



New Mexico Environment Department

Canadian and Upper Rio Grande Lakes TMDL

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Surface Water Quality Bureau

May 1, 2024





Agenda

NMED SWQB
Staff
Introductions

Monitoring and
Assessment
Overview

TMDL Overview

Canadian and
Upper Rio
Grande Lakes
TMDL

Q&A/Discussion

Monitoring and Assessment Overview





Federal Clean Water Act

“restore and maintain the chemical, physical, and biological integrity of the Nation’s waters”

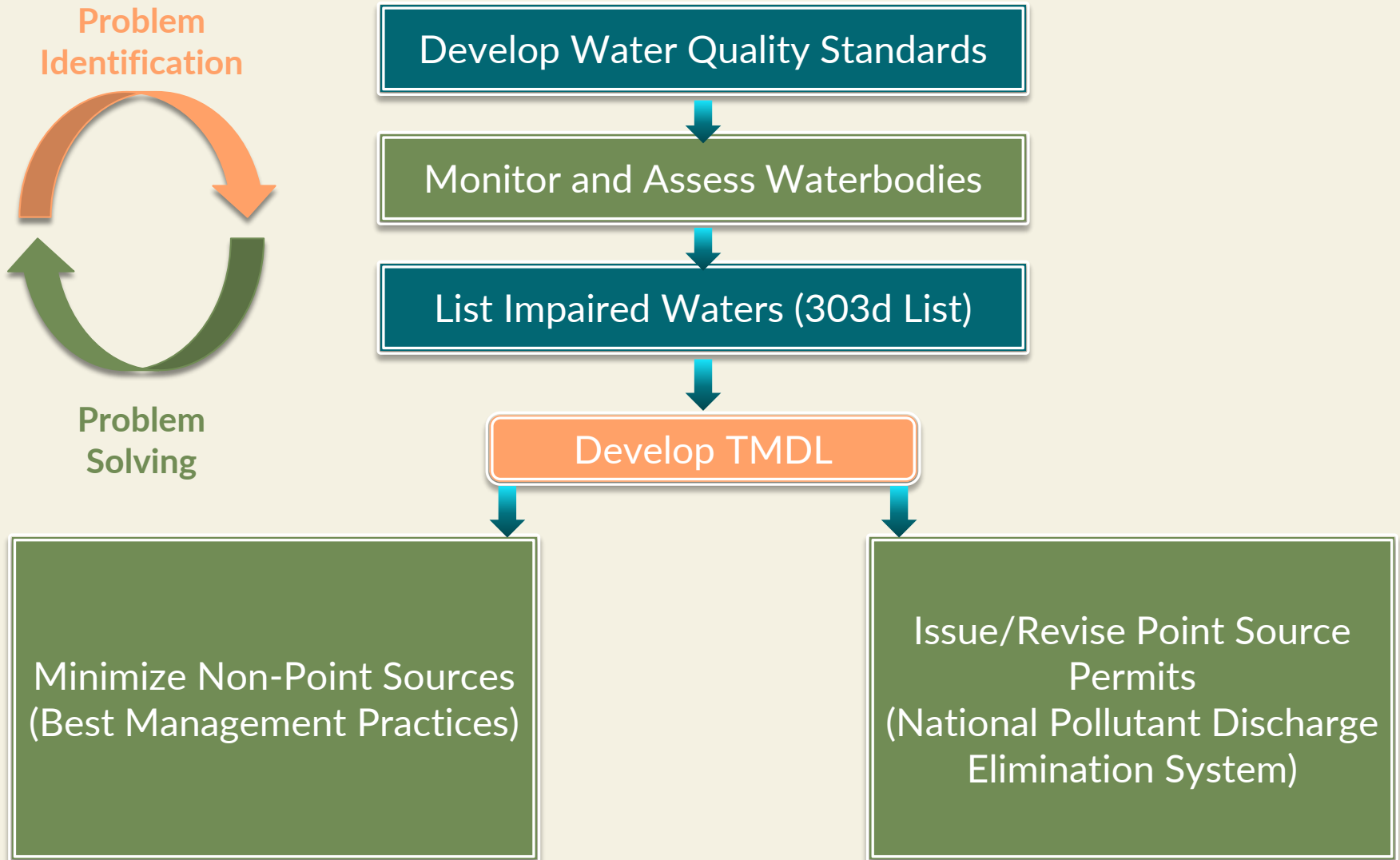
In order to reach a level of water quality that “provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in and on the water”

