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E. SWQB Plans and Reports

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- NMED SWQB. 2019. *New Mexico Nonpoint Source Management Plan*. https://www.env.nm.gov/surface-water-quality/nps-plan/. (last visited May 20, 2020)

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- NMED SWQB. 2017. *Procedures for Assessing Standards Attainment for the State of New Mexico CWA §303(d)/ §305(b) Integrated Report: Comprehensive Assessment and Listing Methodology (CALM)*. https://www.env.nm.gov/surface-water-quality/calm/. (last visited May 20, 2020)

- NMED SWQB. 2018. *Standard Operating Procedures for Data Collection (SOPs)*. https://www.env.nm.gov/surface-water-quality/sop/. (last visited May 20, 2020)

- U.S. District Court for the District of New Mexico. 1997. Forest Guardians and Southwest Environmental Center (Plaintiffs) v. Carol Browner, in her official capacity as Administrator, EPA (Defendant): Joint Motion for Entry of Consent Decree. April 29.

State of New Mexico
Continuing Planning Process
Appendix A

Antidegradation Policy Implementation Procedure for Regulated Activities

Originally Approved 2004
Approved Revision October 23, 2020

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Glossary

Alternatives Analysis: An evaluation of possible cost-effective, reasonable alternatives to regulated discharges that might degrade water quality, including less-degrading alternatives, non-degrading alternatives, and no-discharge alternatives, such as treatment process changes, relocated discharge facilities, land application, reuse, and subsurface discharges. The evaluation must provide substantive information pertaining to the cost and environmental impacts associated with the proposed discharge and the alternatives being evaluated, so that alternatives that are cost-effective and reasonable and least degrading are identified.

Antidegradation: A regulatory policy and implementation procedure approved by EPA and the WQCC to protect existing uses of surface waters and to specify how the WQCC will determine, on a case-by-case basis, whether and to what extent, existing water quality may be lowered in a surface water.

Assimilative Capacity: The difference between the baseline water quality concentration for a pollutant and the most stringent applicable water quality criterion for that pollutant.

Baseline Water Quality (BWQ): A characterization of selected pollutants in a perennial surface water as measured and expressed during a specified time period. Once established, baseline water quality is a fixed quantity/quality unless it is updated by NMED to reflect changes in water quality.

Bio-accumulative Pollutant: a pollutant, such as pesticides or other chemicals, that accumulates in aquatic organisms when ingestion and absorption rates are faster than metabolic and excretion rates (*see* human health-organism only criteria in 20.6.4.900 NMAC).

Degradation: A decline in the chemical, physical, or biological conditions of a surface water or other decline in water quality as measured on a pollutant-by-pollutant basis.

Detection Limit: The minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results.

Designated Use: A use of a surface water specified in the *Standards for Interstate and Intrastate Surface Waters* (20.6.4 NMAC). Designated uses include domestic water supply, irrigation and irrigation storage, primary contact, secondary contact, livestock watering, wildlife habitat, aquatic life, and fish culture and water supply.

Effluent-Dependent Water: An effluent-dependent water is a surface water that without the point source discharge of wastewater would be an ephemeral water.

Ephemeral Surface Water: A surface water that contains water briefly only in direct response to precipitation; its bed is always above the water table of the adjacent region.

Existing Use: A use and the water quality necessary to support the use that has been attained in a surface water on or after November 28, 1975, whether or not it is a designated use in the surface water quality standards (20.6.4 NMAC) or if it is currently attaining the quality required for that use.

Existing Water Quality: Baseline water quality.

High Quality Water: A surface water with water quality that is better than the applicable water quality standard as determined on a pollutant by pollutant basis.

Intermittent Surface Water: A surface water that contains water for extended periods only at certain times of the year, such as when it receives seasonal flow from springs or melting snow.

Less-Degrading Alternative: A cost-effective, reasonable alternative to a proposed discharge that would result in fewer detrimental changes to water quality as characterized by the baseline water quality evaluation.

Loading Capacity: total assimilative capacity of a waterbody for the pollutant of concern at critical flow. The loading capacity is the maximum amount of pollutant loading that a waterbody can receive and still meet water quality standards.

Minimal Degradation: A deterioration or decline in water quality that results in the consumption of less than 10 percent of the available assimilative capacity for a pollutant.

National Pollutant Discharge Elimination System [NPDES]: The point source discharge permit program established by Section 402 of the Clean Water Act (33 U.S.C. § 1342).

Non-Degrading Alternative: A cost-effective, reasonable alternative to a proposed discharge that would result in no significant degradation of water quality as characterized by the baseline water quality evaluation.

Outstanding National Resource Water (ONRW): A surface water that is classified as an outstanding national resource water under 20.6.4.9 NMAC.

Perennial Surface Water: A surface water that typically contains water throughout the year and rarely experiences dry periods.

Regulated Discharge: A point source discharge regulated under Section 402 of the CWA, a discharge for Dredge and Fill material regulated under Section 404 of the CWA, and any discharged authorized by a federal permit or license that is subject to state water quality certification under Section 401 of the CWA.

Relative Percent Difference (RPD): RPD is an expression of the degree of variation between two water quality samples taken under similar conditions. RPD is calculated using the following equation, where S represents the concentration of the pollutant in the original sample and D represents the concentration of the pollutant in the new sample.

$$\boldsymbol{RPD = \frac{|S - D|}{(S + D)/2}\ x\ 100}$$

Short-Term Degradation: Degradation that is six months or less in duration, i.e., water quality returns to baseline water quality within six months after the discharge commences.

Significant Degradation: The consumption of 10 percent or more of the available assimilative capacity for any pollutant of concern at critical flow conditions or any consumption of assimilative capacity that exceeds a cumulative cap of 50% of assimilative capacity.

Significantly Improved Water Quality: For purposes of a BWQ re-evaluation, significantly improved water quality compares the original baseline water quality data to new water quality data acquired or submitted to the Department and calculates the relative percent difference (RPD) between the two data points. If the RPD is greater than or equal to 20% and sampling technique, sample processing and transport, and laboratory analyses are comparable, a new baseline characterization may be warranted.

Surface Waters of New Mexico: All surface waters situated wholly or partly within or bordering upon the state, including lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, reservoirs or natural ponds. Surface waters of the state also means all tributaries of such waters, including adjacent wetlands, any manmade bodies of water that were originally created in surface waters of the state or resulted in the impoundment of surface

waters of the state, and any "waters of the United States" as defined under the Clean Water Act that are not included in the preceding description.

Temporary Degradation: Degradation that is six months or less in duration, i.e., water quality returns to baseline water quality within six months after the discharge commences; short-term degradation.

Tier 1 Protection: Policies and procedures that prohibit degradation which results in the loss of an existing use, or violation of water quality criteria; and prohibit degradation of existing water quality where pollutants of concern do not meet applicable water quality standards. Tier 1 defines the minimum level of protection for all waters and requires that water quality be maintained such that the existing and designated uses of the water are supported. This applies to waters that do not meet or meet but are not better than the water quality standards for existing or designated uses. Surface waters with this protection may already be of lower quality.

Tier 2 Protection: Policies and procedures that prohibit significant degradation of a surface water unless a review of reasonable alternatives and social and economic considerations shows that the lowering of water quality is necessary for important social and economic considerations in the area where the water is located. Tier 2 protection level applies to perennial and intermittent waters where data confirm high quality water (i.e., where existing water quality is better than applicable water quality standards as determined on a pollutant-by-pollutant basis).

Tier 3 Protection: Policies and procedures that prohibit any lowering of water quality in Outstanding New Mexico Waters as identified under 20.6.4.9 NMAC unless impacts are minimized and temporary.

Toxic Pollutant: A pollutant or combination of pollutants, including disease-causing agents, that after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will cause death, shortened life spans, disease, adverse behavioral changes, reproductive or physiological impairment or physical deformations in such organisms or their offspring.

Translator: Methodologies to guide the calculation of site-specific numeric targets (not criteria) based on a given narrative standard.

Water Contaminant: Any substance that, if discharged or spilled, could alter the physical, chemical, biological or radiological qualities of water.

Water Pollutant: A water contaminant in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or to unreasonably interfere with the public welfare or the use of property. Pollutants may include liquid, solid, gaseous, or hazardous substances such as contaminants, toxic pollutants, solid waste, chemicals, pesticides, herbicides, fertilizers, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, dirt, and mining, industrial, municipal and agricultural wastes.

Water Quality Criteria: Elements of water quality standards that are expressed as pollutant concentrations, levels, or narrative statements representing a water quality that supports a designated use.

1 Overview of New Mexico's Antidegradation Approach

Water quality standards (WQS) are the foundation for a wide range of programs under the Clean Water Act (CWA). WQS consist of designated uses such as aquatic life and recreation, water quality criteria necessary to protect those uses, and antidegradation requirements. Each State must develop, adopt, and retain a statewide antidegradation policy regarding water quality standards and establish procedures for its implementation through the water quality management process. Antidegradation implementation is based on a set of procedures to be followed when evaluating activities that may impact the quality of New Mexico's surface waters. Antidegradation implementation is an integral component of a comprehensive approach to protecting and enhancing surface water quality.

Antidegradation protections consist of three levels, or tiers, of protection defined by New Mexico's water quality standards in 20.6.4.8 NMAC. Tier 1 protections provide a floor of protection, ensuring that existing instream water uses and the level of water quality necessary to protect those existing uses are maintained and protected. Tier 2 protections maintain and protect water quality that exceeds water quality numeric and narrative criteria, prohibiting any lowering of water quality unless necessary to accommodate social or economic need. Tier 3 protections are afforded to waters designated by the Water Quality Control Commission (WQCC) as Outstanding National Resource Waters (ONRWs). In ONRWs, no degradation is permitted except in limited, specifically defined instances, such as to accommodate public health or safety activities or to enable activities to restore or maintain water quality.
Antidegradation applies to all activities with the potential to adversely affect water quality or existing or designated uses, including:

- Any proposed new or increased point source or nonpoint source discharge of pollutants that would lower water quality or affect the existing or designated uses.
- Any proposed increase in pollutant loadings to a waterbody when the proposal is associated with existing activities.
- Any increase in flow alteration over an existing alteration.
- Any hydrologic modifications, such as dam construction and water withdrawals.

This document has been drafted to provide guidance to persons responsible for regulated discharges that may degrade water quality in New Mexico. Regulated discharges include those that require a permit and/or a water quality certification under Section 401 of the Clean Water Act (CWA) pursuant to state or federal law. The Nonpoint Source Management Plan, a separate document incorporated by reference into the WQMP/CPP, describes antidegradation implementation procedures applicable to nonpoint source discharges. The information contained in this document is intended to provide guidance only and is not a substitute for the provisions of any other laws, rules, or regulations.

The guidance that follows addresses implementation procedures for New Mexico's antidegradation rule at 20.6.4.8 NMAC, and the federal antidegradation policy at 40 CFR 131.12. NMED is required by 40 CFR 131.12(a) to develop and adopt a statewide antidegradation policy and to identify methods for implementing that policy. The guidance generally includes:

- Processes for identifying the antidegradation protection level (i.e., the "*tier*") that applies to a surface water;
- Procedures for determining baseline water quality (BWQ);

- Approaches for evaluating water quality degradation;
- Procedures for identifying and evaluating less degrading or non-degrading alternatives*;*
- Procedures for determining the importance of economic or social development to support significant degradation of high quality surface waters; and,
- Information on intergovernmental coordination and public participation processes*.*

1.1 DESIGNATED USES AND WATER QUALITY CRITERIA

Water quality standards, including designated uses and associated water quality criteria can be found at 20.6.4 NMAC. Under the Clean Water Act (CWA) and New Mexico's surface water quality standards, various uses are assigned to surface waters. Designated uses include domestic water supply, irrigation and irrigation storage, primary contact, secondary contact, livestock watering, wildlife habitat, aquatic life, and fish culture and water supply. Designated uses are accompanied by an established set of *water quality criteria* designed to ensure that the designated uses are achieved. In accordance with state regulations, designated uses can be established or changed only through administrative rulemaking. Most surface waters have several designated uses. Where more than one use exists, or has been designated for a surface water, the use with the most stringent water quality criteria must be maintained and protected.

1.2 COVERAGE AND GENERAL APPLICABILITY

In general, the antidegradation implementation procedures described in this guidance apply to every proposal for a new or increased permitted discharge of a pollutant to a "surface water of the State." Permitted discharges are those discharges regulated under the authority of the CWA and discharges regulated pursuant to 20.6.2 NMAC that have the potential to impact surface water quality. These include National Pollutant Discharge Elimination System (NPDES) point source discharges regulated under Section 402 of the CWA; discharges which result in the placement of dredged or fill material into surface waters regulated under Section 404 of the CWA; and any discharge authorized by federal permits and licenses that are subject to state water quality certification under Section 401 of the CWA.

These procedures do not apply to non-point sources (NPS). In instances when significant degradation is determined to be a concern and NPS sources are impacting water quality, NMED will work with stakeholders to identify and implement best management practices, as described in the Nonpoint Source Management Plan.

These procedures also do not apply to other water quality-related actions, including revision of Commission documents (e.g., New Mexico Water Quality Standards, Continuing Planning Process, Statewide Water Quality Management Plan, and New Mexico Nonpoint Source Management Plan); the Commission's establishment of Total Maximum Daily Loads (TMDLs); or the conduct of studies, including use attainability analyses, by any party, including NMED. These types of water quality-related actions already are subject to extensive requirements for review and public participation, as well as various limitations on degradation imposed by state and federal law.

Section 3 summarizes the antidegradation review approach used in New Mexico, which is based on the type of regulated discharge under consideration (e.g., by permit type), the receiving water, and the BWQ for relevant pollutants of concern in the receiving surface water.

1.3 COORDINATION WITH ASSESSMENT AND IMPAIRMENT LISTING

Section 305(b) of the CWA requires each state to prepare and submit to the U.S. Environmental Protection Agency (EPA) a biennial report describing water quality of all surface waters in the state. Each state must monitor water quality and review available data to determine if water quality standards are being met. From the assessment, the CWA Section 303(d) List ("303(d) list") is created which identifies surface waters that do not meet water quality standards. These waters are known as water quality limited waters or impaired waters. Identification of a surface water as impaired may be based on a violation of a numeric or narrative water quality criterion. NMED's antidegradation policy implementation procedure (i.e., this appendix) assigns a protection category for the receiving water based on whether water quality standards are being met.

To coordinate antidegradation reviews with the 305(b) reporting and 303(d) listing activities, NMED will implement the following protections:

- *Tier 1 Protection (applicable to all waters):* No further degradation is permitted in a surface water where the most current water quality for that criterion does not meet, or meets but is not better than, the applicable water quality standards. Impaired waters are identified on New Mexico's 303(d) list and targeted for future water quality management planning (e.g., TMDLs, Watershed Based Plans (WBPs), etc.) to improve water quality and attain WQS.
- *Tier 2 Protection (applicable to perennial and intermittent waters where data confirm high-quality water is present):* Where possible, NMED may award priority points for grant or other funding programs that target water quality protection and restoration and support actions needed to protect and restore water quality. NMED may also revise the BWQ based upon more recent water quality data included in the biennial assessment of surface waters.
- *Tier 3 Protection (applicable to all waters designated as an ONRW):* No degradation is allowed in an ONRW, except in limited, specifically defined instances, such as to accommodate public health or safety activities or to enable activities to restore or maintain water quality, as outlined in 20.6.4.8(A)(3) and 20.6.4.8(A)(4) NMAC. For activities that may cause short-term degradation, NMED may award priority points for grant or other funding programs that target water quality protection and support actions needed to protect and restore water quality.

In addition, NMED participates in reviews for Clean Water State Revolving Funding. Applications are reviewed for compliance with water quality standards for both surface and groundwater, and projects that directly implement a fix to a water quality problem are awarded priority points to allow more rapid implementation of those projects. This results in a more proactive approach from the Department to restore or maintain water quality in surface waters across the state.

1.4 INTERGOVERNMENTAL COORDINATION AND REVIEW PROCESS

Federal and state regulations require intergovernmental coordination and public participation for Tier 2 reviews and public participation in decisions that may result in water quality degradation. Coordinating antidegradation reviews among various agencies and other interested parties will involve significant cooperation in gathering data, conducting evaluations, analyzing alternatives and evaluating potential social and economic impacts. A list of agencies that may be involved in the intergovernmental coordination and review process is included as Appendix A.5 of this document.

For comprehensive Tier 2 reviews on perennial waters, determining BWQ, evaluating projected impacts, analyzing possible alternatives, and evaluating economic or social benefits, if applicable, must occur prior to issuing an individual NPDES permit. Therefore, it is recommended that an applicant discharging into a perennial water meet with NMED in a pre-application conference at least one year prior to permit issuance. Timely notification and early consultation with NMED will help ensure that the issuance of permits can proceed without disruption to facility design, construction, or other activities planned by the applicant.

1.5 PUBLIC NOTIFICATION AND PARTICIPATION

Information on BWQ, designated uses, water quality standards, applicability of protection tiers, impact analyses, alternatives analyses, agency decisions, and other matters related to antidegradation reviews will be documented by NMED and made part of the public record. Public notification of proposed actions and requests for public comment will be made in accordance with Chapter 8 of this appendix.

2 Tiered Protection Levels

2.1 TIER DEFINITIONS

Federal law requires that surface waters be protected from discharges that might degrade water quality. To implement this requirement, it is necessary to identify antidegradation protection levels, or tiers, appropriate to each surface water. The state antidegradation rule at 20.6.4.8 NMAC delineates three tiers of protection for New Mexico surface waters. These tiers are applied on a pollutant-by-pollutant basis. Although Tiers are defined on a pollutant-by-pollutant basis, ONRWs are identified on a waterbody basis as described further below in this section and in NMAC 20.6.4.9(D) NMAC. Under this approach, surface water quality might degrade for one or more pollutants of concern but be unaffected for other pollutants. Degradation may be further described as *de minimis* (consumption of less than 10% of the assimilative capacity for a pollutant of concern) or significant (consumption of 10% or more of the assimilative capacity for a pollutant). Minimal (*de minimis*) degradation is permitted under the antidegradation rule and does not trigger comprehensive Tier 2 antidegradation review requirements. Significant degradation triggers the comprehensive Tier 2 antidegradation implementation procedures described below. The tiered protection levels are applied as follows:

Tier 1 – Applies as the default protection level for all surface waters, including intermittent waters, ephemeral waters, effluent dependent waters, and other surface waters and requires that water quality be maintained such that the existing and designated uses of the water are supported. Tier 1 prohibits further degradation of existing water quality where a pollutant of concern does not meet or meets but water quality is <u>not</u> better than applicable water quality criteria. Tier 1 protection for impaired waters apply only to those pollutants that resulted in the 303(d) listing**.**

Tier 2 – Applies to perennial surface waters with high quality water (i.e., where existing water quality is better than applicable water quality standards as determined on a pollutant-by-pollutant basis). Tier 2 requires that existing high-quality water be maintained but allows for limited (*de-minimis*) degradation. The Tier 2 protection level prohibits significant degradation unless a review of reasonable alternatives and social and economic considerations supports a lowering of water quality. Tier 2 may also apply to intermittent waters if data are available and indicate a high-quality water (i.e., water quality better than applicable WQS). Tier 2 is the default protection level for all high-quality perennial and intermittent waters (i.e., water quality is better than the applicable WQS).

Tier 3 – Applies only to New Mexico Outstanding National Resource Waters (ONRWs) identified in 20.6.4.9(D) NMAC. Tier 3 prohibits any degradation and lowering of water quality in an ONRW unless impacts are minimal and temporary. Approval for any degradation must be obtained according to the process outlined in 20.6.4.8(A)(3) and 20.6.4.8(A)(4) NMAC.

Antidegradation is more about levels of protection than it is about levels of quality. In fact, for Tier 3 it could be said that antidegradation is all about protection, as the outstanding character may have little to do with actual water quality in the traditional sense of pollutant concentrations (e.g., waters may have particularly high ecological value). Numeric water quality criteria are considered in an antidegradation analysis, however NMED takes other considerations into account as warranted. For example, Tier 3 (ONRWs) analyses require consideration of the essential character or special use that makes the water an ONRW, such as high ecological or recreational value.

Most of the involvement in the antidegradation policy is regarding Tier 2 waters. This tier is where antidegradation procedures can work to maintain high quality water and is also where dischargers may have to expend extra effort to reduce their proposed degradation of water quality or demonstrate that allowing lower water quality is necessary to accommodate important economic and social development in the area in which the water is located.

2.2 DESIGNATION OF TIER CATEGORY

At a minimum, all surface waters in New Mexico are protected in accordance with Tier 1 antidegradation requirements. Tier 1 applies categorically to all intermittent and ephemeral streams, effluent dependent waters, and all surface waters on the 303(d) list on a pollutant-by-pollutant basis. Where a surface water is listed on the state's 303(d) list for one or more pollutants, and where existing water quality for other pollutants is better than water quality standards, the surface water will be afforded Tier 1 and Tier 2 protection on a pollutant-by-pollutant basis. That is, Tier 1 protection for the pollutants not meeting water quality standards and Tier 2 protection for pollutants that are better than water quality standards.

Perennial waters, and possibly some intermittent waters, that are found to have existing water quality better than applicable water quality standards are protected at the Tier 2 level. For Tier 2 protection, determinations regarding the significance of degradation are based on BWQ and the relative change in water quality projected to result from the discharge under review. In general, BWQ, as discussed in Chapter 4 of this appendix, defines existing water quality for purposes of antidegradation reviews. BWQ can be established for surface waters through monitoring and water quality assessments conducted by NMED, regulated entities, or by others (e.g., contractors). Tier 3 protection applies to ONRWs listed in 20.6.4.9(D) NMAC. Tier 3 protection will be afforded for all pollutants of concern in an ONRW.

Where a perennial water has been assessed but has not been listed as an impaired water or as an ONRW, the presumed antidegradation protection level is Tier 2 for all pollutants of concern. If a protection tier has not already been determined for a perennial surface water, NMED will establish the tier by identifying the use(s) of the segment, determining BWQ, and comparing the attributes of the surface water under study to the criteria for the tiers as cited above.

Upon establishing the appropriate tier(s) for a surface water, NMED will document its findings along with BWQ characterization and make this information available as part of the public record. Tier levels established by NMED may be revised, or alternate tier assignments may be assigned when waters are added or removed from the 303(d) list or are added to the list of ONRWs (see 20.6.4.9(D) NMAC).

Table 2-1 summarizes decision criteria for assigning protection tiers and the antidegradation requirements for each. More information on conducting the antidegradation reviews for waters requiring Tier 2 and Tier 3 protection can be found in Chapter 3 of this document.

Table 2-1. Tier Descriptions and Summary of Antidegradation Protection Requirements

Tier	Waters Included	Protection Requirements
1	All surface waters that meet but are not better than applicable water quality criteria, i.e., not considered "high quality," as determined on a pollutant by pollutant basis. All surface waters on the state's 303(d) list of impaired waters for the pollutant that resulted in the listing. Intermittent waters.[1] All ephemeral waters. All effluent dependent waters.	The minimum level of protection necessary to maintain the existing and designated uses of a surface water. Where a surface water is impaired or meets, but water quality is not better than, applicable water quality criteria, there shall be no lowering of the water quality with respect to the pollutant causing the impairment. Tier 1 protection applies regardless of any economic or social benefits associated with a proposed discharge.
2	For intermittent[1] and perennial waters reflecting high-quality waters, i.e., where the level of water quality is better than applicable water quality criteria as determined on a pollutant-by-pollutant basis. Tier 2 is the default protection level for high-quality perennial and intermittent waters that are not ONRWs or on the 303(d) list.	High-quality water in perennial and intermittent (if known) streams and lakes must be protected at a level that minimizes degradation of that water quality. No significant degradation of the Tier 2 pollutants in the surface water is allowed unless a comprehensive antidegradation review of reasonable alternatives demonstrates that the lowering of water quality is necessary for important social and economic considerations in the area in which the waters are located.
3	ONRWs.	No new or expanded direct discharges. No lowering of water quality allowed unless it is minimized and temporary, *and* degradation is approved according to 20.6.4.8 NMAC.

[1] For intermittent waters, if water quality data are available and assessable, and indicate a high-quality water (i.e., water quality better than applicable WQS), then Tier 2 protection applies on a pollutant-by-pollutant basis.

3 Antidegradation Review Requirements

The antidegradation review procedure is based on the protection tier assigned to the receiving water, the type of receiving water, existing (i.e., baseline) water quality in the receiving water, the projected impacts, and nature of the proposed discharge.

In general, the antidegradation review requirements described in this guidance apply to regulated discharges that have the potential to degrade water quality. These include NPDES point source discharges regulated under Section 402 of the CWA; discharges which result in the placement of dredged or fill material into surface waters regulated under Section 404 of the CWA; and any discharge authorized by federal permits and licenses that are subject to state water quality certification under Section 401 of the CWA.

3.1 ANTIDEGRADATION REVIEW REQUIREMENTS BY TIER

Tier 1: Reviews to Protect Existing Uses

Tier 1 reviews must ensure that the level of water quality necessary to protect existing uses is maintained and protected. In general, the "level of water quality necessary to protect existing uses" is defined by state-adopted surface water quality standards.

General Applicability

Tier 1 protection applies to all surface waters. In determining whether a surface water is afforded only Tier 1 protection, NMED will focus on whether the surface water meets or fails to meet applicable WQS.

Impaired Waters

For surface waters listed as impaired on the 303(d) list and for those waters that meet but are not better than the water quality criteria for a particular designated use, Tier 1 protection will be provided for the listed pollutants. Non-listed pollutants in 303(d) listed waters and those surface waters that are of high-quality may be afforded Tier 2 protection. Under Tier 1, no discharges will be permitted to cause further degradation for pollutants that do not meet applicable water quality standards. Where existing uses of a surface water are impaired, there will be no lowering of the water quality with respect to the pollutant(s) of concern causing the impairment.

Non-Perennial and Effluent Dependent Waters

Lack of flow in ephemeral and intermittent waters makes it difficult to characterize BWQ and conduct Tier 2 antidegradation reviews. Similarly, lack of flow and/or the nature of flow in effluent dependent waters also makes these waters difficult to characterize, other than simply characterizing the effluent being discharged. These non-perennial waters will receive Tier 1 protection for all pollutants of concern unless there is sufficient BWQ data to demonstrate a high-quality water for intermittent waters to which a Tier 2 evaluation would be appropriate. Applicable WQS must be maintained and protected for these surface waters.

For example, certain individual and general permit applicants will likely discharge to a non-perennial stream segment where there is no other existing discharge to the segment, little or no flow in the channel beyond the immediate area of the discharge, and no available ambient water quality data. No BWQ

evaluation will be required for these discharges. Antidegradation reviews for most discharges to non-perennial waters will focus on requirements that applicable WQS be met end-of-pipe (unless ambient water quality data are available for a BWQ evaluation), and technology-based requirements, e.g., best available technology (BAT), are applied as required by permit conditions. Antidegradation review for NPDES individual municipal separate storm sewer system (MS4) and general permits as well as dredge or fill permits under Section 404 of the CWA for will focus on meeting WQS in receiving waters by ensuring compliance with the permit or state certification of the permit pursuant to Section 401 of the CWA.

General (Narrative) Criteria under 20.6.4.13 NMAC

Total Dissolved Solids (TDS) – NMED will follow the guidance laid out in the Colorado River Salinity Control Forum. Compliance with the Forum requirements will be considered to meet the intent of the narrative standard.

Plant Nutrients – NMED will evaluate nutrient discharges in accordance with available thresholds (i.e., translators) and will use applicable thresholds for the Tier 1 antidegradation review. A similar approach has been taken with Raton and Santa Fe WWTPs, capping the facilities at their current level of discharge/degradation. Depending on the data available, limits will be derived using a percentile of the data set (85^{th}, 95^{th}, etc.) that is reasonably achievable and still maintains and protects existing water quality. There are no technologically based effluent limits (TBELs) available for nutrients for publicly-owned treatment works (POTWs) at this time, but based on the type of treatment system available, NMED will work with the facility to incorporate limitations that maintain or reduce current levels of nutrient loading.

Other General Criteria – If a narrative standard does not have associated numeric thresholds or translators, NMED will not evaluate the narrative standard for antidegradation purposes due to the impracticality of such an evaluation.

Tier 2: Reviews to Protect High Quality Waters

Tier 2 protection applies to high quality perennial and intermittent (if data are available and assessable) waters with water quality better than applicable WQS, as determined on a pollutant-by-pollutant basis. Existing water quality in high quality surface waters must be maintained and protected. Tier 2 prohibits significant degradation unless a review of reasonable alternatives and social and economic considerations support a lowering of water quality, and after opportunity for intergovernmental review and public comment and hearing. If degradation is allowed, it must not result in a violation of applicable WQS.

General Applicability

Any regulated discharge to a high quality water is subject to Tier 2 antidegradation review to determine if the discharge will significantly degrade water quality. Determinations issued under these provisions will be made in accordance with the public notification process described in Chapter 8 of this appendix. If NMED determines after an initial evaluation that comprehensive Tier 2 review requirements do not apply to a proposed discharge, the discharge must still achieve the requirements of the permit or conditions of the water quality certification.

Basic vs. Comprehensive Tier 2 Review

A basic Tier 2 antidegradation review is used to determine whether or not significant degradation will occur from a regulated discharge, i.e., whether or not 10% or more of the available assimilative capacity

for any pollutant of concern will be consumed as a result of the proposed discharge during critical flow conditions or any consumption of assimilative capacity that exceeds a cumulative cap of 50% of assimilative capacity. The BWQ and applicable WQS must be reviewed as part of a basic Tier 2 antidegradation review.

A comprehensive Tier 2 antidegradation review, which includes an alternatives analysis and social and economic demonstration for the degradation, is required for any new or expanded discharge that may significantly degrade a Tier 2 protected water.

No comprehensive Tier 2 antidegradation review is required for discharges regulated under a general NPDES permit or a Section 404 dredge or fill permit. These discharges will be required to meet the conditions of the general permit or Section 401 water quality certification.

Tier 3: Reviews to Protect Outstanding New Mexico Waters

Existing water quality in ONRWs must be maintained and protected. Any discharge that would degrade existing water quality in an ONRW is prohibited, unless the applicant demonstrates that the water quality impacts are temporary and necessary for public health and safety or restoration, and the applicant receives approval for the activity according to the process in 20.6.4.8 NMAC.

General Applicability

Tier 3 protection applies only to surface waters that are classified as ONRWs and identified under 20.6.4.9(D) NMAC.

Tier 3 Review

Discharges that impact ONRWs are subject to Tier 3 antidegradation review. New or expanded discharges that may cause degradation directly to an ONRW identified under 20.6.4.9(D) NMAC are prohibited, except in limited, specifically defined and temporary events, such as to accommodate public health or safety activities or to enable activities to restore or maintain water quality, as outlined in 20.6.4.8.A(3) and (4) NMAC. In general, temporary is defined as occurring for a period of six months or less and is not recurring. In addition, NMED will impose necessary controls on indirect discharges that occur upstream or to tributaries of an ONRW to maintain and protect existing water quality in the downstream ONRW.

Determinations regarding antidegradation reviews for activities that affect ONRWs, such as public health or safety activities or activities to restore or maintain water quality, will be made on a case-by-case basis after consideration of the following factors outlined in 20.6.4.8(A)(3) and 20.6.4.8(A)(4) NMAC:

- The degradation shall be limited to the shortest possible time and shall not exceed six months;
- The degradation shall be minimized and controlled by best management practices or in accordance with permit requirements as appropriate; all practical means of minimizing the duration, magnitude, frequency and cumulative effects of such degradation shall be utilized;
- The degradation shall not result in water quality lower than necessary to protect any existing use in the ONRW; and
- The degradation shall not alter the essential character (e.g., exceptional recreational or ecological significance) or special use (e.g., state special trout water; national or state park, monument, wildlife refuge; designated wilderness or wild river) of the ONRW, as supported by the proceedings and final decision establishing the water as an ONRW.

Prior to the WQCC's decision, NMED will provide a written recommendation to the commission. This recommendation will take into account the following factors:

- Change in ambient concentrations predicted at the appropriate critical flow condition(s)
- Change in loadings (i.e., the new or expanded loadings compared to total existing loadings to the segment)
- Reduction in available assimilative capacity
- Nature, persistence and potential effects of the pollutant
- Potential for cumulative effects
- Degree of confidence in the various components of any modeling technique utilized (e.g., degree of confidence associated with the predicted effluent variability)

The antidegradation review findings must be documented and public participation activities initiated, as per the procedures in 20.6.4.8(3)(a) NMAC. If the review finds that the proposed discharge will not be temporary, the proposed discharge will be denied. In all cases, Tier 1 protection must be maintained.

Emergency Response Action

If an emergency response action is occurring in proximity to an ONRW and is necessary to mitigate an immediate threat to public health or safety, it may proceed prior to notification to the WQCC and NMED, in accordance with the following as outlined in 20.6.4.8(A)(3)(c) NMAC:

- only actions that mitigate an immediate threat to public health or safety may be undertaken pursuant to this provision; non-emergency portions of the action shall comply with the requirements of 20.6.4.8 NMAC;
- the discharger shall make best efforts to comply with requirements noted above;
- the discharger shall notify the department of the emergency response action within seven days of initiation of the action; and,
- within 30 days of initiation of the emergency response action, the discharger shall provide a summary of the action taken, including all actions taken to comply with the requirements above.

Upstream Discharges & Tier 3 Review

A discharge upstream of an ONRW is prohibited where the proposed discharge would degrade existing water quality of the downstream ONRW on a longer than temporary basis. To determine whether the proposed discharge will result in the lowering of water quality in the downstream ONRW, the following factors may be considered:

- Change in ambient concentrations predicted at the appropriate critical flow condition(s)
- Change in loadings (i.e., the new or expanded loadings compared to total existing loadings to the segment)
- Reduction in available assimilative capacity
- Nature, persistence and potential effects of the pollutant
- Potential for cumulative effects
- Degree of confidence in the various components of any modeling technique utilized (e.g., degree of confidence associated with the predicted effluent variability)

If a preliminary determination is made that the requirements above will be met, the antidegradation review findings must be documented and the applicable public participation activities must be initiated. If the review finds that the proposed discharge will result in the lowering of water quality in a downstream ONRW, the proposed discharge will be denied.

