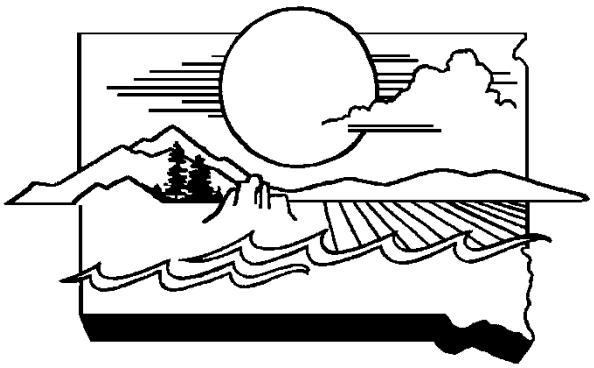
THE 2020 SOUTH DAKOTA INTEGRATED REPORT FOR SURFACE WATER QUALITY ASSESSMENT



Protecting South Dakota's Tomorrow...Today

Prepared By
SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

HUNTER ROBERTS, SECRETARY

SOUTH DAKOTA WATER QUALITY
WATER YEARS 2014-2019 (streams)
and
WATER YEARS 2009-2019
(lakes and mercury in fish tissue)

The 2020 South Dakota Integrated Report
Surface Water Quality Assessment

By the State of South Dakota

Pursuant to
Sections 305(b), 303(d), and 314 of the
Federal Water Pollution Control Act

South Dakota Department of Environment and
Natural Resources

Hunter Roberts, Secretary

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I. EXECUTIVE SUMMARY

This 305(b) and 303(d) Integrated Report (IR) was prepared by the South Dakota Department of Environment and Natural Resources (DENR) in accordance with Sections 305(b), 303(d), and 314 of the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA). This document provides an assessment of South Dakota's surface water resources and identifies impaired waterbodies that require Total Maximum Daily Load (TMDL) development. It is the intent of this report to inform the citizens of South Dakota and the United States Environmental Protection Agency (EPA) of the condition of state surface water resources and to serve as the basis for management decisions by government and other entities for the protection of surface water quality.

South Dakota has about 10,094 miles of perennial rivers and streams (Table 1) and about 87,474 miles of intermittent and ephemeral streams. About 5,875 stream miles have been assessed in the past five years. During this 5-year interval, 22% of assessed stream miles were found to support all their assigned beneficial uses; 78% did not support one or more beneficial uses. DENR has listed a total of 97 different streams or stream segments as impaired requiring TMDL development. Similar to previous reporting periods, nonsupport for fishery/aquatic life uses was caused primarily by total suspended solids (TSS) from agricultural nonpoint sources and natural origin. Nonsupport for recreational uses was primarily caused by *Escherichia coli* (*E. coli*) contamination from livestock and wildlife contributions. One hundred percent of stream miles and lake acres assessed for the following parameters met water quality standards: alkalinity, ammonia, arsenic, chloride, chromium, copper, cyanide, lead, mercury (water column), nickel, radium, selenium, silver, sulfate, and zinc.

South Dakota has 575 lakes and reservoirs with specific aquatic life and recreational beneficial use classifications. DENR has assessed 147 of the 575 lakes and reservoirs with assigned recreation and/or fish life beneficial uses for a total of 134,360 lake acres. An estimated 9% of the assessed lake acreage was considered to support all assigned beneficial uses. Fifty-six lakes do not support water quality standards for the assigned uses but have approved TMDLs. Seventy-three lakes do not support water quality standards for the assigned uses, are on the 303(d) impaired waterbodies list and require TMDL development. The primary cause for nonsupport in lakes is due to mercury in fish tissue. The 2016 adoption of the mercury in fish tissue water quality criterion results in approximately 85% nonsupport in sampled lakes based on acreage.

II. INTRODUCTION

This Integrated Report document provides an assessment of South Dakota's surface water resources and identifies impaired waterbodies that require TMDL development. It is the intent of this report to inform the citizens of South Dakota and the EPA of the condition of state surface water resources and to serve as the basis for management decisions by government and other entities for the protection of surface water quality.

DENR uses the results of the Integrated Report as a tool to stimulate development and prioritization of nonpoint source (NPS) projects and other pollution control activities. This report is shared with the Nonpoint Source Task Force to provide information and guidance. The Nonpoint Source Program also uses this document to supplement news articles released through the DENR Information and Education Project.

States, territories and authorized tribes are required to use EPA's "Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) to develop integrated report information. ATTAINS is a web-based interface that provides states with a mechanism to record, manage and report all 305(b), 303(d) and 314 information. Reporting tools available in ATTAINS provide EPA with a method to review IR information including status of waters at the national, state, and site-specific level.

For example, assessment unit information like waterbody name, size, category, use support, causes of nonsupport, parameters that meet standards, linked TMDLs, and more information is available. DENR used the ATTAINS system to develop the 2020 IR. To learn more about EPA's ATTAINS system visit the following web link:

https://www.epa.gov/waterdata/assessment-and-total-maximum-daily-load-tracking-and-implementation-system-attains

Surface Water Quality

The surface water quality assessments listed in this report rely primarily on the analyses of data generated by DENR, outside organizations, and DENR project sponsors. These groups include the United States Geological Survey (USGS), United States Army Corps of Engineers (USACE), Minnesota Pollution Control Agency, Nebraska Department of Environmental Quality, the city of Sioux Falls, East Dakota Water Development District (EDWDD), James River Water Development District (JRWDD), Belle Fourche River Watershed Partnership, Day County Conservation District, Moody County Conservation District, Friends of the Big Sioux River, Black Hills Resource Conservation & Development, RESPEC Consultants, HydroGeoLogic, and South Dakota State University (SDSU). DENR greatly appreciates data submissions from outside organizations and project sponsors. These submissions provide DENR with increased monitoring data, which improve the confidence of support determinations. Outside organizations may also monitor waterbodies that are not currently monitored by DENR, therefore increasing the extent of waterbodies included in the Integrated Report. While this assessment is as comprehensive as resources allow, some of the state's surface water quality problems may not be identified or documented in this report.

South Dakota has about 10,094 miles of perennial rivers and streams (Table 1) and about 87,474 miles of intermittent and ephemeral streams. About 5,875 stream miles have been assessed in the past five years (October 2014 to September 2019). The stream miles assessed represents the majority of perennial streams and larger tributaries in South Dakota. During this 5-year interval, 22% of assessed stream miles were found to support all their assigned beneficial uses; 78% did not support one or more beneficial uses. DENR has listed a total of 97 different streams or stream segments as impaired requiring TMDL development. Similar to previous reporting cycles, nonsupport for fish life uses was caused primarily by total suspended solids (TSS) from agricultural nonpoint sources and natural origin. Nonsupport for recreational uses was primarily caused by *Escherichia coli* (*E. coli*) contamination from livestock and wildlife contributions. One hundred percent of stream miles and lake acres assessed for the following parameters met water quality standards: alkalinity, ammonia, arsenic, chloride, chromium, copper, cyanide, lead, mercury (water column), nickel, radium, selenium, silver, sulfate, and zinc.

South Dakota has 575 lakes and reservoirs designated aquatic life and recreational beneficial use classifications. The four Missouri River mainstem reservoirs are not included in the total lake acres but are included in the monitored river mileage. DENR fully assessed 147 of the 575 lakes and reservoirs assigned recreation and/or warmwater or coldwater fish life beneficial uses totaling 134,360 acres. The assessed lakes account for 63% of the total classified lake acreage. Thirty-two lakes were partially assessed or did not have sufficient data to make a support determination. An estimated 9% of the assessed lake acreage was considered to support all assigned beneficial uses. Fifty-six lakes do not support water quality standards for the assigned uses but have approved TMDLs. Seventy-three lakes do not support water quality standards for the assigned uses and are on the 303(d) impaired waterbodies list and require TMDL development.

The low number of lakes and reservoirs meeting all assigned beneficial uses can be attributed in large part to mercury in fish tissue. Prior to the 2016 reporting cycle, only 18 lakes were considered not supporting for mercury based on a fish consumption advisory with a threshold of 1.0 mg/kg mercury in fish tissue. In 2016, DENR adopted EPA's mercury in fish tissue standard of 0.3 mg/kg. As a result,

85% of lakes sampled for mercury in fish tissue were deemed not supporting aquatic life uses. These nonsupporting lakes encompass 92,231 acres and the number of lakes assessed for mercury increases with each cycle. DENR received final EPA approval for a statewide mercury TMDL, which included 75 waters not supporting mercury in fish tissue. The TMDL documented that the primary source of mercury in South Dakota comes from global atmospheric deposition. Therefore, the high incidence of nonsupport for lakes is not likely to improve until measures to reduce mercury are implemented at a global scale. Another main cause of nonsupport in lakes continues to be excessive algae blooms due to nutrient enrichment from watershed scale nonpoint sources and internal loading. Aging reservoirs are particularly susceptible to nutrient enrichment and the impacts of productivity.

Many lakes and reservoirs meet water quality standards associated with designated uses. Fifty-five percent of lake acres assessed were considered to fully support the limited contact and immersion recreation uses. One hundred percent of the assessed lake acreage complied with bacteria standards in accordance with the listing methodology. Over 75% of the assessed lake acreage complied with standards for specific conductance, pH, dissolved oxygen, water temperature and total dissolved solids. In addition, 100% of the lake acres assessed for total suspended solids, total ammonia, and total alkalinity complied with standards for warmwater and coldwater beneficial uses in accordance with the listing methodology.

Table 1: Atlas

State Population 2010 Census	814,180
State Surface Area (sq. mi.)	77,047
Number of water basins (according to state subdivision)	14
Total number of river/stream miles	97,568*
Number of perennial river miles (subset)	10,094*
Number of intermittent and ephemeral stream miles (subset)	87,474*
Number of border river miles of shared river/streams (subset)	345*
Miles of ditches and canals (man-made waterways)	712
Number of classified lakes/reservoirs/ponds	575
Acres of classified lakes/reservoirs/ponds	213,265
Acres of freshwater wetlands	1,870,790**
Name of border rivers: Missouri River, Big Sioux River, Bois de Sioux River.	

* Estimated from the USGS (2006) National Hydrography Dataset (1:100,000 scale)
** National Wetlands Inventory

South Dakota has an estimated 1.87 million acres of wetland habitats according to the latest National Wetland Inventory study (Dahl, 2014). The total number of wetlands in South Dakota declined 2.8% from 1997 to 2009 (Dahl, 2014). Small temporary wetlands comprised the primary type of emergent wetland loss. South Dakota exhibited gains in all other emergent wetland classes, especially larger seasonal and semi-permanent classes between 1997 and 2009. The overall wetland area in South Dakota increased from the early to middle 1990s to 2009 (Johnson and Higgins, 1997 and Dahl, 2014).

Water Pollution Control Programs

The water quality goals of the state are: to identify water quality problems, set forth effective management programs for water pollution control, alleviate water quality problems, and achieve and preserve water quality for all intended uses.

Point Source Pollution Control (Surface Water Discharge System):
DENR continues to administer the National Pollutant Discharge Elimination System (NPDES) program in South Dakota, referred to as the Surface Water Discharge permitting program. The Surface Water

Quality Program issues Surface Water Discharge permits and develops water quality-based effluent limits for point sources of pollution to ensure water quality standards are maintained.

Nonpoint Source Pollution Control

Nonpoint Source (NPS) pollution originates from diverse sources. Nonpoint pollution controls must reflect this by wisely using resources available from various state, federal, and local organizations, plus landowner support and participation. South Dakota primarily uses voluntary measures for the implementation of Best Management Practices (BMPs) to control NPS pollution. The CWA Section 319 program is the focal point for a majority of the existing NPS control programs. For more than 25 years, the 319 program has been developing and implementing watershed restoration projects throughout the state.

Public information and education efforts have increased awareness of NPS pollution issues. State and federal programs provide technical assistance and financial incentives to landowners to address NPS pollution problems. Landowners have the capability to accomplish much if they understand the problems and the methods to solve them. Many of the solutions involve land management changes that benefit the landowner by making their lands more productive and sustainable.

Bordering State's 303(d) and 305(b) Lists

North Dakota, Minnesota, Iowa, Nebraska, Wyoming, and Montana possess interstate or border waterbodies that are shared with South Dakota. Under the authority of the CWA, states are granted the right to prevent, reduce, and eliminate pollution, and to plan the development and use of land and water resources. Under this right, states may adopt federal water quality regulations or promulgate their own. States that promulgate their own water quality standards, with limited exceptions, must be as stringent as federal standards. States that border South Dakota often have differences in water quality criteria and/or waterbody beneficial use designations. Due to these possible differences, 305(b) and 303(d) list support determination may differ on waterbodies that border South Dakota and another state. For more specific information on an interstate or border waterbody, interested parties should contact each state.

Comparison of Beneficial Use Support between Integrated Reporting Cycles

South Dakota's Integrated Report describes the percentage of stream miles that support beneficial uses. This general statistic is intended to characterize use support for a given reporting cycle and does not provide for a balanced comparison or trend analysis between reporting cycles. The number of stream miles assessed changes between reporting cycles, assessment methodologies evolve, and datasets can change considerably. In addition, new assessment units are continually being added and removed between reporting cycles. Due to these factors, it is not possible to determine trends between reporting cycles as the appearance of a trend may have nothing to do with changes in water quality.

Interactive Applications Available to the Public

The South Dakota Surface Water Quality Standards Mapping Application is an online mapping application. It serves as an informational reference and links to the water quality standards that apply to each waterbody. The application also includes waterbody support status based on the most recently approved Integrated Report. The South Dakota Surface Water Quality Standards Mapping Application is available online at:
http://sdbit.maps.arcgis.com/apps/MapSeries/index.html?appid=cc5c9f4281db41ed93d324e218e01478

The Water Quality Monitoring Access Portal (WQMAP) is an online mapping application that provides access to water quality data collected by DENR. Data from approximately 150,000 water samples and 8,500 fish flesh contaminant samples collected at approximately 3,600 monitoring stations has been made accessible to the public through WQMAP. This application also provides information about the beneficial use support status of waters, links to water quality documents and information about water

quality restoration projects. WQMAP also serves as an online platform for interested groups to publicly share water quality data. To date, three partnering entities share results from monitoring efforts on WQMAP. The collective water quality data is used for a variety of applications, including beneficial use support assessments for the Integrated Report and TMDL development. WQMAP is located online at: https://apps.sd.gov/NR92WQMAP/.

III. SURFACE WATER QUALITY ASSESSMENT

SURFACE WATER QUALITY MONITORING

General Discussion

South Dakota DENR monitors surface waters in the state through an established statewide ambient stream water quality monitoring program and statewide lakes assessment program. Additional monitoring outlets include: regional water quality assessments, stream biological assessment surveys, TMDL watershed assessments, Surface Water Discharge permits, and state nonpoint source implementation projects. The USGS also conducts routine monitoring throughout the state and that data is available on their website. DENR maintains an internal water quality database (NR92) and submits water quality data through EPA's Water Quality Exchange to EPA's data storage and retrieval (STORET) system.

Water quality standards were first established for all surface waters by the state's Committee on Water Pollution in 1967. The Water Management Board completed the final steps of its most recent triennial review and revisions on December 3, 2014. The Interim Legislative Rules Review Committee approved these revisions on December 16, 2014. DENR received EPA approval on June 17, 2016. On December 9, 2015, another hearing was held to delete the fecal coliform criteria from the immersion and limited contact recreation uses and to add EPA's nonylphenol aquatic life criteria. Those changes were approved by EPA in 2017. The water quality standards consist of water quality criteria necessary to protect those beneficial uses and an antidegradation policy that protects existing uses and high-quality waters.

DENR designates all surface waters in the state for one or more of the following beneficial uses:

(1) Domestic water supply waters;
(2) Coldwater permanent fish life propagation waters;
(3) Coldwater marginal fish life propagation waters;
(4) Warmwater permanent fish life propagation waters;
(5) Warmwater semipermanent fish life propagation waters;
(6) Warmwater marginal fish life propagation waters;
(7) Immersion recreation waters;
(8) Limited contact recreation waters;
(9) Fish and wildlife propagation, recreation, and stock watering waters;
(10) Irrigation waters; and
(11) Commerce and industry waters.

At a minimum, all streams in South Dakota are assigned the beneficial uses (9) and (10) unless otherwise stated in the Administrative Rules of South Dakota (ARSD) Chapter 74:51:03. At a minimum, all lakes and wetlands are assigned the beneficial use of (9). Lakes listed in ARSD Chapter 74:51:02 are assigned the beneficial uses of (7), (8), and (9) unless otherwise specified.

ARSD Chapter 74:51:01 Surface Water Quality Standards is available at: http://www.sdlegislature.gov/Rules/DisplayRule.aspx?Rule=74:51:01 and a subset of the standards for the beneficial uses are shown in Table 2.

State toxic pollutant standards for human health and aquatic life are available at: http://www.sdlegislature.gov/Rules/DisplayRule.aspx?Rule=74:51:01:55 and http://www.sdlegislature.gov/Rules/DisplayRule.aspx?Rule=74:51:01:0B.

Site specific standards are available in ARSD Chapters 74:51:01:45.01, 74:51:01:46.01, 74:51:01:48.01, 74:51:01:48.02, 74:51:01:53.01, 74:51:01:56, and are available at: https://sdlegislature.gov/Rules/DisplayRule.aspx?Rule=74:51:01.

Fixed Station Ambient Monitoring

The DENR water quality monitoring network is currently made up of 153 stations located on various rivers and creeks within the state. Sampling stations are located within high quality beneficial use classifications, above and below municipal/industrial discharges, or within watersheds of concern. Currently, the department collects these samples on a monthly, quarterly, or seasonal basis. This data collected is invaluable for evaluating historical water quality, establishing natural background conditions, monitoring possible runoff events, and acute or chronic water quality concerns.

The most commonly sampled parameters include *E. coli*, TSS, total dissolved solids, pH, ammonia, nitrates, dissolved oxygen, water temperature, pH, specific conductance, and total phosphorous. Several stations are sampled for sodium, calcium, and magnesium during the irrigation season. Stations located along streams that receive flows from historic Black Hills mining areas are also analyzed for cyanide, cadmium, lead, copper, zinc, chromium, mercury, nickel, selenium, silver, and arsenic. Stations along streams that receive flows from historic uranium mining or current exploration are analyzed for arsenic, barium, molybdenum, uranium, radium 226, and radium 228.

Ambient station locations, descriptions, and schedules are available online at: http://denr.sd.gov/des/sw/wqmonitoring.aspx or from DENR upon request.

Table 2: Numeric Criteria Assigned to Beneficial Uses of Surface Waters of the State ARSD 74:51:01

Parameters (mg/L) except where noted	(1) Domestic water supply	(2) Coldwater permanent fish life propagation	(3) Coldwater marginal fish life propagation	(4) Warmwater permanent fish life propagation	(5) Warmwater semipermanent fish life propagation	(6) Warmwater marginal fish life propagation	(7) Immersion recreation	(8) Limited-contact recreation	(9) Fish, wildlife, propagation, recreation & stock watering	(10) Irrigation	(11) Commerce and industry
Alkalinity ($CaCO_3$)									750[1]/1,313[2]		
Barium	1.0										
Chloride	250[1]/438[2]	100[1]/175[2]									
Coliform, total (per 100 mL)	5,000 (mean): 20,000 (single Sample)										
Escherichia coli[4] (per 100mL)							126[6]/ 235[2]	630[6] / 1,178[2]			
Conductivity (umhos/cm @ 25ºC)									4,000[1]/ 7,000[2]	2,500[1]/ 4,375[2]	
Fluoride	4.0										
Hydrogen sulfide undisassociated		0.002	0.002	0.002	0.002	0.002					
Nitrogen, total ammonia as N		[5]Equation-based standard[,2]	[5]Equation-based standard[,2]	[5]Equation-based standard [,2]	[5]Equation-based standard [,2]	[5]Equation-based standard [,2]					
Nitrogen, nitrates as N	10.0								50[1]/88[2]		
Oxygen, dissolved[3]		≥6.0; ≥7.0 (during spawning season)	≥5.0	≥5.0; ≥6.0 (in Big Stone & Traverse during Apr and May)	≥5.0	≥4.0 Oct-Apr; ≥5.0 May-Sep	≥5.0	≥5.0			
pH (standard units)	6.5-9.0	6.5 - 9.0	6.5 - 9.0	6.5 - 9.0	6.5 - 9.0	6.0 - 9.0			6.0 - 9.5		6.0 - 9.5
Sodium Adsorption Ratio[7]										10	
Solids, suspended[7]		30[1]/53[2]	90[1]/158[2]	90[1]/158[2]	90[1]/158[2]	150[1]/263[2]					
Solids, total dissolved	1,000[1]/1,750[2]								2,500[1]/ 4,375[2]		2,000[1]/ 3,500[2]
Sulfate	500[1]/875[2]										
Temperature (ºF)[7]		65	75	80	90	90					
Total Petroleum Hydrocarbons	≤1.0								≤10		
Oil and Grease									≤10		

[1] 30-day average as defined in ARSD 74:51:01:01(60);[2] daily maximum;[3]DO as measured anywhere in the water column of a non-stratified waterbody, or in the epilimnion of a stratified waterbody;

[4] May 1 through September 30; [5]See Table 4; [6] Geometric mean as defined in ARSD 74:51:01:01(24) and 74:51:01:50-51; [7] Site specific standards exist. For a complete list of WQS refer to ARSD 74:51.

Intensive Water Quality Monitoring (Point Sources or Special Studies)

Some of South Dakota's wastewater treatment facilities are required to meet limits beyond the federal technology-based effluent limits. For many of these permits, DENR conducts an intensive water quality survey of the waterbody receiving the discharge. These surveys provide additional information to assist in the development of water quality-based effluent limits for the Surface Water Discharge permits. Point source special studies have been conducted on Moccasin Creek, Boxelder Creek, Whitewood Creek, Spring Creek, and the Redwater River.

Intensive water quality monitoring may also be initiated to investigate quality control issues, collect data for use in compliance, enforcement, site-specific criteria development, or to provide updated information for a waterbody.

Use Attainability Analysis

DENR conducts a Use Attainability Analysis (UAA) on waterbodies assigned only the beneficial use designation (9) Fish and wildlife propagation, recreation, and stock watering waters that receive or are proposed to receive a permitted surface water discharge under the Surface Water Discharge Permitting Program. DENR may also conduct a UAA to determine if the waterbody is assigned the appropriate beneficial uses. During the UAA, physical characteristics of the stream and surrounding land use are documented, physical and chemical properties of the surface water are analyzed, and fish species presence/absence determinations are made. The waterbody reach is visited various times to include different seasons and years. Based on the information collected, the existing beneficial use designation may remain or be assigned a more appropriate beneficial use designation.

Recreation Use Study

During the summer months of 2008 through 2019, DENR assessed and will continue to assess the recreation beneficial use of waters that are assigned the (8) Limited contact recreation waters beneficial use. The purpose of the study is to determine if the existing beneficial use is appropriate or if the waterbody should also be assigned the (7) Immersion recreation waters beneficial use. During the study, field personnel measure channel depth and width, stream flow, dissolved oxygen, and pH. Surface water quality samples are collected and analyzed for *E. coli* bacteria. In addition, public access, land use, channel morphology, and other physical characteristics of the waterbody are documented and photographed. Area residents are interviewed and asked questions regarding stream flow and recreational use in the waterbody.

General Biological Monitoring and Assessment

Biological samples are often included as part of a use attainability assessment, watershed assessment study, or special project. In limited cases, biological samples may be required under certain permits. DENR's Watershed Protection Program incorporates aquatic plant/algae surveys into lake studies. Stream studies incorporate bioassessment surveys using fish, aquatic macroinvertebrates, periphyton and mussels as biological indicators of water quality.

Perennial-Wadeable Stream Bioassessment

DENR and research partners from SDSU identified stream reference sites and developed bioassessment tools for perennial wadeable streams in the Northern

Glaciated Plains (NGP) ecoregion of eastern South Dakota (Appendix E). The project focused on reference site validation, Index of Biological Integrity (IBI) development, and generation of a biomonitoring toolkit to increase the state's biological monitoring and assessment capacity. Final deliverables of the project included identification of validated reference sites, core metrics and an IBI process-quantification tool. The project also yielded biological, habitat and water quality datasets, Kriging (IBI interpolation tool) maps, habitat entry and analysis templates, two Master of Science theses, and several peer-reviewed journal publications. Results of this effort will be used for a variety of water resource management applications including evaluating nutrient-related narrative standards. Future work is being focused on expanding the reference site network and gaining existing reference site data.

DENR and research partners from SDSU expanded reference site development and bioassessment efforts to the Northwestern Great Plains ecoregion (43) in western South Dakota (Appendix E). The project began in 2013 and commenced in the fall of 2017. The project was based on a random probabilistic survey design stratified by level 4 ecoregions. Final project deliverables were similar to those produced in the aforementioned NGP ecoregion. Results of this effort are expected to be used for a variety of water resource management applications including evaluating nutrient-related narrative standards for the 2020 reporting cycle. Future work will be focused on expanding the reference site network and gaining existing reference site data.

Intermittent Stream Bioassessment

A large majority of the stream miles (90%) in South Dakota are characterized as intermittent or ephemeral (USGS, NHD 2006). These streams were once thought to be less significant than perennial streams due to the lack of constant flow. Intermittent streams have gained recognition nationwide with respect to their ecological importance as many contribute greatly to downstream water quality, habitat condition, and biotic integrity.

DENR was awarded an EPA R-EMAP research grant (2006-2010) to develop a reference site network for intermittent streams in the NGP ecoregion of eastern South Dakota (Appendix E). The intermittent stream reference site project was conducted through a collaborative effort between DENR and the Natural Resource Management Department at SDSU. The project provided the state with the tools necessary to identify "reference quality" stream reaches, and the framework for developing bioassessment tools required to make water quality decisions with regards to habitat and biotic integrity of potentially impacted streams. Aquatic macroinvertebrates are the primary biological indicator for determining health of these systems. The project provided a habitat and macroinvertebrate sampling protocol and further insight into macroinvertebrate community characteristics of intermittent streams. Final deliverables associated with the intermittent stream reference site project included a detailed project summary, two Master of Science theses, and two peer-reviewed publications.

Biological Reference Collection and Database

DENR and GF&P provided financial and technical support for the development of a statewide biological reference collection and database. Support and maintenance of the collection and database is currently being negotiated with research personnel from the Natural Resource Management Department at SDSU. Aquatic macroinvertebrate and mussel voucher specimens from statewide collection efforts were processed and stored on campus. All information associated with each individual specimen including geo-location was documented in the SPECIFY database cloud developed and maintained by

Kansas State University. Mussel voucher specimens and supporting information were also added to the collection and database. The database is being used as a tool to locate areas of the state poorly represented with macroinvertebrate data. The long-term goal of the project is to make biological information available to a variety of users.

Fish Contaminants Sampling

In a collaborative effort among GF&P, the Department of Health, and the DENR, fish tissue from lakes and rivers are sampled and analyzed for contaminants including mercury, cadmium, selenium, pesticides, and PCBs. The data are used to monitor and assess the levels of these contaminants present in fish flesh.

The sampling locations and schedule are determined in a joint effort by GF&P and DENR personnel. The rivers and lakes are typically sampled in conjunction with GF&Ps' survey sampling and occur between early spring and late fall. Waterbodies are selected based on GF&P fishery management objectives, public access, and fishing pressure. Waterbodies are resampled based on contaminant concentrations in fish tissue.

The data is used by both the Department of Health and DENR. The Department of Health will issue a fish consumption advisory when sampling results indicate the one part per million Food and Drug Administration mercury threshold may be exceeded in edible fish tissue. DENR also uses mercury in fish tissue results to assess the mercury in fish tissue water quality criterion (0.3 mg/kg) and determine waterbody support. Fish tissue sampling design and procedures are addressed in the Surface Water Quality Program document *South Dakota Fish Contaminants Sampling Protocol*, January 2013.

Statewide Lake Assessment Program

DENR implemented a targeted approach to monitor and assess lakes and reservoirs within the state during the 2019 field season. This monitoring design replaced the random statistical survey design used from 2008 to 2018. The targeted approach focuses exclusively on waterbodies with Assessment Unit Identifications (AUIDs) in the most recent Integrated Report cycle. The current annual goal of the program is to sample 25 lakes per year at a minimum of three times during growing season defined as May 1st to September 30th. Annual lake selection is based on priority criteria and a tiered approach to allow flexibility.

Priorities and decision tiers of the Statewide Lakes Assessment Program

- Integrated Report Assessment: Lakes with a nonsupport status that require updated data to determine status (EPA categories 4a and 5). Lakes that lack water quality data to make an assessment determination (EPA categories 2 and 3).
- TMDL Development: High Priority lakes and those on the 303(d) Vision Priority Schedule.
- Public Importance: Lakes are divided into three tiers based on best professional judgment of economic value, recreation use, and public interest.
    - Tier 1 – Lakes with the highest economic value, recreation use, and public interest. Lakes in this tier will be sampled on average 3 times over the course of a 10-year period.
    - Tier 2 – Lakes with significant economic value, recreation use, and public interest. Lake in this tier will be sampled twice over the course of a 10-year period.

- Tier 3 – Lakes with the least amount of economic value, recreation use, and public interest. Lakes in this tier will only be assessed when prioritized for TMDL development or Integrated Report Assessment.

Rotating Basin-Region Assessment

DENR is in the initial stages of implementing a rotating basin assessment project. The project relies on partnerships with outside water resource agencies within the state. The goal of the assessment is to monitor lakes and streams in major river basins or large geographic regions for two years during the growing season and then rotate to a new region. The "rotating basin" assessment will focus on all lake and stream AUIDs in each basin or region with the goal of assessing all AUIDs over a ten-year period.

EDWDD field personnel assessed 42 stream segments twice per month (May to October) and 22 lakes monthly (May to September) in the Big Sioux, Red and Minnesota River basins during the 2019 field season. The monitoring effort served as a pilot to determine if all proposed AUIDs could be sampled in a reasonable timeframe. EDWDD and other water resource partners will begin the Big Sioux, Red and Minnesota rotating basin assessment during the 2020 and 2021 field seasons. Planning will take place in 2020 to determine the next region and partnership in the assessment rotation.

State-Scale Statistical Survey

South Dakota's state-scale statistical survey will be conducted in conjunction with EPA's National Aquatic Resource Surveys. South Dakota participates in the National Lakes Assessment (NLA) and National Rivers and Streams Assessment (NRSA) conducted on a 5-year rotation. The national scale surveys provide the foundation for a state-scale survey for both resource types. South Dakota's state-scale survey will be based on a state-level intensification following the national lake and stream assessment framework with technical assistance from EPA in order to evaluate the condition of South Dakota's waters as a whole. The next NLA and NRSA surveys are scheduled to begin during the summers of 2022 and 2023, respectively.