Section 303(d) of the Federal Clean Water Act (CWA) requires states to develop TMDL documents for impaired waters





Framework for Restoring Polluted Waters





Purposes of Water Quality Standards

Per
40 CFR 131.2:

Protect
public
health and
welfare

Enhance
the quality
of water

Serve the
purposes of
the Clean
Water Act



New Mexico Water Quality Standards (WQS)-
<https://www.env.nm.gov/surface-water-quality/wqs/>



Monitoring Surface Water Quality



Biological

- *Escherichia coli* (*E. coli*)
- Fish Assemblages
- Insect Assemblages

Chemical

- pH, DO, SC
- Ions, metals, organics
- Nutrients

Physical

- Channel morphology, substrate
- Flow measurements
- Temperature



Assessment of Water Quality Data

The Comprehensive Assessment and Listing Methodology (CALM) details the process used to determine if designated uses are being met

The CALM is reviewed and revised as needed every odd-numbered year, most recently in 2023

All submitted data that meet SWQB QA/QC quality requirements are assessed

Link to CALM:

<https://www.env.nm.gov/surface-water-quality/calm/>

Information about data submittal:

www.env.nm.gov/surface-water-quality/data-submittals/



CWA 303(d)/305(b) Reporting

When a water body meets water quality standards:

- It is listed as Fully Supporting on 303(d)/305(b) List
- It is delisted, if previously listed as impaired

When a water body does not meet water quality standards:

- The impairment is added or remains on 303(d)/305(b) List, and SWQB:
 - Collects additional data as needed to confirm impairment
 - Prioritize TMDL (or Advanced Restoration Plan) development
 - Review and revise water quality standards if warranted

TMDL Overview





Total Maximum Daily Loads

A TMDL document is a water quality plan that establishes specific goals to meet water quality standards. It includes:



Target loading capacities



Information potentially leading to:

- Permit revisions and implementation
- Development of Watershed Based Plans, which discuss measures to restore the chemical, physical, and biological integrity of the waterbody



TMDL Calculation

For most Lake TMDLs, a concentration-based value and a mass-based value are calculated

A concentration-based TMDL will be the water quality standard criteria

- For example, a total nitrogen concentration-based TMDL would be 0.90 mg/L

Conversion factors and a specific reservoir/lake storage (acre-feet) are used to calculate a mass-based TMDL

- Mass-based TMDLs are expressed as lbs/day



TMDL Allocations

$$\text{TMDL} = \Sigma \text{LA} + \Sigma \text{WLA} + \text{MOS}$$

(MOS is a Margin of Safety to account for uncertainty)

Load Allocation (LA) is pollution from any non-point source(s) and is addressed through Best Management Practices (BMP)

Waste Load Allocation (WLA) is from a known point source and is controlled through NPDES permits





Draft TMDL Review Process



Reviewed by SWQB and EPA Region 6 staff prior to release of the public comment draft



Released for a 30-day public comment period



Stakeholders are notified of the draft TMDL and public meeting via GovDelivery (email list)



SWQB hosts a public meeting



Stakeholders can submit written comments



SWQB responds to written comments in the Response to Comments appendix of the Final Draft TMDL



Final TMDL Approval Process



Final Draft TMDL may be presented to the New Mexico Water Quality Control Commission (WQCC)



The WQCC-approved TMDL is incorporated into the NM Water Quality Management Plan and submitted to EPA Region 6 for final approval