3.2 ANTIDEGRADATION REVIEW REQUIREMENT BY TYPE OF PERMIT

Antidegradation review requirements for regulated discharges that may degrade water quality vary according to 1) classification, existing uses, and condition of the receiving water; 2) the type of discharge and permit under which the discharge is conducted; and 3) the range and severity of projected impacts on the surface water. For example, antidegradation review requirements for discharges authorized under general permits differ from antidegradation review requirements for discharges regulated by individual permits. This section outlines the antidegradation review requirements for regulated discharges that may degrade water quality, including those with individual and general NPDES permits and those covered under Section 404 of the CWA (Dredge or Fill permits).

Compliance with the requirements of general permits and prompt attention to conditions that might result in water quality degradation will help ensure that discharges authorized by general permits do not cause violations of WQS. Moreover, some new or expanded discharges formerly authorized by a general permit may not be eligible for such coverage in the future if NMED believes they could significantly degrade a surface water. In those cases, applicants will be required to seek coverage under an individual permit.

In order to implement New Mexico's antidegradation policy in an efficient manner, it is recommended that persons proposing individually-permitted discharges which might degrade water quality in a perennial water notify NMED before determining BWQ (see Chapter 4 of this appendix) or applying for a permit. Such an approach will help ensure that the antidegradation review proceeds smoothly, without delay, and that planned facilities will comply with applicable statutes and rules. Figure 3-1 summarizes the Tier 2 review process for individual NPDES permit reissuance and new or expanded NPDES permits. Figure 3-2 summarizes the review requirements for individual NPDES; NPDES Stormwater Permits; general NPDES permits; individual and nationwide Section 404 permits, and federal permits and licenses subject to Section 401 water quality certification.

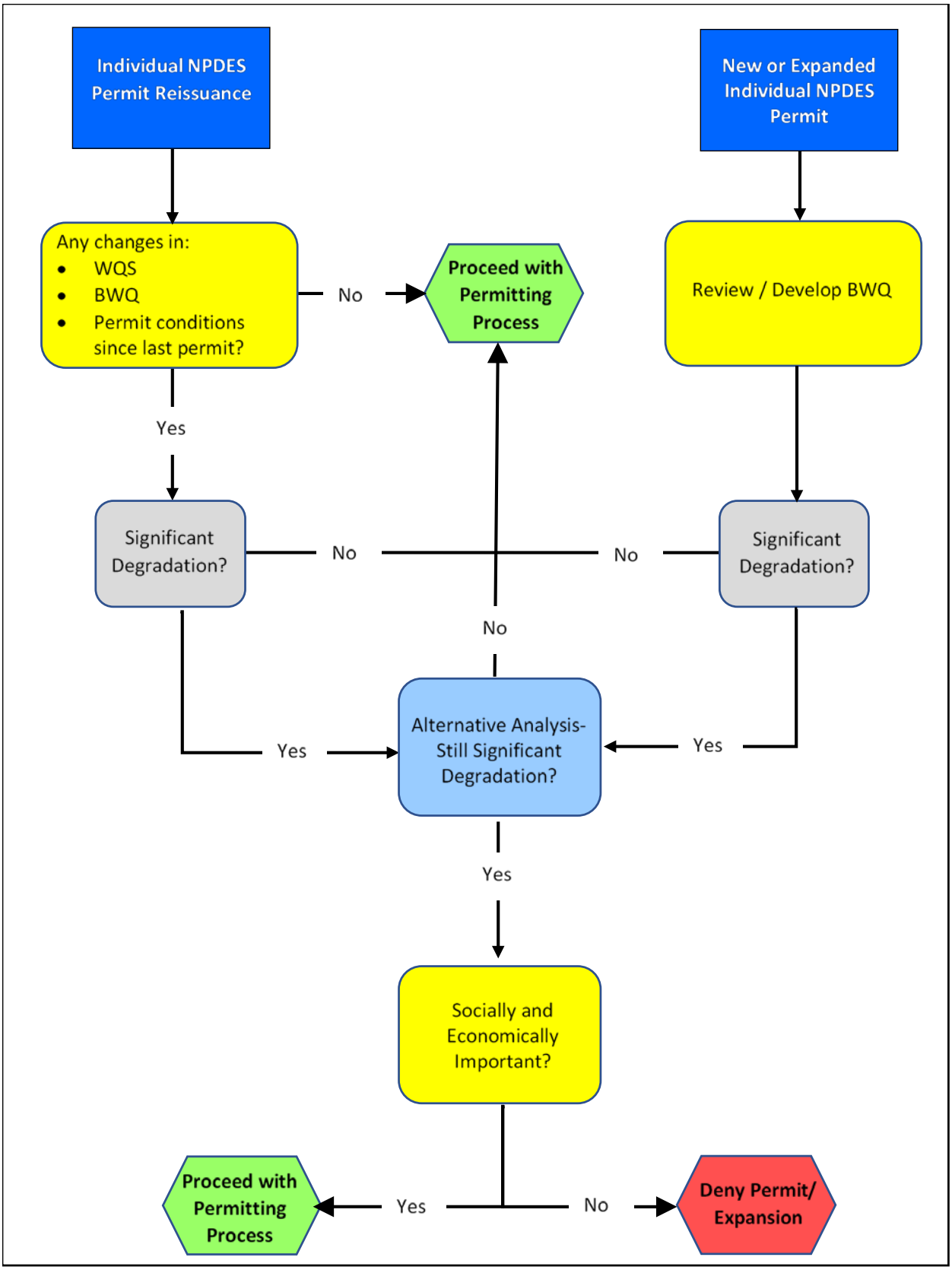


Figure 3-1. Tier 2 Antidegradation Review Process for Individual NPDES Permits

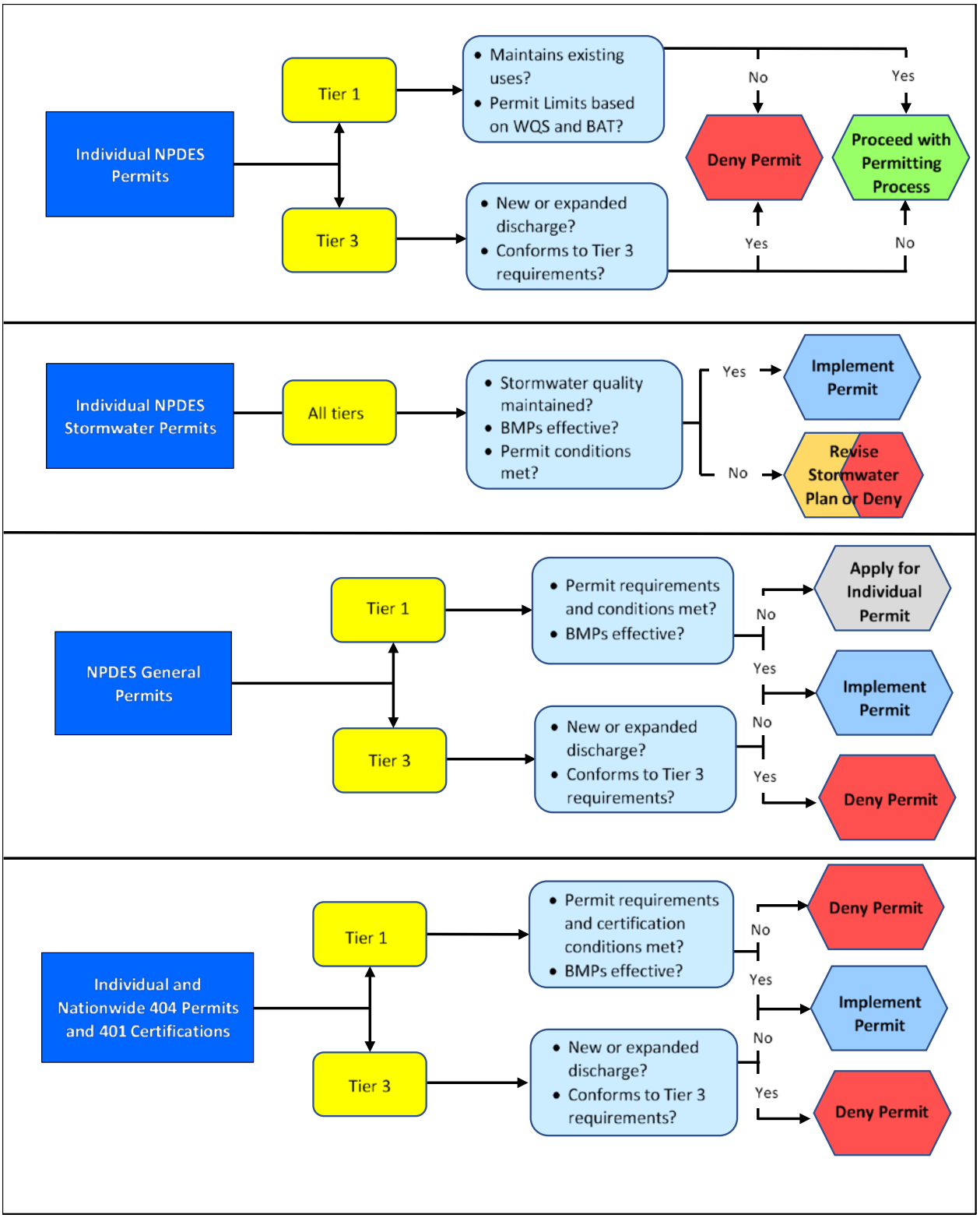


Figure 3-2. Antidegradation Review Requirements by Permit Type

3.3 INDIVIDUAL NPDES PERMITS

General Applicability

All point source discharges regulated by individual NPDES permits are subject to an antidegradation review at the time of issuance, modification, or renewal of a permit. All NPDES permits must ensure that water quality is protected at the appropriate tier based on available water quality information; however, at a minimum, the level of water quality necessary to maintain existing uses must be maintained and protected.

Reasonable Potential for Minor POTWs

Facilities less than 0.1 million gallons per day (MGD) are not required to sample or report any toxic substances on their NPDES permit applications, since studies indicated they have "no reasonable potential" to discharge toxic substances in amounts that would violate state WQS. Facilities greater than 0.1 MGD, but less than 1 MGD report some toxic substances that are present in facility discharges of that size.

Supporting information for this decision was published by EPA as "Evaluation of the Presence of Priority Pollutants in the Discharges of Minor POTW's," June 1996, and was sent to all state NPDES coordinators by EPA Headquarters. In this study, EPA collected and evaluated data on the types and quantities of toxic pollutants discharged by minor POTWs of varying sizes from less than 0.1 MGD to just under 1 MGD. The Study consisted of a query of the EPA Permit Compliance System (PCS) database from 1990 to 1996, an evaluation of minor POTW data provided by the State agencies, and on-site monitoring for selected toxics at 86 minor facilities across the nation.

Therefore, in the cases of facilities under 0.1 MGD, these facilities have already been assessed as having no reasonable potential to discharge toxic substances in toxic amounts. Additional historical records may provide information to assess reasonable potential.

Overview of the Antidegradation Review Procedure

The antidegradation review for individual NPDES permits will be based upon the assigned protection tier, the existing uses of the segment, applicable WQS, flow regime of the receiving water, pollutants of concern associated with the discharge, projected impacts on the receiving water, cumulative impacts from other pollutant sources, and the significance of any degradation that might occur as a result of the discharge.

All applicants will be required to identify pollutants reasonably expected to be in the discharge, estimate flow rates, and characterize pollutant concentrations and/or mass pollutant loads, as specified by NMED. In addition, applicants for new and expanded discharges to perennial waters under an individual permit are required to collect and submit existing or new information on BWQ needed to analyze the impact(s) of the discharge to a perennial water if ambient water quality data are not available. For the purpose of this analysis, expanded means an increase in design flow of the facility. In many cases, NMED's current water quality monitoring (conducted on a rotating basis in watersheds across the state) will provide applicable baseline data for use in these evaluations; however, for certain cases, the applicant may need to generate additional data for consideration in the antidegradation analysis if there are atypical pollutants of concern that are not normally monitored by NMED. For intermittent streams, the applicant

may choose to collect and submit water quality data for BWQ, which will help to evaluate appropriate and protective limits that may not be end-of-pipe requirements.

If feasible, it is recommended that an applicant discharging to a perennial water meet with NMED in a pre-application conference at least one year prior to individual NPDES permit issuance because of the substantial information requirements associated with development of effluent limits and, if necessary, a comprehensive Tier 2 antidegradation review.

Permit Limits and Antidegradation Requirements for Individual Permits

During the permit development process, EPA Region 6 will coordinate with NMED, who will evaluate existing water quality using both internal and applicant-supplied data, identify designated uses of the receiving water and analyze the impacts of the discharge as well as cumulative discharges that might affect the assimilative capacity of the receiving surface water for relevant pollutants of concern. Individual permit limits for discharges to perennial waters will be based upon applicable effluent guidelines, the characteristics of the discharge, and analyses designed to ensure that no significant degradation of the receiving water occurs. Permit limits for discharges to ephemeral, intermittent, and effluent dependent waters will be based on the WQS and EPA effluent guidelines and other technology-based requirements (e.g., secondary treatment requirements, BAT, MEP). Regardless of hydrology, all permit limits must ensure that existing uses are maintained and protected. NMED will use its authority under Section 401 of the Clean Water Act to conditionally certify federal permits that authorize discharges to Waters of the United States where the antidegradation analysis shows that stricter water quality controls are needed.

Proposed new or expanded discharges that may significantly degrade waters protected at the Tier 2 level must undergo a comprehensive antidegradation review to determine whether less degrading or non-degrading alternatives exist and whether significant degradation is necessary to accommodate important economic or social development in the area where the surface water is located. As it pertains to implementation of New Mexico's antidegradation policy, significant degradation is defined as the consumption of 10% or more of assimilative capacity of the receiving water for any pollutant of concern associated with the discharge during critical flow (e.g., 4Q3) conditions or any consumption of assimilative capacity that exceeds a cumulative cap of 50% of available assimilative capacity.

Early notification and consultation between the applicant, EPA, and NMED will help ensure that the NPDES permitting process proceeds efficiently. The following steps outline the general procedure for processing an NPDES permit:

- Applicant notifies NMED and EPA Region 6 of intent to apply for or renew permit coverage
- EPA determines eligibility for general permit or individual permit coverage
- Applicant consults with NMED on BWQ and available assimilative capacity in the receiving waterbody.
- NMED conducts antidegradation review and drafts a letter to document BWQ and available assimilative capacity; determination of minimal/significant degradation; and if a comprehensive Tier 2 antidegradation review is required. The letter is mailed to EPA and the permittee.
- If required, undergo comprehensive Tier 2 antidegradation review (alternatives analysis, economic/social documentation) – see Chapters 6 & 7 of this appendix.
- If significant degradation is deemed necessary based on the comprehensive Tier 2 review, conduct public participation and intergovernmental coordination consistent with Chapter 8 of this appendix.

- Applicant applies for permit after consultation with NMED.
- EPA (in consultation with NMED) develops draft permit limits based on effluent guidelines, applicable WQS, BWQ (if required), and antidegradation requirements.
- NPDES permitting process/comment period addresses both public notice requirements for antidegradation review and NPDES permitting.
- NMED prepares a Section 401 Water Quality Certification.
- Final permit drafted and issued.

Applicants seeking individual permit coverage for new or expanded discharges to a perennial surface water will be required to provide or collect BWQ information on pollutants of concern (e.g., pH, metals), if that information is not available (see Chapter 4). Data collection may be required depending on the availability of water quality data, nature of the proposed discharge, and the pollutants reasonably expected in the discharge.

Comprehensive Tier 2 Antidegradation Review Procedure for New or Expanded Discharges to Perennial Waters Requiring an Individual NPDES Permit

Degradation under Tier 2 will be deemed significant if the new or expanded discharge requiring an individual NPDES permit results in a reduction of available assimilative capacity (the difference between the BWQ and the applicable water quality criterion) of 10% or more at the defined critical flow condition(s) for the pollutant(s) of concern or any consumption of assimilative capacity that exceeds a cumulative cap of 50% of available assimilative capacity for the pollutant(s) of concern. Significant degradation will be determined on a pollutant-by-pollutant basis.

It should be noted that pollutants of concern for Tier 2 antidegradation reviews include those pollutants reasonably expected to be present in the discharge for which a numeric water quality criterion exists. If multiple water quality criteria apply, assimilative capacity will be calculated using the most stringent applicable WQS.

If a determination is made that significant degradation will occur, NMED will determine whether significant degradation is ***necessary*** by evaluating whether reasonable and cost-effective, less degrading or non-degrading alternatives to the proposed new or expanding discharge exist. The applicant will be responsible for conducting an alternatives analysis as described in this guidance. NMED will evaluate the alternatives analysis submitted by an applicant for consistency with the requirements outlined in Chapter 6. The alternatives analysis must provide substantive information on all reasonable, cost effective, less degrading or non-degrading alternative. Alternatives may include:

- Pollution prevention measures
- Reduction in scale of project
- Water reuse
- Treatment process changes
- Innovative treatment technology or technologies
- Advanced treatment technology or technologies
- Seasonal or controlled discharge options to avoid critical flow periods
- Improved operation and maintenance of existing treatment systems
- Alternative discharge locations, including subsurface discharges
- Zero discharge alternatives

As a rule of thumb, NMED will consider non-degrading or less degrading pollution control alternatives with costs that are less than 110 percent of the base costs of the pollution control measures associated with the proposed discharge to be cost-effective and reasonable (see Chapter 6.4 of this appendix).

If it is determined that reasonable, cost-effective, less degrading or non-degrading alternatives to the proposed discharge exist, the project design must be revised accordingly. In general, if such alternative(s) exist, the alternative or combination of alternatives that result in the least degradation must be implemented. If the regulated entity does not agree to adopt such reasonable and cost-effective alternatives, the alternatives analysis findings will be documented and the discharge will not be allowed. If significant degradation would occur even after application of reasonable less degrading or non-degrading alternatives, a determination must be made as to whether the proposed discharge is necessary to accommodate important economic or social development in the area in which the waters are located. NMED will evaluate the social and economic documentation for consistency with the requirements outlined in Chapter 7.

If the proposed discharge is determined to have social or economic importance in the area where the surface water is located, the basis for that preliminary determination will be documented and the Tier 2 review will continue. If significant degradation is proposed, the applicant also must show that the highest requirements for new and existing point source discharges are achieved, that all cost-effective and reasonable best management practices for non-point source pollution control are identified and effectively implemented and that Tier 1 protection is provided.

Tier 2 reviews include the public participation provisions outlined in Chapter 8. Once the intergovernmental coordination and public participation requirements are satisfied, NMED will make a final determination concerning the social or economic importance of the proposed discharge. All key determinations, including determinations to prohibit the discharge, must be documented and made a part of the public record (40 CFR 131.12 (b)).

3.4 INDIVIDUAL NPDES STORMWATER PERMITS

Urban areas with populations greater than 100,000 based on the 1990 census were considered Phase I Municipal Separate Storm Sewer Systems (MS4) communities and were required to apply for an individual NPDES stormwater permit. Urban areas as defined in the 2000 and subsequent census surveys every 10 years are considered Phase II MS4 communities. Stormwater discharges from Phase II MS4s are authorized by individual or general NPDES stormwater permits. However, neither Phase I nor Phase II MS4s authorized under individual stormwater permits are required to meet the same antidegradation requirements that apply to other individual NPDES permits outlined above.

In addition to MS4s, other entities can be required to obtain an individual NPDES stormwater permit by EPA on a case by case basis.

Overview of the Antidegradation Review for Individual Stormwater Permits

Antidegradation reviews for individual NPDES stormwater permits will be based on an adaptive management approach. This approach may include routine monitoring of stormwater quality at representative outfalls to adequately characterize stormwater discharges. The permittee will then evaluate, through effectiveness monitoring, whether storm water quality is being maintained, improving, or degrading and whether Best Management Practices (BMPs) identified in the permittee's stormwater pollution prevention plan are effective at controlling the discharge of pollutants. Future antidegradation

review of individual NPDES stormwater permits will consist of an analysis of the effectiveness of the BMPs and compliance with the requirements of the stormwater permit.

3.5 GENERAL NPDES PERMITS

A number of discharges to surface waters are authorized under general NPDES permits. These include stormwater runoff from municipalities required to comply with the Phase II MS4 stormwater permit, industrial activities covered by the stormwater program (Multi Sector General Permits), stormwater from construction sites one acre or larger (Construction General Permits), pesticide applications in or adjacent to surface waters (Pesticide General Permit), and concentrated animal feeding operations (CAFOs).

All NPDES general permits require preparation of a stormwater pollution prevention plan (SWPPP) that includes identification and control of all pollutants associated with the activities to minimize impacts to water quality. The permits also include requirements to implement site-specific interim and permanent BMPs and/or other controls to reduce (or eliminate) pollutant loading to minimize impacts to water quality. BMPs are designed to prevent to the maximum extent practicable an increase in pollutant load to the water body. BMPs also include measures to reduce flow velocity to assure that applicable water quality standards, including the antidegradation policy, are met. Compliance with the terms and conditions of the general permits is required to maintain authorization to discharge under the general permit. Discharges covered by a general permit that do not comply with general permit conditions or antidegradation requirements will be required to seek coverage under an individual permit.

Overview of the Antidegradation Review for General Permits

Regulated discharges authorized by general permits are not required to undergo a Tier 2 antidegradation review as part of the permitting process. However, new and reissued general permits must be evaluated to consider the potential for significant degradation as a result of the permitted discharges.

Discharges covered by general permits are transient or essentially non-existent (e.g., “no discharge”) with temporary or short-term impacts. Further, dischargers seeking coverage under a general permit are required in their SWPPP to identify pollutants on a pollutant-by-pollutant basis and to design and implement controls to minimize impacts to water quality. As a result, discharges that comply with general permits are not likely to cause significant degradation of water quality. In addition, activities covered under general permits (e.g., construction, industries, municipalities, dairies, feedlots, etc.) are considered to have social and economic importance to New Mexico. Therefore, antidegradation review for general permits will be based on whether or not the permit conditions are met and if the BMPs are effective at limiting (or eliminating) pollutant loading to minimize water quality impacts.

3.6 SECTION 404 PERMITS

Section 404 of the CWA regulates the placement of dredged or fill material into the “waters of the United States.” The U.S. Army Corps of Engineers (Corps) administers the permit program dealing with these discharges (e.g., wetland fills, in-stream sand/gravel work, etc.), in cooperation with the EPA and in consultation with other public agencies. Individual permits are issued for discharges with significant impacts. Discharges covered under Section 404 permits include any activity that results in the placement of dredged or fill material within the ordinary high-water mark of the waters of the U.S. or within wetlands recognized as waters of the U.S.

Overview of the Antidegradation Review for Regional or Nationwide Permits under Section 404 of the CWA

Antidegradation reviews involving the placement of dredged or fill material will be performed via the water quality certification process under Section 401 of the CWA. New Mexico manages its Section 401 water quality certification program to ensure that discharges resulting in the placement of dredged or fill material into surface waters do not cause water quality impairments or significant degradation of surface waters. New Mexico certifies general Section 404 permits ("regional" permits issued by the Albuquerque district of the Corps, and "nationwide" permits issued at the national level) in advance of individual projects that will be covered by the permits. New Mexico denied certification of the 2017 nationwide permits for projects in ONRWs, except for projects covered by Nationwide Permit 27 (for "Aquatic Habitat Restoration, Enhancement, and Establishment Activities"). Pursuant to Section 404, the Corps requires dischargers to obtain specific authorization from the Corps before commencing a discharge under a nationwide or regional permit. A Corps notification requirement (Regional Condition 2b) coupled with a state Section 401 certification condition provides NMED the opportunity to review projects proposed for authorization under a nationwide permit and confirm their consistency with the existing Section 401 certification. This review process often results in improvements in project design and BMP selection and ensures compliance with the antidegradation policy.

For new nationwide Section 404 permits, new regional Section 404 permits, or projects covered by existing Section 404 permits that have not yet received Section 401 certification (as of 2020, projects located in ONRWs and not covered by Nationwide Permit 27), NMED considers developing new Section 401 certifications. Based on this review, NMED may make one of three decisions: 1) grant the certification, 2) grant the certification with conditions, or 3) deny the certification.

NMED's Surface Water Quality Bureau (SWQB) will use the Section 401 certification process to evaluate whether a discharge will cause significant degradation to water quality. Pollutant loads from dredge or fill projects regulated under Section 404 of the CWA are often difficult or impossible to quantify in the same manner as practiced in NPDES permits. Dredge or Fill permits are often used for temporary construction measures in or near a watercourse that may result in disturbance or deposition of sediments in the water. The primary tool for limiting the discharge of pollutants (e.g., sediment and contaminated sediment) from these activities is through certification conditions mandating the installation and operation of BMPs that prevent pollutant transport to a watercourse and thereby degradation. The SWQB reviews dredge or fill projects pursuant to the State's water quality certification procedures as described under 20.6.2.2002 NMAC and Section 401of the CWA. To protect and maintain water quality, the SWQB has long employed a strategy of requiring the implementation of BMPs that are designed to prevent to the maximum extent possible the discharge of pollutants to a surface water.

Under the BMP-based approach adopted by New Mexico, regulated discharges that qualify for coverage under the Corps regional or nationwide Section 404 permits that have been certified by the state pursuant to Section 401 of the CWA will not be required to undergo a formal antidegradation review at the time of submitting a Preconstruction Notification and receiving authorization to discharge under the nationwide permit. Antidegradation requirements will be deemed to be met if all appropriate and reasonable BMPs related to erosion and sediment control, project stabilization, and prevention of water quality degradation (e.g., preserving vegetation, stream bank stability, and basic drainage hydrology) are applied and maintained. Applicants desiring to fulfill antidegradation review requirements under this approach will be responsible for ensuring that nationwide permit requirements and relevant water quality certification conditions are met.

Regulated discharges that may degrade waters protected at the **Tier 3** level must comply with the antidegradation requirements applicable to that protection level (i.e., only temporary impacts are allowed as authorized under procedures laid out in 20.6.4.8(A)(3) and 20.6.4.8(A)(4) NMAC) before a certification will be granted under Section 401 of the CWA. Any discharge authorized under an individual or nationwide permit (with the exception of Nationwide Permit 27) under Section 404 of the CWA currently requires an individual certification if it will discharge to an ONRW to ensure that impacts will be temporary.

NMED reserves the right to make case-specific determinations regarding the implementation of this approach during the Section 404 permitting or Section 401 water quality certification processes, which must be completed prior to the commencement of any discharges that result in the placement of dredged or fill material into New Mexico surface waters.

Impacts to Downstream or Adjacent Waters

It is important to note that where a discharge covered by a regional or nationwide general permit under Section 404 of the CWA, the permit only applies to the site of the fill and does not apply to activities or conditions downstream of or adjacent to the site of the fill.

Certain nationwide and regional permits require individual certification by the State of New Mexico in accordance with Section 401 of the CWA. During that individual certification process, NMED will evaluate any potential impacts to downstream waters and incorporate certification requirements to ensure compliance with all aspects of the antidegradation rule.

Overview of the Antidegradation Review for Individual Permits Under Section 404 of the CWA

The decision-making process for individual Section 404 permits is contained in the Section 404(b)(1) guidelines and contains all of the required elements for a Tier 1 and Tier 2 antidegradation review. (40 CFR Part 230). Prior to issuing a permit under the Section 404(b)(1) guidelines, the Corps must: 1) make a determination that the proposed discharges are unavoidable (i.e., necessary); 2) examine alternatives to the proposed discharge and authorize only the least damaging practicable alternative; and 3) require mitigation for all impacts associated with the discharge. A Section 404(b)(1) findings document is produced as a result of this procedure and is the basis for the permit decision. Public participation is also provided for in this process. Because the Section 404(b)(1) guidelines meet the requirements of a Tier 1 and Tier 2 antidegradation review, NMED will not conduct a separate review for the proposed discharge. Tier 1 and Tier 2 antidegradation review will be met through Section 401 certification of individual Section 404 permits and will rely upon the information contained in the Section 404(b)(1) findings document. Any discharge to a Tier 3 water authorized under an individual or nationwide permit under Section 404 (with the exception of Nationwide Permit 27) currently requires an individual Section 401 certification.

4 Determining Baseline Water Quality

Existing – or Baseline Water Quality (BWQ) – provides the reference against which predicted degradation associated with a regulated discharge is measured. This section describes how BWQ is characterized through:

- Establishment of BWQ information for perennial surface waters using existing water quality data.
- Approaches which consider the size and potential impacts of the proposed discharge when determining data needs for BWQ characterization and antidegradation review.
- Cooperative action by both NMED and the applicant to generate BWQ information where few or no data exist.

4.1 SUMMARY OF APPROACH

BWQ is used to evaluate an activity or discharge and determine whether it will degrade or lower water quality. Only an activity or discharge that might cause degradation is subject to a Tier 2 antidegradation evaluation. This evaluation is performed for each parameter or pollutant of concern for which the surface water is afforded Tier 2 protection.

In general, BWQ for perennial waters will be based upon existing data collected under NMED monitoring and assessment programs. Evaluations of BWQ will seek to gather information on pollutants of concern reasonably expected to be in discharges regulated by an individual NPDES permit, including suspended and settleable solids, sediment, nutrients, bacteria, biological oxygen demand, and metals. Information about other pollutants of concern will be handled on a case by case basis.

Where no, or few, data exist, NMED will advise the applicant on what data are needed and provide guidance to the applicant on how to collect and report the needed information to NMED. For perennial waters, the priority approach for evaluating BWQ is to use existing water quality data where available. Where adequate data are not available, the second priority approach is to collect BWQ data. Note that due to the lack of flow on intermittent, ephemeral, and effluent dependent, these types of surface waters will be subject to Tier 1 protection levels and appropriate water quality-based effluent limits designed to achieve applicable water quality standards. If ambient water quality information is available for an intermittent water, BWQ will be determined and Tier 2 requirements applied to the waterbody. Therefore, applicants proposing discharges to these surface waters will not be required to determine BWQ.

The regulated entity for a new or expanded discharge to a perennial water that will be regulated by an individual permit generally will be required to provide BWQ data for pollutants of concern that are reasonably expected to be discharged to help NMED determine BWQ, existing uses, and the applicable tier. **The regulated entity is advised to contact NMED prior to initiating an evaluation of BWQ to seek guidance and concurrence regarding the pollutants to be evaluated and the proposed sampling protocols.** This initial consultation may also be used by regulated entities to evaluate the availability of existing data that may be used as a supplement to, or in lieu of, new BWQ data.

Once BWQ is established for a surface water, it is the yardstick against which degradation is measured during all future antidegradation reviews for that surface water unless BWQ is updated by NMED to reflect changes in water quality. Antidegradation policy generally does not allow a lowering of BWQ. However, certain circumstances may allow for re-evaluation of BWQ. For example, if it is shown that there was an

error in determining BWQ, then BWQ can be re-evaluated. Likewise, if water quality has improved, allowing for additional available assimilative capacity, then a request for re-evaluation of BWQ will be considered by NMED.

Table 4-1 shows the minimum BWQ information required, by size of discharge (design flow in million gallons per day), before permit development. Data collection for other pollutants may be required depending on the nature of the proposed discharge and the pollutants reasonably expected in the discharge. The BWQ requirements will be based on the surface water quality upstream of the facility.

Table 4-1. Minimum BWQ Information for Dischargers

Parameter/Pollutant	All Dischargers	Discharges >0.1 MGD	Discharges > 1.0 MGD
Flow	Y	Y	Y
Temperature	Y	Y	Y
BOD5/CBOD5/DO	Y	Y	Y
E. coli	Y	Y	Y
Total Suspended Solids	Y	Y	Y
pH	Y	Y	Y
Total Ammonia		Y	Y
Total Residual Chlorine		Y	Y
Total Nitrogen		Y	Y
Total Phosphorus		Y	Y
Total Dissolved Solids		Y	Y
Aluminum, either dissolved or TR			Y
Antimony, dissolved			Y
Arsenic, dissolved			Y
Beryllium, dissolved			Y
Barium, dissolved			Y
Boron, dissolved			Y
Cadmium, dissolved			Y
Chromium, dissolved[1]			Y
Cobalt, dissolved			
Copper, dissolved			Y
Cyanide, TR			
Lead, dissolved			Y
Manganese, dissolved			

[1] Upon consultation, NMED may require speciation of chromium into chromium III and chromium VI.

Parameter/Pollutant	All Dischargers	Discharges >0.1 MGD	Discharges > 1.0 MGD
Mercury [2]			Y
Molybdenum, either dissolved or TR			
Nickel, dissolved			Y
Selenium, either dissolved or TR			Y
Silver, dissolved			Y
Thallium, dissolved			Y
Uranium, dissolved			Y
Vanadium, dissolved			Y
Zinc, dissolved			Y
Hardness, dissolved – must be taken concurrently with metals sampling.			Y
Other constituents (i.e. organics, PCBs, or other applicable pollutants) based on consultation, type of facility	Y	Y	Y

4.2 BASELINE WATER QUALITY EVALUATION PROCEDURES

As needed, BWQ will be established if no BWQ characterization is available or if no information is available for a pollutant of concern reasonably expected to be discharged into the surface water. Data used for a BWQ characterization must meet the following criteria: 1) collected in accordance with an approved quality assurance project plan (QAPP); and 2) collected using specified sample collection and analysis protocols (SOP, SAP, etc.).

Given the complexity of the issue, BWQ characterizations may take some time to complete. It is recommended that regulated entities submit their BWQ monitoring plan and QAPP well in advance of any planned activities or permit application submittals, to facilitate and streamline the permitting process. In addition, environmental groups, trade organizations, the general public, and other governmental agencies may elect to generate BWQ data with the prior approval of NMED and under appropriate, documented quality assurance / quality control (QA/QC) procedures. The objective of this effort is to generate a reasonable, credible, and scientifically defensible characterization of existing water quality for antidegradation reviews.

During data generation projects by regulated entities or third parties, NMED may conduct field, laboratory, or QA/QC audits to verify that data generators are adhering to established sampling protocols, and may split samples for independent analysis. **Data generators that proceed without agency**

[2] Upon consultation, NMED may require speciation of total mercury or dissolved mercury. Methylmercury analysis may also be required.

notification and concurrence risk rejection of the data and significant delays in the permitting process. Potential generators of BWQ data are also encouraged to notify other regulated entities and stakeholders in the water quality segment or watershed of their intent to generate BWQ data. Stakeholder cooperation in the BWQ evaluation process may allow sharing of the cost of data generation and avoidance of conflict in subsequent permitting actions.

4.3 BWQ SAMPLING LOCATION

For new or expanded discharges into a perennial water where there are no existing water quality data on the surface water (i.e., where new data must be collected for evaluation of BWQ), the BWQ sampling location generally will be immediately upstream of the proposed discharge location. Determinations regarding BWQ characterization and accommodation of variations caused by seasonal impacts, water level fluctuations, or other factors will be made by NMED. Information submitted by permittees will be considered on a case-by-case basis.