Toxicity Testing Program

Whole Effluent Toxicity (WET) testing measures the effect of wastewater on specific aquatic organisms' ability to survive, grow and reproduce. WET limits and monitoring are included in permits if a reasonable potential analysis determines they need to be included in the permit. The permits are developed following the EPA-approved DENR WET Implementation Plan. This plan helps determine if the permittee will need acute or chronic testing and what limits need to be included. Additionally, it identifies the frequency of testing and other requirements that may need to be included. WET tests are expensive and there are only select labs that are able to perform these tests. Currently, there are fifteen Major facilities with acute testing and nine with chronic testing and twenty-three Minor facilities with acute testing and eleven facilities with chronic testing. A few facilities perform both acute and chronic testing.

Priority toxic monitoring is included in all major municipal permits. The frequency of analysis depends on the size of the wastewater treatment facility and whether or not the municipality has an approved pretreatment program. The frequency of analysis varies from once every five years for smaller facilities without a pretreatment program to annually for larger wastewater treatment facilities with a pretreatment program. A list of priority toxics is available in Table II at:

https://www.ecfr.gov/cgi-bin/text-idx?SID=84083f4206da829ac7b485da614bdae3&mc=true&node=ap40.24.122_164.d&rgn=div9.

Total Maximum Daily Loads (TMDLs) and Section 303(d)

Overview of TMDLs

TMDLs are an important tool for the management and protection of South Dakota's surface water quality. The goal of TMDLs is to ensure that waters of the state attain and maintain water quality standards to ensure support of designated beneficial uses. EPA defines a TMDL as "the sum of the individual waste load allocations for point sources and load allocations for both nonpoint sources and natural background sources established at a level necessary to achieve compliance with applicable surface water quality standards." In simple terms, a TMDL is the amount of pollution a waterbody can receive and still support its designated beneficial uses. TMDLs must be developed for impaired waters, should address a specific waterbody or watershed, and should specify quantifiable targets and associated actions that will enable the waterbody to support its designated beneficial uses.

Section 303(d) of the CWA requires states to develop and submit a biennial list of impaired waters targeted for TMDL development, referred to as the 303(d) list. Pollutant causes, TMDL priority, and a schedule for TMDL development is required. TMDLs must allow for seasonal variations and provide a margin of safety to account for uncertainty. Appendix A provides a list of waterbodies with EPA approved TMDLs.

Types of Waters Listed

The following information and data sources were used to determine which waterbodies require TMDLs based on the requirements of section 303(d) of the CWA:

- Waters included in the Integrated Report that are identified as "not supporting" or also known as "impaired" waters;
- Waters for which modeling indicates nonattainment of water quality standards; and
- Waters for which documented water quality problems have been reported by local, state, or federal agencies, the general public, or academic institutions.

Appendix D provides a summary of DENR's 2020 303(d) list.

Impaired Waters

Waterbodies that are identified as "NON" (nonsupporting) under the "Support" column in the basin tables are placed in EPA Category 5 which identifies the waterbody as impaired and requires a TMDL. This is the basis for the 303(d) list. If a waterbody is identified as "NON" but has an approved TMDL for the pollutant cause the waterbody is placed in EPA Category 4a (nonsupporting with a TMDL).

Waters with Surface Water Discharge-Related Wasteload Allocations

In 1993, DENR was delegated the authority to administer the NPDES permitting program. As stated earlier, South Dakota's NPDES permitting program is referred to as the Surface Water Discharge (SWD) permitting program. SWD permits are used to control the discharge of pollutants from point sources. At a minimum, most SWD permits contain technology-based effluent limits, which are attained using the best available technology that is economically achievable. Where the application of technology-based effluent limits is not sufficient to ensure the surface water quality standards are maintained, DENR develops water quality-based effluent limits for the permit.

If a SWD permittee discharges a pollutant to an impaired waterbody, the TMDL for that pollutant will include a "wasteload allocation" for the permittee. The wasteload allocation is implemented through the SWD permit.

SWD permits are issued for a maximum of five years, after which time the effluent limits and existing in-stream water quality are reevaluated. Ammonia, biochemical oxygen demand, and dissolved oxygen are the primary parameters targeted for modeling to develop water quality-based effluent limits.

Waters Reported by Government Agencies, Members of the General Public, or Academic Institutions

DENR did not receive any recommendations to list specific water resources on the 2020 303(d) list from outside government agencies, members of the general public, environmental organizations, or academic institutions.

TMDL Prioritization of 303(d) Listed Waters

EPA regulations codify and interpret the requirement in Section 303(d)(1)(A) of the CWA such that states establish a priority ranking for waters listed as impaired (or threatened) in their Integrated Reports. The regulations of 40 Code of Federal Regulations Part 130.7(b)(4) require states to prioritize waters in their Section 303(d) lists for TMDL development and to identify those water quality limited segments targeted for TMDL development in the next two years. States may consider other factors relevant to prioritizing waters for TMDL development including programmatic needs such as identification of wasteload allocations for permits; vulnerability of certain waters to degradation; waters in areas of high economic development; ecological, recreational, economic, and aesthetic values; degree of public interest and support; and state or national policies and priorities. DENR has a two-tiered priority scheme.

High Priority

- Documented health problems or a threat to human health;
- Waters listed as impaired because of bacteria and TSS in waters assigned coldwater fisheries, or mercury in fish flesh;
- Waters where TMDL development is expected during the next two years
- Waters with documented local support for water quality improvement.; or
- Waters in areas of high economic development

Low Priority

- Water where local support for TMDL development is expected but not documented;
- Waters having impairments not listed as a High Priority;
- Waters with no evident local support for water quality improvements; or
- Waters where impairments are believed to be due to largely to natural causes.

For more information on nonpoint source TMDL development and implementation refer to the "South Dakota Nonpoint Source Program Management Plan." This document is located at the following website:
http://denr.sd.gov/dfta/wp/documents/NPSMgmtPlan14.pdf.

SOUTH DAKOTA'S LONG-TERM VISION STRATEGY

Section 303(d) of the CWA provides for an opportunity to more effectively restore and protect South Dakota's waters by using a systematic process of prioritizing TMDL development and implementing alternative approaches and protection activities. A Long-Term Vision (hereafter referred to as the Vision) was developed by the EPA and six actions were identified as being important to this process. South Dakota's strategy includes the six actions discussed below.

Engagement

The Vision for the CWA 303(d) Program asks EPA and the states to actively engage the public and other stakeholders to improve and protect water quality, as demonstrated by documented, inclusive, transparent, and consistent communication; requesting and sharing feedback on proposed approaches; and enhanced understanding of program objectives.

South Dakota uses multiple means to engage the public and stakeholders and these will be used as part of the Vision. The NPS Task Force will be a primary means of getting information about the Vision to the stakeholders. The NPS Task Force is a citizen's advisory group containing approximately twenty-five agencies, organizations, and tribal representatives. The NPS Task Force meetings are open to the general public. The NPS Task Force provides a forum for the exchange of information and activities about NPS-related activities as well as providing recommendations for projects applying for CWA Section 319 funds. DENR gave a presentation about the Vision to the NPS Task Force on December 9, 2014. The EPA also participated in the meeting and responded to questions during the presentation. There was much discussion of the Vision, the TMDL Prioritization Scheme, and how the Vision would impact NPS Implementation Projects. A presentation was also given during the NPS Coordinators meeting on April 22, 2015. Additional presentations about the Vision will occur as needed.

A September 2015 EPA/State joint Nonpoint Source Pollution and Water Quality Meeting was held in Rapid City, South Dakota and brought together the states in EPA Region 8 as well as other regional interests. The Vision plans for each state were presented and each state responded to questions/comments about their Vision plan.

The public notice process used to announce the availability of the Integrated Report is the primary forum used to engage the public regarding the Vision Strategy. The public notice process allows the public and stakeholders the opportunity to formally comment on contents of the IR and the Vision Strategy. Additional efforts to inform the public and stakeholders about the Vision will occur in response to requests by stakeholders and the public.

Some elements of the Vision, such as Alternative or Protection activities, may be incorporated into NPS Implementation projects. If these projects request CWA Section 319 funds, these projects will be presented to the NPS Task Force as well as the South Dakota Board of Water and Natural Resources for review and approval of funding. This provides additional opportunities for public comment. The Vision Strategy will also be included in the South Dakota NPS Management Plan.

Prioritization

The Vision prioritization process focused on waters considered *High Priority* for TMDL development following the criteria described on page 16 (2020 IR). The original Vision priority waters were those not supporting designated beneficial uses for bacteria, TSS, temperature (waters designated coldwater fish life propagation), and mercury in fish tissue. The current Vision priority waters and status are documented in South Dakota's most recent Long-term Vision Strategy at the following weblink: http://denr.sd.gov/dfta/wp/tmdl/tmdlvision.pdf.

EPA declared an open season for states to make changes to the Vision priority waters list. States revised Vision priority lists were due to EPA in August of 2018. South Dakota removed 25 waters from the original Vision priority list during the open season. The main changes included removal of waters delisted during the 2018 reporting cycles. In addition, seven waters were removed due to TMDL development data needs and unspecified reasons. The new Vision priority list includes 44 waterbodies with varying TMDL completion status (Table 3). South Dakota is on pace to complete Vision priority TMDLs by September 30, 2022.

Protection

This element is intended to encourage management actions that prevent impairments to waters not currently impaired. South Dakota is receptive to this concept and will consider providing technical or financial assistance to these types of projects. There is no anticipation of a large number of requests for "protection" activities and DENR will consider each as they become known. Requests for funding for CWA Section 319 funds will follow the same protocols as other projects requesting these funds and the "protection" activities must be identified as such. Protection activities within an existing implementation project must also identify those activities as "protection" activities.

Integration

DENR has very good working relationships with other programs, and regional, state and federal agencies. The NPS Task Force is a major forum for interaction between the various federal, state, regional, and local agencies, as well as the general public. The Natural Resources Conservation Service (NRCS) is the primary federal agency that DENR interacts with on NPS implementation projects. CWA Section 319 funds are often used in concert with NRCS funds to more efficiently use both funding sources to combat NPS pollution. The U.S. Forest Service, U.S. Bureau of Reclamation, or Bureau of Land Management may also be involved in DENR's NPS control effort when activities will occur on or impact lands managed by these agencies. USGS provides essential water flow and water quality data in certain rivers and streams in South Dakota and has been a partner in various water quality assessment activities.

Regional or local agencies are often project sponsors for NPS assessment or implementation projects. Water development districts, conservation districts, cities, and locally based partnerships have all interacted with DENR and have integrated into NPS assessment and implementation projects. Universities have been involved in South Dakota's NPS control effort through research studies that help the state assess water or biological quality of our streams.

Alternatives

In addition to TMDLs, alternative approaches that incorporate adaptive management or are tailored to specific circumstances may be used. Alternative approaches may be better suited to implement priority watershed or water actions to restoration under certain circumstances. Generally, DENR currently requires a TMDL to be developed before

funds are allocated towards a NPS 319 Implementation Project. Henceforth, consideration will be given to projects or cases where a relatively simple or straight-forward solution can be reached without going through the full TMDL development process. Requests for funding for CWA Section 319 funds will follow the same protocols as other projects requesting these funds and the "alternative" activities must be identified as such. DENR also supports an Information and Education Project that may be useful in circumstances where public outreach and education can help to identify alternative approaches to resolving water quality issues.

Assessment

The goal of this element is to identify the extent of healthy and impaired waters in each State's priority watersheds or waters through site-specific assessments. South Dakota uses different methods and data sources to assess waters including:

- Fixed ambient monitoring of rivers and streams. The major rivers and streams in the state are sampled monthly;
- Data obtained from regional sources or federal agencies (e.g. the USGS or volunteer monitoring programs);
- A subset of lakes sampled multiple times annually as part of the Statewide Lakes Assessment (SWLA) project;
- Intensive lake and stream monitoring conducted on a two-year rotating basis with in major river basins through partnerships with water resource entities;
- Random statistical surveys in conjunction with EPA's National Lakes Assessment and National Rivers and Streams Assessment;
- Site-specific assessments if more general data methods/surveys do not provide adequate data.

South Dakota's assessment strategies provide water quality data for 303(d) assessment and TMDL development. Several monitoring and assessment strategies are designed to provide flexibility to meet data needs of individual waters as 303(d) priorities change. Intensive monitoring and assessment strategies will help to guide future Vision priorities including protection and alternative approaches.

DENR continues to work with EPA Region 8 to develop chlorophyll-a targets for lake 303(d) assessments. Chlorophyll-a targets will serve as TMDL endpoints to evaluate nutrient-related narrative standards and associated use attainment. During the 2020 IR cycle, protective thresholds were available for lakes west of the Missouri River including the Black Hills. Chlorophyll-a targets are still being developed for lakes east of the Missouri River. South Dakota will likely focus on lake impairment and TMDL development in the next Vision cycle.

South Dakota has a well-documented history of doing site-specific assessments and will continue to develop and schedule assessment projects where data are deemed lacking for waters needing a TMDL. Site-specific assessments are either done by DENR personnel if the waterbody is within reasonable travel distance or by a regional entity/contractor if funds are available and direct DENR involvement is not the best option. Computer modelling, scientific literature, and reference conditions may also be used to assess waters.

Vision Summary

The South Dakota strategy for the Long-Term Vision under the CWA Section 303(d) Program contains the six elements stressed by EPA. The primary goal is to prioritize TMDL development for the Vision where implementation activities can be focused to

provide a better chance of improving water quality. South Dakota may also prioritize TMDLs that are considered of state importance and require immediate action. South Dakota's current Long-Term Vision Strategy is also available at the following web address: http://denr.sd.gov/dfta/wp/tmdl/tmdlvision.pdf.

Table 3: South Dakota's Revised (2018) Vision Priority Waters and Status

ASSESSMENT UNIT ID (AUID)	CAUSE NAME	STATUS
SD-BF-L-NEWELL_01	Mercury in fish	TMDL Completed and approved
SD-BF-R-BELLE_FOURCHE_01	*E. coli*	TMDL Completed and approved
SD-BF-R-DEADWOOD_01	*E. coli*	Drafted-EPA review
SD-BF-R-WHITEWOOD_04	*E. coli*	Draft-development
SD-BF-R-WHITEWOOD_06	*E. coli*	2020 IR delist
SD-BS-L-BITTER_01	Mercury in fish	TMDL Completed and approved
SD-BS-L-ISLAND_N_01	Mercury in fish	TMDL Completed and approved
SD-JA-L-LARDY_01	Mercury in fish	TMDL Completed and approved
SD-BS-L-LONG_COD_01	Mercury in fish	TMDL Completed and approved
SD-JA-L-MID_LYNN_01	Mercury in fish	TMDL Completed and approved
SD-BS-L-MINNEWASTA_01	Mercury in fish	TMDL Completed and approved
SD-JA-L-OPITZ_01	Mercury in fish	TMDL Completed and approved
SD-BS-L-REID_01	Mercury in fish	TMDL Completed and approved
SD-BS-L-SWAN_01	Mercury in fish	TMDL Completed and approved
SD-BS-L-TWIN_01	Mercury in fish	TMDL Completed and approved
SD-BS-L-TWIN_02	Mercury in fish	TMDL Completed and approved
SD-BS-R-BEAVER_02	*E. coli*	Fecal coliform TMDL Translation
SD-BS-R-BIG_SIOUX_01	*E. coli*	Drafted-EPA review
SD-BS-R-BIG_SIOUX_05	TSS	No progress
SD-BS-R-BIG_SIOUX_06	TSS	No progress
SD-BS-R-BRULE_01	TSS	Draft-development
SD-BS-R-BRULE_01	*E. coli*	Fecal coliform TMDL Translation
SD-BS-R-SIXMILE_01	*E. coli*	Draft-development
SD-BS-R-SKUNK_01	*E. coli*	Draft-development
SD-CH-R-RAPID_04	*E. coli*	Fecal coliform TMDL Translation
SD-CH-R-SPRING_01	*E. coli*	No progress
SD-JA-L-ELM_01	Mercury in fish	TMDL Completed and approved
SD-JA-R-JAMES_08	TSS	Draft-development
SD-JA-R-JAMES_09	TSS	Draft-development
SD-JA-R-JAMES_10	TSS	Draft-development

Table 3: South Dakota's Revised (2018) Vision Priority Waters Status (continued)

ASSESSMENT UNIT ID (AUID)	CAUSE NAME	STATUS
SD-JA-R-JAMES_11	TSS	Draft-development
SD-JA-R-WOLF_01	*E. coli*	Drafted-EPA review
SD-JA-R-WOLF_02	*E. coli*	Drafted-EPA review
SD-MI-L-HURLEY_01	Mercury in fish	TMDL Completed and approved
SD-MI-L-ROOSEVELT_01	Mercury in fish	TMDL Completed and approved
SD-MN-R-WHETSTONE-S-FORK-01	*E. coli*	Draft-development
SD-MN-R-WHETSTONE-S-FORK-02	*E. coli*	Draft-development
SD-MN-R-YELLOW_BANK_N_FORK_01	*E. coli*	TMDL Completed and approved
SD-MN-R-YELLOW_BANK_S_FORK_01	*E. coli*	TMDL Completed and approved
SD-MU-L-COAL_SPRINGS_01	Mercury in fish	TMDL Completed and approved
SD-VM-R-LONG_01	*E. coli*	Drafted-EPA review
SD-VM-R-VERMILLION_03	*E. coli*	Draft-development
SD-VM-R-VERMILLION_E_FORK_01	*E. coli*	Fecal coliform TMDL Translation
SD-VM-R-VERMILLION_W_FORK_01_USGS	*E. coli*	TMDL Completed and approved

Summary of the State TMDL Waterbodies

Using the methodologies, data, information, and public input described for the surface water quality assessments, DENR included the waterbodies that require TMDLs in Appendix D. These tables include waterbody names, pollutants of concern, and other information. A total of 170 different waterbodies require TMDLs. Each waterbody may contain several different pollutants and thereby may constitute several TMDLs. This results in 225 required TMDLs due to multiple impairment causes. The 303(d) List of waterbodies that require TMDL development is available in Appendix D.

Resource Implications
The development and implementation of TMDLs relies on existing programs, resources, and activities. TMDL development requires effective and continuous coordination from all DENR water programs. In addition, TMDLs must have the support, input, and coordination from affected government agencies, local groups, and citizens. TMDL development involves coordination from many diverse groups sharing the common goal of improving water quality.

Delisting Reasons

Delisting of Waterbodies
Waters may be delisted using the following EPA delisting reasons:

- Applicable water quality standard attained, according to new assessment method;
- Applicable water quality standard attained, due to change in water quality standard;
- Applicable water quality standard attained, due to restoration activities;
- Applicable water quality standard attained, based on new data;
- Applicable water quality standard attained, original basis for listing was incorrect;
- Applicable water quality standard attained, reason for recovery unspecified;
- Applicable water quality standard attained, threatened water no longer threatened;
- Clarification of listing cause;
- Data and/or information lacking to determine water quality status, original basis for listing was incorrect;
- Listed water not in state's jurisdiction;
- Water determined to not be a water of the state; or
- Water quality standard no longer applicable.

Appendix B provides a list of waterbodies, causes, and delisting reasons used for the 2020 reporting cycle.

LISTING METHODOLOGY

Two major types of assessments were used to determine use support status of waterbodies: one based on monitoring, and the other based on qualitative evaluations. Monitoring data were primarily obtained from DENR, outside organizations, and DENR project sponsors.

DENR maintains a Quality Management System to ensure that all environmental water quality data generated or processed meet standard accepted requirements for precision, accuracy, completeness, representativeness, and comparability. This entails the preparation and periodic review and revision of the DENR Quality Management System, Quality Assurance Project Plans, and Standard Operating Procedures. It also includes the preparation of periodic reports to DENR management and EPA; the review of contracts, grants, agreements, etc., for consistency with quality assurance/quality control (QA/QC) requirements; and the administration of QA/QC systems and performance audits. The establishment of schedules for the collection of duplicate and blank samples, laboratory split samples, review of field sampling techniques, and coordination with contracted labs to ensure compliance with QA/QC objectives are required.

DENR maintains an EPA-approved *Quality Management Plan* (Revision V, September 2016); it is available at: http://stage.denr.sd.gov/des/sw/contactinformation.aspx. The Surface Water Quality Program operates under the *Quality Assurance Project Plan for the Surface Water Quality Program and Feedlot Permit Program,* Revision IV, January 2020, and *Surface Water Quality Program and Feedlot Permit Program Standard Operating Procedures, Field Water Quality Sampling,* Revision III, January 2016. These documents are available at: http://stage.denr.sd.gov/des/sw/wqmonitoring.aspx. The Watershed Protection Program operates under the *Watershed Protection Program Quality Assurance Project Plan for the Assessment Team and Implementation Team,* Revision V, March 2016. This document is available at: https://denr.sd.gov/dfta/wp/documents/wpqapp2016.pdf. *The Standard Operating Procedures for Field Samplers, Volume I* (Revision 6.2, May 2018) *& Volume II* (Revision 3.2, May 2018) can be accessed at http://denr.sd.gov/dfta/wp/wqinfo.aspx

DENR requires that all outside organizations that submit data or qualitative evaluations for this Integrated Report operate under a quality management system and be willing to provide quality assurance documentation upon request.

Rivers and streams were assessed by dividing waterbodies into segments that contain the same designated beneficial uses, water quality standards criteria, and environmental and physical influences. When section, township, and range are used in ARSD Chapter 74:51:03 to describe the beginning or end point of a stream segment, the boundary of the segment is that point where the most downstream portion of the stream crosses the boundary of that section. For lakes, the entire waterbody is assessed as a whole unit. The Hydrography Event Management Tool developed by USGS was used to create lakes and stream segments as part of the geospatial package. Lake acreage and stream miles were determined using medium resolution geospatial data from the National Hydrography Dataset. Monitoring data obtained during the current reporting period were analyzed using DENR's NR92 database-generated reports.

The data for each monitored waterbody were compared to numeric water quality standards applicable to the beneficial uses assigned to the segment and nutrient-related narrative standards.

Table 4: Criteria for Determining Support Status

Description	Minimum Sample Size	Impairment Determination Approach
FOR CONVENTIONAL PARAMETERS (such as dissolved oxygen, TSS, *E. coli* bacteria, pH, water temperature, etc.)	STREAMS: a minimum of 10 samples (collected on separate days) for any one parameter are required within a waterbody reach. A minimum of two chronic (calculated) results are required for chronic criteria (30-day averages and geomeans). LAKES: at least two independent years of sample data and at least two sampling events per year.	STREAMS: >10% exceedance for daily maximum criteria (or 3 or more exceedances between 10 and 19 samples) or >10% exceedance for 30-day average criteria (or 2 or more exceedances between 2 and 19 samples) LAKES: >10% exceedance when 20 or more samples were available. If < 20 samples were available, 3 exceedances were considered impaired. See lakes listing methodology section for specifics on parameters associated with a vertical profile (i.e., dissolved oxygen, water temperature, pH, and specific conductance).
FOR TOXIC PARAMETERS (such as metals, total ammonia, etc.)	All Lakes and Streams: Minimum of 2 samples within a consecutive 3-year period within the data age date range.	All Lakes and Streams: More than one exceedance of toxic criteria within a consecutive 3-year period (within the data age date range) for the acute and/or chronic standard.
FOR MERCURY IN FISH TISSUE	All Lakes and Streams: A minimum of 10 tissue samples are required. No minimum number of sample events. All available data from January 2009 through September 2019 was used.	All Lakes and Streams: 95th percentile of data exceeds 0.3mg/kg mercury OR when a fish consumption advisory has been issued.
DATA AGE (for both conventional and toxic parameters)	STREAMS: Data collected from October 1, 2014, to September 30, 2019 (unless otherwise noted) LAKES: All available data collected from October 2009 through September 2019 Although the reporting cycle spans two years, that data age does not allow for sufficient temporal variability. Therefore, the above data ages will be used unless there is justification that the data are not representative of current conditions.	

Assessment Methodology for Numeric Water Quality Standards

Table 4 outlines data age and the required number of samples used by DENR to determine waterbody support. Deviations from the above criteria were allowed in specific cases and are generally discussed in the river basin summaries. Use support assessment for all assigned uses was based on the number of exceedances of water quality standards for the following parameters: TSS, total dissolved solids, pH, water temperature, dissolved oxygen, *E. coli*, and others. Exceedances of more than one parameter were not considered additive in determining overall support status for any given waterbody. A waterbody with less than 10% exceedances with respect to the total number of samples for one or more parameters is considered fully supporting. If multiple samples are collected on the same day within an AUID, the worst sample is compared to the daily maximum criteria. Toxic parameters are only allowed one violation in a three-year period to be considered fully supporting. The weekly average temperature is calculated on a rolling seven-day period. Chronic standards, including geometric means and 30-day averages, are applied to a calendar month. Weekly data is composited and then averaged across a minimum of 3 separate weeks in a calendar month to calculate the 30-day average or geomean. For hardness-based metals, the hardness and metal concentrations are averaged for the calendar month. For mercury in fish tissue, the reach is considered nonsupporting if the 95th percentile of the cumulative mercury fish tissue concentration exceeds the water quality criterion or if the state has issued a mercury fish consumption advisory.

To ensure a sufficient number of samples were available for each stream segment (usually a minimum of 10) the period of record considered for this report was from October 1, 2014 to September 30, 2019 (5 years unless otherwise noted) for streams, and October 1, 2009 to September 30, 2019 (10 years) for lakes. The ten-year timeframe in lakes was designated to account for climatic variability (wet and dry cycles) and increase the chance of covering multiple sampling events. The ten-year timeframe was thought to provide a more recent description of a lake's support status between reporting cycles in comparison to using all available data.

In addition to the stream and lake listing methodologies, waterbodies were also evaluated based on reported beach closures, fish kills, fish consumption advisories, applicable public complaints, and best professional judgment.

Stream Assessment Methodology for Nutrient-Related Narrative Standards

EPA considers nutrient pollution one of the nation's top water quality priorities. The agency has called upon states to increase efforts to address nutrient pollution. Item #3 in EPA's 2014 Integrated Report Memo to states, describes considerations for "Identifying nutrient-impacted waters for the Section 303(d) list for states without formal numeric nutrient water quality criteria." This section identifies potential approaches for developing nutrient based criteria to assess attainment of applicable narrative standards and associated beneficial uses.

South Dakota has several narrative water quality standards in ARSD (Chapters; 74:51:01:05, 74:51:01:06, 74:51:01:08, 74:51:01:09, 74:51:01:10, and 74:51:01:12) designed to protect surface waters from nutrient-related impacts. Narrative standards lack general criteria to determine attainment. DENR developed a decision tree-based stream assessment method with multiple lines of evidence to determine attainment of applicable narrative standards and associated designated uses. The assessment criteria identify the applicable stream population, minimum data requirements, numeric targets and other actions required in the decision process.

The assessment is structured to identify streams which exceed regional reference-based nutrient (nitrogen and phosphorus) targets as an initial screening mechanism. Further evaluation

of those waters is conducted using measures of ecological integrity and associated targets (Tables 5 and 6). The methodology provides a mechanism for which to evaluate nutrient impacts as well as impacts from multiple environmental stressors. When a stream assessment unit is considered to not meet applicable narrative standards it will be placed on the 303(d) list with cause “unknown” until a stressor analysis or TMDL analysis can determine the pollutant (i.e. nutrients) or pollutants impairing designated aquatic life uses.

The assessment methodology applies exclusively to wadeable-perennial streams in level III Ecoregions 43 and Ecoregion 46, with the exception, of those in level IV Ecoregion 46c (Appendix E). Limitations associated with evaluating all stream assessment units statewide are based on the availability of regional and/or site-specific assessment tools. Building a reference site network and bioassessment capacity at the statewide level is a long-term goal. As regional assessment tools become available, the assessment methodology will evolve accordingly.

Table 5: Assessment Methodology for Nutrient-Related Narrative Standards for Applicable Wadeable Streams in Ecoregions 43 and 46

Are there at least 20 total phosphorus-nitrogen sample results in the assessment unit?	No	End assessment
Yes		
Is the assessment unit located in Level III Ecoregions 43 or 46?	No	End Assessment
Yes		
Is the assessment unit located in Level IV Ecoregion 46c?	Yes	End Assessment
No		
Is the assessment unit considered wadeable?	No	End Assessment
Yes		
Is the average total phosphorous or total nitrogen concentration above the targets?	No	End Assessment
Yes		
Is an Invertebrate IBI and Fish IBI score calculated for the assessment unit?	No	Assign assessment unit to category 2N
Yes		
Are both IBI scores > 50? If one IBI score is <50 and one IBI score is >50, and a Habitat Condition Score is not available see special note: If two IBI scores (>50) and one Habitat Condition score is calculated: Are 2-of-3 scores meeting the impairment thresholds? Invert and Fish IBI score >50 Habitat Condition score >50	No	List as Impaired/Threatened Special Note: If one IBI score is > 50 and the other IBI score is <50 then assign to category 2N. * Category 2N Implies the Assessment unit requires the necessary Invertebrate IBI, Fish IBI and Habitat Condition scores to make a final support/impairment determination. It may also imply reassessment is necessary to make a final determination.
Yes	No	List as Impaired/Threatened
Assessment unit is not impaired.		

DENR is currently building a reference site network for wadeable-perennial streams in ecoregions 43 and 46. The reference site network will be used to establish water quality targets and criteria for making water quality-based decisions. In the interim, DENR relied on literature-based nutrient targets developed at a larger regional scale (Table 6). Nutrient targets were derived from data collected as part of EPA's National Aquatic Resource Surveys. Nitrogen and phosphorus targets were based on the 75th percentile of the reference site data within EPA nutrient regions which correspond to Ecoregions 43 and 46 in South Dakota (Herlihy and Sifneos 2008).

Table 6: Nutrient Targets for Streams in Ecoregions 43 and 46

Nutrient Region	Level III Ecoregion in SD	Total Phosphorus mg/L	Total Nitrogen mg/L
Grass Plains	43	0.18	2.5
Temperate Plains	46	0.087	0.93

A minimum of twenty samples collected in the most recent 5-year period (2014-2019) were required to generate an average concentration to initiate the screening portion of the assessment. If the average nutrient concentration(s) exceeded the targets further evaluation was required using measures of ecological integrity. If macroinvertebrate and fish Index of Biotic Integrity (IBI) scores were not available the assessment unit was placed in user-defined subcategory 2N, indicating further assessment is required. An assessment unit was also placed in subcategory 2N if macroinvertebrate and fish IBI scores conflicted and a Habitat Condition Index (HCI) score was not available. When IBI and/or HCI values were borderline (45-49) the water was also assigned to subcategory 2N to imply a reassessment will be conducted prior to a determination. A use support determination was not made for assessment units based solely on meeting the nutrient targets. DENR considers waters in subcategory 2N a top priority for ecological assessment.