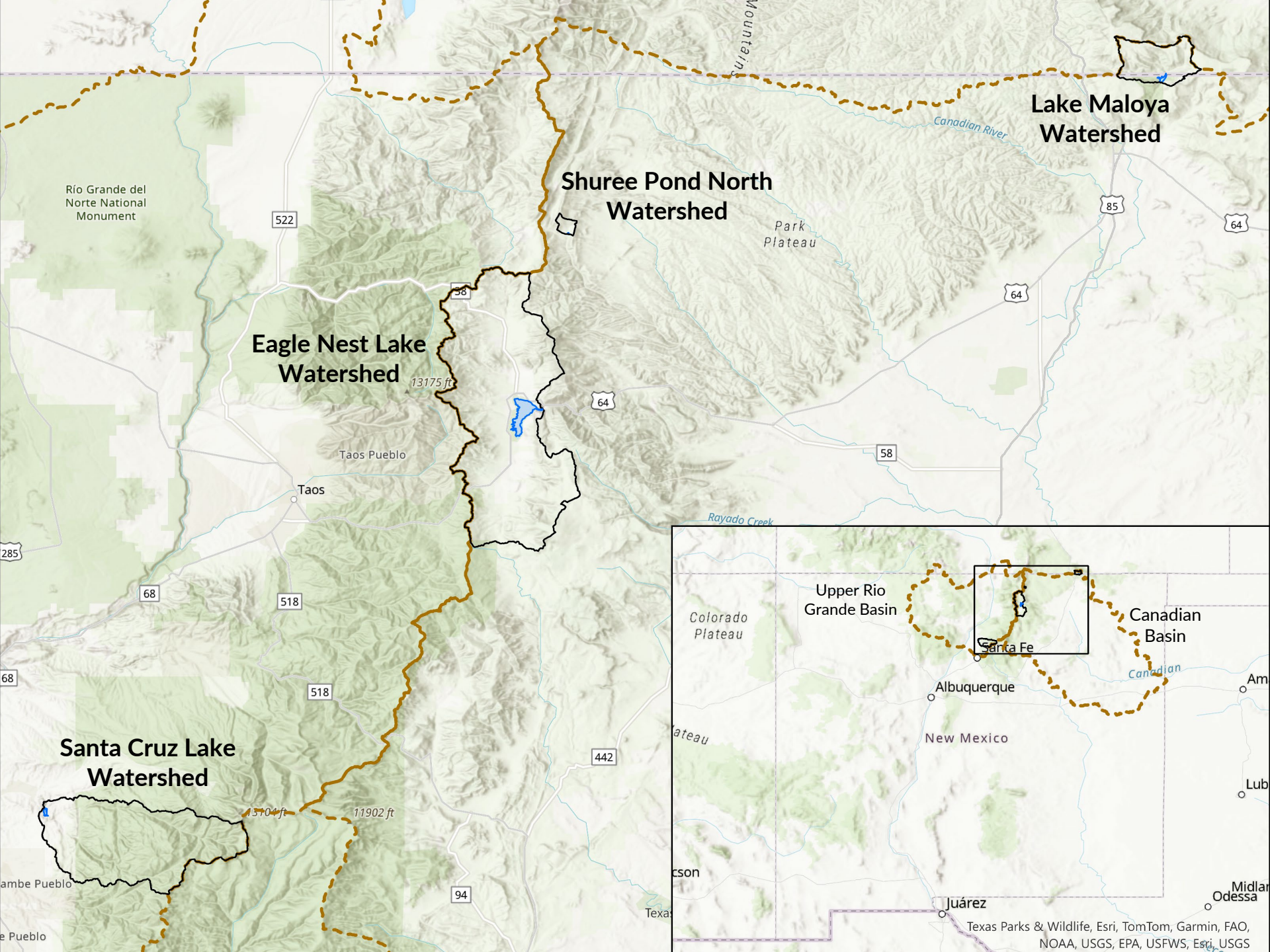


The EPA-approved TMDL is then posted to the SWQB TMDL website at:

www.env.nm.gov/surface-water-quality/tmdl/

Canadian and Upper Rio Grande Lake TMDLs





Lake Maloya Watershed

Shuree Pond North Watershed

Eagle Nest Lake Watershed

Santa Cruz Lake Watershed

Upper Rio Grande Basin

Canadian Basin

Santa Fe

Albuquerque

New Mexico

Juárez

Río Grande del Norte National Monument

Park Plateau

Taos Pueblo

Taos

Colorado Plateau

Plateau

cson

Texas

Texas Parks & Wildlife, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, USGS



2024 Canadian and Upper Rio Grande Lake TMDLs

Aluminum, Total Recoverable

- Santa Cruz Lake

Plant Nutrients

- Eagle Nest Lake
- Lake Maloya
- Santa Cruz Lake
- Shuree Pond North

Temperature

- Santa Cruz Lake



What is Aluminum?