Where there is adequate, existing water quality data from multiple sampling sites on a surface water, these stations can become the BWQ stations from which a composite BWQ characterization can be developed. Alternatively, NMED may choose one existing monitoring site as the BWQ station from which to characterize baseline water quality. NMED may request additional monitoring at the site if the existing data are insufficient, e.g., where no information has been collected on pollutants of concern reasonably expected in the proposed discharge. Applicants also may be required to collect BWQ data after the permit is issued to develop a BWQ profile during build-out of the activity's discharge capacity.

Sampling and Analysis Protocol

In general, BWQ will be established through existing monitoring and assessment programs sponsored or approved by NMED. NMED will consider the use of older data on a case-by-case basis, as deemed appropriate, if such data is representative of BWQ conditions. In cases where significant changes have occurred in the watershed, it may be appropriate to use a shorter period of record. The minimum elements of an acceptable BWQ monitoring plan include the collection of at least four samples (one sample per quarter) over a minimum one-year period. Data generators may sample more frequently than specified, but are expected to provide the results of all monitoring. Only NMED-approved monitoring results will be used in the establishment of BWQ. Applicants are advised to seek input from NMED prior to developing a BWQ sampling plan and/or collecting samples.

The sampling plan should address the following elements: experimental design of the sampling project; project goals and objectives; evaluation criteria for data results; background of the sampling project; identification of target conditions (including a discussion of whether any weather, seasonal variations, stream flow, lake level, or site access may affect the project); data quality objectives; types of samples scheduled for collection; sampling frequency; sampling period; sampling locations and rationale for site selection; and a list of field equipment (including tolerance range and any other specifications related to accuracy and precision).

Samples, containers, preservation techniques, holding times, and analysis should be conducted in accordance with *Guidelines Establishing Test Procedures and Analysis of Pollutants* at 40 CFR Part 136 and performed by a laboratory certified by the New Mexico Department of Health. The use of other validated analytical methodologies may be authorized where such use can be technically justified. Stream flow should be measured each time BWQ sampling is performed.

It is important to note that the BWQ pollutant concentrations derived from the data generated will be assumed to be the concentration present during the normal annual low-flow period. All stream samples should be taken when there is a measurable surface flow in the segment at the BWQ sampling location. If environmental conditions prevent achieving the minimum collection requirements, the sampling period should be extended until at least 4 samples are obtained. Acceptable methods for flow measurement include those described in the *Standard Operating Procedure for Stream Flow Measurement* (NMED/SWQB 2015) or at https://www.env.nm.gov/wp-content/uploads/2017/06/ SOP_7.0_Discharge _4-7-15.pdf, or in the U.S Geologic Survey manual *Techniques of Water Resources Investigations of the United States Geologic Survey* (Chapter A8, Book 3, "Discharge Measurements at Gauging Stations") or at https://pubs.water.usgs.gov/TWRI3A8/.

4.4 POLLUTANTS OF CONCERN

Pollutants of concern are those pollutants reasonably expected to be present in a discharge and may adversely affect the water quality of a receiving water body. Not every chemical found in the discharge nor every pollutant for which there are water quality criteria will be of concern. Pollutants that rise to the level of concern will vary by discharge—its quality as well as size—and location of that discharge (i.e., quality of the receiving water).

New or expanded dischargers regulated by an individual permit may be required to generate BWQ data for any pollutants of concern associated with the proposed discharge to a perennial water. In addition to the pollutants of concern, regulated entities may also be requested to provide water quality data for parameters necessary to determine the appropriate value range of water quality criteria (e.g., pH, temperature, hardness). The applicant may also be required to collect data pertaining to impairments in the receiving waterbody. Again, the importance of consultation between BWQ data generators and NMED staff prior to BWQ data generation cannot be overstated.

4.5 INTERPRETATION OF DATA AND ESTABLISHMENT OF BWQ

Generators of BWQ data are expected to provide documentation of their adherence to approved or established protocols and certification that the submitted information is accurate and complete. NMED will review available data and determine BWQ for surface waters on a pollutant-by-pollutant basis. Data generators should make every effort to use the most sensitive, practical analytical methods available. **The use of less sensitive analytical methods may cause rejection of the data set.**

In general, NMED will calculate the geometric mean of all credible data to determine BWQ for a particular pollutant, except *E. coli* bacteria for which the geometric mean will be calculated. For data sets that contain "not detected" or "less than" analytical results, BWQ will be considered to be the detection limit where the reported detection limit is less than or equal to the applicable water quality standard for the pollutant. If at least one data point is detected above the detection limit and the rest of the data points are reported as "less than", then all the data reported as "less than" will be counted as ½ the detection limit when calculating the geometric mean for the BWQ determination.

For data sets where the detection limit is greater than the applicable standard for a pollutant and the reported data are "not detected" or "less than", NMED may request additional data that is analyzed at an appropriate detection level. If additional data are not provided, NMED will use ½ the detection limit when calculating the geometric mean for the BWQ determination.

NMED will use the initial BWQ value established for a particular pollutant in a surface water to judge the impact of all subsequent proposals for discharges involving that pollutant. BWQ re-evaluations may be appropriate if the data used in the original determination is shown to be inaccurate or invalid or if the water quality of the segment is significantly improved when compared with the original BWQ determination. Affected stakeholders may submit a request to NMED for a BWQ re-evaluation under those circumstances. Sampling and analysis will follow the approach in Section 4.3 of this policy, including collection of a minimum of four data points for the re-evaluation.

For a waterbody to show significant improvement, NMED will evaluate old versus new data using the Relative Percent Difference (RPD) of the data. In perennial waterbodies, if the RPD indicates that the water has improved (with respect to specific analytes) according to the matrix listed below, a BWQ re-evaluation may be warranted. Other considerations for a re-evaluation of BWQ include sampling techniques, sample processing and transport, and laboratory analyses.

Table 4-1

Analyte Class (as noted in 20.6.4.900 NMAC)	**Relative Percent Difference (RPD) threshold for BWQ Re-evaluation**
Persistent/Bio-accumulative (HH-OO)	No re-evaluation – NMED will consider bio-accumulative pollutants on a case by case basis
All other analytes	≥20% improvement in water quality

5 Evaluating the Level of Degradation of Proposed Discharges

Antidegradation reviews are required for all regulated discharges that have the potential to degrade water quality in New Mexico. The review procedures described in this chapter do not apply to non-point sources of pollution (addressed in the Nonpoint Source Management Plan), discharges covered under Section 404 of the CWA (addressed through certification conditions and implementation of BMPs) or NPDES general permits (addressed through the implementation of benchmarks and BMPs). The antidegradation procedures vary by the tier level of protection and by the type of surface water. For pollutants with Tier 2 protection levels, the degradation evaluation determines whether or not significant degradation will occur – i.e., whether or not 10% or more of the available assimilative capacity for any pollutant of concern will be consumed as a result of the proposed discharge during critical flow (e.g., 4Q3) conditions or the cumulative cap of 50% of available assimilative capacity is exceeded. The level of degradation will be evaluated from BWQ conditions.

For Tier 3 protection levels, the degradation evaluation must determine that no degradation will occur as a result of the proposed discharge unless the impacts are temporary. As a general rule of thumb, temporary impacts are defined as impacts of less than six months duration.

5.1 Applicability of Degradation to the Various Protection Tiers

The concept of degradation is relatively simple: any discharge that results in a decline of water quality (as determined on a pollutant-by-pollutant basis). Degradation is not allowed to cause or contribute to impairments that result in the loss of existing uses (i.e., the Tier 1 threshold), and is not allowed at all in Outstanding New Mexico Waters (ONRWs) unless it is temporary (i.e., the Tier 3 threshold) as determined by NMED and approved according to 20.6.4.8 NMAC.

Significant degradation may be allowed in surface waters protected at the Tier 2 level if the applicant for a new or expanded discharge characterizes the effluent and BWQ, completes an alternative analysis, and provides social and economic supporting documentation. For Tier 2 reviews, determining BWQ, evaluating projected impacts, analyzing possible alternatives, and evaluating economic or social benefits, if applicable, must occur ***prior to*** issuing an individual NPDES permit. Therefore, it is recommended that an applicant discharging to a perennial water meet with NMED in a pre-application conference **at least one year prior** to the anticipated date of NPDES permit issuance.

Decisions regarding significant degradation of Tier 2 protection levels will only be made after the required alternatives analysis along with economic and social benefits justification have been completed, after technology-based and nonpoint source control requirements are met, and after the intergovernmental coordination and public participation provisions in Chapter 8 have been satisfied.

5.2 PROCEDURE FOR TIER 2 DEGRADATION EVALUATION

Tier 2 evaluation procedures vary by the type of surface water, as outlined below:

Discharges to Non-Perennial Waters

Many individual NPDES permit applicants will likely discharge to an ephemeral, intermittent, or effluent dependent water. Tier 2 degradation evaluation procedures do not apply to these discharges. Discharges to non-perennial waters will be required to meet applicable surface water quality standards and technology-based standards, e.g., best available technologies (BAT) at the "end-of-the-pipe" (i.e., Tier 1 degradation evaluation procedures).

In some limited cases, data may be available to determine BWQ in these non-perennial waters. If data are available and assessable and confirm a high-quality water, NMED would conduct a Tier 2 antidegradation review. Similar to perennial waters, no significant degradation of the Tier 2 pollutants would be allowed unless a comprehensive antidegradation review of reasonable alternatives and social and economic considerations supports a lowering of water quality.

Discharges to Perennial Waters

All other individually-permitted discharges to perennial waters must conduct an antidegradation review to determine whether or not significant degradation will occur, i.e., whether or not 10% or more of the available assimilative capacity for any pollutant of concern will be consumed as a result of the proposed discharge during critical flow (e.g., 4Q3) conditions or the cumulative cap of 50% of assimilative capacity is exceeded. The Tier 2 degradation review for new or expanded discharges is based on these characterizations:

- BWQ, as determined by data collected pursuant to Chapter 4
- The critical in-stream flow (e.g., 4Q3)
- The flow and pollutant loads resulting from the proposed discharge
- Projected changes in water quality that occur as a result of the proposed discharge

The results of the antidegradation review will be used to determine whether the proposed discharge will be subject to additional requirements as part of the permitting process, such as analyses of reasonable, cost-effective, less degrading or non-degrading alternatives and examination and justification of important economic and social costs and benefits (see Chapter 6 and Chapter 7, respectively).

Mixing Zones

If needed, a new or expanded facility who discharges to a perennial water may be evaluated for the applicability of a mixing zone analysis on a case by case basis.

5.3 CALCULATIONS TO DETERMINE SIGNIFICANCE OF DEGRADATION

At the Tier 2 protection levels, BWQ is better than the water quality standards for one or more pollutants. Therefore, no significant degradation from BWQ is allowed unless a comprehensive antidegradation review of reasonable alternatives and social and economic considerations supports a lowering of water quality. Degradation is generally assumed to be "significant" if a discharge consumes 10% or more of a surface water's assimilative capacity for any pollutant of

concern (other than bio-accumulative pollutants as defined by the human health-organism only (HH-OO) criteria at 20.6.4.900 NMAC) under critical flow conditions or the discharge consumes any percentage of the cumulative assimilative capacity beyond 50%.

To determine if a discharge will cause significant degradation, assimilative capacity must be calculated and then evaluated under critical flow conditions. The first step in this process is to calculate the assimilative capacity and significant degradation limit. The assimilative capacity of the waterbody for any pollutant of concern under review is the difference between *observed* BWQ and the most stringent applicable water quality criterion. Figure 5-1 provides a simplified visual representation of assimilative capacity for a given pollutant (Pollutant X). In this example, the most stringent applicable water quality criterion for Pollutant X is 10 mg/L and the *observed* BWQ measurement is 3 mg/L. In Figure 5-1, the assimilative capacity of Pollutant X is the difference between the water quality criterion and the BWQ, or 10 mg/L minus 3 mg/L, and equals 7 mg/L. The "significant degradation" limit is 10% of the assimilative capacity (7 mg/L) or 0.7 mg/L. Thus, a regulated discharge undergoing a Tier 2 review would be considered *de minimis* (i.e., no significant degradation) if it did not cause the water quality in the receiving surface water to exceed the BWQ (3 mg/L) plus the significant degradation limit (0.7 mg/L), or 3.7 mg/L for Pollutant X.

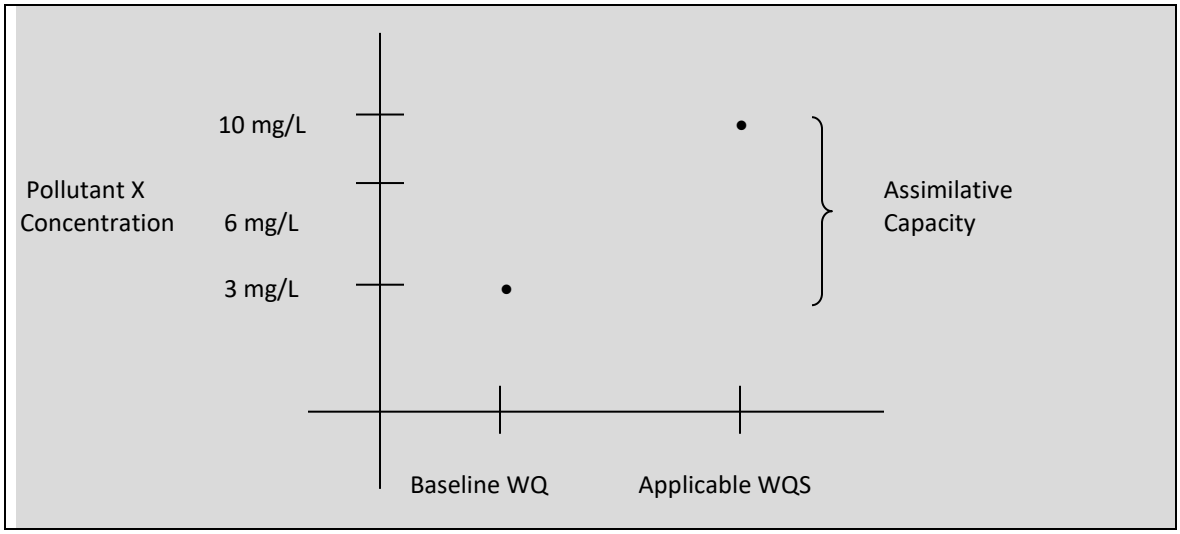


Figure 5-1. Simplified Representation of Assimilative Capacity

The second step to determine the significance of degradation is to evaluate the "significant" assimilative capacity concentration, identified in step one, under critical flow conditions. While NMED's antidegradation formula evaluates the assimilative capacity concentration similar to the example shown above in Figure 5-1, that resultant concentration is converted to a load using the receiving stream's critical flow and a conversion factor of 8.34. For example, the significant degradation concentration limit of 3.7 mg/L for Pollutant X in Figure 5-1 is converted to a loading capacity using the following formula:

$$Load\ Capacity\ \left(\frac{lbs}{day}\right) = concentration\left(\frac{mg}{L}\right) x\ flow\ (4Q3, million\ gallons\ per\ day)\ x\ 8.34$$

Consideration of Multiple Discharges – 50% Cumulative Cap

To address degradation associated with multiple regulated discharges to the same receiving water over time, NMED is establishing a separate significance threshold of a 50% cumulative cap on the consumption of assimilative capacity. This approach creates a "backstop" so that multiple regulated discharges to a water body over time which individually do not consume 10% of the assimilative capacity do not result in the consumption of the majority of the assimilative capacity without NMED ever conducting a comprehensive Tier 2 antidegradation review. NMED has established this significance threshold at 50% of the assimilative capacity when BWQ is characterized. This means that once 50% of the assimilative capacity is used in a surface water for a pollutant of concern, any further lowering of water quality is considered significant degradation. NMED will conduct a comprehensive Tier 2 antidegradation review for each lowering of water quality once the 50% cumulative cap is exceeded, regardless of the amount of assimilative capacity that would be used by the regulated discharge.

Critical Flow

The calculations noted above are to be executed under critical flow conditions for the pollutants of concern. For point source discharges, critical flow for all criteria/pollutants, except HH-OO, is the minimum four consecutive day flow that occurs with a frequency of once in three years (4Q3) in the receiving water. (20.6.4.11(B)(2) NMAC). Critical lake and reservoir water levels will be determined on a case-by-case basis.

Calculations for Tier 2 Pollutants

The calculation to determine if a discharge will result in significant degradation is a variation of the mass balance equation that is used to determine water quality-based effluent limits:

$$(Q_d)(C_d) + (Q_s)(C_s) = (Q_r)(C_r)$$

Where:

Q_d =discharge flow cfs
Q_s =stream flow (4Q3)
Q_r =resulting in-stream flow (downstream of discharge, or Q_s+Q_d)
C_d =discharge concentration,
C_s =concentration in stream

C_r = resultant in-stream concentration

Solve for C_d:

$$C_d = \frac{[C_r(Q_d + Q_s)] - [(C_s)(Q_s)]}{Q_d}$$

For purposes of Tier 2 antidegradation reviews, NMED solves for the discharge concentration that uses 10% of the assimilative capacity:

Where:

C_{bwq} = BWQ
C_r = resultant in-stream concentration = [(WQS - C_{bwq}) x 0.1 + C_{bwq}]

$$C_d = \frac{[((WQS - C_{bwq}) \times 0.1 + C_{bwq})(Q_d+Q_s)] - [(C_s)(Q_s)]}{Q_d}$$

The calculated discharge concentration (C_d) is compared with the proposed discharge concentration. If the calculated concentration is greater than the proposed concentration, then a determination of "no significant degradation" is found. If the level of degradation is estimated to be less than 10% of the assimilative capacity, and less than 50% of the cumulative cap (if applicable), *and* existing uses are maintained, the antidegradation review process is complete and the permitting process may proceed.

If the discharge is found to consume more than 10% of available assimilative capacity (calculated < proposed) or exceeds the 50% cumulative cap, a comprehensive Tier 2 review is required. The regulated discharge would be required to conduct an alternatives analysis (Chapter 6) and demonstrate "important economic or social development" (Chapter 7) if allowances are sought to further reduce assimilative capacity. If such demonstrations are made, the WQCC may allow consumption of additional assimilative capacity (degradation) as long as intergovernmental and public participation processes are followed and water quality standards are not violated.

6 Identifying and Evaluating Pollution Control Alternatives for Tier 2 Protection

A regulated entity proposing a new or expanded discharge requiring an individual NPDES permit that would significantly degrade water quality in a Tier 2 surface water (i.e., consume 10% or more of the assimilative capacity or exceed the cumulative cap of 50% for any pollutant of concern) is required to prepare an evaluation of alternatives to the proposed discharge. The evaluation must provide substantive information pertaining to the cost and environmental impacts associated with the proposed discharge and the alternatives evaluated. This chapter provides guidance on how to evaluate alternatives when an impacts analysis determines that significant degradation may occur.

The intent of the alternatives analysis is to identify cost-effective and reasonable *less degrading* or *non-degrading* approaches for reducing discharge-related impacts so they do not result in significant degradation of the receiving water.

6.1 Less Degrading and Non-degrading Pollution Control Measures

Under New Mexico's antidegradation implementation procedures, applicants are required to analyze these alternatives if their proposed discharge will cause significant degradation of higher quality (i.e., Tier 2) waters. Less degrading or non-degrading pollution control alternatives identified and evaluated during this process should be reliable, demonstrated processes or practices that can be reasonably expected to result in a defined range of treatment or pollutant removal.

Applications containing proposals for new or experimental methods will be required to append information regarding likely performance results and may be approved at the discretion of NMED with the understanding that if the proposed technology does not meet projected pollutant control targets the applicant must adopt conventional or other pollution control measures that meet state antidegradation requirements.

Pollution control alternatives that may be evaluated when a proposed discharge will result in significant degradation of the receiving water segments may include the following:

- Alternative methods of production or operation
- Pollution prevention and treatment process changes
- Recycling/reusing wastewater (i.e., closed loop systems)
- Holding/transport facilities for treatment/discharge elsewhere
- Groundwater recharge (i.e., soil-aquifer treatment, injection)
- 100% reuse
- Advanced or innovative biological/physical/chemical treatment
- Pollution prevention and process changes
- Improvements in the collection system
- Improved operation and maintenance of existing treatment system

- Seasonal or controlled discharges to avoid critical periods
- Alternative discharge locations, and associated water quality impacts at those locations
- Reduction in the scope of the proposed project

Applicants will be expected to address reasonable and cost-effective alternatives, or mix of alternatives, in their evaluations. NMED staff and the applicant will meet to discuss these and other issues early in the process. It is the responsibility of the applicant to screen for and propose a list of reasonable, cost-effective alternatives that will be evaluated in detail. NMED may require that additional alternatives be analyzed.

If the project results in significant degradation even after applying reasonable, cost-effective alternatives, the proposal must demonstrate 1) important social or economic development as outlined in Chapter 7; 2) the level of water quality necessary to protect existing uses is maintained (i.e., Tier 1 protection); 3) all cost-effective and reasonable BMPs for nonpoint source control are implemented; and 4) the highest statutory and regulatory requirements for all new and existing point sources are achieved (20.6.4.8(A)(2) NMAC).

6.2 IDENTIFYING COST COMPONENTS AND ASSESSING COSTS

An assessment of costs related to the alternatives summarized above is necessary to determine whether or not a prospective alternative pollution control measure is reasonable. General cost categories include:

- Capital costs
- Operating costs
- Other costs (one-time costs, savings, opportunity cost, salvage value)

In order to develop a standardized framework for projecting, evaluating, and comparing costs associated with various pollution control measures, applicants should use a "present worth" framework for generating and reporting cost information. Components of the present worth framework include:

$$P = C + O + [A * (P/A, d, n)] - S - L$$

Where:

P = Present worth,
C = Capital cost,
O = Other costs (expressed as dollars invested at the beginning of the project),
A = Annual operating cost,
d = Discount rate,
n = Useful life in years,
S = Present worth of salvage value of facilities,
L = Present worth of salvage value of land, and
$(P/A, d, n)$ = Equal series present worth factor, = $[(1 + d)^n -1] / [d (1+d)^n]$.

The present worth calculated for the alternative technologies depends on the right choice for the discount rate (d), and the useful life (n) of the equipment or facility. Recommended discount rates for New Mexico are provided by the New Mexico Water Infrastructure Finance Authority (WIFA). The useful life of the facility or equipment is based upon similar facilities or equipment handling similar wastes and flows and must be approved by NMED. Speculative costs for land, facilities,

etc., will not be allowed. For more information on the present worth calculation and other methods that may be used to assess costs, see Appendix A1, Direct Cost Comparison of Alternatives.

6.3 Evaluating Environmental Impacts Associated with Alternatives

Pollution control measures evaluated as alternatives to a proposed discharge may have environmental impacts that help define their overall value and/or desirability. Applicants are required to provide substantive information pertaining to both the cost and environmental impacts associated with pollution control alternatives evaluated for discharges that would significantly degrade Tier 2 level of protection. The information related to environmental impacts should include impacts on the natural environment (i.e., land, air, and water) resulting from implementation of the alternative. The types of impacts evaluated during this process may include:

- Sensitivity of stream uses
- Need for low-flow augmentation
- Sensitivity of groundwater uses in the area
- Potential to generate secondary water quality impacts (storm water, hydrology)
- System or technology reliability, potential for upsets/accidents
- Effect on endangered species
- Non-water quality environmental impacts
- Nature of pollutants discharged
- Dilution ratio for pollutants discharged
- Discharge timing and duration
- Siting of plant and collection facilities

Review of these impacts might be on a qualitative or quantitative basis, as appropriate. Non-water quality environmental impact analyses to be submitted by the applicant include estimations of the potential impact of the alternative(s) on odor, noise, energy consumption, air emissions, and solid waste generation. Odor and noise may be addressed qualitatively while other non-water quality impacts might need to be addressed quantitatively. The energy use, air emission, and solid waste generation impacts can be expressed as a percent increase/decrease as compared to the proposed discharge. Other factors that should be considered during the review include the technical, legal, and local considerations of the various alternatives examined. The schedule and the estimated time of completion of the project should also be provided for each alternative discussed.

6.4 Cost and Reasonableness Criteria for Alternatives Evaluation

In general, an alternative or suite of alternatives is considered to be cost-effective and reasonable if it is feasible and the cost is less than 110% of the *base costs* of pollution control measures for the proposed discharge in present worth costs. It should be noted that the 110% cost-effectiveness criterion is a general rule-of-thumb – if pollution control costs for alternatives that

would result in water quality benefits exceed the 110% cost threshold, those alternatives may be required if the water quality and environmental benefits outweigh the economic costs.

When calculating the cost of a proposed discharge and any less- or non-degrading alternatives, it is important to identify the base cost for required pollution control measures for any proposed discharge. The base cost for NPDES-permitted facilities is the cost of treatment to meet applicable water quality standards or the cost of meeting federal technology-based requirements, whichever is more stringent and legally applicable. The base cost for Section 404 dredge-and-fill permits (e.g., wetland fills, mining streambed fills) is the cost of pollution controls to meet minimum Section 404 permit and Section 401 water quality certification requirements.

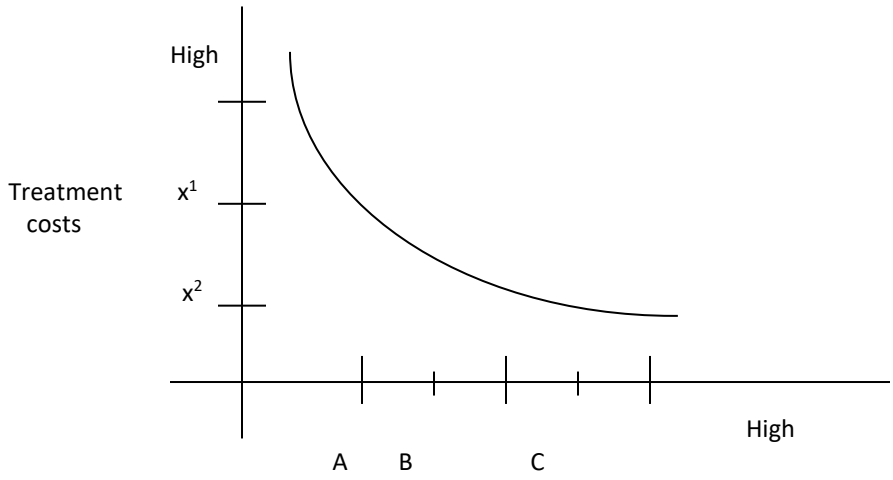
6.5 PROCEDURE FOR COMPARING COSTS OF VARIOUS ALTERNATIVES

In reviewing costs for a variety of discharge scenarios, three reference costs can be identified (see Figure 6-1):

- The cost of treatment that results in no discharges of any pollutants of concern (the "no-discharge" cost).
- The cost of treatment that produces an effluent that results in no significant degradation of the receiving water, i.e., that does not consume more than 10% of the available assimilative capacity for any pollutant of concern.
- The cost of treating an effluent to a quality that meets specific effluent/ BAT limits or water quality criteria for any/all pollutants of concern (i.e., the conceptual minimum Tier 1 requirement).

The base cost for comparing the reasonableness and cost-effectiveness of less degrading or non-degrading alternatives is the cost of producing an effluent that meets water quality standards or the cost of meeting federally-required effluent concentration limits or best available technology, whichever is more stringent (level C in Figure 6-1).

Applicants will be required to submit cost information to NMED for base pollution control measures as defined above and alternative pollution control measures that would result in no significant degradation (level B). NMED may request cost or other information regarding preventing degradation (level A). NMED will evaluate the limitations of the alternatives analysis and may request additional analyses or information, as needed, to make a determination.



A = The "no degradation" alternative
B = Activity modifications resulting in "no significant degradation," i.e., does not consume more than 10 percent of the available assimilative capacity for any other pollutant of concern (POC)
C = Activity modifications that achieve or maintain minimally required use-based water quality criteria or best available demonstrated control technology
x^1 = Costs for implementing the "no degradation" alternative
x^2 = Costs for less degrading alternative(s)

Figure 6-1. Comparison of Treatment Costs to Produce Effluents of Varying Quality

6.6 SUMMARY OF THE ALTERNATIVES ANALYSIS PROCESS

The preceding discussion describes the approach that will be followed by NMED for determining whether or not less- or non-degrading alternatives to the proposed new or expanded discharge will be required to prevent significant degradation of perennial surface water. The following steps summarize the alternatives analysis process and other relevant actions during comprehensive Tier 2 reviews:

- Based on characterizations of the new or expanded proposed discharge, BWQ, and projected impacts on the receiving water segment, NMED will determine whether or not the proposed discharge will significantly degrade water quality, i.e., consume more than 10% of the available assimilative capacity for any other pollutant of concern.
- If it is determined that significant degradation would likely occur due to the proposed discharge, an analysis of less degrading or non-degrading alternatives to the proposed discharge will be required.
- The applicant will be required to submit cost information for base pollution control measures associated with the proposed discharge, alternative pollution control measures that would result in no significant degradation, and for other less or non-degrading alternatives as appropriate.

- NMED will evaluate the proposed discharge, the less and non-degrading alternatives, and the costs and feasibility associated with each mix of options.
- NMED will approve the least degrading alternative – or mix of alternatives – that does not exceed the 110% base cost threshold (i.e., is cost-effective and reasonable).
- If the approved alternative (i.e., pollution control alternative or mix of alternatives) will not result in significant degradation of the receiving water segment, permitting of the discharge may proceed. If the approved alternative will still result in significant degradation of the receiving water, the applicant will be required to conduct an analysis of economic and social benefits so the WQCC can determine whether or not the discharge can be permitted.
- All water quality impacts in the alternatives analysis will be evaluated at the BWQ station and back-calculated to develop the upstream effluent limit (i.e., the degradation of proposed discharges including alternatives will be evaluated at the BWQ point, while permit limits and permit compliance will be developed and evaluated at the discharge point).

If the project results in significant degradation even after applying reasonable, cost-effective alternatives, in order to allow such degradation and lowering of water quality the proposal must demonstrate that the new or expanded discharge is important to economic and social development (as outlined in Chapter 7), protects existing uses (i.e., maintains Tier 1 protection), achieves the highest statutory and regulatory requirements for point sources, and implements cost-effective and reasonable BMPs for nonpoint source control (20.6.4.8(A)(2) NMAC). NMED encourages watershed planning to further protect surface water quality and CWA Section 319 grants are available for various groups to plan and implement on-the-ground improvement projects. In addition, Clean Water State Revolving Fund (CWSRF) loans are available for a wide range of wastewater or storm drainage projects that protect surface and ground water, including projects that control nonpoint source pollution.

7 Social and Economic Importance for Tier 2 Reviews

7.1 Regulatory Requirements for Social and Economic Analysis

As discussed in previous chapters, if an alternatives analysis has been conducted for a proposed new or expanded discharge to a Tier 2 protected water requiring an individual NPDES permit, and the least degrading, cost-effective alternative still results in significant degradation, an analysis of the social and economic importance of the discharge must be conducted. Under New Mexico's antidegradation policy, found at 20.6.4.8(A)(2) NMAC, the Commission may authorize a proposed discharge that would significantly lower the water quality of a Tier 2 water, if allowing lower water quality is necessary to accommodate important economic and social development in the area in which the surface water is located.

There are several steps in determining social and economic importance. First, the applicant conducts an analysis of the social and economic benefits/costs associated with the discharge. The applicant must document any social and economic benefits/costs associated with the proposed discharge and report them to NMED, including identifying and documenting general environmental justice issues in the area where the discharge will be located that may impact the benefits/costs analysis[3,4]. NMED then reviews the information and may require additional information and/or a more in-depth, substantial and widespread impact analysis if there is not enough information to make a decision or if the proposed discharge is complex. Additional information is included in Appendix A.3 and Appendix A.4. If enough information has been submitted, NMED will make a preliminary determination to deny or authorize the degradation. Finally, "after public comment and intergovernmental coordination, the WQCC analyzes all information and makes a final determination (20.6.4.8(A)(2) NMAC).

7.2 Role of the Applicant

The role of the applicant is to demonstrate the social and economic benefits of the proposed new or expanded discharge associated with allowing significant degradation of high-quality water. The report on social and economic benefits/costs (positive and negative) associated with the project is relatively simple and straightforward. NMED requires that up-to-date and accurate data are included in the report, and that estimates of job gains/losses, housing impacts, etc., be summarized completely and based on defensible estimates. Using the *Social and Economic Importance Worksheet*, Appendix A.2, the applicant must document how the proposed new or expanded discharge affects the social, economic, and environmental factors listed below.

Social, Economic, and Environmental Considerations

[3] For information on the EPA Region 6 EJ Action Plan, visit: https://www.epa.gov/environmentaljustice/region-6-new-mexico-ej-action-plan

[4] Environmental Justice Screening and Mapping Tool: https://www.epa.gov/ejscreen

Below are the **economic and social** benefits/costs most commonly associated with this socio-economic analysis:

- Creating, expanding or maintaining employment
- Reducing the unemployment rate
- Increasing median household income
- Reducing the number of households below the poverty line
- Increasing needed housing supply
- Increasing the community tax base
- Providing necessary public services (e.g., fire department, school, infrastructure)
- Correcting a public health, safety, or environmental problem
- Improving quality of life for residents in the area

Below are the **environmental** benefits or costs most commonly associated with this analysis:

- Promoting/impacting fishing, recreation, and tourism industries
- Enhancing/impacting threatened and endangered species
- Providing increased flood control and sediment trapping through maintaining or creating wetlands and riparian zones or impacting wetlands and riparian zones
- Reserving assimilative capacity for future industry and development or reserving no capacity for future discharges.

The applicant may choose or may be required to describe additional factors as needed to strengthen its Social and Economic Importance Analysis. Appendix A.4, *Other Economic and Environmental Considerations*, provides examples of other issues that might be helpful to address in developing an analysis. All information provided should be based upon the most current, available data.

7.3 ROLE OF NMED

Prior to issuance of any proposed new or expanded discharge permit that would significantly lower the water quality of a Tier 2 protected water, NMED will ensure that the proposed discharge is necessary to accommodate important economic or social development in the area in which the waters are located. NMED may also collect and analyze additional information to assess the market and non-market social and economic benefits and costs of the proposed discharge, including by soliciting public information and comment where appropriate or by accessing information available from the New Mexico Community Data Collaborative (http://www.nmcdcmaps.org/), the Distressed Communities Index (https://eig.org/dci), or EPA, including EJSCREEN (https://www.epa.gov/healthresearch/tools-support-environmental-justice). In making a preliminary decision, NMED will rely primarily on the demonstration made by the applicant. NMED will analyze all information and make a preliminary determination on the facts on a case-by-case basis.