Macroinvertebrate and fish community health provide the primary basis for determining attainment of applicable narrative standards. Macroinvertebrates and fish provide a more holistic representation of overall biotic health. Both communities integrate the effects of multiple stressors overtime at different trophic levels. An Index of Biotic Integrity (IBI) was developed for wadeable streams in ecoregions 43 and 46 following processes described in Whittier et al. (2007). An IBI integrates sensitive measures of community structure and function capable of discriminating between good and poor biological health. Core metrics scores are summed and scaled to provide a single IBI score that ranges from 100 to 0, with 100 being best condition. An IBI score of less than 50 was used to indicate poor biological health.

A quantified measure of habitat condition was also used as a line of evidence especially if the fish and macroinvertebrate IBI scores display conflicting status. Habitat condition can provide an indication of a stream's physical potential to support a healthy biological community. It can also identify factors that may be impacting narrative standards and designated uses. An HCI score was developed using core habitat metrics that highly correlated with fish and macroinvertebrate metrics. The HCI scoring convention was developed using the same processes used for IBI development (Whittier et al. 2007). The HCI scores are scaled from 100 to 0 to quantify overall habitat condition. An HCI score of less than 50 signifies poor habitat condition.

Twenty-five stream assessment units met the criteria to be assessed for nutrient-related narrative standards in ecoregion 46 (Table 7). Twenty of the twenty-five assessment units had average nitrogen or phosphorus concentrations above the respective targets. Fourteen of the assessment units have IBI and or HCI scores available. Twelve segments meet the criteria and are considered fully supporting and thirteen remain in Category 2N requiring further assessment.

Table 7: Nutrient-related Assessment Status of Stream Assessment Units in Ecoregion 46 in Eastern, South Dakota

Assessment Unit Identifier (AUID)	TN or TP less than Target	IBI/HCI Available	Assessment Status
SD-BS-R-SKUNK_01	NO	YES	Full Support
SD-BS-R-BIG_SIOUX_01	YES	YES	Full Support
SD-BS-R-BEAVER_01	NO	NO	Category 2N
SD-BS-R-MEDARY_01	NO	NO	Category 2N
SD-BS-R-SIXMILE_01	NO	NO	Category 2N
SD-BS-R-STRAYHORSE_01	NO	NO	Category 2N
SD-JA-R-ELM_01	NO	YES	Category 2N
SD-JA-R-FIRESTEEL_01	NO	YES	Category 2N
SD-JA-R-MAPLE_01	NO	NO	Category 2N
SD-JA-R-PIERRE_01	NO	NO	Category 2N
SD-JA-R-TURTLE_01	NO	NO	Category 2N
SD-JA-R-WOLF_01	NO	YES	Full Support
SD-JA-R-WOLF_02	NO	YES	Full Support
SD-JA-R-WOLF_SP_01	NO	YES	Category 2N
SD-MN-R-LAC_QUI_PARLE_W_BR_01	YES	NO	Full Support
SD-MN-R-LITTLE_MINNESOTA_01	YES	NO	Full Support
SD-MN-R-WHETSTONE_01	NO	YES	Full Support
SD-MN-R-WHETSTONE_N_FORK_01	NO	NO	Category 2N
SD-MN-R-WHETSTONE_S_FORK_01	YES	YES	Full Support
SD-MN-R-WHETSTONE_S_FORK_02	NO	YES	Full Support
SD-MN-R-YELLOW_BANK_N_FORK_01	NO	YES	Full Support
SD-MN-R-YELLOW_BANK_S_FORK_01	YES	YES	Full Support
SD-VM-R-LONG_01	NO	NO	Category 2N
SD-VM-R-VERMILLION_E_FORK_01	NO	YES	Category 2N
SD-VM-R-VERMILLION_E_FORK_02	NO	YES	Full Support

Twenty-three stream assessment units met the criteria to be assessed for nutrient-related narrative standards in ecoregion 43 (Table 8). Twenty of the twenty-three assessment units had average nitrogen or phosphorus concentrations above the respective targets. Five assessment units have IBI and or HCI scores available. Five segments meet the criteria and are considered fully supporting and eighteen remain in Category 2N requiring further assessment.

Table 8: Nutrient-related Assessment Status of Stream Assessment Units in Ecoregion 43 in Western, South Dakota

Assessment Unit Identifier (AUID)	TN or TP less than Target	IBI/HCI Available	Assessment Status
SD-BF-R-REDWATER_01	NO	NO	Category 2N
SD-BF-R-WHITEWOOD_07	NO	NO	Category 2N
SD-CH-R-CHEYENNE_02	NO	YES	Full Support
SD-CH-R-CHEYENNE_03	NO	NO	Category 2N
SD-CH-R-RAPID_04	NO	NO	Category 2N
SD-CH-R-RAPID_05	NO	NO	Category 2N
SD-GR-R-GRAND_01	NO	NO	Category 2N
SD-GR-R-GRAND_03	NO	NO	Category 2N
SD-GR-R-GRAND_N_FORK_01	NO	NO	Category 2N
SD-GR-R-GRAND_S_FORK_01	NO	YES	Category 2N
SD-GR-R-GRAND_S_FORK_02	NO	NO	Category 2N
SD-LM-R-LITTLE_MISSOURI_01	NO	YES	Full Support
SD-MI-R-CROW_01	NO	NO	Category 2N
SD-MU-R-MOREAU_01	NO	NO	Category 2N
SD-MU-R-MOREAU_03	NO	NO	Category 2N
SD-MU-R-RABBIT_01	NO	NO	Category 2N
SD-WH-R-LITTLE_WHITE_01	NO	NO	Category 2N
SD-WH-R-WHITE_01	NO	YES	Category 2N
SD-WH-R-WHITE_02	NO	YES	Category 2N
SD-WH-R-WHITE_03	NO	NO	Category 2N
SD-CH-R-BEAVER_01	YES	NO	Full Support
SD-CH-R-FALL_01	YES	NO	Full Support
SD-CH-R-RAPID_03	YES	NO	Full Support

Lake Assessment Methodology for Numeric Standards

Support determinations and impairment decisions were made for those lakes considered assessed. The minimum assessment requirements include two criteria; 1) at least two independent years of sample data and; 2) at least two sampling events per year. All available data from the most recent 10-year period (2009-2019) was used in the individual assessments. Data older than 10 years was considered in the assessment if deemed pertinent. For example, if the exceedance rate for a given parameter was borderline (10%), older data was considered to determine if a trend exists.

The primary water quality data used to make impairment decisions was acquired from the following sources: statewide lakes assessment project, rotating basin-region assessment project, individual lake assessment projects, outside entities, and when appropriate, citizens' monitoring efforts.

Statewide Lakes Assessment (SWLA) Project
DENR uses a targeted approach to monitor and assess lakes and reservoirs within the state. Lakes and reservoirs with AUIDs represent the core population of lakes for assessment. The current annual goal of the program is to sample 25 lakes per year at a minimum of three times during growing season defined as May 1st to September 30th. Annual lake selection is based on priority criteria and a tiered approach to allow flexibility.

Rotating Basin-Region Assessment Project
DENR is in the initial stages of implementing a rotating basin assessment project. The project relies on partnerships with outside water resource agencies within the state. The goal of the assessment is to monitor lakes and streams in major river basins or large geographic regions for two years during the growing season and then rotate to a new region. The "rotating basin" assessment will focus on all lake and stream AUIDs in each basin or region with the goal of assessing all AUIDs over a ten-year period.

Individual Lake Assessment Project-Citizens Monitoring
Project specific data are generally collected monthly throughout the growing season from site locations consistent with those established during the SWLA project. Field measurements and water samples are usually collected at each site. Data from outside entities and citizens' monitoring efforts are used when sampling efforts follow similar protocol to the SWLA project or individual lake assessments.

A suite of water quality parameters is collected during standard assessment efforts. Water temperature, dissolved oxygen, conductivity, specific conductance, pH, and Secchi disk transparency are measured on site. Chlorophyll-a is extracted from 50-1000 ml of a lake sample and analyzed by spectrophotometer as described in APHA (1998). Nitrate, total phosphorus, total Kjeldahl nitrogen, ammonia, alkalinity, TSS, total dissolved solids, and *E. coli* samples are processed and shipped to the State Health Laboratory in Pierre, South Dakota, for analysis.

Lake sampling stations consist of one to three predetermined site locations within the basin of each lake. The number of site locations assigned to each lake is dependent on basin size. Lake water is generally collected with an integrated sampler tube oriented vertically into the water column to capture water in the photic zone defined as two times the Secchi depth. Water from the integrated sampler is placed in a clean carboy and transferred to clean water sample bottles for lab analysis. Lake water samples are generally collected at each station or from composited water from multiple stations.

Lakes are considered impaired if cumulative water quality standard data exhibit greater than 10% exceedances when 20 or more samples are available. If less than 20 (10-19) samples are available, three exceedances are considered impaired. Water quality standard parameters associated with water samples include, but are not limited to: nitrate, alkalinity, TSS, total dissolved solids, and *E. coli.* Impairment is assigned to toxic parameters (i.e., Total Ammonia Nitrogen) if more than one violation occurred in the last three years.

Water column profiles are generally measured with a multi-meter probe during lake assessment visits. Profile data is collected at 1.0-meter depth increments from the surface to near the bottom at multiple stations (2-3) throughout a lake to provide spatial coverage. The number of individual measurements is dependent on the depth of the respective water column. Water quality standard parameters associated with vertical profiles include but are not limited to: dissolved oxygen, water temperature, pH, conductivity and specific conductance.

Lakes are considered impaired specifically for water temperature, pH and specific conductance if greater than 10% exceedances (greater than 20 samples) occurred within the entire collection of profile measurements available for the specified 10-year period. When less than 20 samples were available, three exceedances were considered an impairment. Direct surface temperature and pH values for each station were not included in the profile assessment to avoid anomalous values associated with environmental conditions at the air-water interface.

Shallow, well-mixed lakes were also considered impaired for dissolved oxygen if greater than 10% exceedances (greater than 20 samples) occurred within the entire collection of profile measurements available for the specified 10-year period. When less than 20 samples were available, three exceedances were considered an impairment. Direct bottom dissolved oxygen measurements were excluded from the assessment to avoid anomalous values associated with the sediment-water interface. For deeper thermally stratified lakes, dissolved oxygen measurements were evaluated exclusively within the epilimnion and metalimnion. The epilimnion, metalimnion and hypolimnion are defined in the Surface Water Quality Standards ARSD Section 74:51:01:01.

If thermal stratification was not well defined an alternate process was used to define the epilimnetic zone. In such instances, the epilimnion was determined by identifying the depth of the water column above the greatest thermal variation as defined by a change of greater than 1^{o}C per meter (Wetzel, 2001). The water column above this zone of temperature deviation was considered representative of the epilimnion.

Some lakes demonstrate various depths and degrees of stratification between sites and sampling visits. All representative dissolved oxygen values based on previously described criteria were collectively pooled and evaluated based on a percent exceedance. Again, if greater than 10% exceedances (greater than 20 samples) of the dissolved oxygen standard were observed within the collective profile measurements, the lake was considered impaired for dissolved oxygen and non-supporting the corresponding beneficial uses. If less than 20 samples were available, three exceedances were considered impaired.

Lake Assessment Methodology for Nutrient-Related Narrative Standards

South Dakota has several narrative water quality standards (ARSD Sections 74:51:01:05, 74:51:01:06, 74:51:01:08, and 74:51:01:012) designed to protect beneficial uses of surface waters from nutrient-related impacts. An assessment methodology using numeric targets and criteria was developed to assess nutrient-related narrative standards and designated aquatic life and recreation use support for the 2020 reporting cycle.

DENR worked with EPA Region 8 to develop protective chlorophyll-a targets and assessment methods for lakes in South Dakota. Chlorophyll-a provides a surrogate for phytoplankton (i.e. algae and cyanobacteria) production. It is cost effective to collect and process and is an important variable for characterizing eutrophication. In addition, excess chlorophyll-a can directly impact nutrient-related narrative standards and designated uses of waters.

EPA contracted with TetraTech Inc., to perform a lake classification and stressor-response analysis. DENR provided the lake dataset, technical input, and an independent exploratory analysis during the process. Both analyses used the same comprehensive dataset compiled from long-term lake monitoring efforts in South Dakota. The Black Hills were not included in this effort as protective chlorophyll-a targets and criteria were previously established during the 2016 reporting cycle.

The first phase of the process was to develop a classification scheme to group waterbodies based on similarities in nutrient processing and variable response (i.e. chlorophyll-a) to minimize natural variability among waterbodies across the state. The classification effort resulted in grouping waterbodies into distinct regions. Lake classes were generally referred to as Western Lakes, Eastern Lakes, and Northeastern Lakes.

The next phase of the process involved a stressor-response analysis for lakes in each class. Linear regression models were developed to describe chlorophyll-a as a function of nutrients. In general, chlorophyll-a significantly increased with increasing nutrients though the models displayed considerable variability between lakes in each class. The nutrient-chlorophyll-a models were more sensitive in Western Lakes than in Eastern and Northeastern Lakes.

The analysis further focused on describing the response of dissolved oxygen and cyanobacteria cell counts as a function of chlorophyll-a. Thresholds were determined to be necessary to translate the relational and probability results to meaning chlorophyll-a targets. The work group decided to use South Dakota's dissolved oxygen standards ($\geq$4 mg/L and $\geq$5 mg/L) for aquatic life uses, cyanobacteria cell counts greater than >100,000 cells to indicate cyanotoxin concern level, and a chlorophyll-a concentration of 30 µg/L to indicate nuisance bloom level and cyanotoxin risk (WHO, 2003 and Downing et al. 2001).

Results of the analysis were summarized to help direct the decision process for determining final chlorophyll-a targets. The statistical response of dissolved oxygen and cyanobacteria cell counts to chlorophyll-a was documented for each lake class. In addition, the probability of observing dissolved oxygen and cyanobacteria cell counts that exceed thresholds was translated to exceedance percentage of different chlorophyll-a measures (annual mean-instantaneous grabs) between 10 and 30 µg/L for each lake class. DENR considered the results in the final target decision process.

DENR conducted an independent analysis to explore final chlorophyll-a target options. A chlorophyll-a target was developed for lakes in Level III ecoregions 43, 44 and 25, referred to as the Western Lakes class (Appendix E). The analysis focused on the interquartile (IQR) range

and algae bloom frequency characteristics of Western Lakes. Lakes in the population with growing season median chlorophyll-a concentrations where <25% of the samples exceeded a bloom level of 30 µg/L were termed low blooming lakes (Table 9). The 10th and 90th percentile of low blooming lakes growing season median values was calculated at 1.09 µg/L and 19.6 µg/L, respectively. This provides assurance that a growing season chlorophyll-a target of 19.6 µg/L would protect lakes from exceeding a 25% bloom frequency at a bloom level of 30 µg/L. These results support the reference-based chlorophyll-a target of 14 µg/L, which is the target DENR has used since the 2014 reporting cycle.

Table 9: Low Bloom Frequency Waterbodies in the Western Lake Class

Low Blooming Reservoirs (AUID)	
SD-BA-L-MURDO_01	SD-CH-L-CURLEW_01
SD-BF-L-NEWELL_01	SD-CH-L-NEW_WALL_01
SD-BF-L-NEWELL_CITY_01	SD-GR-L-GARDNER_01
SD-BF-L-ORMAN_01	SD-GR-L-SHADEHILL_01
SD-CH-L-ANGOSTURA_01	SD-MI-L-BYRE_01
SD-MU-L-COAL_SPRINGS_01	

A chlorophyll-a target for Western lakes of 14 ug/L is also supported by other lines of evidence in the data distribution. The IQR of all chlorophyll-a concentrations from western lakes was calculated at 2.6 and 14.5 µg/L. The corresponding IQR of cyanobacteria is 271 and 33,834 cell counts, which is considered low risk for cyanotoxin (WHO, 2003). The chlorophyll-a IQR also had an associated bloom frequency of 25% at a chlorophyll-a bloom level of 30 µg/L. A chlorophyll-a target of 14 µg/L is considered protective of narrative nutrient-related standards and designated aquatic life and recreation uses of lakes in the western class.

New chlorophyll-a targets were not developed for Eastern and Northeastern lake classes despite considerable analysis efforts and discussions by the workgroup. DENR will continue to work with EPA to develop protective chlorophyll-a targets to serve as TMDL endpoints in the interim of the 2022 reporting cycle. DENR used the reference-based targets used in previous IR cycles (2014-2018) to determine clear impairment of lakes in ecoregions 46,47 and 42 (Table 10, Appendix E).

Table 10: Chlorophyll-a targets for lakes in ecoregions 42, 46 and 47 in eastern SD

Nutrient ecoregion		Level III ecoregion in SD	ug/L
V	Cultivated Great Plains	42	49.9
VI	Temperate Plains	46,47	37.8

(Herlihy and Sifenos, 2008)

Ecoregion 17 Black Hills

A reference approach was used to develop protective chlorophyll-a targets for Black Hills Lakes in Ecoregion 17 (Appendix E). Assessed waterbodies in the Black Hills were classified into two groups based on physical characteristics (size, depth, and retention time) (Table 11). The initial reference lake identification process used a traditional watershed disturbance approach to locate lakes least impacted by human activity. Unfortunately, many waterbodies with relatively undisturbed watersheds did not always correlate well with good water quality conditions. Reference lakes were selected based on DENR's knowledge of exceptional water quality and no prior history of impairment with respect to nutrients and productivity (i.e. algae), as well as having a watershed that is relatively undisturbed.

Table 11: Assessment Units in Ecoregion 17 of the Black Hills

Large Reservoirs (AUID)	Small Reservoirs/Lakes (AUID)
SD-CH-L-PACTOLA_01*	SD-CH-L-BISMARK_01
SD-CH-L-DEERFIELD_01*	SD-CH-L-CANYON_01
SD-CH-L-SHERIDAN_01	SD-CH-L-CENTER_01
	SD-CH-L-COLD_BROOK_01*
	SD-CH-L-COTTONWOOD_SPRINGS_01*
	SD-CH-L-HORSETHIEF_01
	SD-BF-L-IRON_CREEK_01
	SD-CH-L-LAKOTA_01
	SD-CH-L-LEGION_01
	SD-BF-L-MIRROR_EAST_01*
	SD-BF-L-MIRROR_WEST_01*
	SD-CH-L-STOCKADE_01
	SD-CH-L-SYLVAN_01

*Indicates a reference waterbody

Pactola and Deerfield reservoirs were selected to represent reference condition for the large reservoir category. Cold Brook, Cottonwood Springs, and Mirror Lakes 1 and 2 were considered reference for the small waterbody category. Numeric chlorophyll-a targets for each size class were based on the annual growing season median values for each reference group. Table 12 describes the chlorophyll-a (corrected for pheophyton) thresholds for waterbodies in Ecoregion 17 of the Black Hills.

Table 12: Impairment Thresholds for Large and Small Waterbodies in the Black Hills

Large Waterbodies	Small Waterbodies
Median growing season (corrected for pheophyton) ≤ 7 µg/L	Median growing season (corrected for pheophyton) ≤ 8 µg/L

Reference-based chlorophyll-a thresholds for both waterbody size classes are below 10 µg/L. Chlorophyll-a concentrations of less than 10 µg/L in lake environments have been associated with low cyanobacteria dominance and corresponding risk of cyanotoxin, generally considered protective of recreation and domestic water supply uses (Downing et al. 2001). GF&P surveyed anglers at several popular Black Hills reservoirs to gain information on angling satisfaction at varying levels of concentration. Results of the survey showed anglers had enjoyable angling

experiences in waterbodies with mean growing season concentrations at or below 10 µg/L. A median chlorophyll-a target of 10 µg/L was used for waterbodies designated the use of Domestic Water Supply waters.

A waterbody was considered impaired if a minimum of five growing season median values were available and two values exceeded the class specific threshold in the most recent fifteen-year period. Of the Black Hills assessment units (n=16), fourteen had insufficient data to be assessed and two were considered meeting criteria and in full support. DENR intends to assess waterbodies in the Black Hills during the 2020 and 2021 field seasons to obtain sufficient information to make assessment determinations for the 2022 reporting cycle, resources permitting. Dredging at 3 lakes, completed in 2015, necessitates additional sampling to accurately identify the chlorophyll-a condition of those waters.

Based on the comprehensive assessment of applicable waterbodies statewide, eighty-three lake assessment units were evaluated with nutrient-related narrative criteria. Seventeen lakes were considered to support applicable uses and thirty lakes did not support applicable uses. Thirty-six lakes did not have sufficient data to make support determinations based on minimum data requirements.

The nutrient-related narrative standards being evaluated for lakes have implications for both aquatic life and recreation uses. Therefore, support determinations for lakes evaluated for nutrient-related narrative standards were applied to domestic water supply water (1), fish life propagation uses (2, 3, 4, 5), and both recreation uses (7, 8).

Assessment Categories

South Dakota uses assessment categories recommended in EPAs 2006 IR guidance document. DENR added a user-defined sub category (2N). South Dakota's assessment categories are described below:

Category 1:	All designated uses are met;
Category 2:	Some of the designated uses are met but there is insufficient data to determine if remaining designated uses are met;
Subcategory 2N:	Additional data is required to determine if nutrient-related narrative standards are met;
Category 3:	Insufficient data to determine whether any designated uses are met;
Category 4A :	Water is impaired but has an EPA approved TMDL;
Category 4B:	An impairment caused by a pollutant is being addressed by the state through other pollution control requirements;
Category 4C:	Water is impaired by a parameter that is not considered a "pollutant;" and
Category 5:	Water is impaired or threatened and a TMDL is needed.

Beneficial use support determinations made by South Dakota for border waters may differ from determinations made by bordering states. States may have different beneficial uses and applicable water quality standards assigned to waterbodies. In addition, differences in monitoring strategy, assessment methodology, and other factors may affect the support determination. DENR coordinates with border states to address water quality concerns.

STATEWIDE SURFACE WATER QUALITY SUMMARY

Approximately 5,875 miles of rivers and streams have been assessed to determine water quality status for a period covering the last five years (October 2014 through September 2019). The five-year time span is necessary to ensure enough data points are available for each stream segment to properly characterize existing stream conditions and adequately portray the natural variability in water quality.

Currently, 22% of the assessed stream miles fully support all assigned beneficial uses. Nonsupport in assessed streams was caused primarily by *E. coli* bacteria from agricultural nonpoint sources and wildlife. In order of stream miles affected, causes of impairment this reporting cycle include: *E. coli,* TSS, sodium adsorption ratio (salinity), dissolved oxygen, total dissolved solids, temperature, specific conductivity and cadmium.

Natural pollutant sources of dissolved and suspended solids are exemplified by erosive soils that occur in western South Dakota Badlands and within the Missouri River basin (including considerable exposed marine shale formations) and in extreme southeastern South Dakota (including large areas of highly erodible loess soils). Storm events that produce moderate to significant amounts of precipitation contribute to suspended sediment problems over large areas of the state, particularly in the west and southeast. *E. coli* concentrations also increase significantly during times of precipitation and runoff events. Appropriate best management practices should be applied to treat the sources of these and other parameters whose effects are likely to be masked during periods of low precipitation.

On a positive note, 100 percent of stream miles assessed for alkalinity, ammonia, arsenic, chloride, chromium, copper, cyanide, lead, mercury, nickel, nitrate, radium, selenium, silver, sulfate, and zinc met associated water quality standards as shown in Tables 13 and 14 and Figure 1 below.

Table 13: 2020 Category Status for Rivers and Streams in South Dakota vs 2018

2018			2020		
EPA Category	Total Size (miles)	Number of Assessment Units	EPA Category	Total Size (miles)	Number of Assessment Units
1	1,311	55	1	1,271	54
2	259	7	2	12	2
3	365	10	3	316	13
4A	828	23	4A	804	20
4B	0	0	4B	0	0
4C	0	0	4C	0	0
5	3,517	90	5	3,788	97

Table 14: 2020 Parameters Supporting Uses for Streams

Parameter	Stream Miles Not Supporting	Stream Miles Supporting	Number of Streams Not Supporting	Number of Streams Supporting	Percent Miles Supporting
Alkalinity	0	844	0	30	100
Ammonia	0	5094	0	143	100
Arsenic	0	434	0	27	100
Chloride	0	145	0	5	100
Chromium	0	88	0	17	100
Copper	0	90	0	18	100
Cyanide	0	90	0	18	100
Lead	0	90	0	18	100
Mercury, Total	0	88	0	17	100
Nickel	0	90	0	18	100
Nitrate	0	5435	0	154	100
Radium	0	344	0	9	100
Selenium	0	19	0	3	100
Silver	0	90	0	18	100
Sulfate	0	145	0	5	100
Zinc	0	90	0	18	100
pH	27	5528	3	158	100
Specific Conductivity	57	5060	10	149	99
Cadmium	2	88	1	17	98
Temperature	167	5319	5	151	97
Total Dissolved Solids	250	5293	6	153	95
Dissolved Oxygen	316	5235	10	148	94
Salinity/ Sodium Adsorption Ratio	882	3370	14	75	79
Total Suspended Solids	2044	3569	52	111	64
Escherichia coli	2917	2421	81	70	49
Mercury in Fish Tissue	583	370	7	6	39

Mileage values were generated by ATTAINS and the values were rounded to the nearest whole number. If a stream segment was impaired for multiple beneficial uses, the mileage associated with the stream segment was only counted once.

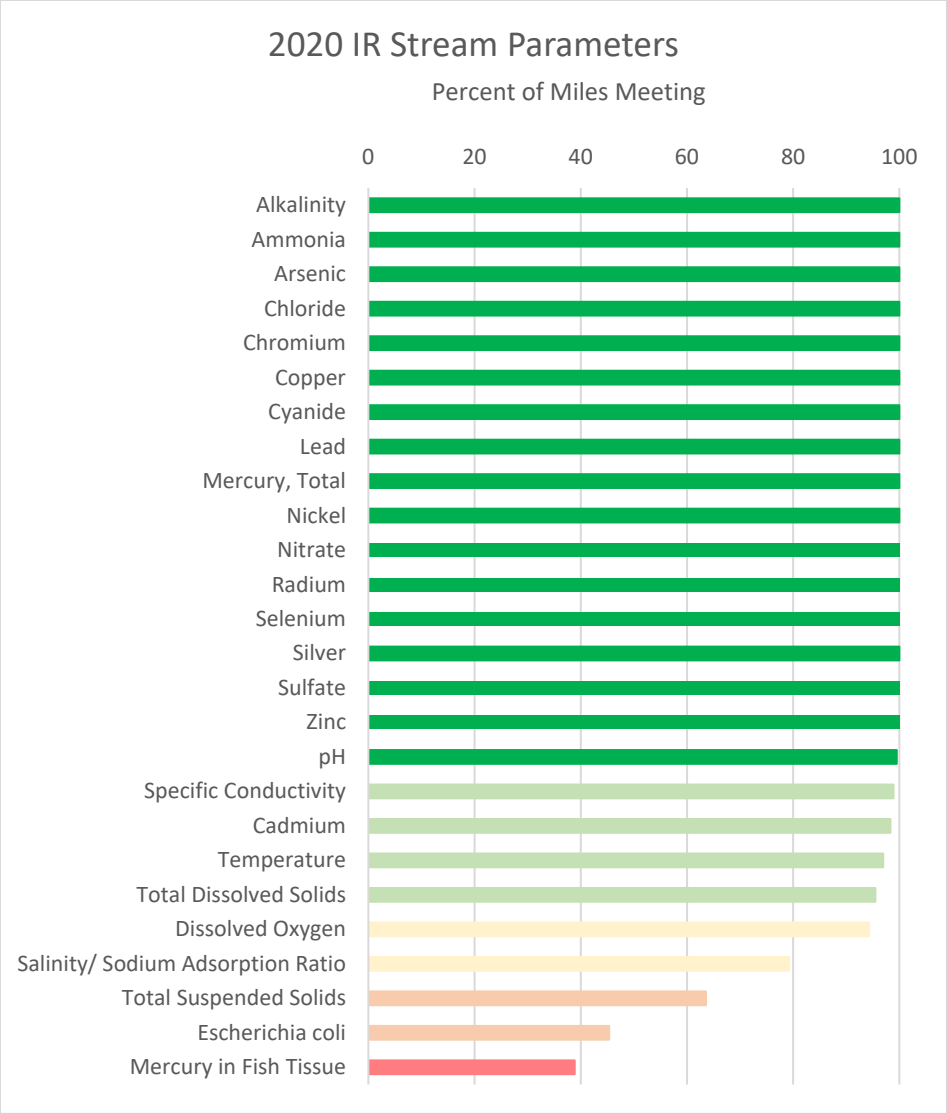

Figure 1: 2020 Integrated Report Stream Parameters

Some parameters may meet for some uses but not for others. For instance, the *E. coli* limited contact recreation standard is 1,178 cfu/100 mL while the immersion recreation daily maximum standard is 235 cfu/100 mL. A stream could easily meet the limited contact but not the immersion recreation standard. Table 15 summarizes the percent of stream miles meeting each beneficial use.

Table 15: Rivers and Streams Beneficial Uses by Stream Miles

Use	Supporting	Nonsupporting
Domestic Water Supply	94.5%	5.5%
Coldwater Permanent Fish Life	48.9%	51.1%
Coldwater Marginal Fish Life	84.5%	15.5%
Warmwater Permanent Fish Life	39.3%	60.7%
Warmwater Semipermanent Fish Life	35.1%	64.9%
Warmwater Marginal Fish Life	86.0%	14.0%
Immersion Recreation	46.5%	53.5%
Limited Contact Recreation	51.1%	48.9%
Fish, Wildlife Prop, Rec and Stock Watering	85.9%	14.1%
Irrigation	77.8%	22.2%
Commerce and Industry	100.0%	0.0%

South Dakota has 575 lakes and reservoirs listed in ARSD Chapter 74:51:02 with specific aquatic life and recreation beneficial uses. These lakes total approximately 213,265 acres. GF&P presently manages approximately 500 lakes for recreational fishing. The 2020 Integrated Report contains assessments for 134,360 lake acres using water quality data collected from October 2009 through September 2019.

Excluding the four Missouri River reservoirs, an estimated 30% of the lakes and reservoirs have been assessed, accounting for 67% of the total lake acreage. An estimated 9% of the lake acreage was considered to support all assessed beneficial uses. This is a decrease from 15.7% in the 2018 Integrated Report. As nearly 85% of lakes assessed for mercury do not meet the adopted water quality criterion of 0.3 mg/kg methylmercury in fish tissue, it is expected that the percentage of lakes acres meeting all uses will decline as more lakes are assessed for methylmercury. While many factors influence mercury methylation and bioaccumulation rates, the sources of mercury in fish tissue are mostly atmospheric deposition from sources outside of South Dakota. DENR completed and received final EPA approval for a statewide mercury TMDL, which included 75 waters not supporting the mercury in fish tissue standard. Based on lake acreage, the primary causes of nonsupport are mercury in fish tissue, temperature, pH, dissolved oxygen, and salinity/SAR. In general, nonsupport is attributed to nonpoint source pollution while temperature and sodium adsorption ratio are attributed to natural sources.