Aluminum is:

- The most common metal in earth's crust and found in most soils and rocks
- Concentrations vary according to local geology and human activities (mining, industrial processes)

Elevated aluminum concentrations in waterbodies may:

- Increase mortality and retard growth and egg production of fish by binding with and impairing the functions of the gills
- Chronic high levels are also toxic to benthic invertebrates and some single-celled plants



Aluminum Probable Source Summary

Lake/Reservoir	Probable Sources
Santa Cruz Lake	Dumping/Garbage/Trash/Litter; Rangeland Grazing (dispersed); Highway/Road/Bridge Runoff; Hiking Trails; Inappropriate Waste Disposal; Residences/Buildings; Paved/Gravel/Dirt Roads; Pavement/Impervious Surfaces; Site Clearance (Land Development); Other Recreation (angling, campgrounds)



What are Plant Nutrients?

Nitrogen (N) and phosphorus (P) are nutrients that usually limit plant growth

Dissolved oxygen (DO) is correlated with nutrient levels

Excess levels of N and/or P negatively impact aquatic life communities by lowering DO, light limitations, changes in species composition, and mobility obstruction

Excess algae also cause nuisance odors and an unsightly appearance

High concentrations of nutrients can lead to algal blooms, which can produce toxins





Plant Nutrients Probable Source Summary

Lake/Reservoir	Probable Sources
Eagle Nest Lake	Abandoned Mines (Inactive/Tailings); Active Mines (Gravel); Angling Pressure; Bridges/Culverts/RR Crossings; Campgrounds (Defined); Channelization; Crop Production (Cropland or Dry Land); Dams/Diversions; Dirt or Gravel Roads; Flow Alteration (from Water Diversions); Highway/Road/Bridge Runoff; Hiking Trails; Logging Ops – Legacy; Low Water Crossing; Municipal Point Source Discharge; On-Site Treatment Systems (Septic, etc.); Residences/Buildings; Rangeland Grazing (Dispersed); Site Clearance (Land Development); Storm Water Runoff due to Construction; Urban Runoff/Sewers; Waterfowl; Wildlife other than Waterfowl
Lake Maloya	Grazing in Riparian or Shoreline Zones; Highway/Road/Bridge Runoff (Non-Construction Related); Impervious Surface/Parking Lot Runoff; Off-Road Vehicles; Other Recreational Pollution Sources; Rangeland Grazing; Drought-Related Impacts; Unspecified unpaved road or trail; Waterfowl; Watershed Runoff Following Forest Fire; Wildlife other than Waterfowl
Santa Cruz Lake	Angling Pressure; Bridges/Culverts/RR Crossings; Dumping/Garbage/Trash/Litter; Hiking Trails; Fire Suppression (Thinning/Chemicals); Highway/Road/Bridge Runoff; Inappropriate Waste Disposal; Logging Ops – Legacy; On-Site Treatment Systems (Septic, etc.); Paved/Gravel/Dirt Roads; Pavement/Impervious Surfaces; Rangeland Grazing (dispersed); Residences/Buildings; Site Clearance (Land Development); Waste from Pets (high concentration); Wildlife other than Waterfowl
Shuree Pond North	Drought-Related Impacts; Forest Roads (Road Construction and Use); Grazing in Riparian or Shoreline Zones; Highway/Road/Bridge Runoff; Off-Road Vehicles; Other Recreational Pollution Sources; Rangeland Grazing; Unspecified Unpaved Road or Trail; Waterfowl; Wildlife other than Waterfowl