If information available to NMED is not sufficient to make a preliminary determination regarding the socioeconomic importance of the proposed new or expanded discharge, NMED may require the project applicant to submit specific items of information needed to make a determination. NMED may also require use of quantitative models for large proposed discharge (e.g., major industrial wastewater treatment facility, large concentrated animal feeding operation, etc.).

Once the available information pertaining to the socioeconomic importance of the proposed new or expanded discharge has been reviewed by NMED, a preliminary determination to deny or authorize the degradation will be made. If the proposed discharge is determined to be necessary to accommodate important economic or social development in the area in which the affected waters are located, the substance and basis for that preliminary determination will be documented and the Tier 2 review will continue. NMED will make the preliminary determination available to the public and forward its preliminary determination to governmental agencies that may be impacted by the discharge.

Once the public participation and intergovernmental coordination requirements are satisfied, the WQCC will make a final determination concerning the social or economic importance of the proposed new or expanded discharge and whether to deny or authorize the discharge (20.6.4.8(A)(2) NMAC). All social and economic importance findings and other required findings, including determinations to deny issuance of a permit for a discharge, will be documented and made part of the public record.

8 Requirements for Intergovernmental Coordination and Public Participation

This chapter outlines public participation and intergovernmental coordination and review requirements. Antidegradation reviews for NPDES-permitted facilities will employ the public participation procedures that are available through the permitting process (e.g., draft permits, fact sheets, opportunities to comment, etc.). The NPDES permit fact sheet will include a discussion for the public of NMED's antidegradation review.

Once the intergovernmental coordination and public notice requirements outlined below are satisfied, NMED will make a final determination concerning the social or economic importance of the proposed new or expanded discharge in the area in which the affected receiving waters are located. All determinations, including determinations to prohibit the discharge, will be documented and made a part of the public record.

8.1 PUBLIC NOTIFICATION REQUIREMENTS

There are a number of opportunities for public participation in the review of new and increased discharges into Tier 1 waters. The WQCC adopts Total Maximum Daily Loads (TMDLs) with applicable wasteload allocations for point sources discharging to Tier 1 waters not meeting water quality objectives. This process includes public notice and comment. The EPA and Army Corps follow detailed procedures requiring public notice and comment when issuing NPDES and Section 404 dredge or fill permits. Finally, the NMED's Section 401 certifications can be appealed and a full hearing held before the WQCC.

Public notice and opportunity for public comment is also provided for all comprehensive Tier 2 reviews. NMED will publish notice and provide an opportunity to comment on the preliminary decision and statement of basis. The public comment period will be at least 30 days. Public notice and opportunity for comment may be combined with other public participation procedures, such as those related to NPDES permitting processes or intergovernmental coordination / review procedures. During the public comment period, any interested person may submit written comments and request a public hearing. A request for a public hearing must be in writing and must state the nature of the issues to be raised. If NMED determines that the request for public hearing raises issues of significant public interest within the scope of the antidegradation policy, the Department will hold a public hearing. The public hearing will be held in a location near the water affected by the discharge.

Discharges that may result in a significant degradation of water quality for Tier 2 pollutants may be approved by the WQCC, after full satisfaction of the intergovernmental coordination and public participation processes, provided that:

- The level of water quality necessary to protect existing uses is fully protected. Water quality shall be maintained and protected in all surface waters of the state (20.6.4.8(A)(1) NMAC).

- The highest statutory and regulatory requirements for new and existing point sources are achieved.
- All cost-effective and reasonable best management practices for non-point source pollution control are implemented.
- Allowing lower water quality is necessary to accommodate important economic or social development in the area where the surface water is located.
- Watershed-based planning as a further means to protect surface waters is encouraged.

All comprehensive Tier 2 findings will be documented by NMED and made part of the administrative record. Review documents – including evaluations of BWQ, existing uses, the level of review conducted, alternatives analyses, social/economic studies, impacts analyses, and any decisions or findings – will be made available to the public.

For activities that may impact Tier 3 waters, NMED will publish notice and provide a 30-day public comment period. After the comment period, NMED will provide a recommendation to the Commission. NMED will provide notice of activities approved by the WQCC pursuant to 20.6.4.8(A)(3)(a) NMAC and of activities conducted pursuant to 20.6.4.8(A)(4) NMAC by posting a brief description, location, and timeframe for such activities on a dedicated Department website.

8.2 OPPORTUNITIES FOR PUBLIC PARTICIPATION

Public participation in the implementation of New Mexico's water quality antidegradation policy can be broad or specific. Opportunities for broad participation include involvement in the triennial review of the water quality standards program (i.e., use designations, water quality criteria determinations, antidegradation implementation procedures) and participation in rule development relative to permitting processes. In addition, any interested party may nominate a water segment for protection at the Tier 3 level by following the procedure for consideration outlined under 20.6.4.9 NMAC (see Chapter 2). Finally, interested groups can conduct volunteer monitoring under an NMED-approved plan to support BWQ determinations.

Wherever possible, NMED will seek to integrate public participation regarding antidegradation reviews with existing NMED public participation procedures (e.g., NPDES permitting procedures).

8.3 INTERGOVERNMENTAL COORDINATION AND REVIEW

Intergovernmental coordination is required prior to approving a new or expanded discharge requiring an individual NPDES permit that would significantly degrade a surface water protected at the Tier 2 level. This requirement seeks to ensure that all relevant public entities at the local, state, and federal levels are aware of any proposal to significantly lower water quality and are provided with an opportunity to review, seek additional information, and comment on the proposal. The intergovernmental coordination and review process occurs prior to the issuance of any final determination on the social and/or economic importance of the proposed discharge, and may occur in tandem with public notice procedures outlined in the previous section. The time period afforded to commenting agencies will be consistent with the requirements for submission of public comments.

Intergovernmental coordination requirements will be satisfied by providing a written notice and request for comment to the appropriate agencies listed in Appendix A.5. Such notice will include summary information on the proposed new or expanded discharge, the receiving water segment, the BWQ of the receiving water segment, the tier designation, estimated impacts of the proposed discharge upon the receiving water, the alternatives reviewed, and the projected social or economic importance of the proposed discharge. In providing notice to these agencies, staff should note the importance of circulating the notice to local or regional constituents of the agencies involved so that NMED receives timely and complete responses from governmental entities that might have information regarding the proposal or might be affected by it.

8.4 APPEALS OF ANTIDEGRADATION REVIEW DECISIONS

Persons adversely affected by any final decision of the Department may appeal to the WQCC in accordance with the New Mexico Water Quality Act, NMSA 1978, Sections 74-6-1 to -17.

Appendix A.1
Direct Comparison of Alternatives

Direct cost comparisons of alternatives are typically performed on the basis of present worth calculations or calculations of uniform annual cost (if the useful life of each alternative is different), using an applicable interest (discount) rate. The present worth calculation is a well-established method for integrating the upfront capital costs (and associated indebtedness) of a project with its ongoing annual costs of operation, and transforming the integrated costs to one equivalent value. The calculation yields the total equivalent dollars which would have to be invested at the beginning of a project in order to finance it for the life of the facility. The monetary costs considered in the calculations include the total value of the resources, which are attributable to the wastewater treatment, control, and management systems and the component parts. To determine these values, all monies necessary for capital construction costs, operational costs, and maintenance costs should be identified.

Capital construction costs used in cost comparison analysis consist of estimates of the construction costs, including overhead and profit; costs of land (including land purchased for the treatment works site and land used as part of the treatment process or for ultimate disposal of residues), relocation expenses, and right-of-way and easement acquisitions; costs of design engineering, field services (including cost of bond sales); startup costs such as operator training; financing costs and interest during construction; and the costs of any other site-related environmental controls, such as erosion and sediment control practices.

Operational and maintenance costs are usually considered on an annual basis and include operational staff salaries, cost of energy and fuels, cost of treatment chemicals, cost of routine replacement of equipment and equipment parts, and other expenditures necessary to ensure effective and dependable operation over the life of the facility. Annual operation and maintenance costs should be averaged to account for variations, which might occur, year-to-year due to varying production or wastewater volume.

The salvage value of equipment, tankage, and materials from the treatment works is part of the present worth calculation. Salvage value is estimated using straight-line depreciation during the useful life of the project and can generally only be claimed for equipment where it can be clearly demonstrated that a specific market or re-use opportunity will exist. Salvage value estimation should also take into account the costs of any restoration or decommissioning of treatment units and final disposal costs. It is possible in some cases that these costs may be high enough that the net salvage value will be negative.

Land purchased for the treatment works site is also assumed to have a salvage value at the end of the project useful life equal to its market value at the end of the analysis period. The local inflation rate for land in the use area should be used to project the market value at the end of the analysis period.

It is also important to evaluate any opportunity cost associated with different alternatives. Opportunity costs should not be considered for speculative growth or production increases claimed by an applicant. Any costs claimed should be clearly associated with integral portions of projects, which are realistically available, and are otherwise locally approvable.

The discount rate used in the present worth or uniform annual cost calculation for public sewerage projects should be that rate published by the NMED Construction Program Bureau and associated funding agencies for the planning review and evaluation of water resource projects. The rate is available from NMED. For private sector projects, the interest rate utilized should be that rate at which the applicant can borrow funds. Since the present worth calculation is being performed more to compare alternatives rather than to obtain a very accurate estimation of

actual costs, the fact that the same interest rate assumption be utilized for each alternative is more important than the actual interest rate selected.

Cost estimates have an associated level of precision. The cost estimates prepared by the project sponsor should include an estimate of the error for each alternative. The applicant is responsible for documenting and defending all cost estimates used in the analysis.

Cost estimate equations:

The equations below are the basic expressions of the present worth and equivalent annualized cost concepts. Additional mathematical factors and apportionment of costs are incorporated into the equations where appropriate.

I. The basic present worth calculation should be performed in accordance with the following equation:

$$P = C + O + [A * (P/A,d,n)] – S – L$$

where,

P = present worth

C = capital cost

A = annual operating costs

(P/A,d,n) = equal series present worth factor $[(1 + d)^n – 1] / [d (1 + d)^n]$

d = discount rate

n = useful life in years

S = present worth of salvage value of facilities

L = present worth of salvage value of land

O = other costs (if any)

A gradient factor may be added into the equations to account for inflation of annual operating costs, as opposed to using an average value throughout the project life, by simply adding the additional following term onto the right-hand side of the above equation:

$$[G * (P/G,d,n)]$$

where,

G = uniform increase in annual costs

(P/G,d,n) = present worth factor for a gradient =

$(1 – nd) [(1 + d)^n – 1] / [d^2 * (1 + d)^n]$.

II. If the alternatives have different useful lives, the cost comparison may be performed using the Equivalent Uniform Annual Cost Method. The equation for this method is:

$$EUA = (C + O) * (A/P,d,n) + A – [(S + L) * (A/F,d,n)]$$

where,

EUA = equivalent uniform annual cost

(A/P,d,n) = capital recovery factor $[(1 + d)^n – 1] / [d (1 + d)^n]$

(A/F,d,n) = uniform series sinking fund factor $d / [(1 + d)^n – 1)]$

To add a gradient factor, the following additional term is simply added to the right hand side of the above equation:

[G * (A/G,d,n)]

where,

(A/G,d,n) = EUA factor for a gradient = $[(1 + d)^n – 1 – nd] / d * [(1 + d)^n – 1]$.

Additional cost factors:

Other costs, such as opportunity costs, while presented above as one-time present losses, may also have an annual lost revenue component, which could be accounted for by apportioning the costs as both upfront and annual costs.

In general, it is the responsibility of the applicant for a permit or approval to prepare detailed cost estimates for all appropriate and approvable discharge, non-discharge, and combination discharge/non-discharge alternatives. The cost estimates may be prepared by a licensed professional engineer, accountant, economist or other professional qualified in the field, but they must be submitted under a professional engineer seal as part of the permit application.

The sources and rationale for all data and assumptions must be clearly indicated. NMED will review the cost estimates for completeness, accuracy, and validity of assumptions. Where deficiencies are discovered, NMED will either request additional information or obtain the information on its own, or both. Following the review process, NMED will advise the applicant on which alternatives (or combination discharge/non-discharge alternatives) are cost-effective, and processing of a permit application will proceed on that basis. In general, an alternative or suite of alternatives is considered to be cost-effective and reasonable if it is feasible and the cost is less than 110% of the base costs of pollution control measures for the proposed discharge (present worth costs).

Other factors:

While the basic concept behind the direct comparison is the present worth method, which has traditionally been used, other approaches and factors may be proposed by applicants and will be considered by the Department (e.g., EPA's Water Quality Standards Handbook – *Interim Economic Guidance for Water Quality Standards*, EPA-823-B-95-002, 1995).

Combined approach:

Aspects of the other approaches can be integrated or combined with the direct comparison approach. For instance, in EPA's guidance document, the 1 percent of median household income user-fee criteria can be applied as a first test of cost-effectiveness, even before the direct cost comparisons are considered. Only if the user-fees exceed the screening criteria would the direct comparison of the alternative come into play.

Where appropriate, NMED may require that the submitted demonstration of cost-effectiveness include information to support both a primary screening/affordability evaluation as well as a secondary alternative-to-alternative cost comparison.

Appendix A.2
Social and Economic Importance Worksheet

Social & Economic Worksheet

Social and Economic Benefits/Costs

Does your proposed activity:

1. Create or expand employment?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

2. Reduce the unemployment rate?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

3. Increase median family income?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

4. Reduce the number of households below the poverty line?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

5. Increase needed housing supply?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

6. Increase the community tax base?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

7. Provide necessary public services (e.g., fire department, school, infrastructure)?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

8. Correct a public health or environmental problem?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

9. Improve quality of life for residents in the area?

   Yes _____ Describe _____

   No _____ Describe _____

   Don't Know ___

   Not Applicable Why not? _____

Environmental Protection Benefits/Costs

Explain how your proposed activity positively or negatively affects the following:

1. The societal and economic benefits/costs of better health protection.

   Describe _____

   _____

   Don't Know ___

   Not Applicable Why not? _____

2. Fishing, recreation, and tourism industries.

   Describe _____

   _____

   Don't Know ___

   Not Applicable Why not? _____

3. The general societal value of maintaining the quality of the environment.

   Describe _____

   _____

   Don't Know ___

   Not Applicable Why not? _____

4. Threatened and endangered species.

   Describe _____

   _____

   Don't Know ___

   Not Applicable Why not? _____

5. Increased flood control and sediment trapping through maintaining wetlands and riparian zones.

   Describe _____

   _____

   Don't Know ___

   Not Applicable Why not? _____

6. Reservation of assimilative capacity for future industry and development.

   Describe _____

   _____

   Don't Know ___

   Not Applicable Why not? _____

If you need more space to "describe" how this discharge will impact the social, economic and environmental benefits/costs above, please attach additional sheet(s) to this form.

Likewise, if additional considerations are desired or required in your social and economic justification analysis, please refer to Appendix A.3 and Appendix A.4.

Appendix A.3
Information for Substantial and Widespread Impact Analysis (OPTIONAL)

Attachment 1 – Tier 2 Review of a Public Facility

Attachment 1 includes additional information that may be required by the Department to evaluate socio-economic factors of a public facility during a Tier 2 review. This evaluation is based on two types of impacts, referred to as "substantial" and "widespread". The Substantial Impacts analysis is found in Tables 1-3 – 1-7. The Widespread Impacts[12] analysis is found in Table 1-8.

SUBSTANTIAL IMPACTS - SUMMARY

Purpose of Substantial Impacts analysis: Determine whether a public facility can afford pollution controls in order to avoid any degradation of water quality.

The first step in a Substantial Impacts analysis is to provide data on the socio-economic factors listed in the worksheets in Tables 1-1 and 1-2. This data is then used to determine two indicators called the "Municipal Affordability Screener" (Table 1-3) and the "Secondary Affordability Test" (Tables 1-4 – 1-6). The results of these indicators are then compared in the "Assessment of Substantial Impacts Matrix" (Table 1-7) as a way to determine overall affordability to the community.

Widespread Impacts[5] - Summary

Purpose of Widespread Impacts Analysis: evaluates the social costs of pollution control requirements by: 1) defining the affected community; 2) evaluating the community's current characteristics; and 3) evaluating how community characteristics would change if discharger must avoid degradation to water quality.

If the conclusion from the Substantial Impacts analysis is "Questionable Affordability" or "Community cannot afford the pollution control", then a Widespread Impacts analysis may be completed to further resolve the affordability issue. This analysis is primarily a qualitative evaluation based on community socioeconomic factors that are expanded to a larger scale than the Substantial Impacts analysis.

[5] Widespread Impact Analysis forms derived from EPA's Water Quality Standards Academy Participant Manual Update-4, 2000 [EPA 823-B-00-005].

Table 1-1. Antidegradation Data Worksheet

SOCIO-ECONOMIC INDICATORS	DATA
CITY'S DEMOGRAPHICS	
Population_____(year)	
Current Population_____(year)	
Type of household moving away from _____(city)	
Number of households	
Median Household Income (U.S. Census, Census Designated Place)	
Median Household Income (Local Planning Board Estimates, City)	
Median Household Income (U.S. Census, State)	
Median Household Income (U.S. Census, County)	
Major Type of Employment	
Regional Economic Conditions	
% of Total Wastewater Flow from Residential & Municipal Sources	
Unemployment Rate (City)	
Unemployment Rate (County)	
Unemployment Rate (State)	
CITY'S FINANCIAL HISTORY	
Property Tax Revenues (year)	
Sales Tax & Miscellaneous Revenues (year)	
Total Government Revenues_____(year)	
Property Tax Revenues (FY_____)	
Sales Tax & Miscellaneous Revenues (FY_____)	
Total Government Revenues (FY_____)	
Current Market Value of Taxable Property (FY_____)	
Property Tax Delinquency Rate	
Bond Rating - insured sewer	
Bond Rating - non insured sewer	
Overall Net Debt (FY_____)	

Table 1-2. Antidegradation Data Worksheet

SOCIO-ECONOMIC INDICATOR	DATA
Cost of Treatment Options (pollution controls) that will Avoid Degradation of Water Quality	
Capital Improvements	
OPTION 1. (year)_____dollars	
OPTION 2. (year)_____dollars	
Annual Operating Costs	
OPTION 1. (year)_____dollars	
OPTION 2. (year)_____dollars	
FINANCING FOR WASTEWATER TREATMENT OPTIONS	
OPTION 1. Source of Financing	
Repayment Term, Vehicle	
Bond Rate	
Total Annual Cost of Existing Plant	
OPTION 2. Source of Financing	
Repayment Term, Vehicle	
Bond Rate	
Total Annual Cost of Existing Plant	

Table 1-3. Substantial Impacts Analysis – Part I

PART I. CALCULATING THE MUNICIPAL AFFORDABILITY SCREENER	
This screener is used to evaluate expected impacts to households. It indicates whether community households can afford to pay the total annualized pollution control costs to avoid water quality degradation.	
A. Calculate Average Annualized Cost Per Household	
1. Calculate the Total Annual Cost of the Project	
Interest Rate for Financing (*i) =*	_____(expressed as a fraction)
Time Period for Financing (*n) =*	_____(years)
Annualization Factor: $\frac{i}{(i+1)^n - 1}(+ i) =$	_____ (1)
Total Capital Cost of Project to be Financed =	_____ (2)
Annual Operating Costs of Project =	_____ (3)
Annualized Capital Cost [(1) *x* (2)] =	_____ (4)
Total Annual Cost of Project [(3) + (4)] =	_____ (5)
2. Calculate the Total Annual Cost to Households	
Total Annual Cost of Project (5) x Percentage of Total Wastewater Flow Attributable to Residential and Municipal Wastewater Flows =	_____ (6)
Total Annual Cost of Existing Plant ($) *x* Percentage of Total Wastewater Flow Attributable to Residential and Municipal Wastewater Flows =	_____ (7)
Total Annual Cost to Households [(6) + (7)] =	_____ (8)
3. Calculate the Average Annualized Cost Per Household Total Annual Cost to Households (8) = Number of Households	_____ (9)
B. Calculate Screener Value:	
Average Annualized Cost Per Household (9) (*x 100) =* Median Household Income	_____% municipal affordability screen (10)
What type of impact does the Municipal Affordability Screener Indicate in table below? Little Impact: < 1.0 %; Mid-Range Impact: 1.0% - 2.0%; Large Impact: > 2.0% **Explanation of Impacts:** Little Impact – high affordability; households can afford to pay pollution control costs Mid-Range Impact – uncertain affordability Large Impact – low affordability; pollution control costs may cause economic hardship on households	_____ impact
Is there a need to proceed to the Secondary Affordability Test? (yes, if large impact or mid- range impact)	_____(yes/no)

Table 1-4. Substantial Impacts Analysis – Part II

PART II. APPLYING THE SECONDARY AFFORDABILITY TEST

A. EVALUATING THE DEBT INDICATORS

Bond Rating:
This is a Measure of the Credit Worthiness of a Community

What is Bond Rating of (name of municipality)_____?

What is the resulting score? (assign score from table below)

Source of Bond Rating	Weak	Mid-Range	Strong
S&P	below BBB	BBB	above BBB
Moody's	below Baa	Baa	above Baa
Score	1	2	3

_____score points (11)

Overall Net Debt to Market Value of Taxable Property:
This measures Debt Burden on Residents within the Community

(municipality)_____Overall Net Debt = _____ (12)

(municipality)_____Market Value of Taxable Property = _____ (13)

Overall Net Debt (12) (x 100) = _____ % (13a)
Market Value of Taxable Property (13)

What is the resulting score? (assign score from table below)

	Weak	Mid-Range	Strong
Compare % from 13a	>5%	2% - 5%	<2%
Score	1	2	3

_____score points (14)

Explanation of Ratings:
Weak = negative effect on indicator from increased costs for pollution controls
Mid-Range = uncertain effect on indicator
Strong = indicator can withstand increased costs for pollution controls

Table 1-5. Substantial Impacts Analysis – Part II

PART II. APPLYING THE SECONDARY AFFORDABILITY TEST (continued)

B. EVALUATING THE SOCIOECONOMIC INDICATORS

Unemployment Rate:
This measures the General Economic Health of the Community

What is (municipality)_____Unemployment Rate? _____

Is this above, below, or equal to the State's rate?

What is the resulting Score? (assign score from table below)

	Weak	Mid-Range	Strong
Compare unemployment rate	Above State Average	State Average	Below State Average
Score	1	2	3

_____score points (15)

Median Household Income:
This Measure Provides an Overall Indication of Community Earning Capacity

What is (municipality) Median Household Income?

Is this above, below, or equal to the State's rate?

What is the resulting Score? (assign score from table below)

	Weak	Mid-Range	Strong
Compare median income	Below State Average	State Average	Above State Average
Score	1	2	3

score points (16)

Table 1-6. Substantial Impacts Analysis – Part II

<table>
<tr><td colspan="2">PART II. APPLYING THE SECONDARY AFFORDABILITY TEST (continued)</td></tr>
<tr><td>C. EVALUATING THE FINANCIAL MANAGEMENT INDICATORS</td><td></td></tr>
<tr><td>Property Tax Revenue to Full Market Value of Taxable Property:
This Measures Funding Capacity Available to Support Debt Based on Community's Wealth</td><td></td></tr>
<tr><td>What is (municipality)_____Property Tax Revenue?</td><td>_____ (17)</td></tr>
<tr><td>What is the Full Market Value of Taxable Property?</td><td>_____ (18)</td></tr>
<tr><td>Property Tax Revenue (17) / Full Market Value of Taxable Property (18) (x 100) =</td><td>_____% (18a)</td></tr>
<tr><td>What is the resulting Score? (assign score from table below)
<table>
<tr><td></td><td>Weak</td><td>Mid-Range</td><td>Strong</td></tr>
<tr><td>Compare % from 18a</td><td><2%</td><td>2% - 4%</td><td>>4%</td></tr>
<tr><td>Score</td><td>1</td><td>2</td><td>3</td></tr>
</table></td><td>_____score points (19)</td></tr>
<tr><td>Property Tax Collection Rate:
This Measures How Well the Local Government is Administrated</td><td></td></tr>
<tr><td>What is the Property Tax Collection Rate of (municipality)</td><td>_____%</td></tr>
<tr><td>What is the resulting Score? (assign score from table below)
<table>
<tr><td></td><td>Weak</td><td>Mid-Range</td><td>Strong</td></tr>
<tr><td>Compare tax collection rate</td><td><94%</td><td>94% - 98%</td><td>>98%</td></tr>
<tr><td>Score</td><td>1</td><td>2</td><td>3</td></tr>
</table></td><td>_____score points (20)</td></tr>
<tr><td>D. CALCULATE THE CUMULATIVE SECONDARY AFFORDABILITY TEST SCORE: This is the average score of all the indicators calculated above.</td><td></td></tr>
<tr><td>(11) + (14) + (15) + (16) + (19) + (20) / 6 =</td><td>_____cumulative score (21)</td></tr>
<tr><td>In what impact range does the cumulative secondary score fall?
<table>
<tr><td></td><td>Weak</td><td>Mid-Range</td><td>Strong</td></tr>
<tr><td>Compare cumulative score from 21</td><td>< 1.5</td><td>1.5 – 2.5</td><td>> 2.5</td></tr>
</table></td><td>_____ impact range</td></tr>
</table>

Table 1-7. Substantial Impacts Analysis – Part III

<table>
<tr><td colspan="2">Part III. Assessment of Substantial Impacts Matrix</td></tr>
<tr><td>THE MUNICIPAL AFFORDABILITY SCREENER (10) =</td><td>_____%</td></tr>
<tr><td>THE CUMULATIVE SECONDARY AFFORDABILITY TEST SCORE (21) =</td><td>_____score points</td></tr>
<tr><td>Where does (municipality)_____appear in the Substantial Impacts Matrix below?

Substantial Impacts Matrix
<table>
<tr><th rowspan="2">Secondary Assessment Score</th><th colspan="3">Municipal Affordability Screener</th></tr>
<tr><th><1.0%</th><th>1.0% - 2.0%</th><th>>2.0%</th></tr>
<tr><td>< 1.5</td><td>?</td><td>X</td><td>X</td></tr>
<tr><td>1.5 – 2.5</td><td>√</td><td>?</td><td>X</td></tr>
<tr><td>> 2.5</td><td>√</td><td>√</td><td>?</td></tr>
</table>
? = Questionable affordability
√ = Community can afford the pollution control
X = Community cannot afford the pollution control</td><td></td></tr>
<tr><td>Based on the Substantial Impacts Matrix above, what is the affordability status (afford, not afford, or questionable) of the (municipality)_____?

In other words, can the project proponent afford to upgrade the facility in order to avoid water quality degradation?</td><td>_____
Matrix Result</td></tr>
<tr><td>If the conclusion from the Substantial Impacts analysis is either “Cannot Afford” or “Questionable Affordability”, then proceed to the Widespread Impacts analysis for further evaluation.</td><td>Complete Widespread Impacts Analysis?

_____(yes/no)</td></tr>
</table>

Table 1-8. Widespread Impacts Analysis – Public Facility

1. Define the Affected Community

Evaluate the Discharger's Contribution to the Community:

- Contribution to economic base (e.g., property taxes and employment)
- Provides product or service upon which other businesses or thecommunity depend

2. Evaluate Community's Current Characteristics

Evaluate how community's current socioeconomic health may change if proposed project must avoid degradation to water quality by considering the following factors:

- Median household income
- Unemployment rate
- Rate of industrial development
- Developing and declining industries
- Percent of households below poverty line
- Ability of community to carry more debt
- Local and regional factors

Other applicable information on the local and regional economy that should also be reviewed includes:

- Annual rate of population change
- Current financial surplus as a percentage of total expenditures
- Percentage of property taxes actually collected
- Property tax revenues as a percentage of the market value of real property
- Overall debt outstanding as a percentage of market value of real property
- Overall debt per capita
- Percentage of outstanding debt due within 5 years

3. Evaluate How Community Characteristics Would Change if Discharger Must Avoid Degradation to Water Quality

Evaluate the projected adverse socioeconomic impacts of adding pollution controls to the project to meet antidegradation requirements by considering the following:

- Property Values
- Employment Rate
- Commercial Development Opportunities
- Tax Revenues
- Expenditure on Social Services
- State level impacts such as loss of revenues and increased expenditures

Attachment 2 – Tier 2 Review of a Private Facility

Attachment 2 includes additional information that may be required by the Department to evaluate socio-economic factors of a private facility during a Tier 2 review. This evaluation is based on two types of impacts, referred to as "substantial" and "widespread". The Substantial Impacts analysis is found in Table 2-2. The Widespread Impacts analysis is found in Table 2-3.

SUBSTANTIAL IMPACTS - SUMMARY

Purpose of Substantial Impacts analysis: Determine whether a private facility can afford pollution controls in order to avoid any degradation of water quality.

The first step in a Substantial Impacts analysis is to provide data on the socio-economic factors listed in the worksheet in Table 1. This data is then used to calculate four financial tests that in turn indicate the financial health of a private entity (Table 2).

WIDESPREAD IMPACTS - SUMMARY

Purpose of Widespread Impacts analysis: Evaluates the social costs of pollution control requirements by: 1) defining the affected community; 2) evaluating the community's current characteristics; and 3) evaluating how community characteristics would change if discharger must avoid degradation to water quality.

If the Substantial Impacts analysis (i.e., the four financial tests) indicates that the private entity's financial health is questionable, then a Widespread Impacts analysis may be completed to further resolve the affordability issue. This analysis is primarily a qualitative evaluation based on community socioeconomic factors that are expanded to a larger scale than the Substantial Impacts analysis.

Table 2-1. Data Worksheet for Financial Factors

Financial Factor	Data
Current Assets	
Current Liabilities	
Cash flow per given year	
Total debt of the entity	
Amount firm has borrowed (debt)	
Amount of stockholders' capital (equity)	
Pre-tax earnings	
Annualized pollution control cost	

Table 2-2. Substantial Impacts Analysis - Financial Tests Used to Measure the Financial Health of a Private Entity

1. Liquidity Test - Indicates how easily an entity can pay its short-term bills. Current Ratio = Current Assets / Current Liabilities NOTE: A ratio greater that 2 indicates affordability
2. Solvency Test - Indicates how easily an entity can pay its fixed and long-term bills. Beaver's Ratio = Cash flow per given year / Total debt of the entity NOTE: > 0.20 Indicates private entity is solvent < 0.15 Indicates private entity may go bankrupt
3. Leverage Test - Indicates how much money the entity can borrow. Debt-to-Equity Ratio = Amount firm has borrowed (debt) / Amount of Stockholders' capital (equity) NOTE: The larger the Debt-to-Equity Ratio, the less likely that the entity will be able to borrow funds
4. Earnings Test - Indicates how much the entity's profitability will change with the additional pollution control needed to avoid degradation of water quality. Earnings = Pre-tax – Annualized Pollution Control Cost NOTE: Compare earnings result with entity's revenues to measure post-compliance profit rate
Guidelines to evaluate financial tests: o Results of all four tests above should be considered jointly o Ratios and tests should be compared over several years o Financial ratios should also be compared against those of "healthy" entities o The role the entity plays in a parent firm's operations should also beconsidered

Table 2-3. Widespread Impacts Analysis – Private entity/facility

1. Define the Affected Community

Evaluate the Discharger's Contribution to the Community:

- Contribution to economic base (e.g., property taxes and employment)
- Provides product or service upon which other businesses or the community depend

2. Evaluate Community's Current Characteristics

Evaluate how community's current socioeconomic health would change if proposed project must avoid degradation to water quality by considering the following factors:

- Median household income
- Unemployment rate
- Rate of industrial development
- Developing and declining industries
- Percent of households below poverty line
- Ability of community to carry more debt
- Local and regional factors

Other applicable information on the local and regional economy that should also be reviewed includes:

- Annual rate of population change
- Current financial surplus as a percentage of total expenditures
- Percentage of property taxes actually collected
- Property tax revenues as a percentage of the market value of real property
- Overall debt outstanding as a percentage of market value of real property
- Overall debt per capita
- Percentage of outstanding debt due within 5 years

3. Evaluate How Community Characteristics Would Change if Discharger Must Avoid Degradation to Water Quality

Evaluate the projected adverse socioeconomic impacts of adding the pollution control to the project to meet antidegradation requirements by considering the following:

- Property Values
- Employment Rate
- Commercial Development Opportunities
- Tax Revenues
- Expenditure on Social Services
- State level impacts such as loss of revenues and increased expenditures

Appendix A.4
Summary of Other Economic and Environmental Impact Categories

1. **Public Need/Social Service**
   - Health/Nursing Care
   - Police/Fire Protection
   - Infrastructure Need
   - Education (primary)

2. **Consistency with Local Zoning and Planning**
   - Sewage Facility Planning
   - Zoning Requirements
   - Land Use Plans
   - Patterns of Growth/Development

3. **Quality of Life**
   - Educational (post-secondary)
   - Cultural
   - Recreational

4. **Housing**
   - Quantity
   - Affordability

5. **Employment**
   - Number and Type of Jobs Relative to Local Unemployment Rate and Local Labor Force
   - State Local Mean Qualified Income

6. **Tax Revenues**
   - Tax Revenue Income for Relative to Increased Private Demand for Services
   - Public and Private Change in Property Value or Tax Status

7. **Development Potential**
   - Potential to Spur Increased Growth

8. **Sensitivity of Water Use**
   - Presence of Threatened and Endangered Species
   - Public Water Supply Use
   - Water Contact Sports

9. **Nature of Pollutants**
   - Synthetic
   - Bioaccumulative
   - Naturally Occurring

10. **Proposed Degree of Change in Water Quality**
    - Available Dilution
    - Amount of Assimilative Capacity Used

11. Proximity to Wetlands or Floodplain

Presence of Wetlands
Location with Respect to Stream Channel

12. Duration of Discharge

Permanent
Continuous
Short-term

13. Reliability of Treatment Technology

High Tech/Experimental
Energy Intensive
Maintenance Intensive
Natural System
Overall Reliability

14. Compliance Record

Current Violations
Historical Violations
Overall Record

15. Secondary Beneficial Impacts

Groundwater Recharge
Post-Construction Storm Water
Hydromodifications
Thermal Modification
Construction on Previously Undisturbed Lands
Discharge to Previously Undegraded Waters

Appendix A.5
List of Agencies Involved in Intergovernmental Coordination

Interagency Coordination for Antidegradation Review

In accordance with 20.6.2.2001 NMAC, and to the extent practicable, the Department will provide joint public notice with the EPA that the Department is reviewing a draft NPDES permit (which contains the antidegradation review) for the purpose of preparing a state certification or denial pursuant to Section 401 of the CWA. When joint notice is impractical, the Department provides notice that it is reviewing a draft NPDES permit for purpose of preparing a state certification or denial pursuant to Section 401 of the CWA by mailing or emailing the notice, as appropriate, to:

- the NPDES permit applicant or permittee;
- any user identified in the permit application of a privately-owned treatment works;
- any affected federal agency, such as EPA Region 6, the U.S. Fish & Wildlife Service and affected federal public land managers (i.e., U.S. Forest Service, BLM, and National Park Service);
- any affected state agency, such as the NM Office of the State Engineer, New Mexico Game & Fish Department, NM State Land Office, and New Mexico State Parks - EMNRD;
- any affected tribal agency;
- any affected local agency, including each applicable county department of health, environmental services or comparable department;
- any affected Council of Government (COG);
- any federal and state agencies with jurisdiction over fish, shellfish, and wildlife resources;
- the New Mexico Historic Preservation Office;
- the U.S. Army Corps of Engineers; and,
- any person who requests public notice in writing.