Many lakes and reservoirs meet water quality standards associated with designated uses. Seventy percent of lake acres assessed were considered to fully support the limited contact and immersion recreation uses. In addition, 100% of the assessed lake acreage complied with alkalinity, ammonia, *E. coli*, and total suspended solids as shown in Tables 16 and 17, and Figure 2 below.

Table 16: 2020 Category Status for Lakes in South Dakota vs 2018

2018			2020		
EPA Category	Total Size (acres)	Number of Assessment Units	EPA Category	Total Size (acres)	Number of Assessment Units
1	19,820	30	1	10,343	15
2	1,842	8	2	1,515	3
3	6,724	10	3	16,173	32
4A	58,484	61	4A	60,037	56
4B	0	0	4B	0	0
4C	0	0	4C	0	0
5	57,757	62	5	62,465	73

The general statistics reported are intended to characterize category status and causes of nonsupport for the 2020 reporting cycle. Ten of the Category 3 lakes were assessed for the mercury in fish tissue criterion but did not have any water quality data available to make a full support determination. Many lakes assessments were performed in the late 1990s and early 2000s. However, that data does not meet data age requirements to make waterbody support determinations. Also, DENR is moving from a random design for the statewide lake assessment to a more targeted approach assisted by the rotating basin approach. With these changes in sampling design, DENR will be better able to make support determinations on lakes.

Table 17: 2020 Parameters Supporting Uses for Lakes

Parameter	Acres Not Supporting	Acres Supporting	Lakes Not Supporting	Lakes Supporting	Percent Acres Supporting
Alkalinity	0	70382	0	76	100
Ammonia	0	70476	0	71	100
Escherichia coli	0	31897	0	29	100
Total Suspended Solids	0	75219	0	78	100
Specific Conductivity	50	69418	1	71	100
Total Dissolved Solids	50	74755	1	73	100
Nitrate	50	69685	1	75	100
pH	11163	59528	21	58	84
Dissolved Oxygen	10664	54851	23	49	84
Temperature	14150	48591	17	51	77
Chlorophyll-a	29489	27736	30	16	48
Mercury in Fish Tissue	92231	16480	83	23	15
Selenium	50	0	1	0	0
Salinity/SAR	5070	0	1	0	0

Acreage values are generated by ATTAINS and are rounded to the nearest whole number. If a lake was impaired for multiple beneficial uses, the lake acreage was only counted once.

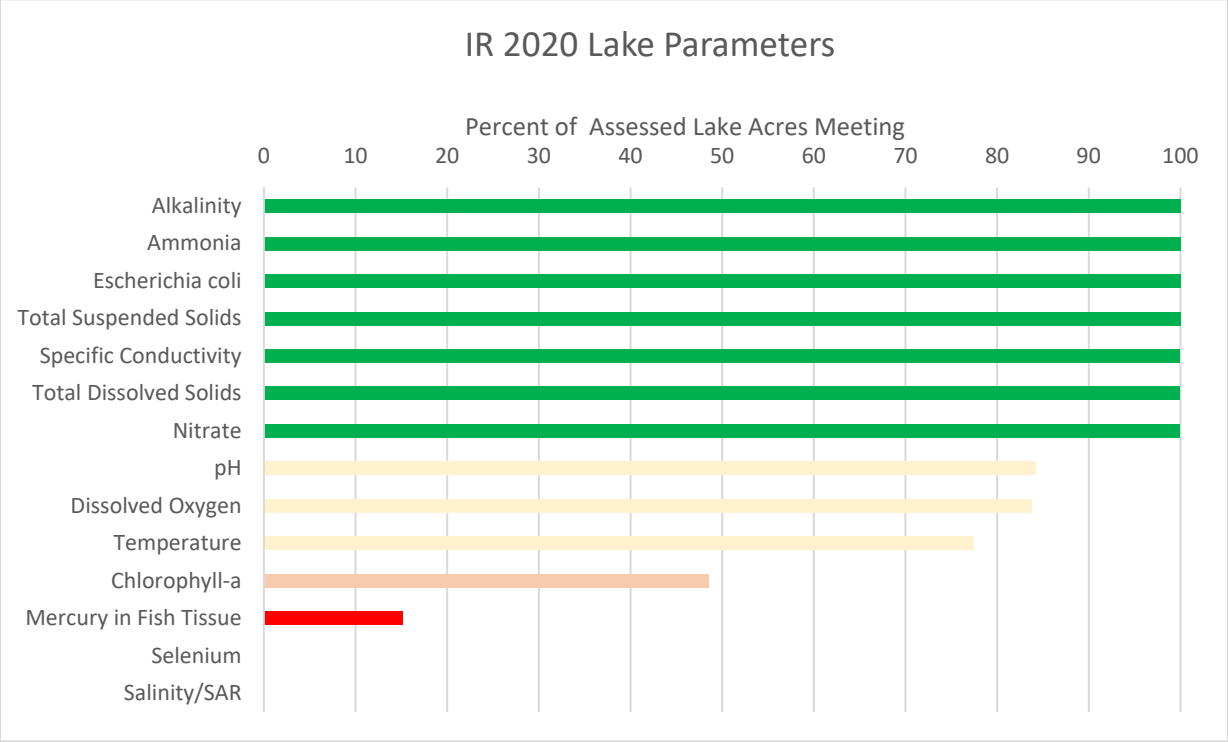

Figure 2: 2020 Integrated Report Lake Parameters

Some parameters may meet for some uses but not for others. For instance, the pH aquatic life use standard is less than 9.0 units while the fish, wildlife, recreation and stock watering standard is less than 9.5 units. A lake could easily meet the fish, wildlife, recreation and stock watering standard but not the aquatic life use standard. Table 18 summarizes the percent of lake acres meeting each beneficial use.

Table 18: Lakes Beneficial Use Status by Acres

Use	Supporting	Nonsupporting
Domestic Water Supply	72.3%	27.7%
Coldwater Permanent Fish Life	0.0%	100.0%
Coldwater Marginal Fish Life	4.9%	95.1%
Warmwater Permanent Fish Life	5.1%	94.9%
Warmwater Semipermanent Fish Life	15.2%	84.8%
Warmwater Marginal Fish Life	7.4%	92.6%
Immersion Recreation	55.4%	44.6%
Limited Contact Recreation	55.4%	44.6%
Fish, Wildlife Prop, Rec and Stock Watering	27.7%	72.3%
Irrigation	58.9%	41.1%

Most lakes and reservoirs in the state are characterized as eutrophic to hypereutrophic. They tend to be shallow, turbid, and well-supplied with dissolved salts, nutrients, and organic matter. These lakes have sizeable watersheds of nutrient-rich glacial soils that are extensively developed for agriculture. Runoff carrying sediment and nutrients from agricultural land is the major nonpoint pollution source.

LAKE WATER QUALITY ASSESSMENT

A total of 575 lakes and reservoirs are currently designated with the beneficial uses of recreation and warmwater or coldwater fish life use in South Dakota. Forty-one assessed lakes in South Dakota have a surface area greater than 1,000 acres and have a combined surface area of 117,559 acres. Lake monitoring and assessment efforts have been conducted routinely since 1989 as part of the DENR's SWLA project. Additional lake data have also been acquired from individual assessment projects and citizens' monitoring efforts. Approximately 30% of the 575 lakes have been assessed, accounting for 67% of the total lake acreage.

Water quality standards were evaluated for each lake in accordance with applicable assessment methodologies. The assessment results suggest 18 lakes fully support all assessed beneficial uses and 129 failed to support one or more beneficial uses. Thirty-two lakes had insufficient data to determine use support.

The low number of lakes and reservoirs meeting all assigned beneficial uses can be attributed in part to mercury in fish tissue. Prior to the 2016 reporting cycle, only 18 lakes were considered not supporting for mercury based on a fish consumption advisory. In 2016, DENR adopted EPA's mercury in fish tissue standard of 0.3 mg/kg. In 2020, 83 lakes or 85% of lake acres assessed were deemed not supporting aquatic life propagation uses for mercury in fish tissue. DENR received final EPA approval for a statewide mercury TMDL, which included 75 waters not

supporting mercury in fish tissue. The TMDL documented that the primary source of mercury in South Dakota comes from global atmospheric deposition. Therefore, the high incidence of nonsupport for lakes is not likely to improve until measures to reduce mercury are implemented at a global scale.

Another main cause of nonsupport continues to be excessive algae due to nutrient enrichment from watershed scale nonpoint sources and internal loading. More than half of lake acres assessed are nonsupporting for chlorophyll-a. Dissolved oxygen problems are caused by excess plant and microbial life decaying and respiring during the night. Sixteen percent of lake acres are impaired for dissolved oxygen. Likewise, high pH above 9.0 may indicate nutrient problems related to excess productivity and about 15% of lake acres assessed have been shown to have high pH problems.

A Trophic State Index (TSI) approach was used to determine the trophic (productivity) status of assessed lakes (Carlson, 1977). The primary trophic state indicators are phosphorus, Secchi depth transparency and chlorophyll-a. Carlson (1991) suggests the chlorophyll-a index (TSI Chl-a) provides the best measure of lake productivity and trophic state. The median TSI was used to classify the trophic status of assessed lakes and reservoirs in South Dakota (Table 19). Below are the trophic state indicators for lakes in the past 15 years. One hundred twenty-two lakes were assessed. These lakes only had to have at least two years of data in the past 15 years. TSI score cutoffs follow in the table below.

Table 19: Trophic Status of Assessed Lakes

TSI Chl-a	Chl-a ug/L	Classification		Number of Lakes	Lake acreage	Percent of assessed acres
<30	0.95	Oligotrophy	O	0	0	0%
30-40	.95-2.6		O	5	939	1%
40-50	2.6-7.3	Mesotrophy	M	14	25363	17%
50-60	7.3-20	Eutrophy	E	41	34753	23%
60-70	20-56		E	46	42028	28%
70+	>56	Hypereutrophy	H	16	15914	11%
		unknown	U	57	31537	21%

DENR has shifted the TSI Chl-a classification scale to the thresholds reflected in Table 20 for more uniform reporting. Oligotrophy previously was cut off at a TSI Chl-a of 35 it is now revised to 40. The eutrophy-hypertrophy threshold was previously at 66 and is now 70. TSI Chl-a by individual lakes are presented in Appendix G.

Table 20: Trophic State Descriptions

A list of possible changes that might be expected in a northern temperate lake as the amount of algae changes along the trophic state gradient.						
TSI	**Chl (ug/L)**	**SD (m)**	**TP (ug/L)**	**Attributes**	**Water Supply**	**Fisheries & Recreation**
<30	<0.95	>8	<6	**Oligotrophy:** Clear water, oxygen throughout the year in the hypolimnion	Water may be suitable for an unfiltered water supply	Salmonid fisheries dominate
30-40	0.95-2.6	4-8	6-12	Hypolimnia of shallower lakes may become anoxic		Salmonid fisheries in deep lakes only
40-50	2.6-7.3	2-4	12-24	**Mesotrophy:** Water moderately clear; increasing probability of hypolimnetic anoxia during summer	Iron, manganese, taste, and odor problems worsen; raw water turbidity requires filtration	Hypolimnetic anoxia results in loss of salmonids; walleye may predominate
50-60	7.3-20	1-2	24-48	**Eutrophy:** Anoxic hypolimnia, macrophyte problems possible		Warm-water fisheries only; bass may dominate
60-70	20-56	0.5-1	48-96	Blue-green algae dominate, algal scums and macrophyte problems	Episodes of severe taste and odor possible	Nuisance macrophytes, algal scums, and low transparency may discourage swimming and boating
70-80	56-155	0.25-0.5	96-192	**Hypereutrophy:** (light limited productivity) dense algae and macrophytes		
>80	>155	<0.25	192-384	Algal scums, few macrophytes		Rough fish dominate; summer fish kills possible

(RMBEL https://www.rmbel.info/tsi/) After Moore, 1. And K. Thornton, [Ed.]1988. Lake and Reservoir Restoration Guidance Manual. USEPA>EPA 440/5-88-002.

The major water quality problems in South Dakota lakes continue to be excessive nutrients, and algae due to nonpoint source pollution (primarily agricultural). Nonpoint source runoff and internal phosphorus cycling continues to negatively impact the trophic state of many lakes. Aging reservoirs have also become more eutrophic as many are now approaching their expected life spans. Water quality degradation due to acid precipitation, acid mine drainage, or toxic pollutants, is presently not a problem in South Dakota lakes.

Acid Effects on Lakes

During lake water quality assessments each lake is measured for field pH. Monitoring efforts from 1989 to 2019 suggest none of the assessed lakes (n=142) had acidic pH conditions (Table 21). DENR is not aware of any lakes in South Dakota that are currently impacted by acid deposition. The lack of acidity in South Dakota lakes is attributed to a lack of industrialization and a natural buffering capacity of the soils.

Table 21: Acid Effects on Lakes

	Number of Lakes	Acreage of Lakes
Assessed for pH	142	126,947
Impacted by Acidity (<6.5)	0	0
Vulnerable to Acidity (<6.5)	0	0

Trends in Lake Water Quality

The trophic state of a lake can be monitored over time to track changes in water quality for prioritizing management decisions. Long-term trends were determined for South Dakota lakes using all available growing season (May-September) data. One hundred thirteen lakes were evaluated for Trophic State Index chlorophyll-a trends. Chlorophyll-a values were collected for the last 30 years from 1989-2019, then median growing season TSIs (chlorophyll-a) were calculated by lake for each year. The Kendall test for trend was applied to lakes with at least 5 years of data. Of the 113 lakes that could be evaluated, 8 declined and 7 improved over the time period (Tables 22-24).

Table 22: Declining Lake Quality in Assessed Lakes (1989-2019)

			TSI Chl-a			Median growing season chl-a		
Assessment Unit	Kendall Tau trend	number of years of data	1990-1999	2000-2009	2010-2019	1990-1999	2000-2009	2010-2019
SD-BA-L-WAGGONER_01	0.6000	11	48	61	68	5.8	23.9	49.6
SD-BF-L-ORMAN_01	0.4937	16	34	44	45	1.4	4.1	4.3
SD-CH-L-ANGOSTURA_01	0.3766	16	39	47	48	2.3	5.3	5.8
SD-GR-L-SHADEHILL_01	0.4774	13	33	44	60	1.3	4.0	19.8
SD-JA-L-LOUISE_01	0.5556	9	57	61	66	14.5	22.2	40.1
SD-JA-L-ROSETTE_01	0.6190	7	64	73	73	28.9	73.1	78.8
SD-MI-L-ROOSEVELT_01	0.7143	8	52	57	64	9.6	14.1	30.2
SD-MN-L-BIG_STONE_01	0.7333	6	46	60	63	5.1	20.3	29.4

Table 23: Improving Lake Quality in Assessed Lakes (1989-2019)

Assessment Unit	Kendall Tau trend	number of years of data	TSI-Chl			Median growing season chl-a		
			1990-1999	2000-2009	2010-2019	1990-1999	2000-2009	2010-2019
SD-BS-L-MADISON_01	-0.3714	21	73.3	62.7	60.7	78.0	26.4	21.6
SD-BS-L-SCHOOL_01	-0.6190	7	70.4	67.6	61.9	59.2	44.9	24.4
SD-CH-L-COLD_BROOK_01	-0.6190	7	47.3	41.6	33.8	8.1	3.2	1.4
SD-CH-L-SHERIDAN_01	-0.3464	18	52.8	43.4	49.5	9.6	3.7	6.9
SD-JA-L-ROY_01	-0.5111	10	60.4	56.8	49.3	20.9	14.5	6.8
SD-MN-L-COCHRANE_01	-0.4719	22	60.8	57.4	53.7	21.7	15.4	10.5
SD-MN-L-OLIVER_01	-0.5948	18	70.3	61.4	57.1	65.9	23.3	14.9

Table 24: Long Term Trends in Assessed Lakes (1989-2019)

	Number of Lakes	Lake Acreage
Assessed for Trends	113	114026
Improving	7	6331
No Trend	98	86182
Degrading	8	21513

STATE-SCALE STATISTICAL SURVEYS

DENR's lake monitoring program used a random probabilistic survey design from 2008 to 2018. This survey design yielded statistically valid results to make inferences about use attainment in lakes with recreation and/or warmwater or coldwater fish life propagation (i.e. 575 waterbodies) uses. Results of the random lake surveys are summarized in Figures 3a-e. Over time, it became apparent that the random design contributed to a deficiency in individual lake data. This impacted the state's ability to make support determinations and develop trends for many individual waterbodies. In response, DENR implemented monitoring changes to better assess the status of individual waterbodies as well as state-scale statistical surveys to incorporate condition of the larger population of lakes and streams.

South Dakota's state-scale statistical survey will be conducted in conjunction with EPA's National Aquatic Resource Surveys. South Dakota participates in the NLA and NRSA which are conducted on a 5-year rotation. The national scale surveys provide the foundation for a state-scale survey for both resource types. South Dakota's state-scale survey will be based on a state-level intensification of the National Aquatic Resource Surveys with technical assistance from EPA. The state-scale survey will enable estimates of the condition of South Dakota's waters as a whole.

DENR conducted a state-level intensification in conjunction with the NRSA during the 2018 and 2019 field season. South Dakota was assigned 43 random stream sites to fulfill national requirements, not including sites allocated to tribes. An additional 32 sites were randomly selected from the over-sample list to meet or exceed 68 random site visits required to ensure appropriate statistical confidence. The intensification sampling focused on parameters of interest for waters with designated recreation and aquatic life uses. Results of the 2018-2019 state-scale statistical stream survey will be available for the 2022 reporting cycle. A similar intensification will also be conducted during the 2022 NLA. DENR also plans to obtain state-scale condition estimates for all lakes and streams in the state based on the national suite of indicators following availability of NLA and NRSA results. DENR will work with EPA going forward to ensure design requirements are met prior to a specific survey to ensure results meet statistical confidence requirements. When results of state-scale surveys become available reporting will occur in the next IR cycle.

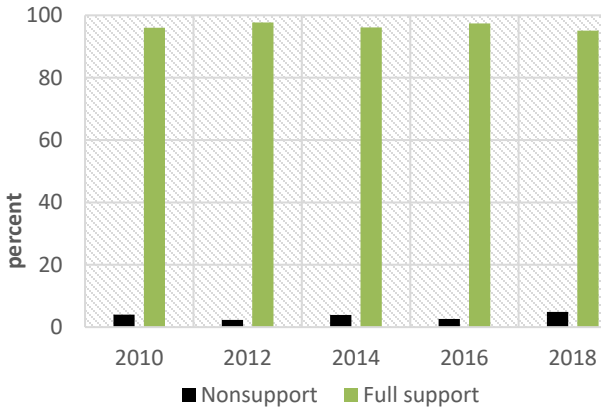

Figure 3a: Aquatic Life Use-Dissolved Oxygen

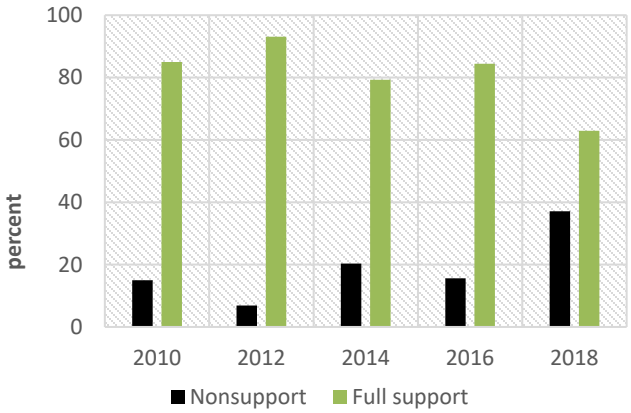

Figure 3b: Aquatic Life Use-pH

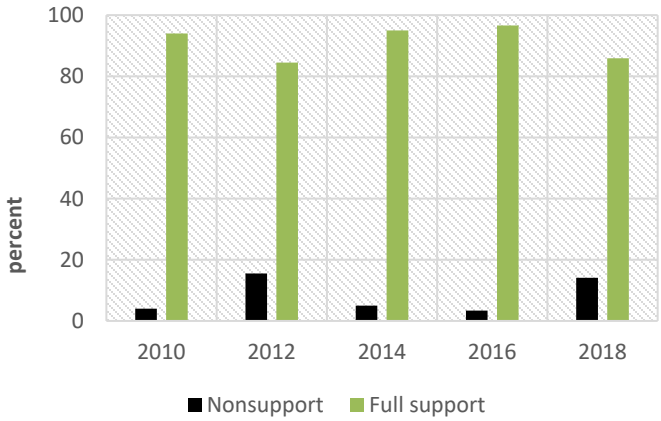

Figure 3c: Aquatic Life Use-Temperature

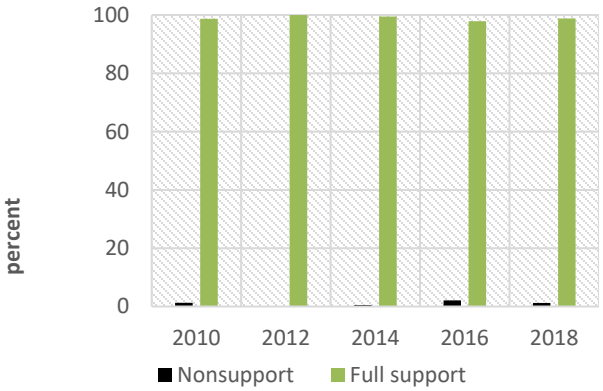

Figure 3d: Limited Contact Recreation- *E. coli*

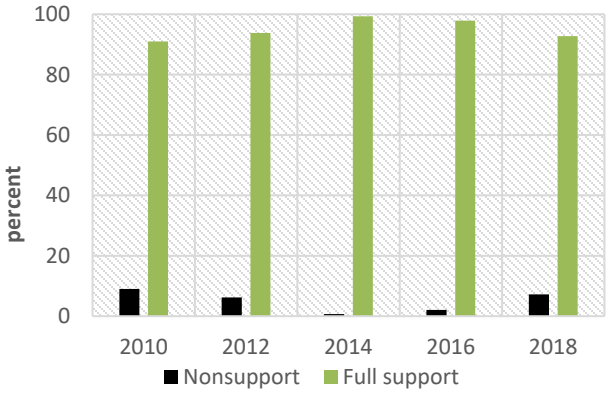

Figure 3e: Immersion Recreation - *E. coli*

Figures 3a-e: State-scale Statistical Results by Parameter for Lakes Assigned Recreation and Aquatic Life Uses

RIVER BASIN WATER QUALITY ASSESSMENTS

South Dakota has fourteen major river basins, most of which drain into the Missouri River (Figure 4). The following sections contain brief narratives that discuss noteworthy waterbodies and pollution problems. A detailed state map showing assessed lakes and streams provides general use support information (Figure 5). More specific information is provided in the accompanying river basin tables in Appendix C.

The River Basin Tables (Appendix C) represent South Dakota's 305(b) Surface Water Quality Assessment. The table information contains the waterbody name, assessment unit identification, reach location, beneficial uses, support determinations, cause of nonsupport, parameters that meet criteria, and EPA category.

DENR does not sample all waterbodies for all possible contaminants. Some waterbodies may be nonsupporting for a particular parameter, and another waterbody may not have been sampled for that parameter. DENR has added a column to the basin tables that shows the parameters that meet criterion. If a parameter is not included in either the cause or meeting column, then the waterbody was not sampled for that parameter or has insufficient data for that parameter. Sampled parameters for each reach have been entered into EPA's ATTAINS system and can be accessed at: https://www.epa.gov/waterdata/assessment-and-total-maximum-daily-load-tracking-and-implementation-system-attains.

Sources of impairment are not included in the basin tables. Sources of impairment are identified during watershed assessments and TMDL development. For more information on sources identified during TMDL development, please refer to the TMDL documents on the DENR website at: http://denr.sd.gov/dfta/wp/wqinfo.aspx

In 2008, DENR adopted the bacterial indicator *E. coli* into the Surface Water Quality Standards to protect recreation beneficial uses. *E. coli* is a fecal coliform bacterium and both indicators originate from common sources in relatively consistent proportions. In general, most of the assessment units previously identified as impaired for fecal coliform were also impaired for *E. coli*. DENR received EPA approval for many fecal coliform TMDLs over the past several years (Appendix A). DENR scientists developed a conversion factor using years of paired fecal coliform and *E. coli* data. Results of the analysis suggest nearly a 1:1 ratio. Because the two bacterial indicators were determined to be interrelated, fecal coliform TMDLs can be considered useful for implementing measures to correct *E. coli* impairment. DENR plans to work with EPA Region 8 on a process to convert fecal coliform TMDLs to *E. coli* TMDLs for several assessment units that have a fecal coliform TMDL and are currently on the 303(d) list for *E. coli.*

Basin waterbody support tables are located in Appendix C. Basin waterbody support maps are located in Appendix F.

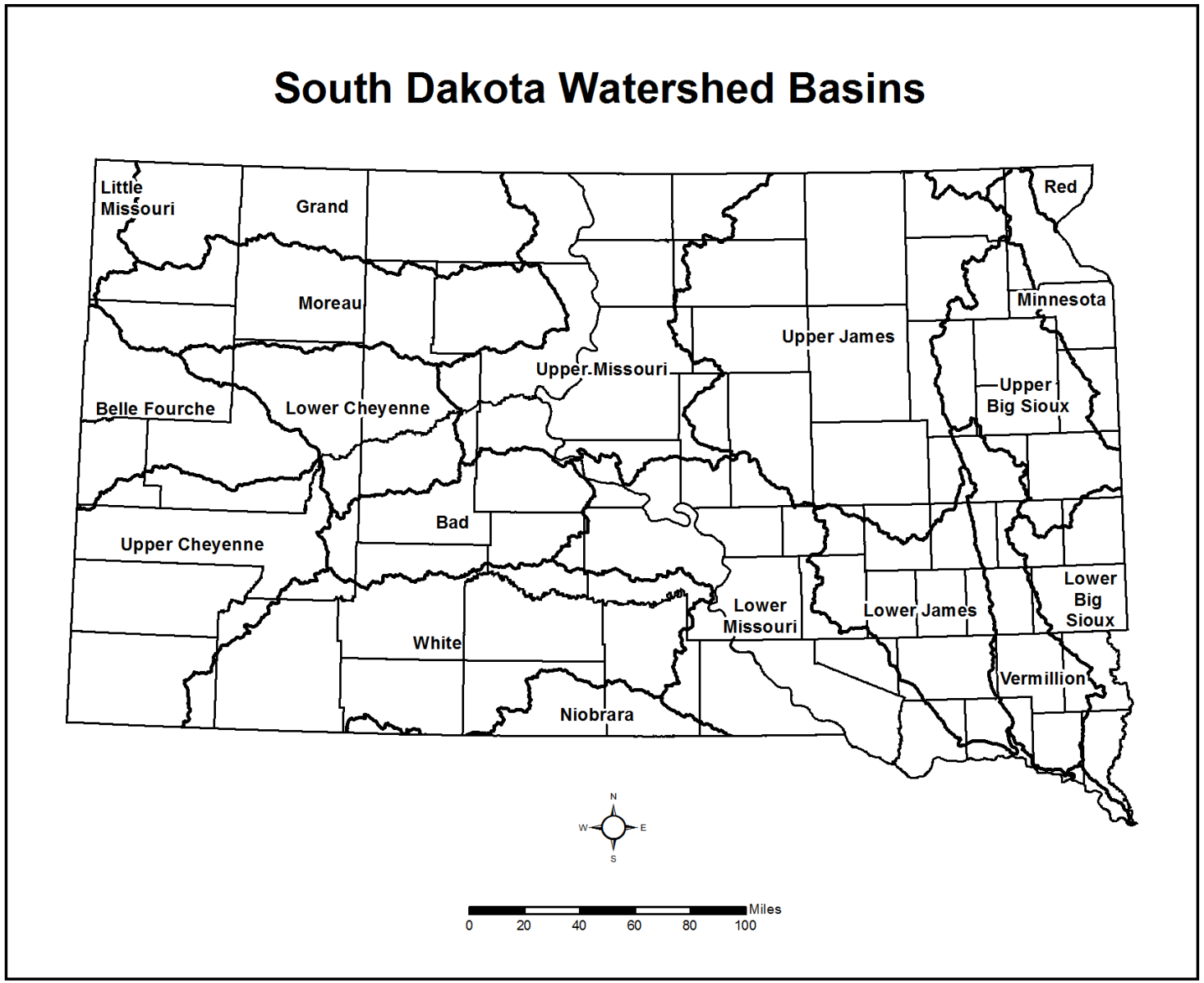

Figure 4: Major River Basins in South Dakota

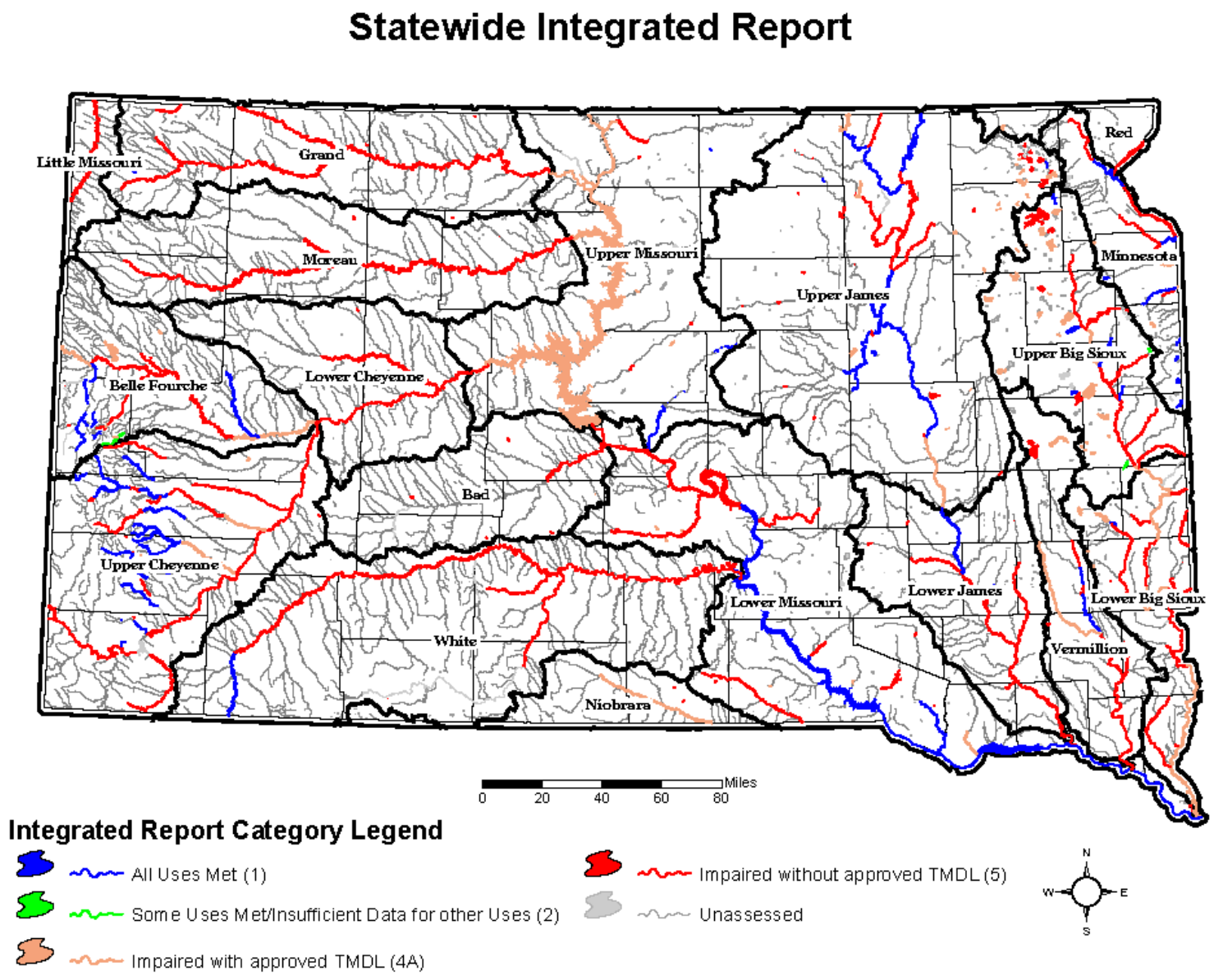

Figure 5: 2020 South Dakota Waterbody Status

Bad River Basin

The Bad River basin lies in west-central South Dakota between the Cheyenne and White River basins and drains approximately 3,175 square miles. Historically, a main characteristic of the basin has been a general lack of constant river flow. The upper portion of the Bad River receives water from the Badlands and artesian wells in the Philip area. These wells contribute minimal flow to the upper portion of the Bad River. There are prolonged periods of low or no flow in the Bad River reach from Midland to the Missouri River.