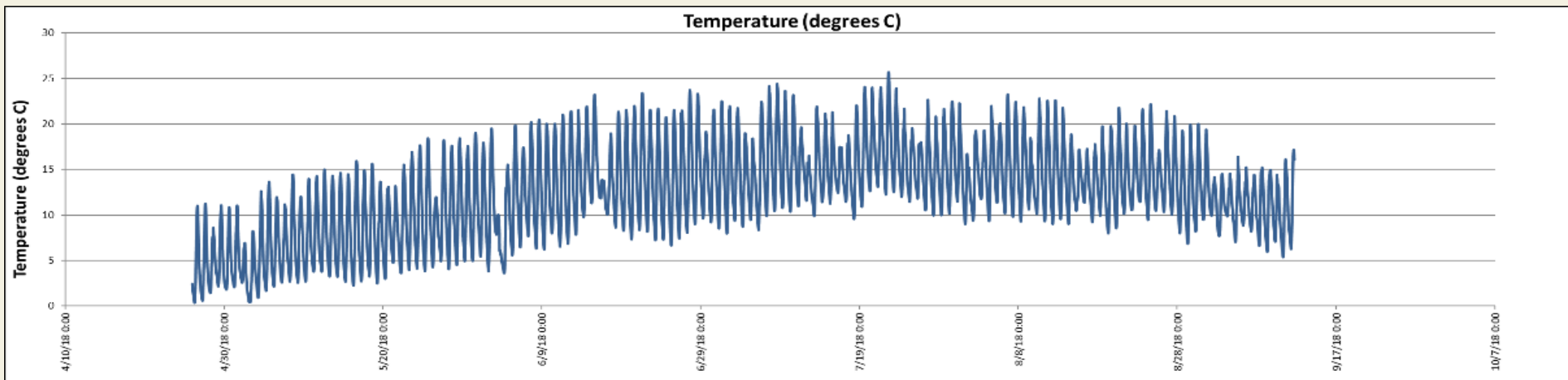


Why is Temperature a concern?

Water temperature varies both seasonally and throughout the day

Temperature affects aquatic life by influencing:

- The amount of oxygen that can be dissolved in water
- The rate of photosynthesis of algae and other aquatic plants
- The rates of growth, reproduction and decomposition of aquatic life
- The sensitivity of organisms to toxic wastes, parasites and diseases





Temperature TMDL Calculation

The load for temperature is expressed at kilojoules (kJ) per day

The lake temperature TMDL equation is:

- $\text{Load Capacity/TMDL (kJ/day)} = \text{Critical Flow (acre-feet/day)} \times \text{Numeric Target (}^{\circ}\text{C)} \times 1.023 \times 10^7$





Temperature Probable Source Summary

Lake/Reservoir	Probable Source
Santa Cruz Lake	Bridges/Culverts/RR Crossings; Dumping/Garbage/Trash/Litter; Highway/Road/Bridge Runoff; Hiking Trails; Logging Ops – Legacy; Paved/Gravel/Dirt Roads; Pavement/Impervious Surfaces; Rangeland Grazing (dispersed); Residences/Buildings; Site Clearance (Land Development)



TMDL Implementation

A TMDL is not a regulatory document, however, the loading calculations are used for the following:

- Regulatory programs, such as the National Pollutant Discharge Elimination System (NPDES) permitting program administered for NM by EPA Region 6
- Non-regulatory programs, such as Watershed Protection Programs (WPS) and Water Quality Improvement Projects (WQIP) using CWA §319(h) and 104(b)(3) grants and Clean Water State Revolving Fund loans



TMDL Implementation

Revise NPDES permits to meet TMDL loading requirements

Develop a Watershed Based Plan:

- Outline appropriate steps to achieve the loading defined in the TMDL, including potential solutions such as Best Management Practices
- Focus on non-point sources of pollution and provide an opportunity for stakeholders to participate in community-based solutions towards improved water quality
- Implement on-the-ground projects to restore water quality



Current TMDL Public Comment Period

The TMDL is available online at:

<https://www.env.nm.gov/surface-water-quality/tmdl/>

The comment period for the Draft TMDL closes:
May 15, 2024 at 5:00 pm

Written comments can be submitted via the NMED public comment portal:

<https://nmed.commentinput.com/comment/search>
or alternately:

Email:

lucas.graunke@env.nm.gov

Mail:

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1190 St. Francis Dr.
P.O. Box 5469
Santa Fe, NM 87502

Fax:

(505) 827-0160



Next Steps



SWQB will respond to written comments in the Final Draft TMDL



SWQB plans to present the Final Draft TMDL to the WQCC at the next available opportunity.



SWQB will send the Final Draft TMDL to all commenters, as well as post it to the SWQB web site, at least 10 days prior to the WQCC meeting.



Questions?