Appendix A.6
Antidegradation Policy and Implementation Plan (20.6.4.8 NMAC)

20.6.4.8 ANTIDEGRADATION POLICY AND IMPLEMENTATION PLAN:

A. Antidegradation Policy: This antidegradation policy applies to all surface waters of the state.

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected in all surface waters of the state.

(2) Where the quality of a surface water of the state exceeds levels necessary to support the propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the commission finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic and social development in the area in which the water is located. In allowing such degradation or lower water quality, the state shall assure water quality adequate to protect existing uses fully. Further, the state shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable BMPs for nonpoint source control. Additionally, the state shall encourage the use of watershed planning as a further means to protect surface waters of the state.

(3) No degradation shall be allowed in waters designated by the commission as outstanding national resource waters (ONRWs), except as provided in Subparagraphs (a) through (e) of this paragraph and in Paragraph (4) of this Subsection A.

(a) After providing a minimum 30-day public review and comment period, the commission determines that allowing temporary and short-term degradation of water quality is necessary to accommodate public health or safety activities in the area in which the ONRW is located. Examples of public health or safety activities include but are not limited to replacement or repair of a water or sewer pipeline or a roadway bridge. In making its decision, the commission shall consider whether the activity will interfere with activities implemented to restore or maintain the chemical, physical or biological integrity of the water. In approving the activity, the commission shall require that:

(i) the degradation shall be limited to the shortest possible time and shall not exceed six months;

(ii) the degradation shall be minimized and controlled by best management practices or in accordance with permit requirements as appropriate; all practical means of minimizing the duration, magnitude, frequency and cumulative effects of such degradation shall be utilized;

(iii) the degradation shall not result in water quality lower than necessary to protect any existing use in the ONRW; and

(iv) the degradation shall not alter the essential character or special use that makes the water an ORNW.

(b) Prior to the commission making a determination, the department or appropriate oversight agency shall provide a written recommendation to the commission. If the commission approves the activity, the department or appropriate oversight agency shall oversee implementation of the activity.

(c) Where an emergency response action that may result in temporary and short-term degradation to an ONRW is necessary to mitigate an immediate threat to public health or safety, the emergency response action may proceed prior to providing notification required by Subparagraph (a) of this paragraph in accordance with the following:

(i) only actions that mitigate an immediate threat to public health or safety may be undertaken pursuant to this provision; non-emergency portions of the action shall comply with the requirements of Subparagraph (a) of this paragraph;

(ii) the discharger shall make best efforts to comply with requirements (i) through (iv) of Subparagraph (a) of this paragraph;

(iii) the discharger shall notify the department of the emergency response action in writing within seven days of initiation of the action;

(iv) within 30 days of initiation of the emergency response action, the discharger shall provide a summary of the action taken, including all actions taken to comply with requirements (i) through (iv) of Subparagraph (a) of this paragraph.

(d) Preexisting land-use activities, including grazing, allowed by federal or state law prior to designation as an ONRW, and controlled by best management practices (BMPs), shall be allowed to continue so long as there are no new or increased discharges resulting from the activity after designation of the ONRW.

(e) Acequia operation, maintenance, and repairs are not subject to new requirements because of ONRW designation. However, the use of BMPs to minimize or eliminate the introduction of pollutants into receiving waters is strongly encouraged.

(4) This antidegradation policy does not prohibit activities that may result in degradation in surface waters of the state when such activities will result in restoration or maintenance of the chemical, physical or biological integrity of the water.

(a) For ONRWs, the department or appropriate oversight agency shall review on a case-by-case basis discharges that may result in degradation from restoration or maintenance activities, and may approve such activities in accordance with the following:

(i) the degradation shall be limited to the shortest possible time;

(ii) the degradation shall be minimized and controlled by best management practices or in accordance with permit requirements as appropriate, and all practical means of minimizing the duration, magnitude, frequency and cumulative effects of such degradation shall be utilized;

(iii) the degradation shall not result in water quality lower than necessary to protect any existing use of the surface water; and

(iv) the degradation shall not alter the essential character or special use that makes the water an ORNW.

(b) For surface waters of the state other than ONRWs, the department shall review on a case-by-case basis discharges that may result in degradation from restoration or maintenance activities, and may approve such activities in accordance with the following:

(i) the degradation shall be limited to the shortest possible time;

(ii) the degradation shall be minimized and controlled by best management practices or in accordance with permit requirements as appropriate, and all practical means of minimizing the duration, magnitude, frequency and cumulative effects of such degradation shall be utilized; and

(iii) the degradation shall not result in water quality lower than necessary to protect any existing use of the surface water.

(5) In those cases where potential water quality impairment associated with a thermal discharge is involved, this antidegradation policy and implementing method shall be consistent with Section 316 of the federal Clean Water Act.

(6) In implementing this section, the commission through the appropriate regional offices of the United States environmental protection agency will keep the administrator

advised and provided with such information concerning the surface waters of the state as he or she will need to discharge his or her responsibilities under the federal Clean Water Act.

B. Implementation Plan: The department, acting under authority delegated by the commission, implements the water quality standards, including the antidegradation policy, by describing specific methods and procedures in the continuing planning process and by establishing and maintaining controls on the discharge of pollutants to surface waters of the state. The steps summarized in the following paragraphs, which may not all be applicable in every water pollution control action, list the implementation activities of the department. These implementation activities are supplemented by detailed antidegradation review procedures developed under the state's continuing planning process. The department:

(1) obtains information pertinent to the impact of the effluent on the receiving water and advises the prospective discharger of requirements for obtaining a permit to discharge;

(2) reviews the adequacy of existing data and conducts a water quality survey of the receiving water in accordance with an annually reviewed, ranked priority list of surface waters of the state requiring total maximum daily loads pursuant to Section 303(d) of the federal Clean Water Act;

(3) assesses the probable impact of the effluent on the receiving water relative to its attainable or designated uses and numeric and narrative criteria;

(4) requires the highest and best degree of wastewater treatment practicable and commensurate with protecting and maintaining the designated uses and existing water quality of surface waters of the state;

(5) develops water quality based effluent limitations and comments on technology based effluent limitations, as appropriate, for inclusion in any federal permit issued to a discharger pursuant to Section 402 of the federal Clean Water Act;

(6) requires that these effluent limitations be included in any such permit as a condition for state certification pursuant to Section 401 of the federal Clean Water Act;

(7) coordinates its water pollution control activities with other constituent agencies of the commission, and with local, state and federal agencies, as appropriate;

(8) develops and pursues inspection and enforcement programs to ensure that dischargers comply with state regulations and standards, and complements EPA's enforcement of federal permits;

(9) ensures that the provisions for public participation required by the New Mexico Water Quality Act and the federal Clean Water Act are followed;

(10) provides continuing technical training for wastewater treatment facility operators through the utility operators training and certification programs;

(11) provides funds to assist the construction of publicly owned wastewater treatment facilities through the wastewater construction program authorized by Section 601 of the federal Clean Water Act, and through funds appropriated by the New Mexico legislature;

(12) conducts water quality surveillance of the surface waters of the state to assess the effectiveness of water pollution controls, determines whether water quality standards are being attained, and proposes amendments to improve water quality standards;

(13) encourages, in conjunction with other state agencies, implementation of the best management practices set forth in the New Mexico statewide water quality management plan and the nonpoint source management program, such implementation shall not be mandatory except as provided by federal or state law;

(14) evaluates the effectiveness of BMPs selected to prevent, reduce or abate sources of water pollutants;

(15) develops procedures for assessing use attainment as required by 20.6.4.15 NMAC and establishing site-specific standards; and

(**16)** develops list of surface waters of the state not attaining designated uses, pursuant to Sections 305(b) and 303(d) of the federal Clean Water Act.

[20.6.4.8 NMAC - Rp 20 NMAC 6.1.1101, 10-12-00; A, 05-23-05; A, 08-01-07; A, 01-14-11]

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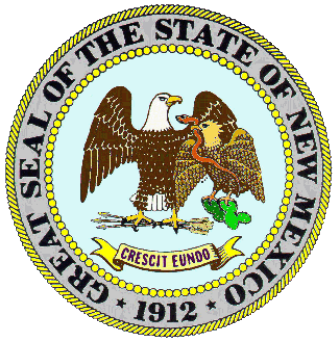
Approved Total Maximum Daily Loads for New Mexico



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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Arkansas-White-Red Rivers Basin	11080001	NM-2306.A_151	Caliente Canyon (Vermejo River to headwaters)	specific conductance	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007	September 21, 2007
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_200	Canadian River (Cimarron River to CO border)	plant nutrients	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	11080003	NM-2305.A_000	Canadian River (Conchas River to Mora River)	E.coli	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	11080006	NM-2303_00	Canadian River (Ute Reservoir to Conchas Reservoir)	E.coli	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_065	Cieneguilla Creek (Eagle Nest Lake to headwaters)	chronic aluminum	TMDL for Metals (Chronic Aluminum) in Cieneguilla Creek	January 13, 2004	May 19, 2004
					Chronic aluminum TMDL withdrawal	April 11, 2017	May 12, 2017
				fecal coliform	TMDL for Fecal Coliform in Six-Mile, Cienguilla, and and Moreno Creeks	January 13, 2004	May 19, 2004
				turbidity, stream bottom deposits, total phosphorus	TMDL for Turbidity, Stream Bottom Deposits, and Total Phosphorus in the Canadian River Basin (Cimarron)		
				E. coli, plant nutrients, temperature	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2305.1.A_10	Cimarron River (Canadian River to Cimarron Village)	plant nutrients	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_040	Cimarron River (Cimarron Village to Turkey Creek)	arsenic, temperature	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_130	Cimarron River (Turkey Creek to Eagle Nest Lake)	arsenic, plant nutrients	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Arkansas-White-Red Rivers Basin	11080004	NM-2306.A_020	Coyote Creek (Mora River to Black Lake)	specific conductance, temperature	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007	September 21, 2007
Arkansas-White-Red Rivers Basin	11080004	NM-2306.A_024	Little Coyote Creek (Black Lake to headwaters)	nutrients	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007	September 21, 2007
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_121	Middle Ponil Creek (South Ponil Creek to headwaters)	temperature	TMDL for Temperature on Middle Ponil Creek	July 10, 2001	September 21, 2001
				turbidity	TMDL for Turbidity in Middle Ponil Creek and Ponil Creek		
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_124	Middle Ponil Creek (Greenwood Creek to headwaters)	plant nutrients	TMDL for the Waters of the Valle Vidal	September 30, 2011	November 8, 2011
Arkansas-White-Red Rivers Basin	11080004	NM-2305.A_00	Mora River (USGS gage east of Shoemaker to Hwy 434)	nutrients	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007 June 10, 2015 (update)	September 21, 2007 July 22, 2015 (update)
Arkansas-White-Red Rivers Basin	11080004	NM-2306.A_000	Mora River (Hwy 434 to headwaters)	sedimentation, specific conductance	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007 September 30, 2011 (update)	September 21, 2007 November 28, 2011 (update)
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_060	Moreno Creek (Eagle Nest Lake to headwaters)	fecal coliform	TMDL for Fecal Coliform in Six-Mile, Cieneguilla and Moreno Creeks in the Canadian River Basin (Cimarron)	January 13, 2004	May 19, 2004
				turbidity	TMDL for Turbidity, Stream Bottom Deposits, and Total Phosphorus in Canadian Basin (Cimarron)		
				temperature, plant nutrients	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_110	North Ponil Creek (South Ponil Creek to McCrystal Creek)	stream bottom deposits, turbidity, total phosphorus	TMDL for Turbidity, Stream Bottom Deposits, and Total Phosphorus in the Canadian Basin (Cimarron)	January 13, 2004	May 19, 2004
				temperature	TMDL for Temperature on North Ponil Creek	November 9, 1999	December 17, 1999
				E. coli	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_162	North Ponil Creek (Seally Canyon to headwaters)	temperature	TMDL for the Waters of the Valle Vidal	September 30, 2011	November 8, 2011
Arkansas-White-Red Rivers Basin	11080006	NM-2303_10	Pajarito Creek (Canadian River to headwaters)	e.coli, plant nutrients	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	1108002	NM-2306.A_100	Ponil Creek (Cimarron River to confluence of North and South Ponil	temperature,	TMDL for Temperature on Ponil Creek	July 10, 2001	September 21, 2001
				turbidity	TMDL for Turbidity in Middle Ponil Creek and Ponil Creek	July 10, 2001	September 21, 2001
				chronic aluminum	TMDL for Metals (Chronic Aluminum) in Ponil Creek		
Arkansas-White-Red Rivers Basin	11080006	NM-2303_10	Pajarito Creek (Canadian River to headwaters)	E.coli, plant nutrients	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_100	Ponil Creek (Cimarron River to US 64)	E. coli	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_101	Ponil Creek (US 64 to confl of North and South Ponil)	E. coli, plant nutrients	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_051	Rayado Creek (Miami Lake Diversion to headwaters)	E. coli, temperature	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2305.A_80	Rayado Creek (Cimarron River to Miami Lake Diversion)	stream bottom deposits	TMDL for Stream Bottom Deposits in Rayado Creek and Metals (Chronic Aluminum) in the Cimarron River	December 12, 2000	February 16, 2001
				plant nutrients	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Arkansas-White-Red Rivers Basin	11080008	NM-2301_10	Revuelto Creek (Canadian River to headwaters)	boron	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	11080004	NM-2305.3.A_20	Sapello River (Mora River to Manuelitas Creek)	sedimentation	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007	September 21, 2007
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_064	Sixmile Creek (Eagle Nest Lake to headwaters)	fecal coliform	TMDL for Fecal Coliform in Six-mile, Cieneguilla, and Moreno Creeks in the Canadian River Basin (Cimarron)	January 13, 2004	May 19, 2004
				turbidity	TMDL for Turbidity, Stream Bottom Deposits, and Total Phosphorus in the Canadian River Basin (Cimarron)	January 13, 2004	May 19, 2004
				E. coli, temperature, plant nutrients	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_120	South Ponil Creek (Ponil Creek to Middle Ponil)	temperature	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_254	Una de Gato (Chicorica Creek to Hwy 64)	plant nutrients	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_030	Una de Gato (Hwy 64 to headwaters)	plant nutrients	TMDL for the Mainstem of the Canadian River (from TX to CO) and select tributaries	September 30, 2011	November 21, 2011
Arkansas-White-Red Rivers Basin	11080002	NM-2306.A_068	Ute Creek (Cimarron River to headwaters)	arsenic, E. coli, temperature	TMDL for the Cimarron River Watershed (Canadian River to headwaters)	August 10, 2010	September 3, 2010
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_220	Vermejo River (Rail Canyon to York Canyon)	specific conductance, temperature	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007	September 21, 2007
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_230	Vermejo River (York Canyon to headwaters)	temperature	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007	September 21, 2007
Arkansas-White-Red Rivers Basin	11080001	NM-2306.A_153	York Canyon (Vermejo Park to headwaters)	specific conductance	TMDL for the Canadian River Watershed-Part One (Mora River to Colorado border)	August 14, 2007	September 21, 2007

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Arkansas-White-Red Rivers Basin	11040001	NM-2701_00	Dry Cimarron River (perennial reaches OK bnd to Long Canyon)	sulfate, total dissolved solids	TMDL for the Dry Cimarron River Watershed	April 14, 2009	June 2, 2009
Arkansas-White-Red Rivers Basin	11040001	NM-2701_02	Dry Cimarron River (Long Canyon to Oak Creek)	E.coli, total dissolved solids	TMDL for the Dry Cimarron River Watershed	April 14, 2009	June 2, 2009
Arkansas-White-Red Rivers Basin	11040001	NM-2701_20	Long Canyon (perennial reaches above Dry Cimarron)	E.coli, selenium	TMDL for the Dry Cimarron River Watershed	April 14, 2009	June 2, 2009
Arkansas-White-Red Rivers Basin	11040001	NM-2701_10	Oak Creek (Dry Cimarron to headwaters)	nutrients, E. coli	TMDL for the Dry Cimarron River Watershed	April 14, 2009	June 2, 2009
Arkansas-White-Red Rivers Basin	11080006	NM-2303_00	Canadian River (Ute Reservoir to Conchas Reservoir)	temperature	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080005	NM-2305.A_010	Conchas River (Conchas Reservoir to Salitre Creek)	chronic aluminum, E.coli, plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080004	NM-2306.A_021	Coyote Creek (Black Lake to headwaters)	temperature, plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080004	NM-2306.A_020	Coyote Creek (Mora River to Amola Ridge)	plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080004	NM-2306.A_022	Coyote Creek (Williams Canyon to Black Lake)	plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080004	NM-2306.A_023	Coyote Creek (Amola Ridge to Williams Canyon)	plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_255	Doggett Creek (Raton Creek to headwaters)	E.coli, plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11040001	NM-2701_00	Dry Cimarron River (perennial reaches OK bnd to Long Canyon)	temperature, plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11040001	NM-2701_02	Dry Cimarron River (Long Canyon to Oak Creek	plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11040001	NM-2701_01	Dry Cimarron River (Oak Creek to headwaters)	plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_252	East Fork Chicorica Creek (Chicorica Creek to headwaters)	E.coli	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11040001	NM-2701_20	Long Canyon (perennial reaches above Dry Cimarron)	temperature, plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080004	NM-2305.3.A_00	Mora River (USGS gage east of Shoemaker to Hwy 434)	E.coli	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080006	NM-2303_10	Pajarito Creek (perennial portions Canadian River to Vigil Canyon)	temperature	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080001	NM-2305.A_253	Raton Creek (Chicorica Creek to headwaters)	E.coli, plant nutrients	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Arkansas-White-Red Rivers Basin	11080001	NM-9000.A_019	Tinaja Creek (West Fork Tinaja Creek to headwaters)	E.coli	Canadian River Watershed TMDL	August 13, 2019	September 18, 2019
Lower Colorado River Basin	15040001	NM-2503_21	Black Canyon Creek (East Fork Gila River to headwaters)	temperature	TMDL for Temperature on Black Canyon Creek	November 13, 2001	April 5, 2002
Lower Colorado River Basin	15040001	NM-2503_43	Canyon Creek (Middle Fork Gila River to headwaters)	plant nutrients	TMDL for Plant Nutrients for Canyon Creek	December 11, 2001	April 10, 2002
				turbidity	TMDL for Turbidity for Canyon Creek		
Lower Colorado River Basin	15040004	NM-2603.A_50	Centerfire Creek (San Francisco R to headwaters)	conductivity	TMDL for Conductivity on Centerfire Creek	November 13, 2001	April 16, 2002
				plant nutrients	TMDL for Plant Nutrients on Centerfire Creek	December 11, 2001	
Lower Colorado River Basin	15040004	NM-2603.A_50	Centerfire Creek (San Francisco R to headwaters)	E.coli, turbidity	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014
Lower Colorado River Basin	13030202	NM-2803_11	Cold Springs Creek (Hot Springs Creek to headwaters)	cadmium, lead	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014
Lower	15040001	NM-2503_20	Gila River (East Fork)	chronic aluminum	TMDL for Metals (Chronic	November 13, 2001	April 15, 2002

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Colorado River Basin					Aluminum) for the East Fork of the Gila River and Taylor Creek		

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Lower Colorado River Basin	15040003	NM-2502.A_21	Mangas Creek (Gila River to Mangas Springs)	plant nutrients	TMDL for Plant Nutrients on Mangas Creek	December 11, 2001	April 16, 2002
Lower Colorado River Basin	13030202	NM-2803_00	Mimbres R (Perennial reaches downstream of Willow Springs)	E.coli	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014
Lower Colorado River Basin	15040001	NM-2503_02	Mogollon Creek (Perennial reaches abv USGS gage)	chronic aluminum	TMDL for Metals (Chronic Aluminum) on Mogollon Creek	November 13, 2001	April 5, 2002
Lower Colorado River Basin	15040004	NM-2603.A_43	Negrito Creek (South Fork)	temperature	TMDL for Temperature on the South Fork of Negrito Creek from the Confluence with the North Fork to the Headwaters	November 13, 2001	April 5, 2002
Lower Colorado River Basin	15040004	NM-2602_20	San Francisco River (Centerfire Creek to AZ border)	temperature	TMDL for Temperature on the San Francisco River from Centerfire Creek to the New Mexico/Arizona Border	November 13, 2001	April 12, 2002
				plant nutrients	TMDL for Plant Nutrients on the San Francisco River from Centerfire Creek upstream to the New Mexico/Arizona Border	December 11, 2001	August 5, 2002
Lower Colorado River Basin	15040004	NM-2602_10	San Francisco River (NM 12 at Reserve to Centerfire Creek)	E.coli, turbidity	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014
Lower Colorado River Basin	15040004	NM-2602_22	San Francisco River (Willow Springs Cyn to NM 12 at Reserve)	E.coli	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Lower Colorado River Basin	15040001	NM-2503_04	Sapillo Creek (Gila River to Lake Roberts)	total organic carbon	TMDL for Total Organic Carbon (TOC) on Sapillo Creek	December 11, 2001	April 12, 2002
				turbidity	TMDL for Turbidity on Sapillo Creek		
Lower Colorado River Basin	15040004	NM-2603.A_43	South Fork Negrito Creek (Negrito Creek to headwaters)	E.coli	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014
Lower Colorado River Basin	15040001		Taylor Creek (Beaver Creek to Wall Lake)	chronic aluminum	TMDL for Metals (Chronic Aluminum) for the East Fork of the Gila River and Taylor Creek	November 13, 2001	April 15, 2002
				temperature	TMDL for Temperature on Taylor Creek		August 5, 2002
Lower Colorado River Basin	15040004	NM-2603.A_40	Tularosa River (San Francisco R to Apache Creek)	conductivity	TMDL for Conductivity on the Tularosa River	November 13, 2001	April 5, 2002
Lower Colorado River Basin	15040004	NM-2603.A_40	Tularosa River (San Francisco River to Apache Creek)	E.coli, turbidity	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014
Lower Colorado River Basin	15040004	NM-2603.A_10	Whitewater Creek (San Francisco River to White-water Campgrd)	turbidity	TMDL for Temperature on Whitewater Creek	November 13, 2001	April 12, 2002
				chronic aluminum	TMDL for Chronic Aluminum on Whitewater Creek	December 11, 2001	
				chronic aluminum	TMDL withdrawal for Chronic Aluminum on Whitewater Creek	March 13, 2018	April 24, 2018
Lower Colorado River Basin	15040004	NM-2503_47	Willow Creek (Gilita Creek to headwaters)	chronic aluminum	TMDL for Upper Gila, San Francisco, and Mimbres River Watersheds	September 9, 2014	September 11, 2014

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Lower Rio Grande Basin	13030102	NM-2101_00	Rio Grande (International Mexico boundary to Leasburg Dam)	E. coli	TMDL for the Main Stem of the Lower Rio Grande (from the International boundary with Mexico to Elephant Butte Dam)	May 8, 2007	June 11, 2007
Lower Rio Grande Basin	13030102	NM-2101_10	Rio Grande (Leasburg Dam to Percha Dam)	E. coli	TMDL for the Main Stem of the Lower Rio Grande (from the International boundary with Mexico to Elephant Butte Dam)	May 8, 2007	June 11, 2007
Middle Rio Grande Basin	13020102	NM-2113_50	Abiquiu Creek (Rio Chama to headwaters)	dissolved oxygen	TMDLs for the Lower Chama Watershed (Below El Vado Reservoir to the confluence with the Rio Grande)	June 8, 2004	September 3, 2004
Middle Rio Grande Basin	13020102	NM-2116.A_030	Canjilon Creek (perennial portions Abiquiu Rsrv to headwaters)	specific conducance, temperature	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011
Middle Rio Grande Basin	13020102	NM-2116.A_010	Cañones Creek (Abiquiu Reservoir to headwaters)	chronic aluminum, fecal coliform, turbidity	TMDLs for the Lower Chama Watershed (Below El Vado Reservoir to the confluence with the Rio Grande)	June 8, 2004	September 3, 2004
Middle Rio Grande Basin	13020102	NM-2116.A_081	Chavez Creek (Rio Brazos to headwaters)	temperature	TMDLs for the Upper Chama Watershed (El Vado Reservoir to Colorado border)	September 9, 2003	March 4, 2004
Middle Rio Grande Basin	13020102	NM-2116.A_023	Poleo Creek (Rio Puerco de Chama to headwaters)	turbidity	TMDLs for the Lower Chama Watershed (Below El Vado Reservoir to the confluence with the Rio Grande)	June 8, 2004	September 3, 2004
Middle Rio Grande Basin	13020102	NM-2116.A_011	Polvadera Creek (Cañones Creek to headwaters)	temperature	TMDLs for the Lower Chama Watershed (Below El Vado Reservoir to the confluence with the Rio Grande)	June 8, 2004	September 3, 2004

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Middle Rio Grande Basin	13020102	NM-2116.A_080	Rio Brazos (Rio Chama to Chavez Creek)	temperature	TMDLs for the Upper Chama Watershed (El Vado Reservoir to Colorado border)	September 9, 2003	March 4, 2004
Middle Rio Grande Basin	13020102	NM-2116.A_041	Rio Capulin (Rio Gallina to headwaters)	E.coli	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011
Middle Rio Grande Basin	13020102	NM-2116.A_000	Rio Chama (El Vado Reservoir to Rio Brazos)	E.coli, temperature, plant nutrients	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011
Middle Rio Grande Basin	13020102	NM-2116.A_002	Rio Chama (Little Willow Creek to CO border)	E.coli, temperature	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011
Middle Rio Grande Basin	13020102	NM-2116.A_001	Rio Chama (Rio Brazos to Little Willow Creek)	temperature	TMDLs for the Upper Chama Watershed (El Vado Reservoir to Colorado border)	September 9, 2003	March 4, 2004
				E.coli, plant nutrients	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011
Middle Rio Grande Basin	13020102	NM-2116.A_110	Rio Chamita (Rio Chama to CO border)	chronic aluminum	TMDLs for the Upper Chama Watershed (El Vado Reservoir to Colorado border)	September 9, 2003	March 4, 2004
				chronic aluminum	Chronic aluminum TMDL withdrawal for Rio Chamita	March 13, 2018	April 24, 2018
Middle Rio Grande Basin	13020102	NM-2116.A_110	Rio Chamita (Rio Chama to CO border)	total ammonia, total phosphorus, fecal coliform	TMDL for the Rio Chamita from the confluence of the Rio Chama to the NM-CO border	August 10. 1999	September 30, 1999
				temperature	TMDL for Temperature on the Rio Chamita	November 9, 1999	December 17, 1999
				E.coli, plant nutrients	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011
Middle Rio Grande Basin	13020102	NM-2115_20	Rio Puerco de Chama (Abiquiu Res to Hwy 96)	E.coli, temperature	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011

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Middle Rio Grande Basin	13020102	NM-2116.A_060	Rio Nutrias (Rio Chama to headwaters)	turbidity	TMDLs for the Lower Chama Watershed (Below El Vado Reservoir to the confluence with the Rio Grande)	June 8, 2004	September 3, 2004
Middle Rio Grande Basin	13020102	NM-2113_30	Rio Tusas (Rio Vallecitos to headwaters)	plant nutrients	TMDL for the Rio Chama Watershed (Abiquiu Reservoir to headwaters)	July 12, 2011	August 16, 2011
Middle Rio Grande Basin	13020102	NM-2112.A_00	Rio Vallecitos (Rio Tusas to headwaters)	chronic aluminum, temperature, turbidity	TMDLs for the Lower Chama Watershed (Below El Vado Reservoir to the confluence with the Rio Grande)	June 8, 2004	September 3, 2004
Middle Rio Grande Basin	13020102	NM-2116.A_070	Rito de Tierra Amarilla (Rio Chama to HWY 64)	stream bottom deposits, temperature, turbidity	TMDLs for the Upper Chama Watershed (El Vado Reservoir to Colorado border)	September 9, 2003	March 4, 2004
Middle Rio Grande Basin	13020201	NM-2118.A_12	Galisteo Creek (Perennial prt 2.2 mi abv Lamy to hdwts)	temperature	TMDL for Galisteo Creek	July 11, 2017	August 22, 2017
		NM-2118.A_10	Galisteo creek (Perennial prt Kewa bnd to 2.2 mi abv Lamy)	temperature	TMDL for Galisteo Creek	July 11, 2017	August 22, 2017
Middle Rio Grande Basin	13020201	NM-2110_00	Santa Fe River (Cochiti Pueblo bnd to Santa Fe WWTP)	chlorine, stream bottom deposits	TMDL for the Santa Fe River from the Cochiti Pueblo to the Santa Fe Wastewater Treatment Plant for Chlorine and Stream Bottom Deposits	January 11, 2000	March 20, 2000
				dissolved oxygen, pH	TMDL for the Santa Fe River for Dissolved Oxygen and pH	December 12, 2000	January 11, 2001
				E.coli	Santa Fe River E.coli TMDL	April 11, 2017	May 3, 2017
Middle Rio Grande Basin	13020201	NM-9000.A_061	Santa Fe River (Santa Fe WWTP to Guadalupe Street)	E.coli	Santa Fe River E.coli TMDL	April 11, 2017	May 3, 2017
Middle Rio Grande Basin	13020201	NM-9000.A_062	Santa Fe River (Guadalupe St to Nichols Reservoir)	E.coli	Santa Fe River E.coli TMDL	April 11, 2017	May 3, 2017
Middle Rio Grande Basin	13020101	NM-9000.A047	Sandia Canyon (Sigma Canyon to NPDES outfall 001)	dissolved copper	Sandia Canyon IR Category 4b demonstration project	September 9, 2014	November 11, 2014
Middle Rio Grande Basin	13020202	NM-2106.A_54	Clear Creek (Rio de las Vacas to San Gregio Lake)	total organic carbon, turbidity	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2106.A_54	Clear Creek (Rio de las Vacas to San Gregio Lake)	E.coli, plant nutrients	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016

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Middle Rio Grande Basin	13020202	NM-2106.A_55	Clear Creek (San Gregorio Lake to headwaters)	Plant nutrients	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2106.A_10	Jemez River (East Fork)	turbidity	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2106.A_10	East Fork Jemez (East Fork Jemez to headwaters)	temperature	TMDL for the Jemez River Watershed (Valles Caldera National Preserve boundaries to headwaters)	August 8, 2006	October 11, 2006
Middle Rio Grande Basin	13020202	NM-2016.A_10	East For Jemez (VCNP to headwaters)	plant nutrients	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2106.A_13	East Fork Jemez River (San Antonio Creek to VCNP boundary)	temperature, arsenic	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2016.A_12	Jaramillo Creek (East Fork Jemez to headwaters)	plant nutrients	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2106.A_00	Jemez River (HWY 4 near Jemez Springs to East Fork)	stream bottom deposits, turbidity	TMDL for Turbidity and Stream Bottom Deposits for the Jemez River and Rio Guadalupe	June 8, 2004	July 30, 2004
				chronic aluminum	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
				chronic aluminum	Aluminum TMDL revision	March 13, 2018	April 27, 2018
Middle Rio Grande Basin	13020202	NM-2105.5_10	Jemez River (Rio Guadalupe to HWY 4 nr Jemez Springs)	stream bottom deposits, turbidity	TMDL for Turbidity and Stream Bottom Deposits for the Jemez River and Rio Guadalupe	June 8, 2004	July 30, 2004
				chronic aluminum	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2105_75	Jemez River (Zia Pueblo bnd to Jemez Pueblo bnd)	E.coli	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2105_75	Jemez River (Zia Pueblo bnd to Jemez Pueblo bnd)	arsenic, boron	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009

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Middle Rio Grande Basin	13020202	NM-2105_71	Jemez River (Jemez Pueblo bnd to Rio Guadalupe)	arsenic, boron	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2105_71	Jemez River (Jemez Pueblo bnd to Rio Guadalupe)	E.coli	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2105.5_10	Jemez River (Rio Guadalupe to Soda Dam nr Jemez Springs)	arsenic, boron, temperature, nutrients	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2105.5_10	Jemez River (Rio Guadalupe to Soda Dam nr Jemez Springs)	E.coli	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2106.A_00	Jemez River (Soda Dam nr Jemez Springs to East Fork)	E.coli	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2106.A_00	Jemez River (Soda Dam nr Jemez Springs to East Fork)	arsenic	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2106.A_21	Redondo Creek (Sulphur Creek to headwaters)	total phosphorus	TMDL for Total Phosphorus for Redondo Creek	October 12, 1999	December 2, 1999
				temperature, turbidity	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2106.A_12	Jaramillo Creek (VCNP boundary to headwaters)	temperature, turbidity	TMDL for the Jemez River Watershed (Valles Caldera National Preserve boundaries to headwaters)	August 8, 2006	October 11, 2006