DENR has assessed five lakes within the basin and also has one water quality monitoring site located on the Bad River. The USGS has water quality monitoring sites on the Bad River and the South Fork Bad River. However, the data are limited, and for most sites, the only parameters that were measured were specific conductance and water temperature.

SD-BA-R-PLUM_01_USGS is a reach on Plum Creek and SD-BA-R-UNNAMED_TRIB_COTTONWOOD_01_USGS is a reach on an unnamed tributary to Cottonwood Creek. These reaches are being removed from this 2020 Integrated Report. These reaches were monitored by USGS, but sampling has been reduced or discontinued and sufficient data is no longer being collected to make waterbody support determinations. DENR will add waterbody reaches to future reports if routine monitoring data becomes available or is supplied by other organizations.

There are no current watershed assessment or implementation projects ongoing in the Bad River Basin.

Belle Fourche River Basin

The Belle Fourche River basin lies in western South Dakota between the Cheyenne and Moreau River basins and drains approximately 3,271 square miles in South Dakota. The upper portion of the basin contains one active and several historic hard-rock mining operations, several small placer mines, and several large decorative stone and bentonite mines. The middle and lower portions of the basin are mainly used for livestock watering and irrigation.

DENR has assessed six lakes and maintains 22 water quality monitoring sites on many streams within the Belle Fourche basin. Water quality monitoring sites are located on the Belle Fourche River, Spearfish Creek, Whitewood Creek, and various other streams. Most of the streams are routinely monitored for toxic pollutants, such as heavy metals, because several hardrock mining operations are or were located in this basin. Available data from DENR watershed assessment projects and sponsors were used to determine waterbody support.

The USGS has water quality monitoring sites on the Belle Fourche River, Crow Creek, Horse Creek, Little Spearfish Creek, Spearfish Creek, and other waterbodies within the basin. The data on some streams are fairly extensive and include information on dissolved oxygen, pH, specific conductance, water temperature, and sodium adsorption ratio. Data collected on all USGS sites were analyzed for this report.

Segment SD-BF-R-SPEARFISH_03 is a reach on Spearfish Creek that has been discontinued. DENR discontinued the monitoring site on that reach in 2016. This stream segment has been merged and is now included with SD-BF-R-SPEARFISH_02.

Strawberry Creek is impacted by historic mining activity and acid mine drainage. One of the contributing sources of impairment was from Brohm Mining Corporation's Gilt Edge Mine. In July 1999, Brohm Mining Corporation's parent corporation, Dakota Mining, declared bankruptcy, and the state of South Dakota took over water treatment. On December 1, 2000, the site was listed on the National Priorities List as a Superfund Site. Remediation activities at Gilt Edge Mine are contracted by EPA to HydroGeoLogic, Inc. Due to remediation activities, copper, low pH, and zinc were delisted as impairment causes in the 2010 cycle. Strawberry Creek continues to be nonsupporting for exceeding chronic cadmium levels. A cadmium TMDL was approved for Strawberry Creek in April 2010.

Several segments of Whitewood Creek near Lead are nonsupporting for *E. coli*. Sources of the high bacteria numbers in the stream's middle reach may be due to aging septic and sewer systems, the combined sewer overflow in Lead, and wildlife and livestock. A SWD permit has been issued to the city of Lead for the combined sewer overflow, requiring compliance with EPA's nine minimum controls for the combined sewer overflow. The city of Lead continues to make progress to separate their sewer systems and ultimately eliminate the combined sewer overflow. TMDLs are currently being developed for the impaired segments of Whitewood Creek.

An implementation project has been ongoing since 2004 to address water quality of the Belle Fourche River and tributaries. Implementation efforts have primarily focused on irrigation practices to reduce TSS. Recent emphasis is being placed on grazing management practices to reduce bacteria. The Belle Fourche River continues to remain nonsupporting for TSS; however, a TMDL was approved in 2005. Fecal coliform and *E. coli* TMDLs have been approved for two segments of the Belle Fourche River.

Big Sioux River Basin

The Big Sioux River basin is located in eastern South Dakota. The lower portion of the river forms the Iowa-South Dakota border. The basin drains an approximate 5,382 square miles in South Dakota and an additional 3,000 square miles in Minnesota and Iowa. The basin's primary economic activity is agriculture, but it also contains much of the state's light manufacturing, food processing, and wholesale industries. Four state educational institutions, several vocational schools, and Sioux Falls, the state's largest city, are located within this basin, making this the heaviest populated basin in the state.

DENR has assessed 37 lakes and maintains 26 water quality monitoring sites within the Big Sioux basin. Seventeen water quality monitoring sites are located on the Big Sioux River. In addition, available data from DENR watershed assessment projects and project sponsors were used to determine waterbody support. The city of Sioux Falls, the Minnesota Pollution Control Agency, Friends of the Big Sioux River, and EDWDD also supplied data for waterbodies within the Big Sioux Basin.

The USGS has water quality monitoring sites on the Big Sioux River, Beaver Creek, Flandreau Creek, Skunk Creek, Willow Creek, Hidewood Creek, and Split Rock Creek within the basin. USGS data on the Big Sioux River are fairly extensive and include

information on dissolved oxygen, pH, specific conductance, water temperature, and sodium adsorption ratio. Data collected on all USGS sites were analyzed for this report.

National Water Quality Initiative (NWQI) project was conducted within the Jensen Creek-Skunk Creek 12-digit hydrologic unit on Skunk Creek (SD-BS-R-SKUNK_01) from 2014-2018. The monitoring portion of the project was supported by EDWDD and DENR. Monitoring efforts were focused on determining the effectiveness of Best Management Practices (BMPs) implemented at different locations along the stream riparian corridor. Seasonal Riparian Area Management (SRAM) was a BMP implemented to remove the ability of livestock to access the riparian zone during the recreation season (May 1-September 30). Monitoring sites were established above, below and within SRAM implementation areas. Results of the monitoring effort were used to examine trends in Escherichia coli bacteria, TSS, nutrients, and ecological integrity of the stream in the presence of SRAM. Support for the implementation of BMPs is provided by the City of Sioux Falls through Clean Water SRF Water Quality Incentive funds and NRCS through the NWQI Partnership program and other federal programs. Information gained from this project was used in support of an EPA success story for TSS (https://www.epa.gov/sites/production/files/2019-07/documents/sd_skunkcreek_1771_508.pdf) though reducing E. coli to meet water quality standards remains a goal.

The main causes of nonsupport within Big Sioux River basin streams continue to be *E. coli* and TSS. The presence of bacteria in the Big Sioux basin is mainly due to runoff from livestock operations, and wet weather discharges and storm sewers within municipal areas. Sediment sources are overland runoff from nearby croplands, inflow from tributaries, and streambank erosion.

Lakes in the Big Sioux River basin are highly productive due to nutrient enrichment and siltation. Most of the monitored lakes are eutrophic or hypereutrophic. The moderate size and shallow depth of most lakes contribute to the hypereutrophic conditions. Lakes are susceptible to rapid changes produced by large nutrient and sediment loads from sizeable agricultural watersheds comprised of glacial soils.

Mercury in fish tissue affects many lakes in the Big Sioux River basin. While there are many factors that influence mercury accumulation in fish, a significant factor in this basin is the expansion of surface water and/or changes in areas inundated by water. Water depth, substrate, and increased organic decay influence the rate that elemental mercury is methylated and converted to the biologically available form of methylmercury. The concentration of mercury in the water column is typically very low like other lakes in the basin. However, the methylation rate is typically higher and results in a greater bioavailability of mercury to aquatic life. Thirty-seven waterbodies in the Big Sioux Basin were monitored for mercury in fish tissue. This includes thirty-four lakes and three river/stream segments. Twenty-seven waterbodies did not support the mercury in fish tissue criterion, while ten waterbodies did support the criterion. A statewide mercury TMDL has been approved by EPA that identifies atmospheric deposition as the primary source of elemental mercury.

Watershed implementation projects within the basin are focused on reducing bacteria, sediment and nutrient loads from both manmade and natural sources. Current implementation projects include the Upper Big Sioux River Implementation project and the Big Sioux River Watershed Implementation project which encompass a large portion of Big Sioux River watershed from the headwaters to the confluence with the Missouri River with

the exception of the watershed area between Watertown and Estelline. Implementation efforts being conducted in the upper noncontributing portion of the basin fall under the Northeast Glacial Lakes Implementation project. Part of the focus of this project is to protect high quality lakes in the region.

Cheyenne River Basin

The portion of the Cheyenne River basin that lies in southwestern South Dakota drains about 9,732 square miles within the boundaries of the state. The area in this basin is very diverse. It includes part of the Black Hills and Badlands, rangeland, irrigated cropland, and some mining areas. The Cheyenne River originates in Wyoming, flows through the southern Black Hills, and enters Lake Oahe near the center of the state.

DENR has assessed 13 lakes and maintains 34 water quality monitoring sites within the Cheyenne basin. Monitoring sites are located on the Cheyenne River, French Creek, and Rapid Creek. Other monitoring sites are located on various other streams in the basin. In addition, available data from DENR watershed assessment projects and sponsors were also used to determine waterbody support.

Temperature is the primary cause of impairment for lakes in the Cheyenne River basin. All temperature impairments on these lakes are due to exceedances of the temperature criterion for the coldwater permanent fish life beneficial use. TMDL development has not been initiated for any of these lakes and sources of the temperature impairments have not yet been identified. In general, ambient air temperature and solar radiation affect water temperature during the peak summer months. Dissolved oxygen and pH problems also are present in Cheyenne Basin lakes.

The USGS maintains water quality monitoring sites located in the Cheyenne River basin including: Battle Creek, Highland Creek, Rapid Creek, Cheyenne River, and others. The USGS data are limited for most sites and mostly includes specific conductance and water temperature information. Data collected on all USGS sites were analyzed for this report.

SD-CH-L-CROW_01 is a small eight-acre reservoir in Fall River County. This AUID is being removed from this 2020 Integrated Report. DENR does not have any information about this waterbody and does not anticipate any future sampling. DENR will add waterbody reaches to future reports if routine monitoring data becomes available or is supplied by other organizations.

The Cheyenne River basin is home to deposits of natural uranium, historic uranium mining, and current exploration drilling. DENR maintains three water quality monitoring locations within the basin to monitor for uranium and other associated parameters. For this 2020 reporting cycle, there are no exceedances to surface water quality standards for any parameters associated with past uranium mining or current explorations.

The Cheyenne River water quality continues to be generally poor due to both natural and agricultural sources. Most of the Cheyenne River drainage basin contains highly erodible soils. The landscape contributes considerable amounts of eroded sediment during periods of heavy rainfall. During normal or lower flow periods, the upper Cheyenne often exceeds irrigation water quality standards for specific conductance and sodium adsorption ratio. Most segments of the Cheyenne River are nonsupporting for *E. coli* bacteria and TSS. Segments below the Fall River have approved TMDLs for bacteria.

Water quality in Rapid Creek for reaches above Rapid City meets water quality standards for designated beneficial uses. Rapid Creek segments in Rapid City to the Cheyenne River continue to display poor water quality due to excessive *E. coli* bacteria levels.
Sediment removal was implemented at Horsethief Lake (SD-CH-L-HORSETHIEF_01), Lakota Lake (SD-CH-L-LAKOTA_01) and Bismark Lake (SD-CH-L-BISMARK_01) under direction of the U.S. Forest Service in the fall of 2014. The waterbodies were dewatered and the lakebeds were allowed to dry prior to excavation. Sediment removal was completed by the summer of 2015 and the waterbodies were allowed to recharge. Therefore, historic water quality data was not used to determine beneficial use support for each waterbody during the 2020 reporting cycle. All three assessment units were assigned to category 3 (insufficient data/not assessed) until sufficient water quality information is available to make beneficial use support determinations.

No assessment or implementation projects are currently ongoing in the Cheyenne River basin.

Grand River Basin

The Grand River basin covers 4,596 square miles in northwest South Dakota and southwest North Dakota. This is a sparsely populated region with a population density of approximately one person per square mile. Agriculture is the major economic activity in the basin, but energy development is important in the region as well.

DENR has assessed six lakes and maintains nine water quality monitoring sites within the Grand River basin.

The USGS provided data for the Grand River and the North and South Fork Grand Rivers.

Due to historic uranium mining in the Grand River basin, DENR maintains four water quality monitoring sites that are monitored for uranium and other associated parameters. For this reporting cycle, there are no surface water quality exceedances for uranium or other parameters associated with uranium mining.

Elevated specific conductance, TSS, and salinity/sodium adsorption ratios (SAR) are typical of the entire basin. The North Fork watershed drains the southern periphery of the North Dakota Badlands, which may be a major source of high levels of specific conductance and SAR. The South Fork drainage contains erosive soils, which contribute sediment and suspended solids that often produce high TSS and SAR levels in the South Fork.

Shadehill Reservoir and the Grand River are considered impaired for irrigation use due to elevated salinity/SAR. High sodium concentration, combined with the clay characteristics of most soils in this region, significantly reduce the acres suitable for continuous irrigation. This condition is measured by the SAR. A SAR value of 10 or greater indicates that the buildup of sodium could break down soil structure and cause serious problems for plant growth.

There are no on-going assessment or implementation projects occurring within the basin at this time.

Waters in the Grand River basin are affected by unique jurisdictional issues. DENR continues discussions with EPA to determine next steps regarding TMDL development and prioritization. Therefore, TMDL priority has been listed as “low” in the Appendix D.

James River Basin

The James River basin is the second largest river basin in the state. It drains approximately 14,729 square miles, stretching from the North Dakota border to the Missouri River near the Nebraska border. It is located in east-central South Dakota. Agriculture and related businesses are the predominant sources of income.

DENR has assessed 46 lakes and maintains 20 water quality monitoring sites within the James River basin. Eleven monitoring sites are located on the James River. The other sites are located on various other streams in the basin. In addition, available data from DENR watershed assessment projects and sponsors were used to determine waterbody support.

The USGS has several water quality monitoring sites on the James River and other streams in the James River basin including: Elm River, Firesteel Creek, Moccasin Creek, Foot Creek, and several unnamed tributaries in the basin. However, the data are very limited. At most sites, the only parameters that were measured were specific conductance and water temperature.

Dissolved oxygen and *E. coli* were the main impairments observed within the James River basin during this reporting cycle. Past reporting cycles have also identified the same causes of impairment within the James River basin. Substantial organic loading from nonpoint sources throughout the watershed occurs during run-off events. Decaying organic material reduces dissolved oxygen concentration of flood water inundating the flood plain. As water drains back into the river channel, the oxygen is greatly reduced. Agricultural activities such as livestock operations, grazing in riparian zones, lack of riparian vegetation, and row crop production heavily contribute to the amount of suspended sediments and bacteria in the James River basin.

Mercury in fish tissue affects many lakes in the James River basin. While there are many factors that influence mercury accumulation in fish, a significant factor in this basin is the expansion of surface water and/or change in area inundated by water. Water depth, substrate, and increased organic decay influence the rate that elemental mercury is methylated and converted to the biologically available form of methylmercury. The concentration of mercury in the water column is typically very low and similar to other lakes in the basin. However, the methylation rate is typically higher and results in a greater bioavailability of mercury to aquatic life. Thirty-seven waterbodies in the James River Basin were monitored for mercury in fish tissue. Thirty-three waterbodies did not meet the criterion; while four waterbodies did meet the criterion. A statewide mercury TMDL has been approved by EPA that identifies atmospheric deposition as the primary source of elemental mercury.

A National Water Quality Monitoring Initiative Partnership project sponsored by NRCS is being conducted on three, 12-digit hydrologic unit watersheds of Firesteel Creek. The focus area is the West Branch (101600110804), main stem (101600110906) and Storia (101600110905) watersheds. DENR and partners conducted baseline water quality monitoring at several site locations on Firesteel Creek prior to the initiation of the National

Water Quality Monitoring Initiative project. Monitoring efforts are currently being conducted to increase baseline data and monitor effectiveness of best management practices as part of the South Central Water Quality Monitoring project sponsored by the James River Development District.

The South Central Watershed Implementation Project is also ongoing in the James River Basin. This project encompasses the Lower James River watershed south of Huron to the Missouri River, including Lake Mitchell and Firesteel Creek. In addition, the Lewis and Clark Reservoir Watershed (Missouri River basin), the Vermillion River basin and Niobrara River basin are also included in the project area. Grassland and cropland BMPs, grassland management systems, riparian area management and animal waste systems are the main BMPs used to combat excess nutrients, bacteria and sediment in waterbodies within the project area. Extensive water quality monitoring is also a component of the project designed to monitor effectiveness of best management practices. Funding for the project is provided by NRCS, DENR and the James River Development District.

Little Missouri River Basin

The Little Missouri River basin is a small basin located in the northwestern corner of the state. The river enters the state from southeastern Montana and drains 583 square miles before exiting into North Dakota. The basin's economy is dominated by agriculture with approximately 90% of the land being used for agricultural production. The majority of this land is rangeland due to limited rainfall.

DENR has one water quality monitoring station in the Little Missouri River basin located on the Little Missouri River. There are currently no formal watershed assessment or implementation projects in the basin.

Minnesota River Basin

The Minnesota River basin is found in the northeastern corner of the state. The basin is bordered on the north by the Red River tributaries, on the west by the Prairie Coteau Pothole region, on the south by the Big Sioux River, and on the east by the South Dakota/Minnesota border. The basin drains an area of 1,637 square miles within South Dakota.

DENR has assessed eight lakes and maintains ten water quality monitoring sites within the Minnesota basin. EDWDD also submitted data for waterbodies with the Minnesota River basin. Most stream impairments are due to bacteria, while lake impairments were due to mercury in fish tissue and temperature.

Implementation efforts are currently ongoing in the Upper Minnesota River basin in Grant and Roberts counties with focus on the Whetstone and Yellow Bank watersheds within the Northeast Glacial Lakes project that also encompasses Day and Marshall Counties. Grazing management, riparian buffers, and livestock stream crossings are some of the best management practices used to improve water quality.

Missouri River Basin

The Missouri River is the largest body of water in South Dakota. It flows through the middle of the state to form what is commonly referred to as either "east" or "west" river. The river

enters the state on the north from North Dakota and flows south until it reaches the vicinity of Pierre. Along this southern course it receives significant flows from the Grand, Moreau, and Cheyenne River basins. From Pierre, the river flows generally east-southeast until it exits the state on the southeast tip after receiving contributing flows from the Bad, White, James, Vermillion, Niobrara, and Big Sioux River basins. The Missouri River basin is the largest basin in South Dakota and drains approximately 15,865 square miles.

The dominant feature of the Missouri River in South Dakota is the presence of four impoundments: Lake Oahe at Pierre (Oahe Dam), Lake Sharpe at Fort Thompson (Big Bend Dam), Lake Francis Case at Pickstown (Ft. Randall Dam), and Lewis and Clark Lake at Yankton (Gavins Point Dam). The largest of these reservoirs is Lake Oahe with 22,240,000 acre-feet of storage capacity covering 374,000 acres. The impoundments serve for flood control, hydroelectric generation, irrigation, municipal water use, water-related recreation, and downstream navigation. The 70-mile reach from the Gavins Point Dam to Sioux City, Iowa, is the last major free-flowing segment of the Missouri River in the state.

DENR has assessed eighteen lakes and maintains thirteen water quality monitoring stations within the Missouri River basin. USGS also has several water quality sites located on the mainstem of the Missouri River and several tributaries. USGS data on the Missouri River itself are fairly extensive and include data for dissolved oxygen, pH, water temperature, sodium adsorption ratio, alkalinity, sulfate, nitrates, total dissolved solids, ammonia, and chlorides. USACE summary data from the 2016 Report “Water Quality Conditions in the Missouri River Mainstem System” were also used in determining waterbody support on Lake Oahe and Lake Sharpe. Water quality data for Lewis and Clark Lake was provided by Nebraska Department of Environmental Quality and USACE.

Lake Sharpe is listed in the Missouri River basin tables as nonsupporting for the (2) coldwater permanent fish life propagation beneficial use due to the temperature criterion. USACE profile data summaries and DENR data were used to assess water temperature. During summer months, the temperature criterion is often met in Lake Sharpe immediately downstream of Oahe Dam; however, the water can quickly heat up further downstream. Water in Lake Sharpe is well-mixed due to the short retention time in the reservoir, relative shallowness, and bottom withdrawal from Big Bend Dam. A significant thermocline does not typically develop in Lake Sharpe and by late summer, coldwater habitat is limited to coldwater discharges from Oahe Dam. Profile data collected by DENR and USACE profile data summaries indicate periods of time during summer months when no coldwater habitat exists and none of Lake Sharpe meets coldwater temperature criterion. DENR is currently working with EPA on a Use Attainability Analysis to justify changing the (2) Coldwater permanent fish life propagation use to a (4) Warmwater permanent fish life propagation use.

A significant temperature-depth gradient occurs on Lake Oahe in the near-dam lacustrine area during summer months. This results in the development of a strong thermocline approximately 20 to 25 meters below the surface. The longitudinal extent of the coldwater habitat is dependent upon pool elevation and thermocline depth. The shallower upper reaches of the reservoir are well-mixed by late summer and do not display significant vertical variations in temperature. However, this area may still provide coldwater habitat based on pool elevation.

USACE profile data summaries were used to assess water temperature and resulting coldwater habitat in Lake Oahe. Thermal profile contour plots measured during the months

of May through September 2016, indicate the temperature criterion was met longitudinally during most months throughout most the length of the reservoir within the state boundary. Thermal profile contour plots measured in August 2016 indicate the temperature criterion was met longitudinally from Oahe Dam to near river mile 1190 (Indian Creek). During this time, pool elevation was high and ranged from 1610 to 1612 feet mean sea level (ft-msl). At the time this 2020 Integrated Report was written, the USACE 2016 report was the most recent report available.

Most lakes in the Missouri River Basin are highly eutrophic because of nutrient enrichment and siltation. Agricultural activities are the primary sources of pollution.

There are currently no active assessment projects in the Missouri River Basin. The only active implementation project is the South Central Watershed Implementation Project, which also encompasses the Lower James River Watershed.

Moreau River Basin

The Moreau River basin is located in the northwest part of South Dakota and drains an area of 4,995 square miles. As with the Grand River basin to the north, agriculture is the mainstay of this sparsely populated basin. Population density is approximately two persons per square mile. A majority of the basin is devoted to ranching operations.

DENR has assessed two lakes and maintains five water quality monitoring sites within this basin. Three monitoring sites are located on the Moreau River, one is located on the South Fork Moreau, and a new site has recently been established on Rabbit Creek.

The USGS has water quality monitoring sites on the Moreau River. The data are limited, and the only parameters measured were specific conductance and water temperature.

Segment SD-MU-R-THUNDER_BUTTE_01 was removed from the 2020 Integrated Report. DENR discontinued the monitoring site in 2016 and has no further plans to monitor Thunder Butte Creek. DENR will add waterbody reaches to future reports if routine monitoring data becomes available or is supplied by other organizations.

Much of the sediment in the Moreau River basin comes from erosive Cretaceous shales that also mineralize the water. As in the adjoining Grand River basin to the north, this leads to high levels of total dissolved solids in the water of local streams, primarily sulfate, iron, manganese, sodium, and other minerals. Other pollutants in the basin include TSS, salinity/SAR, and specific conductance due to natural conditions; and *E. coli* bacteria from livestock and wildlife contributions.

The Moreau River is located downstream from historic uranium mining operations and is monitored for standard parameters and those associated with historic uranium mining. Waterbody support determination for the Moreau River was based on all measured parameters including those associated with uranium mining. As in previous reporting cycles, the Moreau River is listed as not supporting some beneficial use designations based on exceedances of TSS, *E. coli*, and salinity/SAR. There were no exceedances for any parameters associated with uranium mining.

There are currently no on-going assessment or implementation projects occurring within the Moreau basin.

Waters in the Moreau River basin are affected by unique jurisdictional issues. DENR continues discussions with EPA to determine next steps regarding TMDL development and prioritization. Therefore, TMDL priority has been listed as “low” in the Appendix D.

Niobrara River Basin

The tributaries of the Niobrara basin that lie in South Dakota are located in the very south-central part of the state. These tributaries include the Keya Paha River and Minnechaduza Creek. These streams drain approximately 1,742 square miles in South Dakota. Agriculture is the leading source of income to the basin.

DENR has assessed two lakes and maintains one water quality monitoring site on the Keya Paha River.

The Keya Paha River originates at the confluence with Antelope Creek in the Rosebud Indian Reservation. The river flows in a south-east direction and exits the state east of Wewela, South Dakota. The river is not supporting its designated uses due to TSS and *E. coli* bacteria. Land use along the Keya Paha River is primarily agriculture. Livestock grazing in the riparian or shoreline areas has been identified as the primary source of bacteria. There are no point source discharges to the Keya Paha River. A TMDL has been approved for the Keya Paha River to address the contaminants.

Segment SD-NI-R-ANTELOPE_01_USGS was removed from the 2020 Integrated Report. This reach was monitored by USGS, but sampling has been reduced or discontinued and sufficient data is no longer being collected to make waterbody support determinations. DENR will add waterbody reaches to future reports if routine monitoring data becomes available or is supplied by other organizations.

Implementation efforts are being conducted through the South Central Watershed Project.

Red River Basin

The Red River basin covers the extreme northeastern corner of the state. The tributaries of the Red River that are in South Dakota drain a total of 627 square miles. Agriculture is the leading economic industry in the basin.

DENR has assessed two lakes and does not maintain any water quality monitoring sites in the Red River basin.

There are no on-going assessment or implementation projects occurring within the Red River basin at this time.

Vermillion River Basin

The Vermillion River basin covers an area of 2,673 square miles in southeastern South Dakota. The basin is about 150 miles in length and varies in width from 12 miles in the north to 36 miles in the south. Much of the lower 22 miles of the river basin is channelized. Streams in the Vermillion River basin drain to the Vermillion River, which drains to the Missouri River near Vermillion, South Dakota. Agriculture is the leading source of income in the basin. It is estimated that 96% of the total surface area is devoted to agriculture. The remaining areas include municipalities, sand and gravel operations, and other uses.

DENR has assessed six lakes and maintains six water quality monitoring sites within this basin. Three sites are located on the Vermillion River, two are located on the East Fork Vermillion River, and a new site was recently added on Long Creek.

The USGS has water quality monitoring sites in the basin including sites on the Vermillion River, East Fork Vermillion River, and West Fork Vermillion River. The data are limited, and the only parameters measured were specific conductance and water temperature.

Vermillion River is nonsupporting due to exceedances of *E. coli* and TSS. Row crops account for approximately 73% land use in the lower segments. Sediment sources are overland runoff from nearby croplands and feedlots, inflow from tributaries, and streambank erosion. There are approved TSS TMDLs for the two lower reaches of the Vermillion River.

Implementation efforts are being conducted through the South Central Watershed Project.

White River Basin

The White River basin is the southernmost of the five major west-river drainages in South Dakota. The total drainage area of the basin in the state is 8,246 square miles. Agriculture dominates the basin's economy, with the majority of the land used as rangeland or cropland.

DENR has assessed one lake in the White River basin and maintains five water quality monitoring sites within this basin. Four monitoring sites are located on the White River and the other is located on the Little White River.

The USGS has water quality monitoring sites in the basin, including sites on the White River, Little White River, Black Pipe Creek, and others. The data are limited, and the only parameters that were measured were specific conductance and water temperature.

Segment SD-WH-R-LAKE_01_USGS has been removed from this 2020 Integrated Report. This reach was monitored by USGS, but sampling has been reduced or discontinued and sufficient data is no longer being collected to make waterbody support determinations. DENR will add waterbody reaches to future reports if routine monitoring data becomes available or is supplied by other organizations.

DENR continues to sample uranium, and other parameters associated with uranium mining, at an ambient monitoring location on the White River near Oglala. This location was selected due to in-situ uranium mining upstream in Nebraska and the naturally occurring uranium in the highly erodible soils in the White River basin. Support determinations were based on all parameters; however, there were no surface water quality exceedances for uranium or other parameters associated with uranium mining.

The White River basin receives the majority of the runoff and drainage from the western Badlands. The exposed Badlands are a major natural source of both suspended and dissolved solids to the river. Severe erosion and leaching of soils occur in the Badlands and throughout the entire length of the basin. Site specific water quality standards for TSS were established by DENR in 2009 for the White River and Little White River. The White River is listed as impaired for *E. coli* and SAR.

Assessment projects have been completed for the White River, Little White River, and Cottonwood Creek watersheds. There are currently no on-going implementation projects in the White River basin.

WETLANDS

Wetland resources across the Prairie Pothole Region (PPR) of eastern South Dakota provide many ecological services (Figure 6). Wetlands provide hydrologic services such as water and nutrient storage and flood relief. They also enhance waterfowl production and promote biodiversity. Growing awareness of the importance of wetlands prompted the U.S. Fish and Wildlife Service (USFWS) in 1974 to conduct an inventory of U.S. wetlands, also known as the National Wetlands Inventory. The Cowardin et al. (1979), classification system was adopted by the USFWS to classify wetlands based on hydrologic, geomorphologic, biologic, and chemical characteristics. The National Wetlands Inventory provides valuable documentation regarding identity, extent, characteristics and distribution of wetland resources in the PPR.