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Middle Rio Grande Basin	13020202	NM-2106.A_52	Rio Cebolla (Fenton Lake to headwaters)	stream bottom deposits, temperature	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2106.A_50	Rio Cebolla (Rio de las Vacas to Fenton Lake)	stream bottom deposits	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2106.A_40	Rio de las Vacas (Rio Cebolla to Clear Creek)	nutrients	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2106.A_40	Rio de las Vacas (Rio Cebolla to Rito de las Palomas)	temperature, total organic carbon	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2106.A_30	Rio Guadalupe (Jemez River to confl with Rio Cebolla)	Plant nutrients	Jemez River Watershed TMDL	September 13, 2016	September 23, 2016
Middle Rio Grande Basin	13020202	NM-2106.A_30	Rio Guadalupe (Jemez River to confl with Rio Cebolla)	chronic aluminum	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
				stream bottom deposits, turbidity	TMDL for Turbidity and Stream Bottom Deposits for the Jemez River and the Rio Guadalupe	June 8, 2004	July 30, 2004
				temperature	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2106.A_43	Rito de las Palomas (Rio de las Vacas to headwaters)	temperature, sedimentation	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2106.A_42	Rito Penas Negras (Rio de las Vacas to headwaters)	stream bottom deposits, temperature, total	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003

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				nutrients	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009

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Middle Rio Grande Basin	13020202	NM-2106.A_20	San Antonio Creek (East Fork Jemez River to headwaters)	temperature, turbidity	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020202	NM-2106.A_20	San Antonio Creek (East Fork Jemez to VCNP bnd)	arsenic	TMDL for the Jemez River Watershed (from San Ysidro to headwaters excluding the waters in the Valles Caldera National Preserve)	August 11, 2009	September 15, 2009
Middle Rio Grande Basin	13020202	NM-2106.A_22	Sulphur Creek (Redondo Creek to headwaters)	conductivity, pH	TMDL Report for the Jemez River Watershed	December 16, 2002	June 3, 2003
Middle Rio Grande Basin	13020204	NM-2107.A_46	La Jara Creek (perennial reaches above Arroyo San Jose)	chronic aluminum	TMDL for the Rio Puerco Watershed-Part Two	August 14, 2007	September 21, 2007
Middle Rio Grande Basin	13020204	NM-2107.A_46	La Jara Creek (perennial reaches above Arroyo San Jose)	Total aluminum	Upper Rio Puerco TMDL	May 10, 2016	June 16, 2016
Middle Rio Grande Basin	13020203	NM-2105.1_00	Rio Grande (non-Pueblo Alameda to Angostura Diversion)	E. coli	TMDL for the Middle Rio Grande Watershed	April 13, 2010	June 30, 2010
Middle Rio Grande Basin	13020203	NM-2105.1_00	Rio Grande (Alameda Bridge to Santa Ana Pueblo bnd)	fecal coliform	Middle Rio Grande TMDL for Fecal Coliform	November 13, 2001	May 3, 2002
Middle Rio Grande Basin	13020203	NM-2105_50	Rio Grande (Isleta Pueblo boundary to Alameda bridge)	E. coli	TMDL for the Middle Rio Grande Watershed	April 13, 2010	June 30, 2010
				fecal coliform	Middle Rio Grande TMDL for Fecal Coliform	November 13, 2001	May 3, 2002
Middle Rio Grande Basin	13020203	NM-2105_40	Rio Grande (Rio Puerco to Isleta Pueblo boundary)	E. coli	TMDL for the Middle Rio Grande Watershed	April 13, 2010	June 30, 2010
Middle Rio Grande Basin	13020203	NM-2105_10 NM-2105_11	Rio Grande (San Marcial at USGS gage to Rio Puerco)	aluminum, E. coli	TMDL for the Middle Rio Grande Watershed	April 13, 2010	June 30, 2010

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				aluminum	Aluminum TMDL revision	March 13, 2018	April 27, 2018
Middle Rio Grande Basin	13020203	NM-9000.A_001	Tijeras Arroyo (Four Hills Bridge to Headwaters)	plant nutrients	Tijeras Arroyo Nutrients TMDL	September 12, 2017	October 12, 2017
Middle Rio Grande Basin	13020204	NM-2107.A_40	Rio Puerco (Arroyo Chijuilla to Northern Boundary Cuba)	sedimentation	TMDL for the Rio Puerco Watershed-Part One	November 14, 2006	August 10, 2007
				chronic aluminum, nutrients	TMDL for the Rio Puerco Watershed-Part Two	August 14, 2007	September 21, 2007
				chronic aluminum	Chronic aluminum TMDL withdrawal for Rio Puerco	March 13, 2018	April 24, 2018
Middle Rio Grande Basin	13020204	NM-2107.A_42	Nacimiento Creek (Perennial part Hwy 126 to San Gregorio Reservoir)	Turbidity, Total aluminum, uranium	Upper Rio Puerco TMDL	May 10, 2016	June 16, 2016
Middle Rio Grande Basin	13020204	NM-2107.A_44	Rio Puerco (Perennial part northern bnd Cuba to headwaters)	Sedimentation	Upper Rio Puerco TMDL	May 10, 2016	June 16, 2016
Middle Rio Grande Basin	13020207	NM-2107.A_01	Bluewater Creek (Bluewater Reservoir to headwaters)	temperature, nutrients	TMDL for the Rio Puerco Watershed-Part Two	August 14, 2007	September 21, 2007
Middle Rio Grande Basin	13020207	NM-2107.A_00	Bluewater Creek (non-tribal Rio San Jose to Bluewater Rsrv)	temperature, nutrients	TMDL for the Rio Puerco Watershed-Part Two	August 14, 2007	September 21, 2007
Middle Rio Grande Basin	13020207	NM-2107.A_10	Río Moquino (Laguna Pueblo to Seboyettia Creek)	temperature, nutrients	TMDL for the Rio Puerco Watershed-Part Two	August 14, 2007	September 21, 2007
Upper Rio Grande Basin	13020101	NM-98.A_002	Apache Canyon (Rio Fernando de Taos to headwaters)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Upper Rio Grande Basin	13020101	NM-2120.A_705	Bitter Creek (Red River to headwaters)	stream bottom deposits, acute aluminum	TMDL for the Red River Watershed (Rio Grande River to headwaters)	January 10, 2006	March 17, 2006
Upper Rio Grande Basin	13020101	NM-2120.A_827	Comanche Creek (Costilla Creek to Little Costilla Creek)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2120.A_823	Cordova Creek (Costilla Creek to headwaters)	stream bottom deposits, total phosphorus, turbidity	TMDL for Turbidity, Stream Bottom Deposits, and Total Phosphorus for Cordova Creek	November 9, 1999	December 17, 1999

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Upper Rio Grande Basin	13020101	NM-2120.A_820	Costilla Creek (diversion above Costilla to Comanche Creek)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2118.A_34	Embudo Creek (Rio Grande to Canada de Ojo Sarco)	stream bottom deposits, turbidity	TMDL for the Upper Rio Grande Watershed Part 2 (Cochiti Reservoir to Pilar, NM)	April 12, 2005	June 2, 2005
Upper Rio Grande Basin	13020101	NM-2120.A_835	Gold Creek (Comanche Creek to headwaters)	temperature	TMDL for the Waters of the Valle Vidal	September 30, 2011	November 8, 2011
Upper Rio Grande Basin	13020101	NM-2120.A_837	Holman Creek (Comanche Creek to headwaters)	temperature	TMDL for the Waters of the Valle Vidal	September 30, 2011	November 8, 2011
Upper Rio Grande Basin	13020101	NM-2120.A_839	LaBelle Creek (Comanche Creek to headwaters)	temperature	TMDL for the Waters of the Valle Vidal	September 30, 2011	November 8, 2011
Upper Rio Grande Basin	13020101	NM-2118.A_34	Little Tesuque (Rio Tesuque to headwaters)	chronic aluminum	TMDL for the Upper Rio Grande Watershed Part 2 (Cochiti Reservoir to Pilar, NM)	April 12, 2005	June 2, 2005
Upper Rio Grande Basin	13020101	NM-2120.A_706	Placer Creek (Red River to headwaters)	acute aluminum	TMDL for the Red River Watershed (Rio Grande River to headwaters)	January 10, 2006	March 17, 2006
Upper Rio Grande Basin	13020101	NM-2119_10	Red River (Rio Grande to Placer Creek)	acute aluminum	TMDL for the Red River Watershed (Rio Grande River to headwaters)	January 10, 2006	March 17, 2006

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Upper Rio Grande Basin	13010005	NM-2120.A_900	Rio de los Pinos (Colorado border to headwaters)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2120.A_512	Rio Fernando de Taos (Rio Pueblo de Taos to headwaters)	specific conductance, temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-98.A_001	Rio Fernando de Taos (Tienditas Creek to headwaters)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Upper Rio Grande Basin	13020101	NM-2120.A_512	Rio Fernando de Taos (Rio Pueblo de Taos to USFS bnd at Canyon)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Upper Rio Grande Basin	13020101	NM-2120.A_513	Rio Fernando de Taos (USFS bnd at Canyon to Tienditas Creek)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Upper Rio Grande Basin	13020101	NM-2111_12	Rio Grande (non-pueblo Santa Clara to Embudo Creek)	turbidity	TMDL for the Upper Rio Grande Watershed Part 2 (Cochiti Reservoir to Pilar, NM)	April 12, 2005	June 2, 2005
Upper Rio Grande Basin	13020101	NM-2119_05	Rio Grande (Red River to NM-CO border)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2120.A_501	Rio Grande del Rancho (Rio Pueblo de Taos to Hwy 518)	specific conductance	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2120.A_600	Rio Hondo (Rio Grande to USFS boundary)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004

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Upper Rio Grande Basin	13020101	NM-2120.A_602	Rio Hondo (South Fork of Rio Hondo to Lake Fork Creek)	total phosphorus, Total Nitrogen	TMDL for the Rio Hondo (South Fork of Rio Hondo to Lake Fork Creek)	June 14, 2005	September 14, 2005
Upper Rio Grande Basin	13020101	NM-2119_30	Rio Pueblo de Taos (Arroyo del Alamo to Rio Grande del Rancho)	stream bottom deposits, temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2120.A_511	Rio Pueblo de Taos (Rio Grande del Rancho to Taos Pueblo boundary)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2120.A_511	Rio Pueblo de Taos (Rio Grande del Rancho to Taos Pueblo boundary)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Upper Rio Grande Basin	13020101	NM-2119_20	Rio Pueblo de Taos (Rio Grande to Arroyo del Alamo)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13020101	NM-2118.A_52	Rio Quemado (Santa Cruz River to Rio Arriba County bnd)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Upper Rio Grande Basin	13010005	NM-2120.A_901	Rio San Antonio (Montoya Canyon to headwaters)	temperature	TMDL for the Upper Rio Grande Watershed Part 1 (Pilar, NM to CO border)	November 9, 2004	December 17, 2004
Upper Rio Grande Basin	13010005	NM-2120.A_901	Rio San Antonio (Montoya Canyon to headwaters)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012

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Upper Rio Grande Basin	13020101	NM-2120.A_419	Rio Santa Barbara (Picuris Pueblo boundary to USFS boundary)	turbidity	TMDL for the Upper Rio Grande Watershed Part 2 (Cochiti Reservoir to Pilar, NM)	April 12, 2005	June 2, 2005
Upper Rio Grande Basin	13020101	NM-2120.A_419	Rio Santa Barbara (non-Pueblo Embudo Creek to USFS bnd)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Upper Rio Grande Basin	13020101	NM-2111_50	Santa Cruz River (Santa Clara Pueblo bnd to Santa Cruz Dam)	E.coli	TMDL for the Upper Rio Grande Watershed	August 14, 2012	September 13, 2012
Pecos River Basin	13050003	NM-2801_10	Nogal Creek (Tularosa Creek to Mescalero Apache boundary)	E.coli	TMDL for the Sacramento Mountains (Rio Hondo, Tularosa and Rio Peñasco Watersheds)	August 11, 2015	September 21, 2015
Pecos River Basin	13060001	NM-2214.A_091	Bull Creek (Cow Creek to headwaters)	temperature	TMDL for the Pecos Headwaters Watershed (Ft. Sumner Reservoir to headwaters)	August 9, 2005	September 13, 2005
Pecos River Basin	13060001	NM-2214.A_102	Cow Creek (Bull Creek to headwaters)	temperature, turbidity	TMDL for the Pecos Headwaters Watershed (Ft. Sumner Reservoir to headwaters)	August 9, 2005	September 13, 2005
Pecos River Basin	13060001	NM-2214.A_090	Cow Creek (Pecos River to Bull Creek)	temperature, turbidity	TMDL for the Pecos Headwaters Watershed (Ft. Sumner Reservoir to headwaters)	August 9, 2005	September 13, 2005
Pecos River Basin	13060001	NM-2214.A_070	Dalton Canyon Creek (Pecos River to headwaters)	specific conductance	TMDL for the Upper Pecos River Watershed	September 10, 2013	September 25, 2013

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Pecos River Basin	13060001	NM-2212_12	Falls Creek (Tecolote Creek to headwaters)	specific conductance	TMDL for the Upper Pecos River Watershed	September 10, 2013	September 25, 2013

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Pecos River Basin	13060001	NM-2212_00	Gallinas River (Las Vegas diversion to headwaters)	temperature	TMDL for the Pecos Headwaters Watershed (Ft. Sumner Reservoir to headwaters)	August 9, 2005	September 13, 2005
Pecos River Basin	13060001	NM-2214.A_071	Macho Canyon Creek (Pecos River to headwaters)	specific conductance	TMDL for the Upper Pecos River Watershed	September 10, 2013	September 25, 2013
Pecos River Basin	13060001	NM-2213_22	Pecos Arroyo (Gallinas River to headwaters)	E.coli	TMDL for the Upper Pecos River Watershed	September 10, 2013	September 25, 2013
Pecos River Basin	13060001	NM-2214.A_002	Pecos River (Alamitos Canyon to Willow Creek)	turbidity	TMDL for the Pecos Headwaters Watershed (Ft. Sumner Reservoir to headwaters)	August 9, 2005	September 13, 2005
Pecos River Basin	13060001	NM-2214.A_003	Pecos River (Canon de Manzanita to Alamitos Canyon)	temperature, turbidity	TMDL for the Pecos Headwaters Watershed (Ft. Sumner Reservoir to headwaters)	August 9, 2005	September 13, 2005
Pecos River Basin	13060001	NM-2211.A_10	Pecos River (Santa Rosa Reservoir to Tecolote Creek)	E.coli	TMDL for the Upper Pecos River Watershed	September 10, 2013	September 25, 2013
Pecos River Basin	13060001	NM-9000.A_050	El Rito (Pecos River to headwaters)	E.coli	TMDL for the Upper Pecos River Watershed	September 10, 2013	September 25, 2013

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Pecos River Basin	13060001	NM-2114.A_030	Willow Creek (Pecos River to headwaters)	specific conductance	TMDL for the Upper Pecos River Watershed	September 10, 2013	September 25, 2013
Pecos River Basin	13060008	NM-2209.A_22	Carrizo Creek (Rio Ruidoso to Mescalero Apache boundary)	bacteria	TMDL for the Rio Hondo Watershed (Lincoln County) (Pecos River to Headwaters)	January 10, 2006	February 10, 2006
Pecos River Basin	13060008	NM-2209.A_22	Carrizo Creek (Rio Ruidoso to Mescalero Apache boundary)	E.coli	TMDL for the Sacramento Mountains (Rio Hondo, Tularosa and Rio Peñasco Watersheds)	August 11, 2015	September 21, 2015
Pecos River Basin	13060008	NM-2209.A_10	Rio Bonito (Angus Canyon to headwaters)	bacteria	TMDL for the Rio Hondo Watershed (Lincoln County) (Pecos River to Headwaters)	January 10, 2006	February 10, 2006
Pecos River Basin	13060008	NM-2209.A_10	Rio Bonito (NM 48 near Angus to headwaters	E.coli	TMDL for the Sacramento Mountains (Rio Hondo, Tularosa and Rio Peñasco Watersheds)	August 11, 2015	September 21, 2015
Pecos River Basin	13060008	NM-2208_30	Rio Hondo (Perennial Reaches Pecos to headwaters)	bacteria	TMDL for the Rio Hondo Watershed (Lincoln County) (Pecos River to Headwaters)	January 10, 2006	February 10, 2006
Pecos River Basin	13060008	NM-2208_20	Rio Ruidoso (Rio Bonito to US Highway 70)	total nitrogen, total phosphorus (plant nutrients)	TMDL for the Rio Hondo Watershed (Lincoln County) (Pecos River to Headwaters)	January 10, 2006 November 15, 2016 (update)	February 10, 2006 December 13, 2016 (update)

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Pecos River Basin	13060008	NM-2208_20	Rio Ruidoso (Eagle Creek to US Hwy 70 bridge)	E.coli, turbidity	TMDL for the Sacramento Mountains (Rio Hondo, Tularosa and Rio Peñasco Watersheds)	August 11, 2015	September 21, 2015
Pecos River Basin	13060008	NM-2209.A_20	Rio Ruidoso (US Highway 70 Mescalero Apache boundary)	temperature, turbidity	TMDL for the Rio Hondo Watershed (Lincoln County) (Pecos River to Headwaters)	January 10, 2006	February 10, 2006
Pecos River Basin	13060008	NM-2209.A_20	Rio Ruidoso (Carrizo Creek to Mescalero Apache boundary)	plant nutrients	Rio Ruidoso TMDL	November 15, 2016	December 13, 2016
Pecos River Basin	13060008	NM-2209.A_21	Rio Ruidoso (US Hwy 70 bridge to Carrizo Creek)	E.coli	TMDL for the Sacramento Mountains (Rio Hondo, Tularosa and Rio Peñasco Watersheds)	August 11, 2015	September 21, 2015
Pecos River Basin	13060008	NM-2209.A_21	Rio Ruidoso (US Hwy 70 bridge to Carrizo Creek)	plant nutrients	Rio Ruidoso TMDL	November 15, 2016	December 13, 2016
Pecos River Basin	13060010	NM-2208_01	Agua Chiquita (Perennial portions McEwan Canyon to headwaters)	Turbidity	TMDL for the Sacramento Mountains (Rio Hondo, Tularosa and Rio Peñasco Watersheds)	August 11, 2015	September 21, 2015
Pecos River Basin	13060010	NM-2208_00	Rio Penasco (Highway 24 to Cox Canyon)	Turbidity	TMDL for the Sacramento Mountains (Rio Hondo, Tularosa and Rio Peñasco Watersheds)	August 11, 2015	September 21, 2015
Pecos River Basin	13060011	NM-2201_00	Pecos River (TX border to Black River)	E.coli	Lower Pecos Watershed TMDL	September 13, 2016	September 23, 2016

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
Pecos River Basin	13060011	NM-2202.A_00	Pecos River (Black river to Six Mile Dam Lake)	E.coli	Lower Pecos Watershed TMDL	September 13, 2016	September 23, 2016
Pecos River Basin	13060011	NM-2212_10	Tecolote Creek (I-25 to Blue Creek)	temperature	Tecolote Creek TMDL	August 15, 2018	September 13, 2018

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
San Juan River Basin	14080104	NM-2403.A_00	Animas River (San Juan River to Estes Arroyo)	fecal coliform	TMDL for the San Juan River Watershed Part One (Navajo Nation Boundary at the Hogbackk to Navajo Dam)	June 14, 2005	August 26, 2005
				total nitrogen, total phosphorus	TMDL for the San Juan River Watershed Part Two (Navajo Nation Boundary at the Hogbackk to Navajo Dam)	December 13, 2005	January 17, 2006
San Juan River Basin	14080104	NM-2403.A_00	Animas River (San Juan River to Estes Arroyo)	E.coli, temperature	TMDL for the Animas River Watershed	September 10, 2013	September 30, 2013
San Juan River Basin	14080104	NM-2404_00	Animas River (Estes Arroyo to Southern Ute Indian Tribe bnd)	E.coli, total phosphorus	TMDL for the Animas River Watershed	September 10, 2013	September 30, 2013
San Juan River Basin	14080101	NM-9000.A_060	Gallegos Canyon (San Juan to Navajo Boundary)	selenium	TMDL for the San Juan River Watershed Part One (Navajo Nation Boundary at the Hogbackk to Navajo Dam)	June 14, 2005	August 26, 2005
San Juan River Basin	14080105	NM-2402.A_01	La Plata River (McDermott Arroyo to Colorado Border)	fecal coliform	TMDL for the San Juan River Watershed Part One (Navajo Nation Boundary at the Hogbackk to Navajo Dam)	June 14, 2005	August 26, 2005
				dissolved oxygen	TMDL for the San Juan River Watershed Part Two (Navajo Nation Boundary at the Hogbackk to Navajo Dam)	December 13, 2005	January 17, 2006
San Juan River Basin	14080105	NM-2403.A_00	La Plata River (San Juan River to McDermott Arroyo)	fecal coliform, stream bottom deposits	TMDL for the San Juan River Watershed Part One (Navajo Nation Boundary at the Hogback to Navajo Dam)	June 14, 2005	August 26, 2005

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Watershed	HUC	AU_ID	Waterbody	TMDL Paramenter	Document Name	WQCC Approval	EPA Approval
San Juan River Basin	14080105	NM-2401_10	San Juan River (Navajo Boundary at Hogback to Animas River)	fecal coliform	TMDL for the San Juan River Watershed Part One (Navajo Nation Boundary at the Hogback to Navajo Dam)	June 14, 2005	August 26, 2005
San Juan River Basin	14080101	NM-2401_00	San Juan River (Animas River to Canon Largo)	fecal coliform, stream bottom deposits	TMDL for the San Juan River Watershed Part One (Navajo Nation Boundary at the Hogbackk to Navajo Dam)	June 14, 2005	August 26, 2005

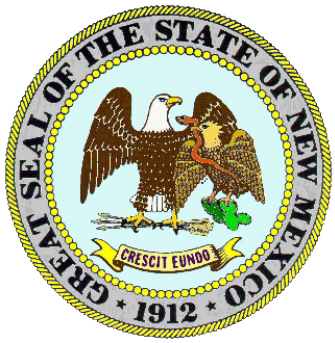
State of New Mexico
Water Quality Management Plan
& Continuing Planning Process

Appendix C

Hydrology Protocol

for the

Determination of Uses Supported by
Ephemeral, Intermittent, and Perennial Waters



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EXECUTIVE SUMMARY

The *Hydrology Protocol* provides a methodology for distinguishing among ephemeral, intermittent and perennial streams and rivers in New Mexico. The results of the *Hydrology Protocol* may also aid in the designation of appropriate designated uses supported by those waterbodies as a result of flow regime. New Mexico's water quality standards (*Standards for Interstate and Intrastate Surface Waters*, 20.6.4 NMAC) set distinct protections for unclassified ephemeral, intermittent and perennial waters (*see* 20.6.4.97 to 99 NMAC) and also identify many classified waters by their hydrology, e.g. "perennial tributaries to" or "perennial reaches of" (*see* 20.6.4.101 to 899 NMAC). Hydrological determinations are key to assuring that the appropriate designated uses and water quality criteria are applied to a particular waterbody.

The *Hydrology Protocol* was specifically developed to generate documentation of the aquatic life and recreation uses supported by the hydrology of a given stream or river. This information can then be used to provide technical support for a Use Attainability Analysis (UAA). Under particular circumstances, the use of the *Hydrology Protocol* can be used for the expedited UAA process (20.6.4.15(C) NMAC), which facilitates the efficient application of the limited aquatic life and secondary contact uses to ephemeral waters, where appropriate, prior to undergoing the full administrative rule-making process. However, the *Hydrology Protocol* cannot be used in place of the UAA.

SWQB or any other party may conduct a *Hydrology Protocol* survey as part of a UAA in accordance with UAA requirements found under 40 CFR 131.10, 20.6.4.15 NMAC and the State's approved Water Quality Management Plan/Continuing Planning Process (WQMP/CPP), therefore the user/evaluator may be a member of SWQB, another regulatory agency, a contractor, or a member of the public.

The information gained from the protocol can also be used to identify unclassified waters within an otherwise classified standards segment. The details of these specific applications are described in Section II of *New Mexico's Water Quality Management Plan and Continuing Planning Process*, to which this *Hydrology Protocol* is an appendix. Other applications where a determination of stream hydrology is necessary are possible but results of the *Hydrology Protocol* must be evaluated cautiously within the specific decision framework of the study.

The protocol relies on hydrological, geomorphic and biological indicators related to the persistence of water and is organized into two levels of evaluations: Level 1 and Level 2. Data gathered during the Level 1 Evaluation should, in most cases, provide enough information to give a clear indication of the hydrological status of the stream. The "*Hydrology Determination Field Sheets,"* a.k.a. "*Field Sheets,*" was developed to record the information collected through application of the *Hydrology Protocol* and may be used to support the UAA process. The Level 1 Evaluation Field Sheets provide some of the necessary information needed in a Use Attainability Analysis to demonstrate a stream is ephemeral, intermittent or perennial. Attainment of a specific Clean Water Act Section 101(a)(2) aquatic life and recreational use may not be feasible due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use*. The data obtained through a Hydrology Protocol survey provides some of

the information that would be necessary to demonstrate that attainment is not achievable but, is only one of the elements required under a UAA to demonstrate the evidence to support changing a designated use.

In certain instances, additional data and supporting information are necessary to determine the hydrological condition of the stream. The methods described as part of the Level 2 Evaluation may be conducted if the Level 1 Evaluation is inconclusive (i.e. the score falls within a gray zone, see Section 2, Table 5). The Level 2 Evaluation relies on more intense and focused data collection efforts and provides the evaluator with additional data and observations to make a final hydrological determination. The Level 2 Evaluation may be used for either an expedited or regular UAA as documentation to support the proper standards classification of a given stream.

Regardless of whether a Level 1 or Level 2 Evaluation is performed, the SWQB encourages the evaluator to gather as much information as possible to make an accurate assessment of the stream. Recommendations are provided in the protocol, but other data not included in these recommendations may be gathered as well.

Table of Contents

I. INTRODUCTION

Streams are drainage features that may exhibit ephemeral, intermittent or perennial characteristics or change from ephemeral to intermittent and intermittent to perennial along a gradient or continuum—sometimes with no single distinct point demarcating these transitions. Nevertheless, all stream systems are characterized by interactions among hydrological, biological, and geomorphic (physical) processes. According to Maidment (1993), *Streamflow* can be described as flowing surface water along a defined natural channel generated by a combination of:

- *Stormflow* – streamflow resulting from the relatively rapid runoff of precipitation from the land as interflow (rapid, unsaturated, subsurface flow), overland flow, or saturated flow from raised, near surface water tables close to the stream.
- *Baseflow* – return flow from sustained groundwater discharge into the channel.
- Contributions of discharge from upstream tributaries as stormflow or baseflow.
- Contributions of discharge from point source dischargers and irrigation return flows.

The *Hydrology Protocol* uses attributes of hydrological, biological and geomorphic processes to produce a quantitative score. The score is then used to characterize the stream as "ephemeral," "intermittent," or "perennial". The term "stream", as it pertains to the *Hydrology Protocol*, refers to a wadable, lotic water body (typically 1st, 2nd, or 3rd Strahler stream order) and the term "river" refers to a non-wadable, lotic water body (generally 4th Strahler stream order or higher). Throughout this document the terms are interchangeable with one another as the same process and procedures are used regardless of whether the channel is wadable or not.

II. DEFINITIONS

The *Hydrology Protocol* is based on the definitions of "ephemeral," "intermittent" and "perennial" adopted by the WQCC in 20.6.4.7 NMAC as follows:

> ***"Ephemeral"*** *when used to describe a surface water of the state means the water body contains water briefly only in direct response to precipitation; its bed is always above the water table of the adjacent region.*
>
> ***"Intermittent"*** *when used to describe a surface water of the state means the water body contains water for extended periods only at certain times of the year, such as when it receives seasonal flow from springs or melting snow.*
>
> ***"Perennial"*** *when used to describe a surface water of the state means the water body typically contains water throughout the year and rarely experiences dry periods.*

III. HYDROLOGY DETERMINATION AND RATING FORM

A. General Information

There are two levels of evaluation for the *Hydrology Protocol* (HP). Data gathered during the Level 1 Evaluation should, in most cases, provide enough information to give a clear indication of the hydrological status of the stream. However, a more in-depth Level 2 Evaluation may be used to gather more information and data for more complex borderline cases. The *Field Sheets* are used to record the information and data collected through application of the HP.

For waterbodies where an HP is being conducted with the intent to remove a designated use that is not an existing use, as defined under 40 CFR 131.3 and 20.6.4.7(E)(3) NMAC, a UAA must be prepared. Third-party UAAs conducted in accordance with 20.6.4.15(D) NMAC, must have a workplan, approved by the Department, prior to conducting an HP UAA.

Although the HP is used as supporting evidence in a UAA, it is beyond the scope of this document to provide guidance on preparing a UAA.

B. User/Evaluator Experience

In order to distinguish ephemeral streams and rivers from non-ephemeral ones or intermittent streams and rivers from perennial ones using the information presented in this protocol, the evaluator should have experience making geomorphic, hydrological, and biological observations in New Mexico or in the semi-arid climate of the southwestern U.S.

The *Hydrology Protocol* was designed to provide the necessary supporting documentation for a UAA based on natural hydrologic flow conditions. In accordance with 20.6.4.15 NMAC, NMED or any other party may conduct a UAA, therefore the User/Evaluator for the *Hydrology Protocol* may be a member of NMED, another regulatory agency, a contractor, and/or a member of the public. It should be noted that only the Department can submit an expedited UAA using the *Hydrology Protocol* for EPA's technical review and approval, as described under 20.6.4.15(C) NMAC.

C. Drought Conditions

Spatial and temporal variations in stream attributes occur in stream systems. These variations can affect persistence and volume of streamflow. The changes to the system's flow regime can be related to seasonal precipitation and evapotranspiration patterns, as well as influenced by recent weather and interannual climate variability.

Local drought and weather data should be reviewed prior to evaluating flow conditions in the field. Perennial streams will have water in their channels year-round in the absence of drought conditions. Therefore, it is *strongly* recommended that field evaluations be conducted outside of drought conditions whenever possible.

Drought conditions, for the purposes of this *Hydrology Protocol*, are defined as any time the Standardized Precipitation Index (SPI) is less than -1.5, indicating severely to extremely dry conditions as described by the National Drought Mitigation Center (NDMC 1995). The 12-month SPI will be used to determine drought conditions and noted on the *Field Sheets*. The 12-month SPI

should be verified through other sources such as the Standardized Precipitation Evapotranspiration Index (Beguería, et al. 2014) or the United States Drought Monitor to ensure that extreme or exceptional drought conditions are not indicated for the survey location.

The 12-month SPI was chosen for use in the *Hydrology Protocol* because SPIs of this time-scale can be linked to groundwater-surface water fluctuations and reservoir storage, it can provide an early warning of drought, and it can help assess drought severity. The SPI calculation for any location in New Mexico is based on 10 climate regions of New Mexico and long-term precipitation records (both rainfall and snowpack), and has available archived maps dating back to 1996. The 12-month SPI value for a particular stream is included as another piece of evidence to be evaluated before making a final stream determination. If the evaluator believes that extreme conditions such as severe drought or abnormal precipitation are influencing the overall rating, he may want to postpone a final decision until another evaluation can take place during more normal conditions.

D. Recent Rainfall Activity

Recent (generally considered to be within 48 hours) rainfall or snowmelt can also influence scoring; therefore, it is *strongly* recommended that field evaluations be conducted at least 48 hours after the last known major rainfall or snowmelt. Field observations regarding the presence or absence of recent high flows should be made and documented on the *Field Sheets* to supplement any available local rain gauge data and to determine if field observations were made at least 48 hours following a precipitation or runoff event. To reduce this source of variability, the Level 1 Field Evaluation should occur during stable baseflow conditions which will vary by region and elevation of the sample reach but are typically between late May and mid-July (to avoid snowmelt) or mid-September and early November (to avoid monsoons). The protocol and scoring mechanism were designed with redundancy (i.e. multiple indicators) to allow for defensible scoring even within 48 hours after a recent rainfall or during drought conditions. Nevertheless, performing field evaluations during or after severe conditions, such as floods or drought, is not optimal nor is it recommended.

E. Scoring

The *Field Sheets* are used to record the score for each attribute and determine the total numeric score for the sample reach under investigation. The *Field Sheets* specifically request information regarding: date, project, evaluator, site, Assessment Unit (AU), 12-month SPI value, latitude/longitude, as well as any other pertinent observations (such as indications of recent rain events). Additional notes for the Field Sheets should include the most recent precipitation date and amount from the closest rain gage, if available, and evidence of any anthropogenic influences and modifications. The *Field Sheets* are an official record, so all pertinent observations should be recorded on it.

In order to assess the natural variability encountered when making hydrological determinations in the field, a four-tiered, weighted scale was developed for evaluating and scoring each hydrological attribute. The scores that are applied to sets of geomorphic, hydrological and biological attributes are: poor, weak, moderate, and strong. *Moderate* scores are intended as an approximate qualitative midpoint between the two extremes of *Poor* and *Strong*. The score ranges were developed to better assess the often gradual and variable transitions of streams from ephemeral

to non-ephemeral. The remaining qualitative description of *Weak* represents gradations that will often be observed in the field. Definitions of poor, weak, moderate and strong are provided in **Table 1**. These definitions are intended as guidelines and the evaluator must select the most appropriate category based upon experience and observations of the sample reach under review, its watershed, and physiographic region.

The quantitative score given to each attribute reflects the evaluator's qualitative assessment of the characteristic along the sample reach. These category range within each of the characteristics allows the evaluator flexibility in assessing variable features or attributes. In addition, the incremental category gradients reduce the variability of range in scores between different evaluators. There may be circumstances where intermediary scores between the categories presented for each indicator are appropriate. In those cases, document the rationale for the intermediary score on the *Field Sheets*.

Table 1. Guide to Scoring Categories

Category	Description
Strong	The characteristic* is easily observable (i.e. observed within less than one minute of searching).
Moderate	The characteristic is present and observable with minimal (i.e. one or two minutes) searching.
Weak	The characteristic is present, but you have to search intensely (i.e., ten or more minutes) to find it.
Poor	The characteristic is not observed.

***** geomorphic, hydrological or biological

F. Level 1 Evaluation: Data Collection for the Hydrology Determination of NM Streams and Rivers

1. Level 1 Office Procedures

The following information should be gathered and reviewed prior to conducting field work for a Level 1 Field Evaluation. It is important to gather as much physical and geographic information as possible by conducting reconnaissance on the stream reach prior to going out to the study site to save time, money and other resources and identify any risks or concerns.

Geographical Information System (GIS) and Remote Sensing Tools
The following is a non-exhaustive list of suggested coverages and resources that can help identify and generate informative maps of the field of study area. In addition, the aerial photographs, GIS coverages and resources listed below can be used to calculate sinuosity prior to field work (see *Indicator* #1.7 (Sinuosity) for more information).

Useful resources include:

- Google Earth
- SWQB Mapper (https://gis.web.env.nm.gov/oem/?map=swqb)
- GIS software (ArcMAP, QGIS, etc.)

Useful coverages that can be added to a GIS project include (Note, not all information listed here will be available for every stream.):

- SWQB water quality stations
- SWQB assessment units
- National Hydrography Dataset (NHD) streams
- Southwest Regional Gap Analysis (http://swregap.nmsu.edu/default.htm)
- Office of the State Engineer (OSE) data
- The United States Geological Survey (USGS) quadrangle maps
- Aerial photographs
- National Hydrography Dataset
- Digital Geologic Map of NM
- National Land Cover Dataset
- Bureau of Land Management (BLM) Land Status
- United States Department of Agriculture (USDA) or Natural Resources Conservation Service (NRCS) soil survey
- Omernik Ecoregions
- NM Roads

Streamflow

Historic or recent flow data from gages such as those managed by the USGS, OSE or Los Alamos National Laboratory (LANL) should be used to make hydrological determinations. Streamgage data, if available, may clearly indicate ephemeral, intermittent, or perennial flow patterns for the available period of record and will facilitate the scoring of Indicator #1.1 *Water in Channel*.

Useful resources include:

- USGS Current Water Data for New Mexico: https://waterdata.usgs.gov/nm/nwis/rt
- OSE Real-Time Water Measurement Information System: http://meas.ose.state.nm.us/
- Los Alamos Area Environmental Data (Intellus): https://www.intellusnm.com

Drought Conditions

The following resources will help determine drought conditions and recent rainfall activity. At a minimum, the 12-month Standardized Precipitation Index (SPI) should be recorded on the *field sheets* along with the date and source the SPI was evaluated. Note, not all information listed here will be available for every stream:

- Historic or recent flow data (known sources include SWQB, OSE, USGS, or localized sources such as Los Alamos National Laboratory for waters on the Pajarito Plateau)
- Standardized Precipitation Index (SPI)
    - https://hprcc.unl.edu/maps.php?map=ACISClimateMaps
- Standardized Precipitation Evapotranspiration Index (SPEI)
    - http://spei.csic.es/index.html
- Rain gauge stations within the County
- Airport/regional climate data
- The National Weather Service:
    - https://w2.weather.gov/climate/index.php?wfo=abq
- https://w2.weather.gov/climate/xmacis.php?wfo=abqhttps://water.weather.gov/ahps/United States Drought Monitor https://droughtmonitor.unl.edu/
- PRISM Climate Data:
    - http://www.prism.oregonstate.edu/mtd

Refer to *Drought Conditions* and *Recent Rainfall Activity* on pages 6-7 for more information.

Stream Segment Identification and Sample Reach Selection

This protocol describes a method for assessing geomorphic, hydrological, and biological indicators of stream flow duration. However, flow characteristics often vary along the length of a stream, resulting in gradual transitions in flow duration. Choosing the sample reach on which to conduct an assessment can influence the resulting conclusion about

flow duration. Before a determination of hydrology can be made for a stream the appropriate sample reach, within the larger stream segment to which the UAA will apply, must be identified.

For SWQB stream segments are termed **assessment units** (**AUs**). AUs are river or stream reaches defined by various factors such as hydrologic or watershed boundaries, geology, topography, incoming tributaries, surrounding land use/land management, water quality standards, etc. AUs are designed to represent waters with assumed homogeneous water quality (WERF 2007). AUs in New Mexico average 10 miles in length and are typically no more than 25 miles in length. A **sample reach**, as used in this protocol, is a length of stream (40 times the average stream bankfull width or 160 meters, whichever is larger) that is chosen to represent a uniform set of physical, chemical, and biological conditions within an AU. It is the principal sampling unit for collecting hydrological, geomorphic and biological data using this protocol. Below are several factors to look for when determining the homogeneity of the AU and the representativeness of the sample reach:

- Are there significant tributaries (2^{nd} order or higher) entering along the reach?
- Are there any changes in geology?
- Are there any dramatic shifts in land use?
- Is there a dramatic change in slope?
- Are there changes in riparian vegetation type and amount?
- Are there any point sources discharging into the reach?
- Are there any irrigation return flows discharging into the reach?

Many of these questions may be evaluated using maps and remote sensing products (e.g. Google Earth), however field reconnaissance along the length of the AU – to evaluate potential gradients in stream hydrology and to select representative sample reach(es) for hydrologic evaluation – should also be conducted.

The sample reach(es) selected for evaluation with the Hydrology Protocol should be as representative as possible of the natural characteristics of the AU. For example, if the stream is mostly vegetated, the sample reach should be located along an area of the channel that is mostly vegetated as opposed to an area that has no vegetation or is sparsely vegetated. It is the responsibility of the assessor(s) to verify and document the homogeneity of the AU and representativeness of the sample reach. SWQB typically defines a representative sample reach for conducting data collection as 40 times the average stream width or 160 meters, whichever is larger. If there are questions regarding the homogeneity of an AU (i.e., you answered “yes” to any of the questions above) then a hydrology evaluation should be performed on multiple sample reaches to identify potential transition point(s) between flow categories and accurately characterize the AU. One approach may be to examine air photos or satellite imagery and identify those areas with the greatest vegetation as potential study reaches with the greatest likelihood for “perennial” characteristics. Using the tools and resources described above may be helpful in confirming characteristics on the ground should an AU need to be re-evaluated.

2. Level 1 Field Procedures

In order to distinguish between ephemeral, intermittent, and perennial streams and rivers using the information presented in this protocol, the field evaluator should have experience making geomorphic, hydrological, and biological observations in New Mexico or the semi-arid region of the southwestern U.S. Field evaluations should be performed at least 48 hours after the last known major rainfall or snowmelt event. In addition, it is *strongly* recommended that field evaluations be conducted outside of drought conditions whenever possible.

Field Equipment and Supplies

- Copy of *Hydrology Protocol* and associated *Field Sheets*.
- Site maps and satellite imagery (1:250 scale if possible)
- Global Positioning System (GPS) – used to determine latitude and longitude
- Clipboard/pencils/sharpies
- Two Metric Rulers
- Two Measuring Tapes
- Survey rod
- Bank pins
- Laser Level/Rod Eyes/Clinometer
- Compass (if not available as part of GPS unit)
- Camera – used to photograph and document site features
- Shovel or Soil Auger
- D-frame dip net/white sorting tray
  (optional) Munsell
- Soil color chart (optional)
- Long piece of string (optional)
- Mechanical tally counter (optional)
- Sand-gauge card (optional)

Sample Reach Selection

Before selecting a location for the survey, note the character of the stream while driving to the site to verify that the reach is representative of the AU being characterized. This initial examination allows the evaluator to study the nature of the channel, observe characteristics of the watershed, and observe characteristics that indicate what source of water (stormflow, or base flow plus tributary/point source discharges, if present) may predominantly or solely contribute to flow in the AU. These initial observations also aid in determining the magnitude (poor, weak, moderate or strong) of specific parameters. In addition, the assessor can identify if the sample reach is generally uniform (i.e. "representative") or if it should be assessed as two or more distinct reaches. Hydrology evaluations must not be made at one point without first walking up and down the channel

for at least 160 meters.

Ideally, the visual examination would be from the stream origin to the downstream confluence with a larger stream or until a change in characteristics such as slope or geology is observed, but this is usually not feasible or practical. Furthermore, property access issues may arise on privately held property. Make sure the site is easily and safely accessible. If the site is on private property get the land owner's approval before conducting an evaluation.

Upon finding a representative area to conduct the survey, document the latitude and longitude (origination and termination) extent of the survey reach on the *Field Sheets*, the length of the survey area should be no less than 160 meters.

Photodocumentation

It is important to explain the rationale behind any conclusions reached using this protocol and sometimes photos are just the medium in which to do that. It is essential to take several photos of the sample reach, AU and/or watershed, as appropriate, to document the environmental conditions and any disturbances or modifications that are relevant to making a final hydrology determination. Multiple and varied photos will help evaluate and verify the homogeneity of the AU as well as the representativeness of the sample reach when and if a UAA is reviewed by NMED, EPA and the WQCC. Photos that document the evaluation attributes (e.g. riparian vegetation, benthic macroinvertebrates, etc.) are also encouraged and provide excellent supporting documentation for any conclusions reached.

The assessor should include a detailed description of each photo on the *Field Sheets*, including date, description of the photo (e.g. left bank, right bank, upstream, downstream, etc.), and GPS coordinates (if different from site location), and attach the photos to the *Field Sheets* to officially document the conditions at the time of the evaluation and to support any conclusions that were reached using this protocol.

3. Level 1 Scoring

Hydrological determinations are accomplished by evaluating 14 different attributes of the sample reach and assigning a numeric score to each attribute following the four–tiered, weighted scale described in Section 1 Scoring and summarized in Table 1. Total scores reflect the persistence of water with higher scores indicating intermittent and perennial systems. **Please see Section 2 – Guidance for Overall Score Interpretation for more details.**

4. Level 1 Indicators

1.1. Water in Channel

It is necessary to distinguish stormwater inflow (resulting from precipitation within the past 48 hours) from baseflow. Flow observations preferably should be taken at least 48 hours after the last substantial rainfall or runoff event. Local weather data and drought

information should be reviewed before evaluating flow conditions. Perennial systems will have water in their channels year-round in the absence of drought conditions. Therefore, it is recommended that field evaluations be conducted outside of drought conditions whenever possible. Drought conditions are defined as any time the Standard Precipitation Index (SPI) is less than -1.5, indicating severely to extremely dry conditions (NDMC 1995). The 12-month SPI should be recorded on the *Field Sheets* to indicate climatic conditions at the time of sampling, and confirmed through other sources such as the Standardized Precipitation Evapotranspiration Index (Beguería, et al. 2014) or the United States Drought Monitor to ensure that extreme conditions are not indicated for the survey location.

Evidence of recent high flows should be noted on the *Field Sheets*. Such evidence includes moist or wet sediment on plants or debris and organic drift lines at or above bankfull or in the active floodplain. Artificial (i.e. point-source) discharges should also be noted on form. Site inspections should result in visually discernible stream flows as evidence of base flow contribution between rain events, even in low flow conditions. If base flows are present during a site inspection that is more than 48 hours after a major rainfall or runoff event, the sample reach is either perennial or intermittent. However, intermittent reaches do not always have water in them. A good rule of thumb for differentiating ephemeral reaches from intermittent ones is if they have water in them during the dry season or during a drought. Look for water in pool areas in the streambed. The presence or types of plants as well as saturated sediment underneath rocks located within the channel are also good indications of the presence of water during the dry season or during a drought.

If the stream is visited during the dry season (typically defined in NM as **late May to mid-July** and **mid-September to early November**, but also varies by region and elevation of the stream) and base flows are not evident, the stream may be ephemeral or intermittent. If there is no flowing water within 48 hours of a rain or runoff event, then the stream is more than likely ephemeral. The prerequisite for a stream to be determined as ephemeral is that there must be no evidence of base flows in the stream banks.

Strong – Flow is evident throughout the sample reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.

Moderate – Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.

Weak – Dry channel with standing pools. There is some evidence of base flows (e.g. riparian vegetation growing along channel, saturated sediment under rocks, etc)

Poor – Dry channel. Dry under rocks and debris. No evidence of base flows was found.

If available, historic or recent flow data from streamgages such as those managed by the USGS, OSE, or LANL may clearly indicate ephemeral, intermittent, or perennial flow patterns for the available period of record and will facilitate the scoring of Indicator #1.1 *Water in Channel*.

1.2. Fish (qualitative observations)

In most cases, fish are indicators of perennial systems, since fish will rarely inhabit an intermittent stream. Fluctuating water levels of intermittent streams provide unstable and stressful habitat conditions for fish communities. When looking for fish, all available habitats should be observed, including pools, riffles, root clumps, and other obstructions (to greatly reduce surface glare, the use of polarized sunglasses is recommended). In small streams, the majority of species usually inhabit pools and runs. Fish should be easily observed within a minute or two. Also, fish will seek cover once alerted to your presence, so be sure to look for them slightly ahead of where you are walking. Check several areas along the sample reach, especially underneath undercut banks.

Strong - Found easily and consistently throughout the sample reach.
Moderate - Found with little difficulty but not consistently throughout the sample reach.
Weak - Takes 10 or more minutes of extensive searching to find.
Poor - Fish are not present (after 10 or more minutes of searching).

1.3. Benthic Macroinvertebrates (qualitative observations)

The larval stages of many aquatic insects are good indicators that a stream is perennial because a continuous aquatic habitat is required for these species to mature. Turn over the rocks and other large substrate found in areas of visible flowing water, (i.e. riffles) and scan the undersides for benthic macroinvertebrates. Also observe the newly disturbed area where the rock once was for signs of movement. This method may be more suitable for mountainous areas where riffles predominate. For lower gradient systems and other areas of slow moving water, benthic macroinvertebrates may be located in a variety of habitats including root wads, undercut banks, pools, leaf-packs, and submerged aquatic vegetation. Note that some benthic macroinvertebrates will make small debris/sand cases, which can be covered with periphyton and easily confused for
excess debris picked up from the substrate. The use of a small net to sample a variety of habitats
including water under overhanging banks or roots, accumulations of organic debris (e.g. leaves) and the substrate may be helpful.

In DRY channels, focus the search on the sandy channel margins for mussel and aquatic snail shells, any remaining pools for macroinvertebrates, and under cobbles and other larger bed materials for caddisfly casings. Casings of emergent mayflies or stoneflies may be observed on dry cobbles or on stream-side vegetation.

Strong - Found easily and consistently throughout the sample reach.
Moderate - Found with little difficulty but not consistently throughout the sample reach.
Weak - Takes 10 or more minutes of extensive searching to find.
Poor - Benthic macroinvertebrates are not present (after 10 or more minutes of searching).

1.4. Presence of Filamentous Algae and Periphyton (qualitative observations)

These forms of algae are attached to the streambed substrate and require an aquatic environment to persist. They are visible as a pigmented mass or film, or sometimes hair-

like growths on submerged surfaces of rocks, logs, plants and any other structures within the channel. Periphyton growth is influenced by chemical disturbances such as increased nutrient (nitrogen or phosphorus) inputs and physical disturbances such as increased sunlight to the stream from riparian zone disturbances.

Strong - Found easily and consistently throughout the sample reach.

Moderate - Found with little difficulty but not consistently throughout the sample reach.

Weak - Takes 10 or more minutes of extensive searching to find.

Poor - Filamentous algae and/or periphyton are not present (after 10 or more minutes of searching).

1.5. Differences in Vegetation

As a rule, only perennial and intermittent systems can support riparian areas that serve the entire suite of riparian ecological functions. Ephemeral streams generally do not possess the hydrological conditions that allow true riparian vegetation to grow. Although water flows down ephemeral channels periodically, the water table does not occur sufficiently close to the soil surface to allow water loving vegetation to access the greater quantity of water they need to grow. Vegetation growing along ephemeral watercourses may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but generally there are no dramatic compositional differences between the two. Even along those ephemeral channels where vegetation composition differs somewhat from the adjacent uplands, that vegetation does not require as much soil moisture as true riparian plants.

Note if vegetation is absent or altered due to man-made activities on the Level 1 *Field Sheet*

Strong – Dramatic compositional differences in vegetation are present between the riparian corridor and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire sample reach – riparian, aquatic, or wetland species dominate the length of the reach.

Moderate – A distinct riparian vegetation corridor exists along part of the sample reach. Compositional species difference between upland and riparian corridor. Riparian
vegetation is interspersed with upland vegetation along the length of the reach.

Weak – Vegetation growing along the sample reach may occur in greater densities or grow more vigorously than in the adjacent uplands, but there are minimal compositional differences between the two.

Poor – No compositional or density differences in vegetation are present between the banks and the adjacent uplands. Vegetation growing along the riparian area does not occur in greater density or grow more vigorously than in the adjacent uplands.

1.6. Absence of Rooted Upland Plants in Streambed

This attribute relates flow to the absence of rooted plants, since flow will often act as a deterrent to plant establishment by removing seeds or preventing aeration to roots. Cases where rooted upland plants are present in the streambed may indicate ephemeral or intermittent flow. Focus should be on the presence of plants in the bed or thalweg and

plants growing on any part of the bank should not be considered. Note, however, there will be exceptions to this attribute. For example, rooted plants can be found in shaded perennial streams with moderate flow but in all cases these plants will be water tolerant (i.e. obligate and/or facultative wetland plants).

Additionally, in some situations (e.g., high gradient sand bedded streams located within flashy watersheds) highly erosive flows and/or depth of scour in response to extreme rainfall events may limit the presence of rooted vegetation. Under these circumstances the assessor may use

professional judgment in selecting the appropriate scoring criteria, and should document on the
Field Sheets and with photos those factors that explain any alternative scoring methodology.

Strong – Rooted upland plants are absent within the streambed/thalweg.
Moderate – There are a few rooted upland plants present within the streambed/thalweg.
Weak – Rooted upland plants are consistently dispersed throughout the streambed/thalweg.
Poor – Rooted upland plants are prevalent within the streambed/thalweg.

*** If the sample reach being evaluated has a score ≤ 2 up to this point, the reach is determined to be ephemeral. If the reach being evaluated has a score≥ 18 at this point, the reach is determined to be perennial. You can STOP the evaluation. However, if the reach has a score between 2 and 18 you should continue the Level 1 Evaluation.***

1.7. Sinuosity
Sinuosity is a measure of a channel's "crookedness." Sinuosity is the result of the stream naturally dissipating its flow forces. Intermittent systems don't have a constant flow regime and, as a result, exhibit substantially less sinuous channel morphology. While ranking, take into consideration the size of the stream (e.g. 1st, 2nd, 3rd order, etc.), which may also influence the stream sinuosity. Sinuosity is best measured using aerial photography (Rosgen 1996).

Examples of sinuosity are provided in Figure 1. To calculate sinuosity using an aerial photograph, measure the stream length and related valley length for at least two meander wavelengths. A meander wavelength is the distance of one meander, or bend, along the down- valley axis of the stream. Divide the *stream* length (SL) by the *valley* length (VL) (Figure 2). If aerial photos are not available, sinuosity can be measured using a GPS's trip computer function to measure channel length and valley length. The higher the ratio (SL/VL), the more sinuous the stream.

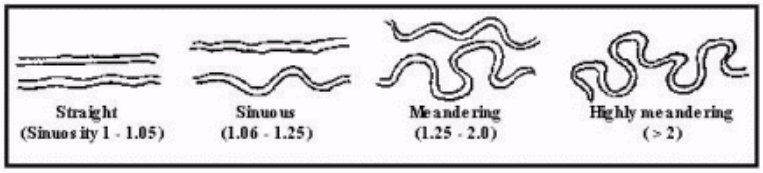


Figure 1. Examples of Stream Sinuosity (NCDWQ 2005)

In some surface waters (e.g., mountain stream settings or areas of complex and varied geology) channel sinuosity may be more reflective of external morphological factors, rather than the presence or absence of stream flow. Under these circumstances the assessor may use professional judgment in selecting the appropriate scoring criteria, and should document on the Level 1 *Field Sheets* and with photos those factors that explain any alternative scoring methodology.

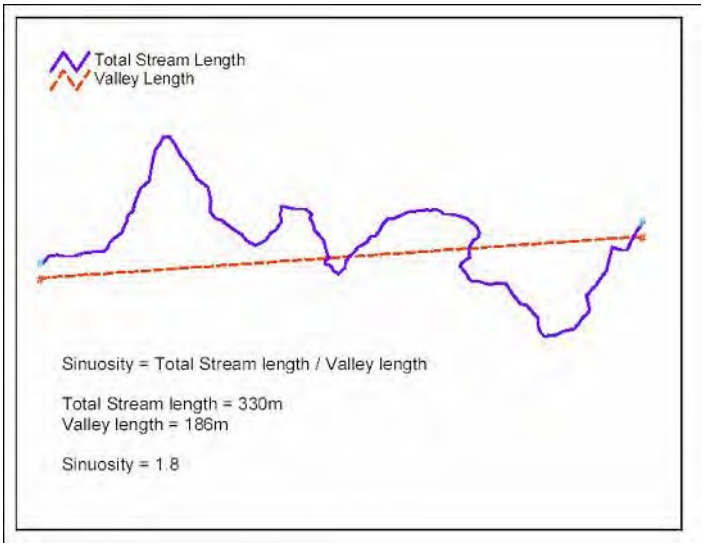


Figure 2. Stream Sinuosity (NCDWQ 2005)
******Note method used to determine sinuosity on the Field Sheets******

Strong – Stream sinuosity ratio is greater than 1.4. Stream has numerous, closely-spaced bends, few straight sections.

Moderate – Stream sinuosity ratio is between 1.4 and 1.2. Stream has good sinuosity with some straight sections.

Weak – Stream sinuosity ratio is between 1.2 and 1.0. Stream has very few bends and mostly straight sections.

Poor – Stream sinuosity ratio is equal to 1.0. Stream is completely straight with no bends.

1.8. Floodplain and Channel Dimensions

The relative importance of many fluvial processes in arid regions, especially the magnitude and frequency of their operation, differs considerably from more humid regions. As a result, channel forms also differ considerably from humid regions. Although one of the difficulties of characterizing dryland ephemeral streams is their enormous variability in form, they tend to be more incised with confined channels relative to intermittent and perennial streams (Knight et al. 1999).

When determining the vertical confinement of the stream, it is important to distinguish whether the flats adjacent to the channel are a frequent and active floodplain, terraces (abandoned floodplain), or are well outside of the flood-prone area. The ratio of the flood-prone area width to the bankfull, or active, channel width is used to determine the vertical confinement of the stream (Rosgen 1994). A larger ratio corresponds to a wide, active floodplain and a minimally confined channel, whereas a smaller ratio corresponds to a narrow or absent floodplain and a noticeably confined channel (**see scoring and "note" below*).

The flood-prone area width is measured at the elevation that corresponds to twice the maximum depth of the bankfull channel as taken from the established bankfull stage (Figure 3). The bankfull, or active, channel is defined as that which is filled with moderate sized flood events that would typically occur every one or two years and do not usually inundate the floodplain. Bankfull levels can be identified by:

- The presence of a floodplain at the elevation of initial flooding,
- The elevation associated with the *highest* depositional features,
- An obvious slope break that differentiates the channel from a relatively flat floodplain terrace higher than the channel,
- A transition from exposed sediments to terrestrial vegetation,
- Moss growth on rocks along the banks,
- Evidence of recent flooding,
- Presence of drift material caught on overhanging vegetation, and
- Transition from flood- and scour-tolerant vegetation to that which is relatively intolerant.

Field Protocol:

The evaluator(s) should start by selecting a location for the purpose of obtaining bankfull data. In general, the easiest location to measure bankfull channel width is within the narrowest segment of the sample reach. Deflectors such as rocks, logs, or unusual constrictions that make a stream especially narrow should be avoided.

1. Once a location is chosen, obtain a *rod reading* for an elevation at the "max depth" location by having one person hold a survey rod at the max depth location (thalweg) and a second person on the terrace adjacent to the stream using a clinometer and a meter stick or ski pole with one meter marked on it (if available, a surveyor's level can be used instead of a clinometer). Hold the clinometer at the one-meter mark on the ski pole, look through the clinometer holding it at zero, and read the height on the survey rod at the "max depth" location (Refer to **Figure 3**). Record the "max depth" *rod reading* on *Level 1 Field Sheets*.
2. Identify the bankfull stage using the indicators described above. Obtain a *rod reading* for an elevation at the "bankfull stage" location using the methods described in Step #1. Record the "bankfull stage" *rod reading* on Level 1 *Field Sheets*.
3. Subtract the "bankfull stage" reading from the "max depth" reading to obtain a maximum depth value. Multiply the maximum depth value by 2 for the "2x Max.

Depth" value. Record the "2x Max. Depth" value on Level 1 *Field Sheets*.

4. Subtract the "2x Max Depth" value from the "max depth" *rod reading* for the "flood- prone area" location *rod reading*. Move the rod upslope, online with the cross-section, until a rod reading for the "flood-prone area" location is obtained.
5. Mark the flood-prone area (FPA) locations on each bank. Measure the distance between the two FPA locations. Record the **FPA Width** on Level 1 *Field Sheets*.
6. Measure the distance between the two Bankfull Stage locations. Record the **Bankfull Width** on Level 1 *Field Sheets*.
7. Divide the FPA Width by the Bankfull Width to calculate the Floodplain to Channel Ratio. Record the calculated ratio on Level 1 *Field Sheets*. <u>The Floodplain to Channel Ratio is used to score the stream for this indicator</u>.

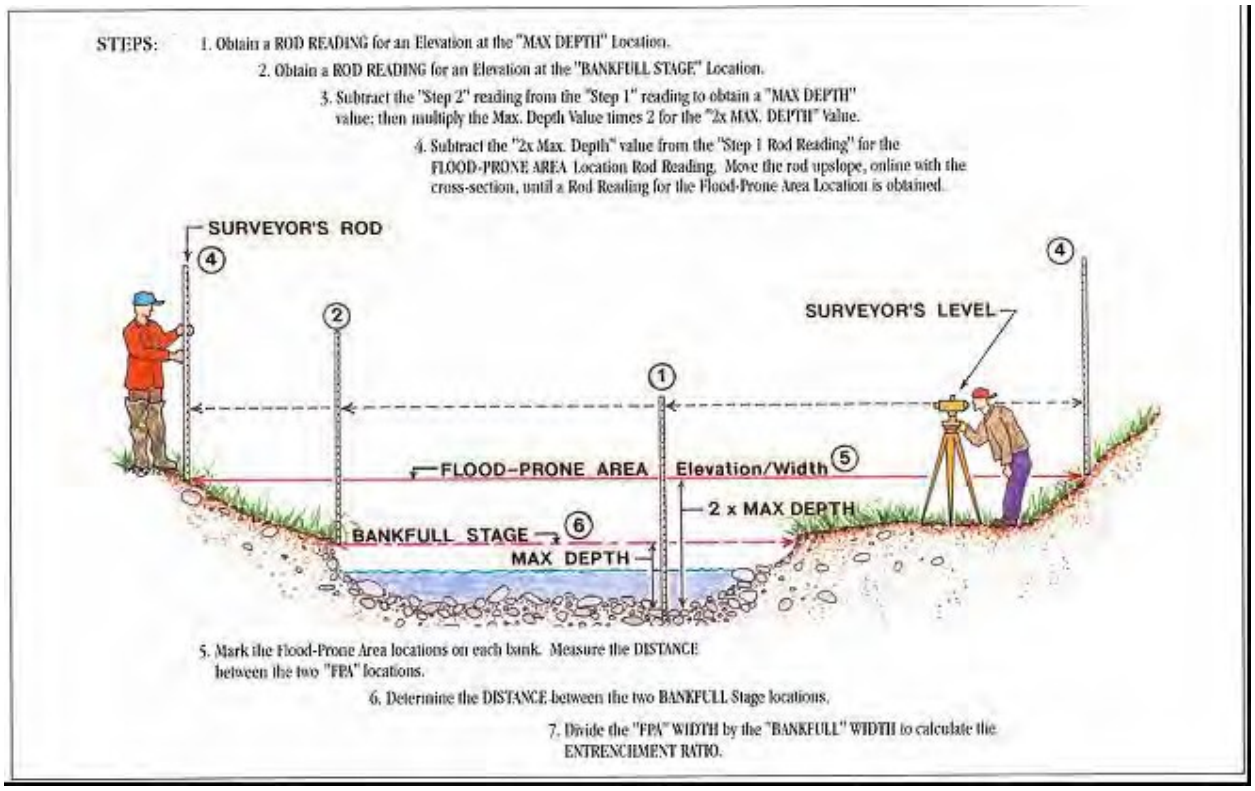


Figure 3. Determining a Flood-Prone Area elevation/width (Rosgen 1996)

In some surface waters (e.g., mountain stream settings or areas of complex and varied geology) the degree of channel confinement may be more reflective of external morphological factors rather than the presence or absence of stream flow. Under these circumstances the assessor may use professional judgment in selecting the appropriate survey location and scoring criteria and should document on the Level 1 *Field Sheets* and with photos those factors that explain the resulting 'representative' scores.

******Alternative methods for determining the Floodplain to Active Channel Ratio should be described and recorded on the Field Sheets******

Strong - Ratio > 2.5*. Stream is minimally confined with a wide, active floodplain.

Moderate - Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present but may only be active during larger storm events.

Weak - Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and disconnected from the channel during most storm events.

*NOTE: a larger ratio corresponds to a wide, active floodplain and a minimally confined channel, while a smaller ratio corresponds to a narrow or absent floodplain and a noticeably confined channel. If the channel is dry and bankfull stage cannot be determined, score this indicator based on your observations using the following scoring system:

Strong = stream is not incised/confined. Wide, active floodplain is connected to the channel.

Moderate = stream is moderately incised/confined. Flood-prone area width is narrow. Floodplain adjacent to the channel may be connected during large floods or represented by abandoned terraces.

Weak = stream is undeniably incised/confined. Flats adjacent to the stream are well outside of the flood-prone area.

1.9. In-channel Structure -- Riffle-Pool Sequences

A repeating sequence of riffle/pool (riffle/run in lower gradient systems, ripple/pool in sand bed systems, or step/pool in higher gradient systems) can be observed readily in perennial systems. Riffle-run (or ripple-run) sequences in low gradient systems are often created by in-channel woody structures such as roots and woody debris. When present, these characteristics can be observed even in a dry channel by closely examining the local profile of the channel. A riffle is a zone with relatively high channel slope gradient, shallow water, and high flow velocity and turbulence. In smaller streams, riffles are defined as areas of a distinct change in gradient where flowing water can be observed. The bottom substrate material in riffles contains the largest sedimentary particles that are moved by bankfull flow (bedload). A pool is a zone with relatively low channel slope gradient, deep water, and low velocity and turbulence. Fine textured sediments generally dominate the bottom substrate material in pools. Along the sample reach, take notice of the frequency between the riffles and pools.

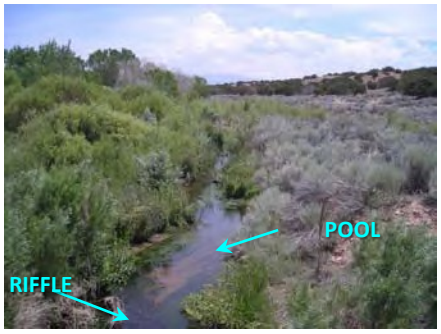
Strong - Demonstrated by a frequent number of riffles followed by pools along the entire sample reach. There is an obvious transition between riffles and pools.

Moderate - Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.

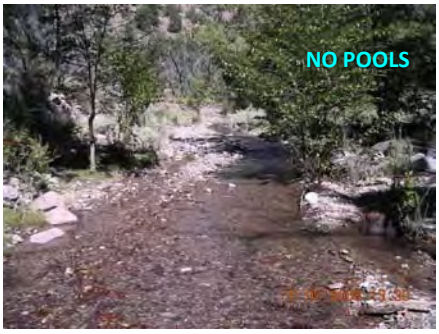
Weak - Mostly has areas of pools or of riffles.

Poor - No riffles or pools observed.

Example of "**Strong**" Score – San Francisco River



Example of "**Moderate**" Score – Santa Fe River



Example of "**Weak**" Score – Mineral Creek

Example of "**Poor**" Score – Arroyo Chamiso

*** If the sample reach being evaluated has a score ≤ 5 at this point, the reach is determined to be ephemeral. If the reach being evaluated has a score ≥ 21 at this point, the reach is determined to be perennial. You can STOP the evaluation. However, if the reach has a score between 5 and 21 you should continue the Level 1 Evaluation.***

1.10. Particle size or Stream Substrate Sorting

This feature can be examined in two ways. The first is to determine if the sediment texture in the bottom of the channel is similar to the texture outside the channel. If this is the case, then there is evidence that erosive forces have not been active enough to down cut the channel and support an intermittent or perennial system. Sediment in the bed of ephemeral channels typically have the same or comparable texture (i.e. particle size) as areas close to but not in the channel. Accelerated stormflow resulting from human activities may produce deep, well-developed ephemeral or intermittent channels which have little or no coarse bottom materials indicative of upstream erosion and downstream transport. The bottom substrate of non-ephemeral systems often has accumulations of coarse sand and larger particles.

The second way this feature can be examined is to look at the distribution of the particles in the substrate in the channel. In lower-gradient, sand-bed streams one may need to look for size variations among sand grains – for instance, coarse versus fine sand. Note, however, the usefulness of this attribute may vary among ecoregions. For instance, in the plateaus or tablelands the variability in the size of substrate particles will probably be less than in the mountains.

Examples of Methods used to determine particle size and gradation:

- Sand Gauge Reference Card (best for sand dominated systems)
- Standard Sieve Analyses
- Wire Screen Method
- Pebble Count Method:
  - EPA's EMAP Pebble Count
  - Wolman Pebble Count
  - Zig Zag Pebble Count
  - USFS Pebble Count Sampling Frame

For whatever method is chosen, repeat procedure for an area close to but not in the channel for comparison purposes. Step outside the bankfull width or above the bank onto the floodplain or first terrace and repeat the procedure used in the bankfull channel. Avoid areas of dense vegetation and soil accumulation. Beware of cactus, snakes, and other hazards when "blindly" picking up particles outside of the channel or even in dry streambeds. For pebble counts, the objective is to measure at least 50 pebbles in the channel and 50 pebbles in areas close to but not in the channel for accurate distributional representations and comparisons.

Strong - Particle sizes in the channel are noticeably different from particle sizes outside the channel in the flood-prone area. There is a clear distribution of various sized substrates in the channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.

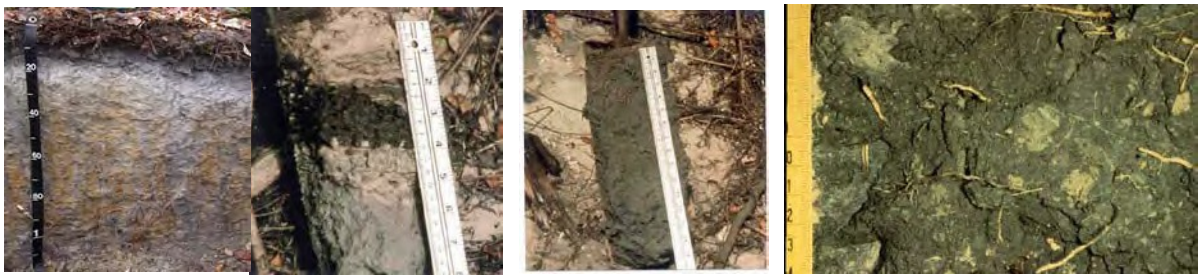
Moderate - Particle sizes in the channel are moderately similar to particle sizes outside the channel in the flood-prone area. Various sized substrates are present in the channel and are represented by a higher ratio of larger particles (gravel/cobble).