Figure 6: Map Depicting Prairie Pothole Region

The PPR of eastern South Dakota had an estimated 1,780,859 acres of wetlands with shallow water habitat in the early to middle 1990's (Johnson and Higgins, 1997). By 2009, South Dakota had an estimated 1,870,790 acres of shallow water wetlands (Dahl, 2014). The total number of wetlands in South Dakota declined by 2.8% from 1997 to 2009 (Dahl, 2014). Small temporary wetlands comprised the primary type of emergent wetland loss. South Dakota did exhibit gains in all other emergent wetland classes especially larger seasonal and semipermanent classes between 1997 and 2009. This implies that the overall wetland area in South Dakota increased from the early to middle 1990s to 2009, which is consistent with the wetland area estimates provided by Johnson and Higgins (1997) and Dahl (2014). The wetland acreage estimates provided by Dahl (2014) represent the most recent documentation of wetland extent available for South Dakota.

The general loss of small temporary wetlands and gain in larger seasonal and semipermanent wetlands can be attributed to agricultural drainage practices. Portions of eastern South Dakota lack open channel ditch networks to convey water from wetland depressions in agricultural fields to riverine systems. Drainage from small temporary wetlands is often conveyed by drain tile networks to downstream basins contributing to the increase in seasonal or semipermanent wetland habitats. The general loss of temporary

wetlands and overall increase in acreage of seasonal and semi-permanent is likely the present trend.

DENR defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (ARSD Chapter 74:51:01:01(53)). Wetlands are designated the beneficial use of fish and wildlife propagation, recreation and stock watering, which provides protection under existing narrative and numeric water quality standards. The USACE is responsible for the control of activities that place fill in wetlands. The USACE authority stems from Section 404 of the CWA. For purposes of Federal 404 identification and delineation, wetlands must have each of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly hydric soil, and (3) the substrate is saturated with water or covered by shallow water at some time during the growing season of each year. Before issuing a 404 permit, the USACE issues a public notice, taking into consideration the comments of the EPA, GF&P, DENR, other resource agencies, and the general public. Construction projects involving wetlands must receive certification from DENR under Section 401 of the CWA to certify the action will not violate South Dakota Surface Water Quality Standards. DENR regulates the discharge of pollutants to wetlands under the Surface Water Discharge permitting program.

The USFWS and private entities, such as Ducks Unlimited, work to protect and preserve wetland resources in South Dakota. An estimated 700 USFWS Waterfowl Production Areas covering about 183,000 acres of uplands and wetlands were purchased by South Dakota prior to 1994 (Johnson and Higgins 1997). The USFWS also obtained easements on an estimated 613,000 acres of eastern South Dakota wetlands. Approximately 51,000 acres of wetlands are currently owned by GF&P and managed as State Game Production Areas and Public Shooting Areas. Many of these aforementioned entities continue to purchase, obtain easements and manage wetland habitats for the purpose of preservation.

EPA is encouraging states to develop monitoring and assessment tools to determine the ecological integrity of wetland environments. EPA currently promotes three approaches to wetland assessment. A Level-1 assessment is a landscape level screening process using GIS technology and other geo-database information systems to evaluate potential impacts to wetland environments. Level-2 assessments incorporate Level-1 information and rapid on-site evaluations of wetland attributes for comparison among wetlands. Level-3 assessments require a more rigorous and comprehensive physiochemical and biological assessment of wetland resources.

The Natural Resource Management Department at SDSU, in cooperation with GF&P, developed a Level-1 and Level-2 wetland rapid assessment protocol for prairie pothole wetlands in eastern South Dakota. The assessment method was modified from a protocol developed by the South Florida Water Management District (Miller and Gunsalus 1999) for evaluating wetland condition. The South Dakota wetland rapid assessment protocol was developed for the state’s Natural Heritage and Wildlife Habitat Programs (GF&P) for identifying reference wetlands, monitoring randomly selected sites, and evaluating wetland restoration efforts.

A Level-3 wetland assessment was developed within the Prairie Pothole Region of South Dakota. This Level-3 assessment focused on development of an Index of Plant Community Integrity (IPCI) originally developed to assess seasonal wetlands in the Prairie

Pothole Region (DeKeyser et al. 2003). The IPCI was modified to evaluate the vegetative composition of wetlands across classification (temporary and semipermanent) and disturbance (native grass to cropland) gradients within the Northern Glaciated Plains and Northwestern Glaciated Plains ecoregions of South Dakota, North Dakota, and Montana. The IPCI method can be used in South Dakota to allow the placement of wetlands into disturbance classes for ecological and mitigation needs (Hargiss et al. 2007). During the IPCI development in South Dakota, researchers noted that the ecological health of eastern South Dakota prairie pothole wetlands decreases from north to south. This was attributed to greater agricultural intensity in southeast South Dakota (DeKeyser, personal communication).

Wetland drainage using subsurface drain tile continues to be a popular agricultural practice in eastern South Dakota. Agricultural producers are motivated to drain small nuisance wetlands or wet pockets in fields to increase tillable acres. Producers enrolled in United States Department of Agriculture programs are required to gain approval before engaging in wetland drainage practices. The NRCS conducts criteria-based wetland determinations to determine a wetland's eligibility for drainage. Wetland drainage is most prevalent in eastern counties of South Dakota.

Potential environmental impacts associated with wetland drainage have become topics of concern within the natural resource management community. The main concern involves the potential for increased nutrient transport and flow to downstream receiving waters. In addition, the loss of wetland habitat may be detrimental to wildlife, especially waterfowl and other birds that rely on these systems during migration. Because drainage activities primarily focus on small, isolated, non-navigable wetlands, most do not fall under CWA jurisdiction or any other federal protection. The South Dakota Legislature has granted counties and townships the authority to manage drainage issues at the local level.

PUBLIC HEALTH/AQUATIC LIFE CONCERNS

The cost of routinely monitoring most toxic pollutants is prohibitive. At present, priority toxins (CWA Section 307(a) toxic pollutants) are routinely monitored at several WQM stream sites located near historic or current mining activities in the northern Black Hills. Ammonia, a priority toxin, is routinely monitored throughout the DENR ambient monitoring network and the statewide lake assessment project.

Table 25: Total Acres and Miles Affected by Toxics

Waterbody	Acres and Miles Monitored For Toxics*	Acres and Miles with Elevated Levels of Toxics**
Rivers (miles)	5,875	2
Lakes (acres)	134,360	50

* Ammonia, cyanide, chlorine, and/or metals including arsenic.

** Elevated levels are defined as exceedances of state water quality standards, 304(a) criteria, and/or FDA action levels, or levels of concern (where numeric criteria do not exist).

Aquatic Life Fish Kills

There were 43 separate aquatic life concern incidents investigated from October 1, 2017, to September 30, 2019. The majority of these kills occurred due to winter kill or summer kill.

The USFWS *Field Manual for the Investigation of Fish Kills* offers the following guide for reporting fish kills:

Minor Kill:	Less than 100 fish
Moderate Kill:	100 to 1,000 fish in 1.6 km of stream or equivalent lentic area.
Major Kill:	More than 1,000 fish in 1.6 km of stream or equivalent lentic area.

By these standards, there were ten minor fish kills, 27 moderate fish kills, and two major fish kills during this reporting cycle in South Dakota.

It is extremely important that the initial phases of an investigation be performed at the earliest indication of a fish kill. The need for such urgency is due to the fact that fish degrade rapidly, and the cause of death may become unidentifiable within a very short time. Unfortunately, DENR and/or GF&P are often notified days after an incident has occurred. For this reason, the department is occasionally unable to positively identify the event that caused the fish kill.

DENR reviews the cause(s) of a fish kill, the waterbody's designated beneficial uses, and the water quality sample data to determine impairment. Marginal fisheries may experience frequent fish kills, while semipermanent fisheries may experience occasional fish kills due to natural environmental conditions. DENR would consider a waterbody as impaired due to a fish kill if water quality data suggest that the cause of impairment is related to human influence. However, a waterbody that experiences a fish kill due to a single occurrence spill and has been remediated, will not be listed as impaired. For this 2020 Integrated Report cycle, there were no waterbodies listed as impaired due to fish kills (Table 26).

Table 26: Summary of Fish Kill Investigations

Date	Waterbody	County	Severity	Cause
04/04/2018	Beaulieu	Tripp	moderate	winterkill
04/17/2018	New Underwood	Pennington	moderate	winterkill
04/23/2018	Hiddenwood	Walworth	moderate	winterkill
04/30/2018	Haugie Marsh	Day	moderate	winterkill
04/30/2018	(Connected to) Bitter	Day	moderate	winterkill
04/30/2018	Hemingway Slough	Day	minor	winterkill
05/14/2018	Tisdale	Pennington	minor	winterkill
05/29/2018	Traverse	Roberts	moderate	unknown
06/25/2018	Kampeska	Codington	minor	unknown
06/25/2018	Pelican	Codington	minor	unknown
07/02/2018	Old Wall Dam	Pennington	moderate	summerkill
07/12/2018	Sully (spillway)	Sully	moderate	fish became trapped
07/22/2018	Brakke	Lyman	minor	suspected viral or bacterial
08/13/2018	Big Stone	Grant	moderate	summerkill
09/26/2018	Wicksville Dam	Pennington	moderate	unknown
11/28/2018	Big Stone (in bay)	Roberts	minor	unknown
03/25/2019	Pocasse	Campbell	minor	unknown
03/29/2019	Wylie Park Pond	Brown	moderate	winterkill
04/08/2019	Bramble Park Pond	Codington	moderate	winterkill
04/08/2019	Campbell	Campbell	moderate	winterkill
04/08/2019	3rd Ave Pond	Codington	moderate	winterkill
04/08/2019	Sully	Sully	major	winterkill
04/08/2019	Kampeska Pits	Codington	moderate	winterkill
04/08/2019	McLaughlin Pond	Codington	moderate	winterkill
04/09/2019	Louise	Hand	moderate	winterkill
04/09/2019	Bailey	Clark	moderate	winterkill
04/15/2019	Fedt Slough	Hamlin	moderate	winterkill
04/15/2019	Marsh	Hamlin	moderate	winterkill
04/16/2019	Pudwell	Corson	minor	winterkill
04/20/2019	School	Deuel	minor	winterkill
04/20/2019	West Coteau	Deuel	minor	winterkill
04/20/2019	Fox	Deuel	moderate	winterkill
04/22/2019	Lemmon East	Perkins	moderate	winterkill
04/22/2019	Nine Mile	Marshall	moderate	winterkill

Date	Waterbody	County	Severity	Cause
04/24/2019	Six Mile	Marshall	moderate	winterkill
04/25/2019	New Underwood	Pennington	minor	winterkill
05/03/2019	Larson GPA	Marshall	major	winterkill
05/07/2019	Bonham Pond	Marshall	moderate	winterkill
05/22/2019	Hosmer	Edmunds	minor	winterkill
06/21/2019	Francis Case	Charles Mix	minor	unknown
07/11/2019	Bad River	Stanley	minor	fish trapped in small pools
07/22/2019	Simon	Potter	moderate	Warm weather and large rainfall/runoff event
09/27/2019	Louise	Hand	moderate	unknown

Unsafe Beaches

During the 2010 legislative session, the legislature passed a bill that removed DENR's authority to regulate public beach closures. Effective April 15, 2013, Public Beach Standards, Chapter 74:04:08 was deleted from ARSD. Bacteria data collection and decisions related to public swimming beach closures are the responsibility of the particular management agency. DENR solicits water quality information including beach closure information from federal, state and local natural resource agencies during the department's request for data process. DENR will list a waterbody as impaired if three beach closures per season occur in a consecutive three-week sampling period. For the 2020 reporting period, DENR was notified that Pactola Lake was closed for swimming during a high water/flood event. The closure was temporary and did not warrant an impairment listing.

Fish Flesh Contaminants

The Surface Water Quality Program, in partnership with the South Dakota Department of Game, Fish, and Parks, and the South Dakota Department of Health, sample and analyze fish from a variety of waterbodies. DENR has been collecting and actively studying fish flesh contaminant data since 1994. The purpose of this work is to determine the concentration of various contaminants in fish to protect public health. Waterbodies are selected for monitoring based on GF&P fishery management objectives, public access, and fishing pressure. Subsequently, this data is also used to assess support of the surface water quality criterion of mercury in fish tissue. A list of waterbodies sampled for fish flesh contaminants is available at: http://denr.sd.gov/des/sw/fish.aspx. Not all waterbodies in this report have been assessed for mercury in fish tissue.

The Food and Drug Administration (FDA) has set 1.0 mg/kg total mercury as the action level for commercial fish. In South Dakota, the Department of Health is responsible for issuing fish consumption advisories and uses the FDA action level. For a list of South Dakota waterbodies with fish consumption advisories refer to the Department of Health website at http://doh.sd.gov/food/fish-advisories.aspx. DENR also assesses mercury in fish tissue but with the purpose of determining if the waterbody is supporting its beneficial uses.

Because fish consumption advisories are issued on waterbodies that exceed 1.0 mg/kg mercury in fish tissue (FDA criterion) and the DENR assesses waterbody support using the surface water quality criterion of 0.3 mg/kg mercury in fish tissue, there are waterbodies in this Integrated Report that are not meeting their designated uses due to mercury in fish tissue based on a water quality standard but may not have a fish consumption advisory. Although mercury in fish tissue is the common factor, public advice on fish consumption and waterbody beneficial use support are separate issues that are addressed by different state agencies. While DENR makes the determination if a waterbody is not meeting its beneficial uses due to mercury in fish tissue, the South Dakota Department of Health provides public health advice. Waterbodies with fish consumption advisories and/or waterbodies that exceed the surface water quality criterion are considered nonsupporting.

Mercury fish tissue concentration is a complex issue. There are many factors that affect a waterbody support determination for mercury in fish tissue, such as the species and feeding guild of fish collected, the age of fish collected, waterbody geomorphology and subsequent methylation rates, and others.

Domestic Water Supply Restrictions

There are currently no water consumption restrictions on waterbodies with the domestic water supply beneficial use designation. However, Firesteel Creek, Maple River, Lake Waggoner and Lake Mitchell are listed as not supporting the domestic water supply beneficial use. Firesteel Creek and Lake Mitchell are only used as an emergency backup for the City of Mitchell. The following tables contain information on reach descriptions and pollutant causes.

Table 27: Waterbodies Affected by Domestic Water Supply Restrictions

Name of Waterbody	Waterbody Type	Type of Restriction			Cause(s) (Pollutant(s)) of Concern	Source(s) of Pollutants
		Closure[a] (Y/N)	Advisory[b] (Y/N)	Other (explain)		
None	-	-	-	-	-	-

[a]Closures- restrict all consumption from a domestic water supply.
[b]Advisories- require that consumers disinfect water (through boiling or chemical treatment before ingestions).

Table 28: Summary of Waterbodies Not Fully Supporting Domestic Water Supply Use

AU ID	Waterbodies	Location	Characterization	Cause
Rivers and Streams				
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	Not Supporting	Total Dissolved Solids (TDS)
SD-JA-R-MAPLE_01	Maple River	ND border to Elm River	Not Supporting	Total Dissolved Solids (TDS)
Lakes and Reservoirs				
SD-BA-L-WAGGONER_01	Waggoner Lake	Haakon County	Not Supporting	Chlorophyll-a
SD-JA-L-MITCHELL_01	Lake Mitchell	Davison County	Not Supporting	Chlorophyll-a

IV. POLLUTION CONTROL PROGRAMS

POINT SOURCE POLLUTION CONTROL PROGRAM

The state received delegation of the federal NPDES program from the United States Environmental Protection Agency (EPA) on December 30, 1993. The NPDES permits issued by the state are referred to as Surface Water Discharge (SWD) permits. EPA continues to issue NPDES permits in South Dakota for facilities over which they retained jurisdiction. As of September 30, 2019, the state has issued a total of 227 individual SWD permits in South Dakota. In addition, DENR has issued coverage to 2,268 facilities under General Storm Water permits, 353 facilities under Multi-Media General permits (Storm Water & Air Quality), and 247 facilities under other General permits. DENR has also issued 23 biosolids-only permits.

Technology-based controls are placed in most SWD and NPDES permits. However, technology-based controls alone do not necessarily protect waters of the state from toxic pollutants. Therefore, water quality-based limits and toxicity testing requirements are also placed in many of the permits.

Water quality-based limits are developed when technology-based limits alone are not adequate to protect the beneficial uses of the receiving stream. In these cases, the state develops water quality-based effluent limits to ensure the surface water quality standards are met and maintained.

The state continues to require whole effluent toxicity testing for all major SWD permittees and certain significant minors. The goal of the whole effluent toxicity approach is to ensure that point source discharges do not contain toxics in toxic amounts. If toxicity is found, the discharger is required to conduct an evaluation of the discharge to determine the source of the toxicity and eliminate the toxicity. This testing is supported by ARSD 74:51:01:12.

The South Dakota Surface Water Quality Standards contain the following provision concerning discharges to lakes:

> ***ARSD 74:51:01:27. Lakes not allowed a zone of mixing.*** *No zone of mixing is allowed for lakes. Discharges to lakes must meet the water quality standards at the point of discharge. No discharge of pollutants is allowed which reaches a lake classified for the beneficial use of coldwater permanent, coldwater marginal, warmwater permanent, warmwater semipermanent, or warmwater marginal fish life propagation or causes impairment of an assigned beneficial use.*

DENR's Surface Water Discharge permitting program regulates the discharge of pollutants from point sources. In most cases, DENR has not allowed discharges to lakes classified for the fish life propagation uses outlined in ARSD Chapter 74:51:01:27. There have been only limited exceptions to this provision.

Many of South Dakota's streams eventually drain into classified lakes. If a point source discharges into a tributary of a lake, DENR takes into account the distance from the lake and the natural attenuation of any pollutants present before the discharge is permitted. During the reissuance of each of these permits, DENR re-evaluates these discharges. If DENR determines that a discharge has a potential to impact a classified lake, DENR has required the point source to cease its discharge to the classified lake. DENR has permitted discharges of uncontaminated water to lakes (i.e. non-contact cooling water).

To date, this approach has protected South Dakota's lakes and has not caused or contributed to a violation of the surface water quality standards from a point source discharge.

To help ensure that wastewater collection and treatment systems in the state are compliant, the department provides cost share funding for their planning, design, and construction. The department administers the Clean Water State Revolving Fund (CWSRF) Loan Program which provides low interest loans to publicly owned wastewater facilities. The department's CWSRF Intended Use Plan establishes the criteria the department uses for fund awards. The Intended Use Plan can be accessed at:

http://denr.sd.gov/dfta/wwf/cwsrf/18cwsrfiup.pdf

Between October 1, 2017, and September 30, 2019, the Department's Board of Water and Natural Resources awarded 32 CWSRF loans and two loan amendments totaling $151,720,475. Portions of seven of the awards were provided as additional subsidy in the form of principal forgiveness. The principal forgiveness totaled $6,515,225. These funds were used for the design and construction of sanitary sewer collection systems, wastewater treatment facilities, storm sewers, and landfill construction associated with the protection of groundwater.

The current CWSRF interest rates are 2.0% for loans with a term of 10 years or less, 2.25% for loans with a term greater than 10 years up to 20 years, and 2.50% for loans with a term greater than 20 years up to a maximum of 30 years. There is also a nonpoint source incentive loan rate for communities that are sponsoring a nonpoint source implementation project. The loan rate for these projects ranges from 1.00% for up to 10 years, 1.25% for loans with a term greater than 10 years up to 20 years, and 1.50% for loans with a term greater than 20 years up to a maximum of 30 years.

CWSRF administrative surcharge fees have been used to provide grant assistance for various clean water activities. To encourage responsible and proactive engineering planning, the Board uses CWSRF administrative surcharge funds to cost share engineering planning studies for small communities (2,500 population and below). Between October 1, 2017, and September 30, 2019, the department awarded a total of $219,976 for 23 engineering studies. The Board awarded $1,453,000 for the construction of three wastewater improvement projects and $500,000 for a nonpoint source implementation project.

South Dakota has a state water planning process that was established in 1972. This establishes an orderly planning process for water development. In addition, the state established a dedicated water funding program in 1993. The dedicated funding sources provided approximately $9.0 million annually. Between October 1, 2017, and September 30, 2019, $12,344,000 in state grants and $330,000 in state loans were awarded to 9 wastewater collection or treatment and storm water projects. Additionally, $775,000 in state grants were awarded to provide nonfederal cost share for one Section 319 nonpoint source implementation project.

COST/BENEFIT ASSESSMENT

DENR provides the Governor and Legislature with annual reports summarizing water and wastewater development activities for the preceding calendar year. These annual reports can be accessed at:

http://denr.sd.gov/documents.aspx#Funding

Information on operation and maintenance costs for local units of government is not readily available. Not all benefit data are readily available, but some information has been included in the Statewide Surface Water Quality Summary section of this report.

NONPOINT SOURCE POLLUTION CONTROL PROGRAM

Nonpoint source (NPS) pollution is the most serious and pervasive threat to the water quality of South Dakota's waters. Nonpoint source is defined as a source of water pollution that does not meet the legal definition of "point source" in section 502(14) of the Clean Water Act.

> *'The term point source means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture'.*- Section 502(14) of the Clean Water Act.

Sources of nonpoint source pollution are diverse. Examples include fertilizer, herbicide and topsoil runoff from agricultural fields, livestock waste deposited in or near streams from unfenced livestock, sediment runoff from overgrazed pastures, manure applied to frozen fields, pet waste in urban areas, sediment from construction sites, sediment from improper logging techniques, leaking contents from failing septic tanks, drainage of acids or metals from abandoned mines and improperly applied chemicals and fertilizers in agricultural and urban environments. More information on nonpoint source pollution can be found here: https://www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution

While substantial progress has been made toward reducing pollution from point sources such as wastewater and industrial plants after the passage and implementation of the Clean Water Act, nonpoint source pollution remains an entrenched problem. NPS pollution is unregulated as agricultural activities are exempt from most of the provisions of the Clean Water Act. The technical and financial assistance currently available is not sufficient to solve all NPS pollution issues in the state. Landowners need to understand the nonpoint source issues and how their activities contribute to NPS pollution. Educating the public about NPS pollution issues may prompt landowners to voluntarily implement activities that control NPS pollution. The continuation of existing activities coupled with the addition of innovative new programs may reduce nonpoint source pollution in South Dakota.

South Dakota's nonpoint source pollution management activities are implemented through the South Dakota Nonpoint Source Pollution Management Program. The primary focus of the program is the control of nonpoint source pollution through the use of voluntary implementation of BMPs and holistic resource management plans. The program coordinates its NPS control activities with local, state, and federal agencies and stakeholder organizations. These agencies

and organizations provide BMPs and financial and technical assistance that increase the program's capacity to develop and implement NPS management projects. A copy of the current management plan is available here and detail on NPS-reducing best management practices is found here:

http://denr.sd.gov/dfta/wp/documents/NPSMgmtPlan14.pdf

South Dakota Nonpoint Source Projects

While the size, target audience, and structure of the projects vary, all share common elements of increasing awareness of NPS pollution issues, identifying, quantifying, and locating sources of nonpoint source impairment and reducing or preventing the delivery of NPS pollutants to waters of the state with emphasis on meeting targets established through TMDLs. Historically, the majority of the projects focused on reducing NPS pollution originating from agricultural operations. More recently, increased resources have been directed toward local initiatives that evaluate water quality conditions, determine sources and causes of NPS pollution within priority watersheds, and develop and implement TMDLs for impaired waterbodies.

Assessment/development projects generally range from one to three years and are designed to assess the water quality and beneficial uses of waterbodies in a predetermined area. The information attained through the assessment project will be used to identify sources of water quality impairments and will lead to the establishment of pollution reduction goals or TMDL endpoints.

Information and education projects are designed to provide information about NPS pollution issues and solutions. Information transfer tools typically used by the department and its project partners include brochures, print and electronic media, workshops, BMP implementation manuals, tours, exhibits, and demonstrations. Information and education projects usually range from one to five years in length. During recent years, the NPS Program has formed a partnership with the South Dakota Discovery Center for the implementation of the statewide information and education efforts that target a wider cross section of the state's population.

Watershed implementation projects are the most comprehensive type of project implemented through the South Dakota NPS Pollution Management Program. Watershed implementation projects are typically long term, three to five years, in duration and designed to implement TMDLs that address NPS pollution sources and beneficial use impairments identified during the completion of an assessment project. Watershed implementation projects promote and encourage the use of voluntary BMPs that help prevent or reduce NPS pollution being delivered to impaired waterbodies.

For information about specific South Dakota NPS projects funded using CWA Section 319 funds, contact DENR, or access EPA's Nonpoint Source Grants Reporting and Tracking System database. The following web link depicts watersheds where NPS assessment and implementation projects have been conducted:

https://denr.sd.gov/dfta/wp/ImplementationProjects.aspx

Nonpoint Source Pollution Control Program Funding Strategy

DENR receives approximately $2.5 million Section 319 funds annually from EPA. Administrative costs total about $770,000. The remaining $1.7 million is made available for project awards. DENR attempts to package the funding for TMDL assessment and implementation projects using a variety of other department, state, federal, or private funding. Other department funds include department fee funds, 604(b) funds, 106 funds, Clean Water SRF administrative surcharge funds, and Clean Water SRF conventional loan funds.

State financial resources from other programs commonly used in implementing NPS projects include the Department of Agriculture's Soil and Water Conservation Grant funds, Game, Fish & Parks funds, and Water Development District funds. Private funds include wildlife groups and conservation organizations. Other federal funding sources commonly used in completing NPS projects include U.S. Department of Agriculture's Environmental Quality Incentive Program, Conservation Stewardship Program, Agricultural Conservation Easement Program, Regional Conservation Partnership Program, and Conservation Reserve Programs.

V. PUBLIC PARTICIPATION PROCESS

To fulfill the requirements of the CWA and involve the affected community and stakeholders in the water quality improvement process, a public participation process for the Integrated Report has been implemented. Summarized below are the procedures employed by DENR to involve the public and affected parties in the development of this report.

Process Description

First Public Review/Input Period
An ad is published in ten statewide daily newspapers, announcing DENR is developing the Integrated Report and requesting water quality data that will aid in the assessment of South Dakota's waters. This announcement is also sent to approximately 120 individuals and organizations.

Second Public Review Period
Data received after the first public review period and additional data gathered by DENR are reviewed and a draft Integrated Report is developed. The draft report is released for a 30-day public review and comment period. The announcement on the availability of the draft report is again published in the ten daily newspapers. The draft report is also made available on DENR's One-Stop Public Notice page at: *http://denr.sd.gov/public/default.aspx*. At this time, the draft report is also provided to EPA Region 8 for review and comment.

Personnel from DENR respond to inquiries and are available to meet with interested groups about the list and listing process. Copies of public participation documents and responses to oral and written comments received during the comment period are included in Appendix H.