Weak - Particle sizes in the channel are similar or comparable to particle sizes outside the channel in the flood-prone area. Substrate sorting is not readily observed in the channel.

1.11. Hydric Soils

One of the most reliable methods for differentiating between ephemeral and non-ephemeral stream types during drier conditions requires investigation of the stream bank (i.e. from the stream bed to the top of the bank). Ephemeral streams usually have poor channel development and lack groundwater-induced base flows that normally result in hydric soils dominating the banks of intermittent and perennial streams. The presence of hydric soil indicators above the elevation of the channel bottom in floodplain soils adjacent to the channel indicates the presence of a seasonal high water table that can provide a critical period of base flow. Non-ephemeral stream banks typically are dominated by soils with hydric indicators, such as visually confirmed oxidized rhizospheres, a matrix of gray or black soils, and reducing conditions confirmed by a redox meter. The presence of hydric soils should be determined through visual observations, pungent odors, clay, etc. Additional information on field indicators of hydric soils is available from the Natural Resources Conservation Service at https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/. There are also

special considerations regarding the determination of hydric soils in arid regions. The United States Army Corps of Engineers (USACE) Wetlands Regulatory Assistance Program has divided New Mexico into three regions (Arid West, Western Mountains, and Great Plains). A regional map and regional supplements to the Corps of Engineers Wetland Delineation Manual are available at: https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp.



Examples of Hydric Soils in the Arid West – U.S. Army Corps of Engineers
(photos found at: http://www.usace.army.mil/CECW/Documents/cecwo/reg/trel08-28.pdf)

Note that hydric soil indicators may be poorly developed at the seasonal high-water table elevation in young, coarse textured, alluvial soil materials with low concentrations of clay, iron, and manganese, or floodplain soils where moving water fails to become reduced.

Present – Hydric soils are found within the sample reach.
Absent – Hydric soils are not found within the sample reach.

1.12. Sediment on Plants or Debris

The transportation and processing of sediment is a main function of streams. Therefore, evidence of sediment on plants or other debris in the channel may be an important indicator of recent high flows. Note that sediment production in stable, vegetated watersheds is considerably less than in disturbed watersheds. Are plants in the channel, on the streambank, or in the floodplain covered with sediment? Look for silt/sand accumulating in thin layers on debris or rooted aquatic vegetation in the runs and pools. Be aware of upstream land-disturbing construction activities, which may contribute greater amounts of sediments to the channel and can confound this indicator. Note these activities on the *Field Sheets* if these confounding factors are present.

Strong – Sediment found readily on plants and debris within the channel, on the streambank, and within the floodplain throughout the length of the sample reach.
Moderate – Sediment found on plants or debris within the channel although not prevalent along the sample reach. Mostly accumulated on plants and debris in pools.
Weak – Sediment on plants and debris is isolated in small amounts along the sample reach.
Poor – No sediment is present on plants or debris.

****Refer to Section 2 Overall Score Interpretation, for guidance on overall Level 1 score interpretation****

Level 1 Supplemental Indicators

The following indicators do not occur consistently throughout New Mexico, which may be the reason why they were not statistically significant between waterbody types. Regardless, when they occur they are useful indicators in the determination of perenniality. Record the score on the Level 1 *Field Sheets* and include the score when calculating the total points.

1.13. Seeps and Springs

Seeps: Seeps have water dripping or slowly flowing out from the ground or from the side of a hill or incised streambank. Springs: Look for "mushy" or very wet, black decomposing leaf litter nearby in small depressions or in the channel. Springs and seeps often are present at grade controls and headcuts. The presence of this indicator suggests that groundwater is a source of streamflow except during a period of drought. Score this category based on the presence or absence of these features observed within the sample reach.

Present – Seeps and/or springs present in reach.
Absent – Seeps and/or springs were not present in reach

1.14. Iron Oxidizing Bacteria/Fungi

These features are often (although not exclusively) associated with groundwater. Iron oxidizing bacteria/fungi derive energy by oxidizing iron, originating from groundwater, in the ferrous form (Fe^{2+}) to the ferric form (Fe^{3+}). In large amounts, iron-oxidizing bacteria/fungi discolor the substrate giving it a red, rust-colored appearance. In small amounts, it can be observed as an oily sheen on the water's surface. This indicates that the stream water is derived from a groundwater source, and these features are most commonly seen in standing water on the ground's surface or in slow moving creeks and streams. Filmy deposits on the surface or banks of a stream are often associated with the greasy "rainbow" appearance of iron oxidizing bacteria. This is a naturally occurring phenomenon where there is iron in the groundwater. However, a sudden or unusual occurrence may indicate a petroleum product release from an underground fuel storage tank. One way to differentiate iron-oxidizing bacteria from oil releases is to trail a small stick or leaf through the film. If the film breaks up into small islands or clusters, it is most likely bacterial in origin. However, if the film swirls back together, it is most likely a petroleum discharge.

Present – Iron-oxidizing bacteria/fungi present in reach.
Absent – Iron-oxidizing bacteria/fungi not present in reach.

Oily sheen on water's surface due to iron-oxidizing bacteria
(photos found at:
http://www.arlingtonva.us/departments/EnvironmentalServices/epo/EnvironmentalServicesEpoDr.aspx)

Iron-oxidizing bacteria in seepage spring at La Plata River, Farmington, NM

****Refer to Section 2 Overall Score Interpretation, for guidance on overall Level 1 score interpretation****

G. Level 2 Evaluation: Borderline Determinations

If, after conducting a Level 1 Evaluation, a hydrological determination cannot be made because more information is required, then a Level 2 Evaluation should be conducted between mid-August and mid-November to coincide with SWQB's biological index period.

1. Level 2 Office Procedures

Refer to the results of the **Level 1 Evaluation**. If this step was not completed in the Level 1 Evaluation or cannot be located then refer to *Drought Conditions* and *Recent Rainfall Activity* and the *Level 1 Office Procedures*, particularly *Stream Segment Identification and Sample Reach Selection*, for more information.

Additional Supporting Information

Additional supporting information may not be scored but can be used to support a Level 2 hydrological determination. Unfortunately, not all information listed here will be available for every assessment unit. Additional supporting information includes, but is not limited to:

Observation of flow:

Observation of flow under certain seasonal or hydrological conditions can directly support classifying a sample reach as perennial. Reaches with flow during the dry season or periods of drought are likely perennial. Although the presence of flow during a drought indicates perennial conditions, care must be taken in evaluating the upper limits of perenniality because some perennial systems may only contain isolated pools of water or be dry during periods of drought.

Thermograph Data:

- Historic or recent SWQB thermograph data may provide some insight on flow during certain seasonal or hydrological conditions
- Do thermograph and/or streamflow data (or lack thereof) warrant the use of equipment to estimate the onset and cessation of flow? (See *Indicator #2.1* below)

Key biological indicators:

As discussed below, the presence of aquatic organisms whose life cycle requires residency in flowing water for extended periods (especially those one year or greater) is a strong indication that a sample reach is perennial. If a reach is recognized as borderline, a qualified aquatic biologist or environmental scientist should evaluate the presence and abundance of such macroinvertebrates and vertebrates species before making a final hydrological determination.

- Current and/or historic fisheries data may be found at:
    - Natural Heritage New Mexico (https://nhnm.unm.edu/)
    - Museum of SW Biology (http://www.msb.unm.edu/index.html)
    - Sublette, James E. et al. 1990. *The Fishes of New Mexico – First Edition.* University of New Mexico Press. 393 p.
- SWQB Fisheries Data are available upon request by contacting the Surface Water Quality Bureau (505-827-0187 or https://www.env.nm.gov/surface-water-quality/).

Other information that may be considered:

- Groundwater contour maps and/or nearby, local well logs.
- Information provided by a long-term resident and/or local professional who has observed the stream during various seasons and hydrological conditions.
- Review of historic information such as aerial photography.
- Professional judgment may be used in conjunction with the total score and supporting information in making the final determination.

2. **Level 2 Field Procedures**

In order to distinguish between ephemeral, intermittent, and perennial streams and rivers using the information presented in this protocol, the field evaluator should have experience making geomorphic, hydrological, and biological observations in New Mexico or the semi-arid region of the southwestern U.S. Field evaluations should be performed at least 48 hours after the last known major rainfall event or snowmelt. In addition, it is *strongly* recommended that field evaluations be conducted outside of drought conditions whenever possible. Drought conditions, for the purposes of this *Hydrology Protocol*, are defined as any time the 12-month SPI is less than -1.5, indicating severely to extremely dry conditions (NDMC 1995).

Refer to the results of the **Level 1 Evaluation**. If this step was not completed in the Level 1 Evaluation or cannot be located then refer to the *Level 1 Field Procedures*, specifically *Sample Reach Selection* and *Photodocumentation,* for more information.

Level 2 Field Equipment and Supplies

Copy of *Hydrology Protocol* and associated *Field Sheets*
*Thermograph Deployment/Upload/Retrieval Field Sheet
*Fish Sampling Field Data Sheet
Site maps and aerial photographs (1:250 scale if possible)
Global Positioning System (GPS) –
used to determine latitude and longitude
Camera and Compass –
used to photograph and document site features
Clipboard/pencils/sharpies
Measuring tape
Survey flags for transect locations
Survey rod
Bank pins
Level
Shovel or Soil Auger
Thermographs with caps and tags
Zip ties/bailing wire
Hammer & T-post driver
Rebar & T-posts (various lengths)
Flagging
Wire/tie cutters
Kicknet (18 inch; 500µm net size)
Forceps
Sieve (500µm mesh)
Buckets –
to help sort macroinvertebrates
Sample containers (500-mL or 1-L)
Ethanol
Ethanol-proof sample labels
Ethanol-proof pen
Timepiece
Backpack electrofisher & accessories
Seine net
Buckets & aerators
Dip & aquarium nets
Voucher kit & formalin
Field guide
Collection permits
Measuring Board
One battery per site –
for electrofisher + back-up

*See the SWQB SOP webpage at https://www.env.nm.gov/surface-water-quality/sop for the current version

3. Level 2 Indicators

2.1. Water in Channel (OPTIONAL)

Observation of flow under certain seasonal or hydrological conditions can directly support classifying a sample reach as perennial. Reaches with flow during the dry season or periods of drought are likely perennial. The longer the period from the last substantial rainfall the stronger the presence of flow supports the perennial determination. Although the presence of flow during a drought indicates perennial conditions, care must be taken in evaluating the upper limits of perenniality because some perennial systems may only contain isolated pools of water or be dry during periods of drought.

If available, historic or recent flow data from streamgages such as those managed by the USGS, OSE or LANL may clearly indicate ephemeral, intermittent, or perennial flow patterns for the available period of record and will facilitate the scoring of this indicator. If streamgage data are not available, temperature sensors (or electrical resistance sensors or pressure transducers) can be used to estimate the onset and cessation of flow (Constanz et al. 2001; Lawler 2002; Blasch et al. 2002). Periods of flow are characterized by those sections of the thermograph where the amplitude of the diel temperature signal is visibly dampened (Constanz et al. 2001). When the in-stream temperature data are compared graphically to the temperature data from a nearby site out of streamflow where little dampening has occurred, a flow signal is easily identifiable.

Strong – The water sensor is decidedly different from the air sensor. The streamflow signal is easily identifiable and occurs throughout the entire time of deployment (i.e. water sensor has a diel signal that is visibly dampened compared to air sensor throughout the deployment).

Moderate – The water sensor differs from the air sensor. A flow signal is identifiable during the majority of time; however, there are short periods of time when the water sensor has a diel signal that is comparable to the air sensor indicating periods of drying.

Weak – The water sensor differs somewhat from the air sensor. A flow signal is identifiable during certain days or weeks; however, there are long periods of time when the water and air sensors have similar diel signals (i.e. no dampening) indicating dry periods.

Poor – There are no substantial differences between the water and air sensors. The two thermographs are visibly comparable to one another indicating little to no water in the channel.

**If using an electrical resistance sensor or pressure transducer, use the following ratings:

Strong – The streamflow signal is easily identifiable and occurs throughout the entire time of deployment

Moderate – A streamflow signal is identifiable during the majority of time; however, there are short periods of time when the sensor indicates periods of drying.

Weak – A streamflow signal is identifiable during certain weeks or months; however, there are long periods of time when the sensor indicates a dry channel.

Poor – There is no sustained streamflow signal from the sensor (flow signal is only for very

brief periods of time – on the timescale of days – indicating a flow response due to storm events). Or there is no discernible streamflow signal.

2.2. Hyporheic Zone/Groundwater Table

Hyporheic zone: Even when there is no visible flow above the channel bottom, there may likely be slow groundwater discharge into and downstream flow in the **hyporheic zone**. The hyporheic zone is the subsurface interface beneath and adjacent to a stream or river where surface water and shallow groundwater mix. It may be recognized by the accumulation of coarse textured sediments in the bottom of the channel that may be up to 2-3 ft deep in small streams. The saturated sediment in the hyporheic zone exchanges water, nutrients, and fauna with surface flowing waters. Consequently, the hyporheic zone is the site of groundwater discharge to the stream channel, downstream flow, and biological and chemical activity associated with aquatic functions of the stream.

Indicators of a hyporheic zone can be observed by digging a bore hole in the streambed when site conditions are conducive to manually digging a bore hole. Water standing in the bore hole or saturated sediment within the bore hole indicates the presence of a hyporheic zone. If conditions are not conducive to boring a hole in the streambed, one can look under rocks. Saturated or moist sediment underneath rocks located within the channel indicates the presence of a hyporheic zone.

Groundwater Table: The presence of a seasonal high water table or groundwater discharge (i.e. seeps or springs) from the bank, above the elevation of the channel bottom, indicates a relatively reliable source of base flow to a stream. When site conditions are conducive to manually digging a bore hole, indicators of a current water table can be observed by digging a bore hole in the adjacent floodplain approximately two feet away from the streambed. The presence of water standing in the hole above the elevation of the channel bottom after waiting for at least 30 minutes (longer for clayey soils) indicates the presence of a high groundwater table.

Strong – Considerable base flow is present. Hyporheic zone and/or groundwater table is readily observable throughout sample reach.

Moderate – Some base flow is present. Hyporheic zone and/or groundwater table is present, but not abundant throughout sample reach.

Weak – Water is standing in pools and the hyporheic zone is saturated, but there is not visible flow above the channel bottom. Indicators of groundwater discharge are present but require considerable time to locate.

Poor – Little to no water in the channel. No indication of a high groundwater table or hyporheic zone.

2.3. Bivalves

Clams cannot survive outside of water, thus one should examine the streambed or look for them where plants are growing in the streambed. Also, look for empty shells washed up on the bank. Some bivalves can be pea-sized or smaller. Since clams require a fairly constant aquatic environment in order to survive, the search for bivalves can be conducted while looking for other benthic macroinvertebrates. A small net may be useful.

Present – Bivalves are found within the sample reach.

Absent – Bivalves are not found within the sample reach.

2.4. Amphibians

Salamanders and tadpoles can be found under rocks, on streambanks and on the bottom of the stream channel. They may also appear in the benthic sample. Frogs will alert you of their presence by jumping into the water for cover. Frogs and tadpoles typically inhabit the shallow, slower moving waters of the pools and near the sides of the bank. Amphibian eggs, also included as an indicator, can be located on the bottom of rocks and in or on other submerged debris. They are usually observed in gelatinous clumps or strings of eggs.

Present – Amphibians are found within the sample reach.
Absent – Amphibians are not found within the sample reach.

Any collection and identification of aquatic species should be performed by a qualified aquatic biologist, environmental scientist, or other professional.

2.5. Benthic Macroinvertebrates (quantitative observations)

The larval stages of many aquatic insects are good indicators that a stream is perennial because a continuous aquatic habitat is required for these species to mature. The Arid West Water Quality Research Project has published a final report on *Aquatic Communities of Ephemeral Stream Ecosystems* (AWWQRR 2006) that may be a useful supplement to this protocol. In addition, SWQB scientists have been looking for the presence of long-lived aquatic species as reliable determinants for perennial channels, North Carolina's Division of Water Quality has developed a list of benthic macroinvertebrate taxa that are perennial stream indicators (NCDWQ 2010) and West Virginia's Department of Environmental Protection maintains a list of macroinvertebrate species that have an extended aquatic life stage (WVDEP – Watershed Assessment Branch, (304) 926-0495). Further information on life histories of specific macroinvertebrates found through the application of this protocol can be researched, if necessary.

Examples of Methods and Equipment used to collect Benthic Macroinvertebrates:

- EPA's EMAP Protocol
- SWQB's Benthic Macroinvertebrate SOP
- Kick Net
- D-Frame Dip Net
- Rectangular Dip Net
- Surber Sampler
- Hess Sampler
- Approaches:
  - Targeted Riffle
  - Reach-Wide, Multi-Habitat
    - top/bottom of riffle, undercut banks, pools/runs, snags/roots/logs

The goal is to collect as many different kinds of aquatic macroinvertebrates from as many different habitats as necessary to ensure an accurate site assessment. Be aware that each habitat type has different sampling protocols, and some have a greater diversity of organisms than others (**Table 2**). If you have many habitats from which to choose, consider sampling from those with the most diversity. If your stream has a rocky bottom, sample at two separate riffle areas and at one other habitat. If your stream has a soft bottom or does not have riffles, collect samples at submerged logs, snags or undercut banks.

Table 2. Relative diversity of various habitat types

Habitat Type	Stream Type	Habitat
Riffles	Rocky bottom	Most diverse
Undercut banks Snags,	Rocky, soft bottoms	↓
tree roots, logs	Rocky, soft bottoms	Least diverse

Strong – More than one taxa of benthic macroinvertebrate that requires water for their entire life cycle (rheophilic taxa) are present as later instar larvae. Overall there is a balanced distribution of taxa. A list of benthic organisms that indicate perennial features are listed in **Tables 3 and 4**.

Moderate – Only one rheophilic taxon was found in the sample, however sample is diverse. Overall there is a balanced distribution of taxa.

Weak – Rheophilic taxa are not present in the sample; however other types of benthic macroinvertebrates are present. Both diversity and abundance are low or not distributed evenly.

Poor – Benthic macroinvertebrates are not present.

Table 3. Ephemeroptera, Plecoptera, and Trichoptera (EPT) perennial indicator taxa

	Ephemeroptera (Mayflies)	**Plecoptera (Stoneflies)**	**Trichoptera (Caddisflies)**
Family:	Caenidae Ephemerellidae Ephemeridae Heptageniidae	Peltoperlidae Perlidae Perlodidae	Hydropsychidae Lepidostomatidae Molannidae Odontoceridae Philopotamidae Polycentropodidae Psychomyiidae Rhyacophilidae

Table 4. Additional indicators of perennial features

	Megaloptera	**Odonata**	**Diptera**	**Coleoptera**	**Mollusca**
Family:	Corydalidae Sialidae	Aeshnidae Calopterygidae Cordulegastridae Gomphidae	Ptychopteridae	Psephenidae Elmidae	Unionidae Ancylidae Pleuroceridae
Family & *Genus*:			Tipulidae *Tipula* sp.	Dryopidae *Helichus* sp.	

2.6. Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa

The larval stages of many species of these three orders require a period of at least a year, submerged in a constantly flowing aquatic environment before reaching maturity and therefore are commonly associated with perennial systems. Studies conducted by North Carolina State University have found that benthic samples collected in intermittent systems frequently display crustaceans (crayfish, isopods, and amphipods) as the dominant order (NCDWQ 2005). In sample reaches with more perennial characteristics, EPT taxa were collected. In highly urbanized areas, these indicators may be absent due to degradation and, therefore, may not be appropriate to evaluate perennial or intermittent flow conditions. These lists should be carefully evaluated (family or genus level ID) since some genera, such as the *Baetis* mayflies for example, are very short-lived in their aquatic life stages.

Present – EPT taxa are found within the sample reach.
Absent – EPT taxa are not found within the sample reach.

Any collection and identification of aquatic species should be performed by a qualified aquatic biologist, environmental scientist, or other professional.

2.7. Fish (quantitative observations)

Fluctuating water levels of intermittent systems provide unstable and stressful habitat conditions for fish communities. When looking for fish, all available habitats should be observed, including pools, riffles, root clumps, and other obstructions (to greatly reduce surface glare, the use of polarized sunglasses is recommended). In small streams, the majority of species usually inhabit pools and runs. Check several areas along the sample reach, especially underneath undercut banks. In most cases, fish are indicators of perennial systems, since fish will rarely inhabit an intermittent stream.

Fish should be collected, measured, and classified to verify if fish are present in a water body and to help confirm the appropriate hydrological determination. Best professional judgment should be exercised to determine sampling methodology (e.g. shocking, seining, etc.) and to ensure that safety concerns are addressed.

Strong – Fish are present in all habitats (riffles, pools, runs, root clumps, undercut banks, etc.). Multiple age classes are present and evenly represented. Large-

bodied fish may be present.

Moderate – Fish are evident in fewer numbers with one age class dominating. Some habitat is not occupied. Large-bodied fish may be present.

Weak – Fish are not readily visible, require 10 or more minutes to locate, and are typically found within one habitat type (e.g. pools, runs). Very sparse.

Poor – Fish are <u>not</u> found within the sample reach.

IV. OVERALL SCORE INTERPRETATION

The final determination of whether a stream is ephemeral, intermittent, or perennial is based on a variety of information including the total score, supporting information, and professional judgment. The use of the Level 1 Evaluation should, in most cases, provide enough information to accurately distinguish between ephemeral, intermittent, and perennial systems. Scores should reflect the persistence of water with higher scores indicating intermittent and perennial systems. However, if a stream is recognized as borderline (i.e. gray zone – see **Table 5**) or if observations are made during a severe or extreme drought (12-month SPI value less than -1.5), then a Level 2 Evaluation that relies on more intensive and focused data collection can be used to make a final hydrological determination or to verify the Level 1 evaluation.

For a Level 1 Evaluation a minimum total score of 9.0 is set as a guideline to distinguish ephemeral channels from non-ephemeral ones unless there are aquatic macroinvertebrates and/or fish, in which case at least one of the Clean Water Act Section 101(a)(2) objectives is attainable and the stream is at least intermittent. In addition, a Level 1 score greater than 22.0 distinguishes perennial streams from non-perennial streams. SWQB recognizes that there is inherent variability in nature, therefore Level 1 scores between 9 and 12 may be ephemeral but will be recognized as intermittent until further data collection and analysis through a Level 2 evaluation or detailed UAA can more clearly determine that the stream is ephemeral. Similarly, Level 1 scores between 19 and 22 may be intermittent but will be recognized as perennial until further data collection and analysis indicate that the stream is intermittent. **Table 5** summarizes interpretation of Level 1 scoring. In most instances, the use of a Level 1 Evaluation should be sufficient to make a final hydrological determination. A hydrological determination does not change the designated use for a waterbody without the completion of a UAA in accordance with 40 CFR 131.10, 20.6.4.15 NMAC and the State's approved Water Quality Management Plan/Continuing Planning Process (WQMP/CPP). **If after conducting Level 1 Evaluation, a hydrological determination <u>cannot be made</u> because more information is required, then a Level 2 Evaluation which uses more intensive data collection can be conducted.**

Table 5. Summary of Level 1 Score Interpretation

Waterbody Type	Level 1 Total Score	Hydrology Determination
Ephemeral	**Less than 9.0***	**Stream is ephemeral**
≥ 9.0 and < 12.0		Stream is recognized as intermittent until further analysis indicates that the stream is ephemeral
Intermittent	**≥ 12.0 and ≤ 19.0**	**Stream is intermittent**
> 19.0 and ≤ 22.0		Stream is recognized as perennial until further analysis indicates that the stream is intermittent
Perennial	**Greater than 22.0**	**Stream is perennial**

* If there are aquatic macroinvertebrates and/or fish the stream is at least intermittent.

If a sample reach is recognized as borderline (within the gray zones), reaches upstream and

downstream of the study area should be assessed to better evaluate the changes in stream classifications along a channel. Additional supporting information can be used to help make the final determination. This supporting information may include, but is not limited to:

Observation of flow: Observation of flow under certain seasonal or hydrological conditions can directly support classifying a stream reach as intermittent or perennial. Conditions supporting a perennial stream classification include:

Stream reaches with flow during the dry season or periods of drought are likely perennial. The longer the period from the last substantial rainfall the stronger the presence of flow supports the perennial stream determination. Although the presence of flow during a drought indicates perennial conditions, care must be taken in evaluating the upper limits of perenniality because some perennial streams may only contain isolated pools of water or be dry during periods of drought.

Key biological indicators: As discussed in the Level 2 Evaluation, the presence of aquatic organisms whose life cycle requires residency in flowing water for extended periods (especially those one year or greater) is a strong indication that a stream reach is perennial. If a stream or river is recognized as borderline, a qualified aquatic biologist/environmental scientist should evaluate the presence and abundance of such macroinvertebrate and vertebrate species before determining the final stream classification.

Other additional supporting information that may be considered:

- Groundwater contour maps or nearby, local well logs.
- Information provided by a long-term resident and/or local professional who has observed the stream during the various seasons and hydrological conditions.
- Review of historic information such as aerial photography.
- Professional judgment may be used in conjunction with the total score and supporting information in making the final determination.

The total score can be affected by seasonal or hydrological conditions as well as man-made impacts such as irrigation diversions or livestock impoundments associated with activities in the watershed. For example, a sample reach may score lower in drought conditions due to the lack of biological and/or certain hydrological indicators. However, a reach may score higher on certain indicators such as drift lines and alluvial deposits if directly below a stormwater outfall. The final hydrological determination should take these factors into account.

The *Hydrology Protocol* is considered to be an evolving, living document. Current thresholds are based on data collected by SWQB during the 2008 and 2009 field seasons from 57 stream reaches throughout the state of New Mexico. An analysis of these data was performed to determine which indicators clearly differentiated the three types of streams and to identify threshold values for scoring. In the event that new data indicate the threshold values used in this protocol are not appropriate and/or if new standards are adopted, SWQB will review the protocol, the related threshold values and differentiating scores. Revisions to the protocol will be proposed to the WQCC as needed in accordance with the process for updating the Water Quality Management Plan/Continuing Planning Process.

V. LITERATURE CITED

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New Mexico Environment Department Surface Water Quality Bureau

LEVEL 1 Hydrology Determination Field Sheet

Date:	Time:	Evaluators:
Stream Name:	Site Description:	
WQS as found under NMAC (20.6.4):	Assessment Unit:	
Starting Latitude:	Ending Latitude:	
Starting Longitude:	Ending Longitude:	
Starting Elevation:	Ending Elevation:	
TOTAL POINTS*: **See Hydrology Protocol for determination*		

WEATHER CONDITIONS	DROUGHT CONDITIONS:	Nearest weather station:	PAST 48 HOURS**:	CURRENTLY**:
	12-mo. SPI Value: 12-mo. SPEI Value: Drought Condition: Obtained from: Date Obtained:	Precipitation past 48 hours:	___ storm (heavy rain) ___ rain (steady rain) ___ intermittant rain ___ % cloud cover ___ clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ intermittant rain ___ % cloud cover ___ clear/sunny
	**Field evaluations should be performed at least 48 hours after the last major rainfall event.			

SITE OBSERVATIONS ALONG ENTIRE REACH	Nearest Stream Modification (description and proximity):
	Nearest Diversion (description and proximity):
	Nearest Discharge (description and proximity):
	Include any and all modifications/discharges and diversions regardless of perceived impact to hydrologic regime along with any field observations

CALCULATIONS FOR DETERMINING FLOODPLAIN AND CHANNEL DIMENSIONS (Use for 1.8 on Field Survey)	Thalwag Height (#1)	Bankfull Height (#2)	Change in Height (#1 - #2)	Change in Height x 2 (#3)	Flood-prone Area Height (#1-#3)
				Flood-prone width:	
				Bankfull Width:	
				Flood-prone Width to Bankfull Width Ratio:	
	Alternative Methods used (describe)?				

PHOTO DOCUMENTATION (include additional photographs as attachment)	Time	Photo #	Description	Identifiable References	Photographer

OTHER SITE CHARACTERISTIC NOTES/ SCHEMATICS	

LEVEL 1 INDICATORS	Stream Condition (identify all that apply then choose most prominent score)			
	Strong	Moderate	Weak	Poor
1.1 Water In Channel	☐ Flow is evident throughout reach ☐ Flow is observed in riffles ☐ Flow may not be evident in runs	☐ Wet Channel ☐ Flow is barely discernable ☐ Floating object needed to observe flow	☐ Dry Channel with standing pools ☐ Saturated or moist sediment under rocks/debris ☐ Evidence of base flows	☐ Dry Channel ☐ Dry under rocks/debris ☐ No evidence of base flows
	6	**4**	**2**	**0**
	Notes/Comments:			
1.2 Fish in Channel	☐ Found easily ☐ Found consistently throughout reach	☐ Found with little difficulty ☐ Not consistent throughout reach	☐ Found with difficulty (10 or more minutes of searching)	☐ Not present (after 10 or more minutes of searching)
	3	**2**	**1**	**0**
	Species Observed and Notes/Comments:			
1.3 Benthic Macroinvertebrates in Channel	☐ Found easily ☐ Found consistently throughout reach	☐ Found with little difficulty ☐ Not consistent throughout reach	☐ Found with difficulty (10 or more minutes of searching)	☐ Not present (after 10 or more minutes of searching)
	3	**2**	**1**	**0**
	Species Observed and Notes/Comments:			
1.4 Filamentous Algae/Periphyton in Channel	☐ Found easily ☐ Found consistently throughout reach	☐ Found with little difficulty ☐ Not consistent throughout reach	☐ Found with difficulty (10 or more minutes of searching)	☐ Not present (after 10 or more minutes of searching)
	3	**2**	**1**	**0**
	Notes/Comments:			
1.5 Vegetation along cooridor (within floodplain)	☐ Dramatic compositional species difference between upland and riparian corridor ☐ Distinct riparian corridor exists along entire reach ☐ Riparian, aquatic or wetland species dominate entire reach	☐ Distinct riparian corridor exists but not along entire reach ☐ Compositional species difference between upland and riparian corridor ☐ Riparian species interspersed with upland species	☐ Minimal compositional species difference between upland and riparian corridor ☐ Vegetation growing along the riparian area occurs in greater density or grows more vigorously than in the adjacent uplands	☐ No compositional species difference between upland and riparian corridor ☐ Vegetation growing along the riparian cooridor does not occur in greater density or grow more vigorously than in the adjacent uplands
	3	**2**	**1**	**0**
	Species Observed and Notes/Comments:			
1.6 Rooted Upland Plants in Channel	☐ Rooted upland plants are absent within the streambed/thalweg	☐ There are a few rooted upland plants within the streambed/thalweg	☐ Rooted upland plants are consistently dispersed throughout the streambed/thalweg	☐ Rooted upland plants are prevalent within the streambed/thalweg
	3	**2**	**1**	**0**
	Species Observed and Notes/Comments:			
			SUBTOTAL (1.1-1.6)	

1.7 Sinuosity of Segment (for length no less than two meanders)	☐ Calculated ratio > 1.4 ☐ Numerous closely spaced bends ☐ Few straight sections	☐ Calculated ratio 1.4 <> 1.2 ☐ Mostly bends ☐ Some straight sections	☐ Calculated ratio 1.2 <> 1.0 ☐ Few bends ☐ Mostly straight sections	☐ Calculated ratio = 1.0 ☐ Completely straight
	3	2	1	0
	☐ Calculated ☐ Observed	Notes/Comments:		
1.8 Floodplain and Channel Dimensions	☐ Calculated ratio > 2.5 ☐ Minimally confined ☐ Wide, active floodplain	☐ Calculated ratio 2.5 <> 1.2 ☐ Moderately confined ☐ Floodplain active during larger events	☐ Calculated ratio < 1.2 ☐ Incised/confined channel ☐ Flooplain absent or narrow ☐ Floodplain not connected	
	3	1.5	0	
	☐ Calculated ☐ Observed	Notes/Comments:		
1.9 In-Channel Structure: Riffle-Pool Sequence	☐ Frequent number of riffle and pools observed throughout reach ☐ Obvious transition between riffles and pools	☐ Less frequent number of riffle and pools ☐ Transition between riffles and pools difficult to distinguish	☐ Mostly has areas of pools or of riffles	☐ No riffles or pools observed
	3	2	1	0
	Notes/Comments:			
				SUBTOTAL (1.1-1.9)
1.10 Particle Size or Stream Substrate Sorting	☐ Particle sizes in the channel are noticeably different from particle sizes outside the channel in the flood-prone area. ☐ Clear distribution of various sized substrates in the stream channel.	☐ Particle sizes in the channel are moderately similar to particle sizes outside the channel in the flood-prone area. ☐ Various sized substrates are present in the stream channel. ☐ Higher ratio of larger particles (gravel/cobble).	☐ Particle sizes in the channel are similar or comparable to particle sizes outside the channel in the flood-prone area. ☐ Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
	☐ Calculated ☐ Observed	Notes/Comments:		
1.11 Hydric Soils Within Flood-Prone Area	☐ Hydric soils were observed in reach	☐ Hydric soils were not observed in reach		
	3	0		
	Notes/Comments:			
1.12 Sediment on Plants and Debris	☐ Sediment found readily on plants and debris in: ☐ channel ☐ streambank ☐ floodplain	☐ Sediment found but not prevalent on plants and debris. ☐ Sediment mostly accumlated on plants and debris in pools	☐ Sediment on plants and debris is isolated in small amounts along the sample reach.	☐ No sediment is present on plants or debris.
	1.5	1	0.5	0
	Notes/Comments:			
1.13 Seeps and Springs	☐ Seeps and/or springs present in reach	☐ Seeps and/or springs not present in reach		
	1.5	0		
	Notes/Comments:			
1.14 Iron Oxidizing Bacteria/Fungi	☐ Iron-oxizing bacteria/fungi present in reach	☐ Iron-oxizing bacteria/fungi not pressent in reach		
	1.5	0		
	Notes/Comments:			
				TOTAL POINTS (1.1-1.14)

Total <9, the stream is determined to be EPHEMERAL.
Total ≤9 and <12, the stream is determined to be INTERMITTENT until further analysis indicates otherwise
Total ≥ 12.0 and ≤ 19.0, the stream is determined to be INTERMITTENT
Total > 19.0 and ≤ 22.0, the stream is determined to be PERENNIAL until further analysis indicates otherwise
Total > 22.0, the stream is determined to be PERENNIAL.