VI. REFERENCES

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VII. KEY TO ABBREVIATIONS

ATTAINS – EPA's Assessment Database (used for Integrated Report development)
ARSD – Administrative Rules of South Dakota
AUID – Assessment Unit Identifier
BMP – best management practice
cfu/100mL – colony forming units per 100 milliliters
CWA- Clean Water Act
CWSRF – Clean Water State Revolving Fund
DENR – South Dakota Department of Environment and Natural Resources
DO – dissolved oxygen
EDWDD – East Dakota Water Development District
EPA – Environmental Protection Agency
E. coli -*Escherichia coli*
FDA – Food and Drug Administration
GF&P – South Dakota Department of Game, Fish and Parks
HCI – Habitat Condition Index
IBI - Index of Biotic Integrity
IPCI – Index of Plant Community Integrity
IQR – interquartile range
IR – Integrated Report
mg/kg – milligrams per kilogram
mg/L – milligrams per liter
NLA - National Lake Assessment
NGP - Northern Glaciated Plains
NPDES – National Pollutant Discharge Elimination System
PPR-Prairie Pothole Region
NPS – Nonpoint Source
NRCS – Natural Resources Conservation Service
NRSA – National Rivers and Streams Assessment
QA/QC – quality assurance/quality control
SAR – Sodium adsorption ratio
SDSU – South Dakota State University
STORET – EPA computer data storage and retrieval system
SWD – Surface Water Discharge
SWLA – Statewide Lakes Assessments
SRAM – seasonal riparian area management
TMDL – Total Maximum Daily Load
TN – Total Nitrogen
TP – Total Phosphorus
TSI – Carlson's (1977) Trophic State Indices
TSS – total suspended solids
USACE – United States Army Corp of Engineers
USGS – United States Geological Survey
WET - Whole Effluent Toxicity
WQM – ambient water quality monitoring
WQS – South Dakota Surface Water Quality Standards
USFWS – United States Fish and Wildlife Service

APPENDICES

APPENDIX A

WATERBODIES WITH EPA APPROVED TMDLS

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Bad	Freeman Lake	SD-BA-L-FREEMAN_01	Jackson County	Nitrates/Selenium	2/7/2001	1507
Bad	Freeman Lake	SD-BA-L-FREEMAN_01	Jackson County	Total dissolved solids	9/26/2012	42516
Bad	Hayes Lake	SD-BA-L-HAYES_01	Stanley County	TSI	9/29/2004	10976
Bad	Hayes Lake	SD-BA-L-HAYES_01	Stanley County	Mercury in Fish Tissue	3/1/2016	65381
Bad	Murdo Dam	SD-BA-L-MURDO_01	Jones County	Mercury in Fish Tissue	3/1/2016	65382
Bad	Sheriff Dam	SD-BA-L-SHERIFF_01	Jones County (FPNG)	Mercury in Fish Tissue	8/18/2016	65867
Bad	Bad River	SD-BA-R-BAD_01	Stanley County line to mouth	TSS	2/7/2001	1537
Belle Fourche	Belle Fourche River		Wyoming to near Fruitdale	TSS	2/2/2005	11383
Belle Fourche	Belle Fourche River		Near Fruitdale to Whitewood Creek	TSS	2/2/2005	11384
Belle Fourche	Newell Lake	SD-BF-L-NEWELL_01	Butte County	Mercury in Fish Tissue	3/1/2016	64500
Belle Fourche	Orman Dam (Belle Fourche Reservoir)	SD-BF-L-ORMAN_01	Butte County	Mercury in Fish Tissue	3/1/2016	65384
Belle Fourche	Bear Butte Cr.	SD-BF-R-BEAR_BUTTE_02	Strawberry Cr. To near Bear Den Mountain	TSS	8/8/2007	33703
Belle Fourche	Belle Fourche River	SD-BF-R-BELLE_FOURCHE_01	Wyoming to Redwater River	Fecal coliform	10/17/2011	41417
Belle Fourche	Belle Fourche River	SD-BF-R-BELLE_FOURCHE_01	Wyoming to Redwater River	*E. coli*	8/31/2017	68243
Belle Fourche	Belle Fourche River	SD-BF-R-BELLE_FOURCHE_03	Whitewood Creek to Willow Creek	TSS	2/2/2005	11385
Belle Fourche	Belle Fourche River	SD-BF-R-BELLE_FOURCHE_04	Willow Creek to Alkali Creek	TSS	2/2/2005	11386
Belle Fourche	Belle Fourche River	SD-BF-R-BELLE_FOURCHE_05	Alkali Creek to mouth	*E. coli*/fecal coliform	10/17/2011	41418/ 41419

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Belle Fourche	Belle Fourche River	SD-BF-R-BELLE_FOURCHE_05	Alkali Creek to mouth	TSS	2/2/2005	11387
Belle Fourche	Horse Creek	SD-BF-R-HORSE_01_USGS	Indian Creek to mouth	TSS	2/2/2005	11382
Belle Fourche	Strawberry Creek	SD-BF-R-STRAWBERRY_01	Bear Butte Creek to S5, T4N, R4E	Cadmium	4/19/2010	38462
Belle Fourche	West Strawberry Creek	SD-BF-R-W_STRAWBERRY_01	Headwaters to mouth	Fecal coliform	4/6/2011	40169
Belle Fourche	Whitewood Creek	SD-BF-R-WHITEWOOD_03	Deadwood Creek to Spruce Gulch	*E. coli*/fecal coliform	7/28/2011	41059
Big Sioux	Big Sioux River		I-29 to near Dell Rapids	TSS	5/28/2008	34495
Big Sioux	Big Sioux River		Near Dell Rapids to Below Baltic	Fecal coliform	5/28/2008	34494
Big Sioux	Big Sioux River		SD/IA border to Nine Mile Creek	*E. coli*	1/23/2008	34093
Big Sioux	Lake Albert	SD-BS-L-ALBERT_01	Kingsbury County	Mercury in Fish Tissue	3/1/2016	65387
Big Sioux	Lake Alvin	SD-BS-L-ALVIN_01	Lincoln County	TSI/fecal coliform	11/9/2001	2193/ 2194
Big Sioux	Antelope Lake	SD-BS-L-ANTELOPE_01	Day County	Mercury in Fish Tissue	3/1/2016	65388
Big Sioux	Bitter Lake	SD-BS-L-BITTER_01	Day County	Mercury in Fish Tissue	3/1/2016	64501
Big Sioux	Blue Dog Lake	SD-BS-L-BLUE_DOG_01	Day County	TSI/fecal coliform	2/7/2001	1436
Big Sioux	Brant Lake	SD-BS-L-BRANT_01	Lake County	TSI	4/12/1999	169
Big Sioux	Brush Lake	SD-BS-L-BRUSH_01	Brookings County	Mercury in Fish Tissue	3/1/2016	65389
Big Sioux	Clear Lake	SD-BS-L-CLEAR_01	Deuel County	TSI/Sediment	2/7/2001	1467
Big Sioux	Clear Lake (Hamlin)	SD-BS-L-CLEAR_H_01	Hamlin County	Mercury in Fish Tissue	3/1/2016	65390
Big Sioux	Diamond Lake	SD-BS-L-DIAMOND_01	Minnehaha County	Mercury in Fish Tissue	3/1/2016	65391

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Big Sioux	Dry Lake	SD-BS-L-DRY_01	Codington County	Mercury in Fish Tissue	3/1/2016	65396
Big Sioux	Dry Lake Number 2	SD-BS-L-DRY_NO2_01	Clark County	Mercury in Fish Tissue	3/1/2016	65392
Big Sioux	East Oakwood Lake	SD-BS-L-E_OAKWOOD_01	Brookings County	TSI/pH	6/13/2008	34521
Big Sioux	Enemy Swim Lake	SD-BS-L-ENEMY_SWIM_01	Day County	Mercury in Fish Tissue	3/1/2016	65397
Big Sioux	Goldsmith Lake	SD-BS-L-GOLDSMITH_01	Brookings County	Mercury in Fish Tissue	3/1/2016	65398
Big Sioux	Goose Lake	SD-BS-L-GOOSE_01	Codington County	Mercury in Fish Tissue	3/1/2016	65399
Big Sioux	Lake Herman	SD-BS-L-HERMAN_01	Lake County	TSI	9/29/2004	10978
Big Sioux	Lake Herman	SD-BS-L-HERMAN_01	Lake County	Mercury in Fish Tissue	3/1/2016	65400
Big Sioux	North Island Lake	SD-BS-L-ISLAND_N_01	Minnehaha/McCook counties (formerly SD-VM-L-ISLAND_N_01)	Mercury in Fish Tissue	3/1/2016	64502
Big Sioux	Lake Kampeska	SD-BS-L-KAMPESKA_01	Codington County	Nutrients/Sediment - special approval	12/26/1996	635
Big Sioux	Lake Kampeska	SD-BS-L-KAMPESKA_01	Codington County	Mercury in Fish Tissue	3/1/2016	65401
Big Sioux	Long Lake	SD-BS-L-LONG_COD_01	Codington County	Mercury in Fish Tissue	3/1/2016	64504
Big Sioux	Lake Madison	SD-BS-L-MADISON_01	Lake County	TSI/fish kill	4/12/1999	639
Big Sioux	Minnewasta Lake	SD-BS-L-MINNEWASTA_01	Day County	Mercury in Fish Tissue	3/1/2016	64506
Big Sioux	Pelican Lake	SD-BS-L-PELICAN_01	Codington County	Nutrients/Sediment-special approval	12/26/1996	918
Big Sioux	Lake Poinsett	SD-BS-L-POINSETT_01	Hamlin County	Nutrients-special approval	11/26/1996	643
Big Sioux	Lake Poinsett	SD-BS-L-POINSETT_01	Hamlin County	Mercury in Fish Tissue	3/1/2016	65402

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Big Sioux	Reid Lake	SD-BS-L-REID_01	Clark County	Mercury in Fish Tissue	3/1/2016	64508
Big Sioux	Rush Lake	SD-BS-L-RUSH_01	Day County	Mercury in Fish Tissue	3/1/2016	65403
Big Sioux	School Lake	SD-BS-L-SCHOOL_01	Deuel County	TSI	9/2/2008	35132
Big Sioux	Lake Sinai	SD-BS-L-SINAI_01	Brookings County	Mercury in Fish Tissue	3/1/2016	65417
Big Sioux	Swan Lake	SD-BS-L-SWAN_01	Clark County	Mercury in Fish Tissue	3/1/2016	64509
Big Sioux	Twin Lakes/W. Hwy 81	SD-BS-L-TWIN_01	Kingsbury County	Mercury in Fish Tissue	3/1/2016	64510
Big Sioux	Twin Lakes	SD-BS-L-TWIN_02	Minnehaha County	Mercury in Fish Tissue	3/1/2016	64511
Big Sioux	West Oakwood Lake	SD-BS-L-W_OAKWOOD_01	Brookings County	TSI	6/13/2008	34522
Big Sioux	Waubay Lake	SD-BS-L-WAUBAY_01	Day County	Mercury in Fish Tissue	3/1/2016	65418
Big Sioux	Beaver Creek	SD-BS-R-BEAVER_01	Big Sioux River to S9, T98N, R49W	Fecal coliform	8/10/2011	41067
Big Sioux	Beaver Creek	SD-BS-R-BEAVER_02	Split Rock Creek to SD-MN border	Fecal coliform/TSS	5/28/2008	34499
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_03	Willow Creek to Stray Horse Creek	Fecal coliform	6/4/2008	34506
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_03	Willow Creek to Stray Horse Creek	*E. coli*	8/8/2011	41060
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_07	Brookings/Moody County Line to S2, T104N, R49W	Mercury in Fish Tissue	3/1/2016	65405
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_08	S2, T104N, R49W to I-90	*E. coli*/fecal coliform	9/26/2012 Updated-7/15/2019	42519 (old) R8-SD-2019-01
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_08	S2, T104N, R49W to I-90	TSS	12/6/2012 Updated-7/15/2019	53280 (old) R8-SD-2019-02

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_10	I-90 to diversion return	*E. coli*/fecal coliform	9/26/2012 Updated-7/15/2019	42520 (old) R8-SD-2019-01
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_10	I-90 to diversion return	TSS	12/6/2012 Updated-7/15/2019	53281 (old) R8-SD-2019-02
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_11	Diversion return to SF WWTF	*E. coli*/fecal coliform	9/26/2012 Updated-7/15/2019	42522 (old) R8-SD-2019-01
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_11	Diversion return to SF WWTF	TSS	12/6/2012 Updated-7/15/2019	53282 (old) R8-SD-2019-02
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_12	SF WWTF to above Brandon	*E. coli*/fecal coliform	9/26/2012 Updated-7/15/2019	42523 (old) R8-SD-2019-01
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_12	SF WWTF to above Brandon	TSS	12/6/2012 Updated-7/15/2019	53283 (old) R8-SD-2019-02
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_13	Above Brandon to Nine Mile Creek	fecal coliform	1/23/2008	34093
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_14	Nine Mile Creek to near Fairview	*E. coli*/fecal coliform	1/23/2008	34094
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_15	Fairview to near Alcester	*E. coli*/fecal coliform	1/23/2008	34095
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_15	Fairview to near Alcester	TSS	2/1/2010	38211
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_16	Near Alcester to Indian Creek	*E. coli*/fecal coliform	1/23/2008	34096
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_16	Near Alcester to Indian Creek	TSS	2/1/2010	38213
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_17	Indian Creek to Mouth	*E. coli*/fecal coliform	1/23/2008	34098
Big Sioux	Big Sioux River	SD-BS-R-BIG_SIOUX_17	Indian Creek to Mouth	TSS	1/23/2008	38212
Big Sioux	Brule Creek	SD-BS-R-BRULE_01	Big Sioux River to confluence with its east and west forks	Fecal coliform	6/2/2011	40438

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Big Sioux	East Brule Creek	SD-BS-R-EAST_BRULE_01	Confluence with Brule Creek to S3, T95N, R49W	Fecal coliform	3/24/2011	40025
Big Sioux	Flandreau Creek	SD-BS-R-FLANDREAU_01	Big Sioux River to MN border	Fecal coliform	5/28/2008	34496
Big Sioux	Hidewood Creek	SD-BS-R-HIDEWOOD_01	Big Sioux River to US Hwy 77	Fecal coliform	6/4/2008	34509
Big Sioux	Jack Moore Creek	SD-BS-R-JACK_MOORE-01	Big Sioux River to S33, T 107N, R 49W	Fecal coliform	5/28/2008	34500
Big Sioux	North Deer Creek	SD-BS-R-NORTH_DEER_01	Six Mile Creek to US Hwy 77	Fecal coliform	5/28/2008	34501
Big Sioux	Peg Munky Run	SD-BS-R-PEG_MUNKY_RUN_01	Big Sioux River to S17, T113N, R50W	Fecal coliform	8/10/2011	41071
Big Sioux	Pipestone Creek	SD-BS-R-PIPESTONE_01	Split Rock Creek to MN border (SD/MN border to SD/MN border)	Fecal coliform	5/28/2008	34502
Big Sioux	Pipestone Creek	SD-BS-R-PIPESTONE_01	Split Rock Creek to MN border (SD/MN border to SD/MN border)	*E. coli*	9/26/2012	42524
Big Sioux	Skunk Creek	SD-BS-R-SKUNK_01	Brandt Lake to mouth	Fecal coliform	5/28/2008	34503
Big Sioux	Split Rock Creek	SD-BS-R-SPLIT_ROCK_01_USGS	At Corson, SD (West Pipestone Creek to Big Sioux River)	TSS/fecal coliform	5/28/2008	34504
Big Sioux	Spring Creek	SD-BS-R-SPRING_01	Big Sioux River to S22, T109N, R47W	Fecal coliform	5/28/2008	34505
Big Sioux	Stray Horse Creek	SD-BS-R-STRAYHORSE_01	Big Sioux River to S26, T116N, R51W	Fecal coliform	6/4/2008	34508
Big Sioux	Union Creek	SD-BS-R-UNION_01	Big Sioux River to confluence with east and west forks	Fecal coliform	8/8/2011	41062
Big Sioux	Willow Creek	SD-BS-R-WILLOW_01	Big Sioux River to S7, T117N, R50W	Fecal coliform	6/4/2008	34507
Cheyenne	Center Lake	SD-CH-L-CENTER_01	Custer County	pH	3/24/2011	33707

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Cheyenne	Center Lake	SD-CH-L-CENTER_01	Custer County	TSI	8/8/2007	33707
Cheyenne	Curlew Lake	SD-CH-L-CURLEW_01	Meade County	Mercury in Fish Tissue	3/1/2016	65406
Cheyenne	Horsethief Lake	SD-CH-L-HORSETHIEF_01	Pennington	pH	3/24/2011	40026
Cheyenne	Legion Lake	SD-CH-L-LEGION_01	Custer County	pH	3/24/2011	35136
Cheyenne	Legion Lake	SD-CH-L-LEGION_01	Custer County	TSI	9/2/2008	35136
Cheyenne	Sheridan Lake	SD-CH-L-SHERIDAN_01	Pennington County	TSI	8/30/2006	31136
Cheyenne	Sheridan Lake	SD-CH-L-SHERIDAN_01	Pennington County	Mercury in Fish Tissue	8/18/2016	65871
Cheyenne	Stockade Lake	SD-CH-L-STOCKADE_01	Custer County	Mercury in Fish Tissue	8/18/2016	65870
Cheyenne	Sylvan Lake	SD-CH-L-SYLVAN_01	Custer County	TSI	9/1/2005	12351
Cheyenne	Sylvan Lake	SD-CH-L-SYLVAN_01	Custer County	pH (high)	8/18/2016	65861
Cheyenne	Battle Creek	SD-CH-R-BATTLE_01_USGS	Hwy 79 to mouth	*E. coli*/fecal coliform	2/18/2014	56640
Cheyenne	Battle Creek	SD-CH-R-BATTLE_02	Teepee Gulch Creek to SD HWY 79	*E. coli*/fecal coliform	2/18/2014	56641
Cheyenne	Beaver Creek	SD-CH-R-BEAVER_01	Wyoming border to Cheyenne River	Fecal coliform	3/12/2010	38253
Cheyenne	Beaver Creek	SD-CH-R-BEAVER_01_USGS	Near Buffalo Gap	Fecal coliform	9/26/2012	42518
Cheyenne	Cheyenne River	SD-CH-R-CHEYENNE_03	Fall River to Cedar Creek	*E. coli*/fecal coliform	9/28/2010	39434/ 39429
Cheyenne	Cheyenne River	SD-CH-R-CHEYENNE_04	Cedar Creek to Belle Fourche River	*E. coli*/fecal coliform	9/28/2010	39435/ 39430
Cheyenne	Cheyenne River	SD-CH-R-CHEYENNE_05	Belle Fourche River to Bull Creek	*E. coli*/fecal coliform	9/28/2010	39436/ 39431
Cheyenne	Cheyenne River	SD-CH-R-CHEYENNE_06	Bull Creek to Lake Oahe	*E. coli*/fecal coliform	9/28/2010	39437/ 39432
Cheyenne	Rapid Creek	SD-CH-R-RAPID_03	Canyon Lake to S15, T1N, R8E	Fecal coliform	9/28/2010	39426

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Cheyenne	Rapid Creek	SD-CH-R-RAPID_04	S15, T1N, R8E to above Farmingdale	Fecal coliform	9/28/2010	39427
Cheyenne	Rapid Creek	SD-CH-R-RAPID_05	Above Farmingdale to Cheyenne River	*E. coli*/fecal coliform	9/28/2010	39433/ 39428
Cheyenne	Rapid Creek	SD-CH-R-RAPID_05	Above Farmingdale to Cheyenne River	TSS	9/27/2011	41087
Cheyenne	Spring Creek	SD-CH-R-SPRING_01	Headwaters to Sheridan Lake	Fecal coliform	12/11/2008	35790
Grand	Shadehill Reservoir	SD-GR-L-SHADEHILL_01	Perkins County	Mercury in Fish Tissue	3/1/2016	65407
James	Moccasin Creek		Aberdeen to Warner	Ammonia	3/19/2001	1581
James	Amsden Dam	SD-JA-L-AMSDEN_01	Day County	Mercury in Fish Tissue	3/1/2016	65408
James	Lake Byron	SD-JA-L-BYRON_01	Beadle County	Nutrients/Sediment-special approval	4/12/1999	618
James	Lake Carthage	SD-JA-L-CARTHAGE_01	Miner County	Mercury in Fish Tissue	3/1/2016	65409
James	Cattail Lake	SD-JA-L-CATTAIL_01	Marshall County (formerly SD-BS-L-CATTAIL_01)	Mercury in Fish Tissue	3/1/2016	65410
James	Lake Cavour	SD-JA-L-CAVOUR_01	Beadle County	Mercury in Fish Tissue	03/1/2016	65411
James	Clubhouse Lake	SD-JA-L-CLUBHOUSE_01	Marshall County	Mercury in Fish Tissue	8/18/2016	65868
James	Cottonwood Lake	SD-JA-L-COTTONWOOD_	Spink County	TSI	11/9/2001	2195
James	Cottonwood Lake	SD-JA-L-COTTONWOOD_01	Spink County	Mercury in Fish Tissue	3/1/2016	65413
James	Cresbard Lake	SD-JA-L-CRESBARD_01	Faulk County	TSI	12/3/2003	9745
James	Elm Lake	SD-JA-L-ELM_01	Brown County	TSI	4/12/1999	420
James	Elm Lake	SD-JA-L-ELM_01	Brown County	Mercury in Fish Tissue	3/1/2016	64512

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
James	Lake Faulkton	SD-JA-L-FAULKTON_01	Faulk County	TSI/Sediment	4/12/1999	623
James	Lake Faulkton	SD-JA-L-FAULKTON_01	Faulk County	Mercury in Fish Tissue	3/1/2016	65414
James	Lake Hanson	SD-JA-L-HANSON_01	Hanson County	TSI	6/3/2004	10623
James	Lake Hanson	SD-JA-L-HANSON_01	Hanson County	Mercury in Fish Tissue	3/1/2016	65415
James	Hazeldon Lake	SD-JA-L-HAZELDON_01	Day County	Mercury in Fish Tissue	3/1/2016	65420
James	Henry Reservoir	SD-JA-L-HENRY_01	Near Scotland, SD	Mercury in Fish Tissue	3/1/2016	65419
James	Horseshoe Lake	SD-JA-L-HORSESHOE_01	Marshall County	Mercury in Fish Tissue	3/1/2016	65421
James	Jones Lake	SD-JA-L-JONES_01	Hand County	TSI	4/2/2003	9747
James	Lardy Lake	SD-JA-L-LARDY_01	Day County (Formerly SD-BS-L-LARDY_01)	Mercury in Fish Tissue	3/1/2016	64503
James	Lilly Lake	SD-JA-L-LILY_01	Day County	Mercury in Fish Tissue	3/1/2016	65422
James	Lake Louise	SD-JA-L-LOUISE_01	Hand County	TSI	11/9/2001	2196
James	Lake Louise	SD-JA-L-LOUISE_01	Hand County	Mercury in Fish Tissue	3/1/2016	65423
James	Loyalton Dam	SD-JA-L-LOYALTON_01	Edmunds County	TSI	4/2/2003	9748
James	Lynn Lake	SD-JA-L-LYNN_01	Day County	Mercury in Fish Tissue	3/1/2016	65424
James	Middle Lynn Lake	SD-JA-L-MID_LYNN_01	Day County (formerly SD-BS-L-MID_LYNN_01)	Mercury in Fish Tissue	3/1/2016	64505
James	Mina Lake	SD-JA-L-MINA_01	Edmunds County	TSI	4/2/2003	9749
James	Mina Lake	SD-JA-L-MINA_01	Edmunds County	Mercury in Fish Tissue	3/1/2016	65425
James	Lake Mitchell	SD-JA-L-MITCHELL_01	Davison County	Nutrients-special approval	4/22/1997	2254

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
James	Opitz Lake	SD-JA-L-OPITZ_01	Day County (Formerly SD-BS-L-OPITZ_01)	Mercury in Fish Tissue	03/1/2016	64507
James	Ravine Lake	SD-JA-L-RAVINE_01	Beadle County	TSI/fecal coliform	4/12/1999	976
James	Ravine Lake	SD-JA-L-RAVINE_01	Beadle County	Mercury in Fish Tissue	3/1/2016	65426
James	Lake Redfield	SD-JA-L-REDFIELD_01	Spink County	Nutrients/Sediment-special approval	4/12/1999	645
James	Reetz Lake	SD-JA-L-REETZ_01	Day County	Mercury in Fish Tissue	3/1/2016	65427
James	Richmond Lake	SD-JA-L-RICHMOND_01	Brown County	TSI	8/8/2007	33708
James	Richmond Lake	SD-JA-L-RICHMOND_01	Brown County	Mercury in Fish Tissue	3/1/2016	65428
James	Rosehill Lake	SD-JA-L-ROSEHILL_01	Hand County	TSI	4/2/2003	9750
James	South Buffalo Lake	SD-JA-L-SOUTH_BUFFALO_01	Marshall County (formerly SD-BS-L-SOUTH_BUFFALO_01)	Mercury in Fish Tissue	3/1/2016	65429
James	Staum Dam	SD-JA-L-STAUM_01	Beadle County	Mercury in Fish Tissue	3/1/2016	65430
James	Wilmarth Lake	SD-JA-L-WILMARTH_01	Aurora County	Mercury in Fish Tissue	3/1/2016	65431
James	Dawson Creek	SD-JA-R-DAWSON_01	James River to Lake Henry	*E. coli*/fecal coliform	6/2/2011	40437
James	Firesteel Creek	SD-JA-R-FIRESTEEL_01	West Fork Firesteel to mouth	Nutrients-special approval	4/22/1997	641
James	James River	SD-JA-R-JAMES_08	Huron 3rd Street Dam to Sand Creek	Mercury in Fish Tissue	8/18/2016	65869
James	James River	SD-JA-R-JAMES_11	Yankton County line to mouth	Fecal coliform	3/24/2011	40029
James	Pierre Creek	SD-JA-R-PIERRE_01	James River to S11, T102N, R58W	Fecal coliform	9/29/2009	37333
James	Pierre Creek	SD-JA-R-PIERRE_01	James River to S11, T102N, R58W	*E. coli*	12/5/2011	41443

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
James	Wolf Creek	SD-JA-R-WOLF_02	Just above Wolf Creek Colony to mouth	TSS	8/8/2011	41061
Little Missouri	Little Missouri River	SD-LM-R-LITTLE_MISSOURI_01	Montana border to North Dakota border	Mercury in Fish Tissue	3/1/2016	65433
Minnesota	Lake Alice	SD-MN-L-ALICE_01	Deuel County	TSI	6/3/2004	10622
Minnesota	Lake Alice	SD-MN-L-ALICE_01	Deuel County	Mercury in Fish Tissue	3/1/2016	65440
Minnesota	Big Stone Lake	SD-MN-L-BIG_STONE_01	Roberts County	Nutrients-special approval	12/26/1996	123
Minnesota	Fish Lake	SD-MN-L-FISH_01	Deuel County	TSI	9/29/2004	10971
Minnesota	Lake Hendricks	SD-MN-L-HENDRICKS_01	Brookings County	TSI/Sediment	4/12/1999	631
Minnesota	Lake Oliver	SD-MN-L-OLIVER_01	Deuel County	TSI	11/9/2001	2197
Minnesota	Punished Woman Lake	SD-MN-L-PUNISHED_WOMAN_01	Codington County	TSI/Sediment	2/7/2001	1621
Minnesota	Summit Lake	SD-MN-L-SUMMIT_01	Grant County	Mercury in Fish Tissue	3/1/2016	65441
Minnesota	North Fork Yellow Bank River	SD-MN-R-YELLOW_BANK_N_FORK_01	SD/MN border to S27, T120N, R48W	*E. coli*	5/21/2018	R8-SD-2018-01
Minnesota	South Fork Yellow Bank River	SD-MN-R-YELLOW_BANK_S_FORK_01	SD/MN border to S33, T118N, R49W	*E. coli*	5/21/2018	R8-SD-2018-01
Missouri	Brakke Dam	SD-MI-L-BRAKKE_01	Lyman County	TSI	9/29/2004	10967
Missouri	Brakke Dam	SD-MI-L-BRAKKE_01	Lyman County	Mercury in Fish Tissue	3/1/2016	65434
Missouri	Burke Lake	SD-MI-L-BURKE_01	Gregory County	DO/pH/TSI	8/8/2007	10983/ 33706/ 33706
Missouri	Byre Lake	SD-MI-L-BYRE_01	Lyman County	TSI	6/3/2004	10983
Missouri	Corsica Lake	SD-MI-L-CORSICA_01	Douglas County	TSI	8/30/2006	31143
Missouri	Cottonwood Lake	SD-MI-L-COTTONWOOD_01	Sully County	Mercury in Fish Tissue	3/1/2016	65435

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Missouri	Dante Lake	SD-MI-L-DANTE_01	Charles Mix County	TSI/DO	9/27/2006	31192
Missouri	Fate Dam	SD-MI-L-FATE_01	Lyman County	TSI	1/14/2005	11380
Missouri	Fate Dam	SD-MI-L-FATE_01	Lyman County	Mercury in Fish Tissue	03/1/2016	65436
Missouri	Geddes Lake	SD-MI-L-GEDDES_01	Charles Mix County	TSI/DO	5/6/2008	34513
Missouri	Hiddenwood Lake	SD-MI-L-HIDDENWOOD_01	Walworth County	TSI/Sediment	4/12/1999	632
Missouri	Lake Hurley	SD-MI-L-HURLEY_01	Potter County	Mercury in Fish Tissue	3/1/2016	64513
Missouri	McCook Lake	SD-MI-L-MCCOOK_01	Union County	TSI	4/12/1999	770
Missouri	Roosevelt Lake	SD-MI-L-ROOSEVELT_01	Tripp County	Mercury in Fish Tissue	3/01/2016	64514
Missouri	Choteau Creek	SD-MI-R-CHOTEAU_01	Lewis & Clark Lake to S34, T96N, R63W	TSS	5/3/2010	38613
Missouri	Emanuel Creek	SD-MI-R-EMANUEL_01	Lewis and Clark Lake to S20, T94N, R60W	*E. coli*	8/10/2011	41068
Missouri	Emanuel Creek	SD-MI-R-EMANUEL_01	Lewis and Clark Lake to S20, T94N, R60W	Fecal coliform/TSS	9/29/2009	37330/ 37331
Missouri	Medicine Creek	SD-MI-R-MEDICINE_01	Lake Sharpe to US Hwy 83	Fecal coliform/TSS	8/30/2006	31146
Missouri	Missouri River (Lake Oahe)	SD-MI-R-OAHE_01	North Dakota border to Oahe Dam	Mercury in Fish Tissue	3/1/2016	65439
Missouri	Ponca Creek	SD-MI-R-PONCA_01	SD/NE border to US Hwy 183	Fecal coliform	8/2/2010	39029
Missouri	Ponca Creek	SD-MI-R-PONCA_01	SD/NE border to US Hwy 183	TSS	4/27/2010	38463
Missouri	Missouri River (Sharpe)	SD-MI-R-SHARPE_01	Oahe Dam to Big Bend Dam	Sediment	2/7/2001	1537
Moreau	Coal Springs Reservoir	SD-MU-L-COAL_SPRINGS_01	Perkins County	Mercury in Fish Tissue	3/1/2016	64515
Moreau	Little Moreau No. 1	SD-MU-L-LITTLE_MOREAU_NO1_01	Dewey County	Mercury in Fish Tissue	3/1/2016	65442

River Basin	Waterbody	AUID	Segment or Lake Location	Impairment	TMDL Approved	TMDL ID
Niobrara	Keya Paha River	SD-NI-R-KEYA_PAHA_01	Keya Paha to NE border	*E. coli*	9/22/2011	41085
Niobrara	Keya Paha River	SD-NI-R-KEYA_PAHA_01	Keya Paha to NE border	TSS	9/29/2009	37332
Niobrara	Keya Paha River	SD-NI-R-KEYA_PAHA_01	Keya Paha to NE border	Fecal coliform	2/1/2010	38214
Red River	White Lake	SD-RD-L-WHITE_01	Marshall County	DO/TSI	8/20/2006	31133
Vermillion	Turkey Ridge Creek		Vermillion River to S31, T98N, R53W	Fecal coliform	9/27/2006	31212
Vermillion	East Vermillion Lake	SD-VM-L-E_VERMILLION_01	McCook County	Mercury in Fish Tissue	3/1/2016	65443
Vermillion	Lake Henry	SD-VM-L-HENRY_01	Kingsbury County	Mercury in Fish Tissue	3/1/2016	65444
Vermillion	Swan Lake	SD-VM-L-SWAN_01	Turner County	TSI/Sediment	4/12/1999	1169/ 1168
Vermillion	Lake Thompson	SD-VM-L-THOMPSON_01	Kingsbury County	Mercury in Fish Tissue	3/1/2016	65445
Vermillion	Whitewood Lake	SD-VM-L-WHITEWOOD_01	Kingsbury County	Mercury in Fish Tissue	3/1/2016	65446
Vermillion	Vermillion River	SD-VM-R-VERMILLION_02	Turkey Ridge Creek to Baptist Creek	TSS	9/27/2010	39404
Vermillion	Vermillion River	SD-VM-R-VERMILLION_03	Baptist Creek to mouth	TSS	7/5/2011	40439
Vermillion	East Fork Vermillion River	SD-VM-R-VERMILLION_EAST_FORK_01	McCook/Lake County to Little Vermillion River	Fecal coliform	9/26/2012	42525
Vermillion	West Fork Vermillion River	SD-VM-R-VERMILLION_WEST_FORK_01_USGS	Vermillion River to McCook-Miner County line	*E. Coli*	8/01/2019	R8-SD-2019-03

APPENDIX B

DENR 2020 WATERBODY DELISTING REPORT

ASSESSMENT UNIT ID	Waterbody Name	Cause	Delisting Reason
SD-BA-L-MURDO_01	Murdo Dam	MERCURY IN FISH TISSUE	TMDL Approved or established by EPA (4a)
SD-BA-R-BAD_01	Bad River	TOTAL SUSPENDED SOLIDS	TMDL Approved or established by EPA (4a)
SD-BF-R-WHITEWOOD_06	Whitewood Creek	*E. COLI*	Applicable WQS attained; based on new data
SD-BF-R-WHITEWOOD_07	Whitewood Creek	TOTAL SUSPENDED SOLIDS	Applicable WQS attained; based on new data
SD-BS-R-BIG_SIOUX_04	Big Sioux River	TOTAL SUSPENDED SOLIDS	Applicable WQS attained; based on new data
SD-BS-R-BIG_SIOUX_07	Big Sioux River	*E. COLI*	Applicable WQS attained; based on new data
SD-BS-R-WILLOW_01	Willow Creek	DISSOLVED OXYGEN	Applicable WQS attained; based on new data
SD-CH-R-BEAVER_01	Beaver Creek	SALINITY	Applicable WQS attained; based on new data
SD-CH-R-FALL_01	Fall River	TEMPERATURE	Applicable WQS attained; based on new data
SD-GR-R-GRAND_N_FORK_01	Grand River, North Fork	*E. COLI*	Applicable WQS attained; based on new data
SD-JA-L-S_RED_IRON_01	South Red Iron Lake	TEMPERATURE	Applicable WQS attained; based on new data
SD-JA-L-SOUTH_BUFFALO_01	South Buffalo Lake	DISSOLVED OXYGEN	Applicable WQS attained; based on new data
SD-JA-R-ELM_01	Elm River	TOTAL DISSOLVED SOLIDS	Applicable WQS attained; based on new data
SD-JA-R-JAMES_02	James River	TOTAL SUSPENDED SOLIDS	Applicable WQS attained; based on new data
SD-JA-R-JAMES_03	James River	TOTAL SUSPENDED SOLIDS	Applicable WQS attained; based on new data
SD-JA-R-JAMES_07	James River	TOTAL DISSOLVED SOLIDS	Applicable WQS attained; based on new data
SD-JA-R-JAMES_09	James River	TOTAL SUSPENDED SOLIDS	Applicable WQS attained; based on new data
SD-MI-L-HIDDENWOOD_01	Lake Hiddenwood	CHLOROPHYLL-*a*	Not specified (dam breach)
SD-MI-L-HIDDENWOOD_01	Lake Hiddenwood	DISSOLVED OXYGEN	Not specified (dam breach)

ASSESSMENT UNIT ID	Waterbody Name	Cause	Delisting Reason
SD-MI-R-MEDICINE_01	Medicine Creek	*E. COLI*	Applicable WQS attained; based on new data
SD-MI-R-SHARPE_01	Missouri River (Lake Sharpe)	DISSOLVED OXYGEN	Applicable WQS attained; based on new data
SD-MN-L-HENDRICKS_01	Lake Hendricks	PH	Applicable WQS attained; based on new data
SD-MN-L-PUNISHED_WOMAN_01	Punished Woman Lake	PH	Applicable WQS attained; based on new data
SD-MN-R-LAC_QUI_PARLE_W_BR_01	Lac Qui Parle River, West Branch	*E. COLI*	Applicable WQS attained; original basis for listing was incorrect
SD-MN-R-MUD_01	Mud Creek	DISSOLVED OXYGEN	Applicable WQS attained; based on new data
SD-MN-R-YELLOW_BANK_N_FORK_01	North Fork Yellow Bank River	*E. COLI*	TMDL Approved or established by EPA (4a)
SD-MN-R-YELLOW_BANK_S_FORK_01	South Fork Yellow Bank River	*E. COLI*	Applicable WQS attained; based on new data
SD-VM-R-VERMILLION_WEST_FORK_01_USGS	West Fork Vermillion River	*E. COLI*	TMDL Approved or established by EPA (4a)
SD-WH-R-WHITE_02	White River	SALINITY	Applicable WQS attained; based on new data
SD-WH-R-WHITE_03	White River	TOTAL SUSPENDED SOLIDS	Applicable WQS attained; based on new data

APPENDIX C

2020 305(b) REPORT

BASIN TABLES

KEY FOR RIVER BASIN INFORMATION TABLES

Waterbody AUID – Waterbody Assessment Unit Identification
Waterbody- Name of Waterbody
Location- Best available description or reach segment
Map ID- Map identification
Use- Beneficial use assigned to waterbody

EPA Category- EPA Support Category
Category 1: All designated uses are met;
Category 2: Some of the designated uses are met but there is insufficient data to determine if remaining designated uses are met;
Category3: Insufficient data to determine whether any designated uses are met;
Category 4A: Water is impaired but has an EPA approved TMDL;
Category 4B: An impairment caused by a pollutant is being addressed by the state through other pollution control requirements;
Category 4C: Water is impaired by a parameter that is not considered a "pollutant;"
Category 5: Water is impaired or threatened and a TMDL is needed.

Support
Full = Full Support
Non = Nonsupport
INS = Insufficient sampling information (limited sample data)
NA = Not Assessed
TH = Threatened

Supporting Parameters
The waterbody meets criterion for the listed parameters.

Nonsupporting Parameters
The waterbody does not meet criterion for the listed parameters.

Parameter Codes:
Alkalinity (ALK); Arsenic (As); Ammonia (NH3); Cadmium (Cd); Chloride (Cl), Chlorophyll-a (CHL-A); Chromium (Cr); Copper (Cu); Cyanide (CN); Dissolved Oxygen (DO); Escherichia coli (ECOLI); Lead (Pb); Mercury in Fish Tissue (MeHg); Mercury Total (Hg); Nickel (Ni); Nitrate (NO3); pH (PH); Radium (Ra); Salinity (Sal); Selenium, total (Se); Silver (Ag); Sodium Adsorption Ratio (SAR); Specific Conductivity (SC); Sulfate (SO4); Temperature (Temp); Total Dissolved Solids (TDS); Total Suspended Solids (TSS); Zinc (Zn)

Bad River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BA-L-FREEMAN_01 Freeman Lake	Jackson County	L1	Warmwater Permanent Fish Life	NON	5	CHL-A, DO, Se	TSS
			Immersion Recreation	NON		CHL-A, DO	
			Limited Contact Recreation	NON		CHL-A, DO	
			Fish and Wildlife Prop, Rec, Stock	NON		NO3, SC, TDS	
SD-BA-L-HAYES_01 Hayes Lake	Stanley County	L2	Warmwater Semipermanent Fish Life	NON	5	CHL-A, DO, MeHg	ALK , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	NON		CHL-A, DO	
			Limited Contact Recreation	NON		CHL-A, DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BA-L-MURDO_01 Murdo Dam	Jones County	L3	Warmwater Permanent Fish Life	NON	5	DO, MeHg	
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BA-L-SHERIFF_01 Sheriff Dam	Jones County (FPNG)	L4	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-BA-L-WAGGONER_01 Waggoner Lake	Haakon County	L5	Domestic Water Supply	NON	5	CHL-A	ALK , DO , MeHG , NH3 , NO3 , PH , SC , Temp , TSS
			Warmwater Permanent Fish Life	NON		CHL-A	
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-BA-R-BAD_01 Bad River	Stanley County line to mouth	R1	Warmwater Marginal Fish Life	NON	5	TSS	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BA-R-S_FORK_BAD_01_USGS South Fork Bad River	Near Cottonwood, SD	R2	Warmwater Marginal Fish Life	INS	3		
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	INS			
			Irrigation Waters	INS			

Belle Fourche River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BF-L-IRON_CREEK_01 Iron Creek Lake	Lawrence County	L6	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON INS INS INS	5	Temp	
SD-BF-L-MIRROR_EAST_01 Mirror Lake East	Lawrence County	L7	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL FULL	5	Temp	ALK , DO , NH3 , NO3 , PH SC , TDS , TSS
SD-BF-L-MIRROR_WEST_01 Mirror Lake West	Lawrence County	L8	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON INS INS INS	5	Temp	
SD-BF-L-NEWELL_01 Newell Lake	Butte County	L9	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL NON	4A	MeHg MeHg	ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
SD-BF-L-NEWELL_CITY_01 Newell City Pond	Butte County	L10	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NA	5	Temp	
SD-BF-L-ORMAN_01 Orman Dam (Belle Fourche Reservoir)	Butte County	L11	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON INS INS NON INS	4A	MeHg MeHg	CHL-A
SD-BF-R-ANNIE_01 Annie Creek	Spearfish Creek to S3, T4N, R2E	R3	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		Ag , ALK , As , Cd , CN , Cr Cu , DO , ECOLI , Hg , NH3 , Ni , NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BF-R-BEAR_BUTTE_01 Bear Butte Creek	Headwaters to Strawberry Creek	R4	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL INS FULL INS	2		Ag , ALK , As , Cd , CN , Cr Cu , Hg , Ni , NO3 , Pb , PH , TDS , TSS , Zn
SD-BF-R-BEAR_BUTTE_02 Bear Butte Creek	Strawberry Creek to S2, T4N, R4E	R5	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL INS FULL INS	2		Ag , ALK , As , Cd , CN , Cr Cu , Hg , Ni , NO3 , Pb , PH , TDS , TSS , Zn
SD-BF-R-BELLE_FOURCHE_01 Belle Fourche River	Wyoming border to Redwater River	R6	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL INS INS	4A	TSS ECOLI	
SD-BF-R-BELLE_FOURCHE_02 Belle Fourche River	Redwater River to Whitewood Creek	R7	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL INS INS	5	TSS ECOLI	
SD-BF-R-BELLE_FOURCHE_03 Belle Fourche River	Whitewood Creek to Willow Creek	R8	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL FULL	5	TSS ECOLI	Ag , As , Cd , CN , Cr , Cu , DO , Hg , MeHG , NH3 , Ni NO3 , Pb , PH , SC , Se , TDS , Temp , Zn
SD-BF-R-BELLE_FOURCHE_04 Belle Fourche River	Willow Creek to Alkali Creek	R9	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL FULL	5	TSS ECOLI	DO , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BF-R-BELLE_FOURCHE_05 Belle Fourche River	Alkali Creek to mouth	R10	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL FULL	4A	TSS ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
SD-BF-R-CLEOPATRA_01 Cleopatra Creek	Confluence with East Branch Cleopatra Creek to mouth	R11	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL	1		Ag , As , Cd , CN , Cr , Cu , DO , ECOLI , Hg , NH3 , Ni NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn
SD-BF-R-CROW_01_USGS Crow Creek	S22, T6N, R1E to Redwater River	R12	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NA INS INS	3		
SD-BF-R-DEADWOOD_01 Deadwood Creek	Rutabaga Gulch to Whitewood Creek	R13	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL FULL	5	ECOLI	Ag , As , Cd , CN , Cr , Cu , DO , Hg , NH3 , Ni , NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn
SD-BF-R-ELM_01 Elm Creek	S8, T8N, R10E to Belle Fourche River	R14	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BF-R-FALSE_BOTTOM_01 False Bottom Creek	S26, T5N, R2E to Burno Gulch Creek	R15	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		Ag , As , Cd , CN , Cr , Cu , DO , ECOLI , Hg , NH3 , Ni NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BF-R-FANTAIL_01 Fantail Creek	Headwaters to Nevada Gulch	R16	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS INS INS INS INS	3		
SD-BF-R-HORSE_01_USGS Horse Creek	Indian Creek to mouth	R17	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NA NA	5	TSS ECOLI	
SD-BF-R-LITTLE_SPEARFISH_01_USGS Little Spearfish Creek	S16, T4N, R1E to Spearfish Creek	R18	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NA INS INS	3		
SD-BF-R-REDWATER_01 Redwater River	US HWY 85 to mouth	R19	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-BF-R-REDWATER_01_USGS Redwater River	WY border to Hwy 85	R20	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NA INS INS	3		
SD-BF-R-SPEARFISH_01 Spearfish Creek	Intake Gulch to Annie Creek	R21	Domestic Water Supply Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters Commerce / Industry	FULL FULL FULL FULL FULL FULL FULL	1		Ag , As , Cd , CN , Cr , Cu , DO , ECOLI , Hg , NH3 , Ni NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BF-R-SPEARFISH_02 Spearfish Creek	Annie Creek to Cleopatra Creek	R22	Domestic Water Supply Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters Commerce / Industry	FULL FULL FULL FULL FULL FULL FULL	1		Ag , As , Cd , CN , Cr , Cu , DO , ECOLI , Hg , NH3 , Ni NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn
SD-BF-R-SPEARFISH_04 Spearfish Creek	Cleopatra Creek to Spearfish City intake dam in S33, T6N, R2E	R23	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		Ag , As , Cd , CN , Cr , Cu , DO , ECOLI , Hg , NH3 , Ni NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn
SD-BF-R-SPEARFISH_05 Spearfish Creek	Homestake Hydroelectric Plant at Spearfish in S15, T6N, R2E to Higgins Gulch	R24	Domestic Water Supply Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BF-R-SPEARFISH_06 Spearfish Creek	Higgens Gulch to mouth	R25	Domestic Water Supply Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BF-R-STEWART_01 Stewart Gulch	Whitetail Creek to NW1/4, NW1/4, S7, T4N, R3E	R26	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		Ag , As , Cd , CN , Cr , Cu , DO , Hg , NH3 , Ni , NO3 , Pb , PH , SC , Se , TDS , Temp , TSS , Zn
SD-BF-R-STRAWBERRY_01 Strawberry Creek	Bear Butte Creek to S5, T4N, R4E	R27	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON INS NON INS	4A	Cd Cd	Ag , As , CN , Cu , NH3 , Ni Pb , PH , SC , Se , TDS , TSS , Zn

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BF-R-W_STRAWBERRY_01 West Strawberry Creek	Headwaters to mouth	R28	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS INS INS INS	3		
SD-BF-R-WHITETAIL_01 Whitetail Creek	Whitewood Creek to S18, T4N, R3E	R29	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL	1		Ag , As , Cd , CN , Cr , Cu , DO , ECOLI , Hg , NH3 , Ni NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn
SD-BF-R-WHITEWOOD_01 Whitewood Creek	Whitetail Summit to Gold Run Creek	R30	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS INS	3		
SD-BF-R-WHITEWOOD_02 Whitewood Creek	Gold Run Creek to Deadwood Creek	R31	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL FULL	5	ECOLI	Ag , As , Cd , CN , Cr , Cu , DO , Hg , NH3 , Ni , NO3 , Pb , PH , Sal/SAR , SC , TDS , Temp , TSS , Zn
SD-BF-R-WHITEWOOD_03 Whitewood Creek	Deadwood Creek to Spruce Gulch	R32	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL FULL	4A	ECOLI	Ag , As , Cd , CN , Cr , Cu , DO , Hg , NH3 , Ni , NO3 , Pb , PH , SC , TDS , Temp , TSS , Zn
SD-BF-R-WHITEWOOD_04 Whitewood Creek	Spruce Gulch to Sandy Creek	R33	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL FULL	5	ECOLI	Ag , ALK , As , Cd , CN , Cr Cu , DO , Hg , NH3 , Ni , NO3 , Pb , PH , Sal/SAR , SC , TDS , Temp , TSS , Zn

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BF-R-WHITEWOOD_05	Sandy Creek to I-90	R34	Coldwater Marginal Fish Life	NON	5	PH	Ag , ALK , As , Cd , CN , Cr Cu , DO , ECOLI , Hg , NH3 , Ni , NO3 , Pb , SC , TDS , Temp , TSS , Zn
Whitewood Creek			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BF-R-WHITEWOOD_06	I-90 to Crow Creek	R35	Warmwater Permanent Fish Life	NON	5	PH	ALK , DO , ECOLI , NH3 , NO3 , SC , TDS , Temp , TSS
Whitewood Creek			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BF-R-WHITEWOOD_07	Crow Creek to mouth	R36	Warmwater Permanent Fish Life	FULL	5		Ag , As , Cd , CN , Cr , Cu , DO , Hg , NH3 , Ni , NO3 , Pb , PH , SC , TDS , Temp TSS , Zn
Whitewood Creek			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Big Sioux River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-L-ALBERT_01 Lake Albert	Kingsbury County	L12	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON NON	5	CHL-A, DO, MeHg CHL-A, DO CHL-A, DO MeHg	ALK , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BS-L-ALVIN_01 Lake Alvin	Lincoln County	L13	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS INS	3		MeHG , NO3 , TSS
SD-BS-L-ANTELOPE_01 Antelope Lake	Day County	L14	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NON	4A	MeHg MeHg	
SD-BS-L-BEAVER_01 Beaver Lake	Minnehaha	L15	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS NA NA INS	3		MeHG
SD-BS-L-BITTER_01 Bitter Lake	Day County	L16	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL NON	4A	MeHg MeHg	ALK , DO , PH , SC , TDS , Temp , TSS
SD-BS-L-BLUE_DOG_01 Blue Dog Lake	Day County	L17	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA FULL	5	PH 	MeHG
SD-BS-L-BRANT_01 Brant Lake	Lake County	L18	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	FULL FULL FULL FULL	1		ALK , CHL-A , DO , ECOLI MeHG , PH , SC , TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-L-BRUSH_01 Brush Lake	Brookings County	L19	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-BS-L-BULLHEAD_01 Bullhead Lake	Deuel County	L20	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON FULL	5	CHL-A CHL-A CHL-A	ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BS-L-CAMPBELL_01 Lake Campbell	Brookings County	L21	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS FULL	2		ALK , MeHG , NH3 , NO3 , SC , TDS , TSS
SD-BS-L-CLEAR_D_01 Clear Lake	Deuel County	L22	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS FULL	2		ALK , NH3 , NO3 , SC , TDS , TSS
SD-BS-L-CLEAR_H_01 Clear Lake (Hamlin)	Hamlin County	L23	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NON	4A	MeHg MeHg	
SD-BS-L-COVELL_01 Covell Lake	Minnehaha County	L24	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS FULL	2		ALK , SC , TDS , TSS
SD-BS-L-DIAMOND_01 Diamond Lake	Minnehaha County	L25	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS NA NA INS	3		MeHG
SD-BS-L-DRY_01 Dry Lake	Codington County	L26	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL NON	4A	MeHg MeHg	ALK , DO , PH , SC , TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-L-DRY_NO2_01 Dry Lake Number 2	Clark County	L27	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NON	4A	MeHg MeHg	
SD-BS-L-E_OAKWOOD_01 East Oakwood Lake	Brookings County	L28	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON FULL	4A	CHL-A CHL-A CHL-A	ALK , DO , PH , SC , TDS , Temp , TSS
SD-BS-L-ENEMY_SWIM_01 Enemy Swim Lake	Day County	L29	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL NON	4A	MeHg MeHg	ALK , CHL-A , DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BS-L-GOLDSMITH_01 Goldsmith Lake	Brookings County	L30	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL NON	4A	MeHg MeHg	ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
SD-BS-L-GOOSE_01 Goose Lake	Codington County	L31	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-BS-L-GRASS_01 Grass Lake	Codington County	L32	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NON	5	MeHg MeHg	
SD-BS-L-HERMAN_01 Lake Herman	Lake County	L33	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON NON	4A	CHL-A, MeHg CHL-A CHL-A MeHg	ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BS-L-ISLAND_N_01 North Island Lake	Minnehaha/McCook counties (formerly SD-VM-L-ISLAND_N_01)	L34	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NON	4A	MeHg MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-L-KAMPESKA_01 Lake Kampeska	Codington County	L35	Domestic Water Supply	INS	4A		ECOLI , NH3 , NO3 , TDS , TSS
			Warmwater Permanent Fish Life	NON		MeHg	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-LONG_COD_01 Long Lake	Codington County	L36	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-BS-L-MADISON_01 Lake Madison	Lake County	L37	Warmwater Permanent Fish Life	NON	4A	CHL-A	ALK , DO , MeHG , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-BS-L-MARSH_01 Lake Marsh	Hamlin County	L38	Warmwater Marginal Fish Life	NA	3		
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NA			
SD-BS-L-MINNEWASTA_01 Minnewasta Lake	Day County	L39	Warmwater Semipermanent Fish Life	NON	5	CHL-A, MeHg	
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-NORDEN_01 Lake Norden	Hamlin County	L40	Warmwater Marginal Fish Life	INS	3		
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-BS-L-PELICAN_01 Pelican Lake	Codington County	L41	Warmwater Semipermanent Fish Life	FULL	1		ALK , DO , ECOLI , NH3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-BS-L-PICKEREL_01 Pickerel Lake	Day County	L42	Warmwater Permanent Fish Life	FULL	1		ALK , CHL-A , DO , ECOLI MeHG , PH , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-L-POINSETT_01 Lake Poinsett	Hamlin County	L43	Warmwater Semipermanent Fish Life	NON	4A	MeHg	ALK , CHL-A , DO , ECOLI NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-REID_01 Reid Lake	Clark County	L44	Warmwater Marginal Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-RUSH_01 Rush Lake	Day County	L45	Warmwater Marginal Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-SCHOOL_01 School Lake	Deuel County	L46	Warmwater Marginal Fish Life	INS	3		
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-BS-L-SCOTT_01 Scott Lake	Minnehaha County	L47	Warmwater Marginal Fish Life	NON	5	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-SINAI_01 Lake Sinai	Brookings County	L48	Warmwater Permanent Fish Life	NON	4A	MeHg	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-ST_JOHN_01 Lake St. John	Hamlin County	L49	Warmwater Marginal Fish Life	FULL	1		ALK , DO , ECOLI , NH3 , NO3 , SC , TDS , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-BS-L-SWAN_01 Swan Lake	Clark County	L50	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-L-TWIN_01 Twin Lakes/W. Hwy 81	Kingsbury County	L51	Warmwater Permanent Fish Life	NON	4A	MeHg	ALK , NH3 , NO3 , PH , SC , Temp
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-TWIN_02 Twin Lakes	Minnehaha County	L52	Warmwater Permanent Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-L-W_OAKWOOD_01 West Oakwood Lake	Brookings County	L53	Warmwater Semipermanent Fish Life	NON	4A	CHL-A	MeHG , NH3 , NO3
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-BS-L-WALL_01 Wall Lake	Minnehaha County	L54	Warmwater Semipermanent Fish Life	INS	3		ECOLI , NO3 , TSS
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-BS-L-WAUBAY_01 Waubay Lake	Day County	L55	Warmwater Semipermanent Fish Life	NON	5	CHL-A, MeHg	
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-BS-R-BACHELOR_01 Bachelor Creek	S28, T106N, R 50W to Big Sioux River	R37	Warmwater Marginal Fish Life	FULL	5		DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BEAVER_01 Beaver Creek	Big Sioux River to S9, T98N, R49W	R38	Warmwater Marginal Fish Life	FULL	5		DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-R-BEAVER_02 Beaver Creek	Split Rock Creek to South Dakota-Minnesota border	R39	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , PH , SC , Temp , TSS
SD-BS-R-BIG_SIOUX_01 Big Sioux River	S28, T121N, R52W to Lake Kampeska	R40	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	DO DO, ECOLI	NH3 , NO3 , PH , Sal/SAR SC , TDS , Temp , TSS
SD-BS-R-BIG_SIOUX_02 Big Sioux River	Lake Kampeska to Willow Creek	R41	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	DO DO, ECOLI	ALK , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp TSS
SD-BS-R-BIG_SIOUX_03 Big Sioux River	Willow Creek to Stray Horse Creek	R42	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	4A	ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , TSS
SD-BS-R-BIG_SIOUX_04 Big Sioux River	Stray Horse Creek to near Volga	R43	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	DO DO	ALK , ECOLI , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp , TSS
SD-BS-R-BIG_SIOUX_05 Big Sioux River	Near Volga to Brookings	R44	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL FULL FULL	5	TSS	ALK , DO , ECOLI , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp
SD-BS-R-BIG_SIOUX_06 Big Sioux River	Brookings to Brookings/Moody County Line	R45	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL FULL FULL	5	TSS	DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-R-BIG_SIOUX_07	Brookings/Moody County Line to S2, T104N, R49W	R46	Domestic Water Supply	FULL	4A		ALK , Cl , DO , ECOLI , NH3 , NO3 , PH , Sal/SAR SC , SO4 , TDS , Temp
Big Sioux River			Warmwater Semipermanent Fish Life	NON		MeHg, TSS	
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_08	S2, T104N, R49W to I-90	R47	Domestic Water Supply	FULL	5		ALK , Cl , DO , NH3 , NO3 PH , Sal/SAR , SC , SO4 , TDS , Temp
Big Sioux River			Warmwater Semipermanent Fish Life	NON		MeHg, TSS	
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_10	I-90 to diversion return	R48	Domestic Water Supply	FULL	4A		ALK , DO , MeHG , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
Big Sioux River			Warmwater Semipermanent Fish Life	NON		TSS	
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_11	Diversion return to SF WWTF	R49	Warmwater Semipermanent Fish Life	NON	4A	TSS	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
Big Sioux River			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_12	SF WWTF to above Brandon	R50	Warmwater Semipermanent Fish Life	NON	4A	TSS	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
Big Sioux River			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-R-BIG_SIOUX_13 Big Sioux River	Above Brandon to Nine Mile Creek	R51	Warmwater Semipermanent Fish Life	NON	5	TSS	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_14 Big Sioux River	Nine Mile Creek to near Fairview	R52	Warmwater Semipermanent Fish Life	NON	5	TSS	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_15 Big Sioux River	Fairview to near Alcester	R53	Warmwater Semipermanent Fish Life	NON	4A	TSS	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_16 Big Sioux River	Near Alcester to Indian Creek	R54	Warmwater Semipermanent Fish Life	NON	4A	TSS	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BIG_SIOUX_17 Big Sioux River	Indian Creek to mouth	R55	Warmwater Semipermanent Fish Life	NON	4A	TSS	ALK , DO , NH3 , NO3 , PH SC , TDS , Temp
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-BS-R-BRULE_01 Brule Creek	Big Sioux River to confluence of its east and west forks	R56	Warmwater Marginal Fish Life	NON	5	TSS	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-R-EAST_BRULE_01 East Brule Creek	confluence with Brule Creek to S3, T95N, R49W	R57	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL NA	5	TSS ECOLI	DO , PH , Temp
SD-BS-R-FLANDREAU_01 Flandreau Creek	Big Sioux River to Minnesota Border	R58	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NON INS INS	5	ECOLI	
SD-BS-R-HIDEWOOD_01 Hidewood Creek	Big Sioux River to U.S. Highway 15	R59	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , PH , SC
SD-BS-R-MEDARY_01 Medary Creek	MN border to Big Sioux River	R60	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BS-R-PEG_MUNKY_RUN_01 Peg Munky Run	Big Sioux River to S17, T113N, R50W	R61	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , PH , SC , Temp
SD-BS-R-PIPESTONE_01 Pipestone Creek	SD/MN border in Minnehaha County to SD/MN border in Moody County	R62	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NON FULL FULL	5	TSS ECOLI ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp
SD-BS-R-SIXMILE_01 Six Mile Creek	Big Sioux River to S30, T112N, R48W	R63	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	DO, ECOLI	ALK , NH3 , NO3 , PH , SC TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-BS-R-SKUNK_01 Skunk Creek	Brandt Lake to Big Sioux River	R64	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp , TSS
SD-BS-R-SPLIT_ROCK_01_USGS Split Rock Creek	West Pipestone Creek to Big Sioux River	R65	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NON FULL FULL	5	TSS ECOLI ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp
SD-BS-R-SPRING_01 Spring Creek	Big Sioux River to S22, T109, R47W	R66	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS INS INS INS	3		
SD-BS-R-STRAYHORSE_01 Stray Horse Creek	Big Sioux River to S26, T116N, R51W	R67	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-BS-R-UNION_01 Union Creek	Big Sioux River to confluence with East and West Forks	R68	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NA NA NA	5	TSS	
SD-BS-R-WILLOW_01 Willow Creek	Big Sioux River to S7, T117N, R50W	R69	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC TDS , Temp , TSS

Cheyenne River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-L-ANGOSTURA_01 Angostura Reservoir	Fall River County	L56	Warmwater Permanent Fish Life	INS	3		CHL-A , MeHG
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
			Irrigation Waters	INS			
SD-CH-L-BISMARK_01 Bismark Lake	Custer County	L57	Coldwater Marginal Fish Life	INS	3		
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-CH-L-CANYON_01 Canyon Lake	Pennington County	L58	Domestic Water Supply	INS	3		
			Coldwater Permanent Fish Life	INS			
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-CH-L-CENTER_01 Center Lake	Custer County	L59	Coldwater Permanent Fish Life	NON	5	DO, PH, Temp	
			Immersion Recreation	NON		DO	ALK , ECOLI , NH3 , NO3 , SC
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-CH-L-COLD_BROOK_01 Cold Brook Reservoir	Fall River County	L60	Coldwater Permanent Fish Life	NON	5	Temp	
			Immersion Recreation	FULL			ALK , DO , ECOLI , NH3 , NO3 , PH , TDS , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-CH-L-COTTONWOOD_SPRINGS_01 Cottonwood Springs Lake	Fall River County	L61	Warmwater Permanent Fish Life	FULL	1		ALK , CHL-A , DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-CH-L-CURLEW_01 Curlew Lake	Meade County	L62	Warmwater Permanent Fish Life	NON	4A	MeHg	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-L-DEERFIELD_01 Deerfield Lake	Pennington County	L63	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL FULL	5	Temp	ALK , DO , ECOLI , MeHG NH3 , NO3 , PH , SC , TDS , TSS
SD-CH-L-DURKEE_01 Durkee Lake	Meade County	L64	Domestic Water Supply Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NA NON NA NA NON	5	MeHg MeHg	
SD-CH-L-HORSETHIEF_01 Horsethief Lake	Pennington County	L65	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS INS	3		
SD-CH-L-LAKOTA_01 Lakota Lake	Custer County	L66	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	FULL FULL FULL FULL	1		ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-L-LEGION_01 Legion Lake	Custer County	L67	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL FULL	4A	PH	ALK , DO , NH3 , NO3 , SC TDS , Temp , TSS
SD-CH-L-NEW_UNDERWOOD_01 New Underwood Lake	Pennington County	L68	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS NA NA INS	3		MeHG
SD-CH-L-NEW_WALL_01 New Wall Lake	Pennington County	L69	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NON	5	PH MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-L-PACTOLA_01 Pactola Reservoir	Pennington County	L70	Domestic Water Supply	FULL	5		ALK , DO , MeHG , NH3 , NO3 , PH , SC , TDS , TSS
			Coldwater Permanent Fish Life	NON		Temp	
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-L-SHERIDAN_01 Sheridan Lake	Pennington County	L71	Coldwater Permanent Fish Life	NON	5	DO, MeHg, Temp	ALK , CHL-A , ECOLI , NH3 , NO3 , SC , TDS , TSS
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-CH-L-STOCKADE_01 Stockade Lake	Custer County	L72	Coldwater Marginal Fish Life	NON	5	DO, MeHg	ALK , ECOLI , NH3 , NO3 , PH , SC , TDS , TSS
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-CH-L-SYLVAN_01 Sylvan Lake	Custer County	L73	Coldwater Permanent Fish Life	NON	5	DO, PH, Temp	ALK , NH3 , NO3 , SC , TDS , TSS
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-CH-R-BATTLE_01 Battle Creek	Near Horsethief Lake to Teepee Gulch Creek	R70	Coldwater Permanent Fish Life	FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-BATTLE_01_USGS Battle Creek	Hwy 79 to mouth	R71	Warmwater Marginal Fish Life	FULL	4A		DO , PH , SC , Temp , TSS
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-BATTLE_02 Battle Creek	Teepee Gulch Creek to SD HWY 79	R72	Coldwater Permanent Fish Life	FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-R-BEAVER_01	WY border to Cheyenne River	R73	Warmwater Semipermanent Fish Life	FULL	5		ALK , As , DO , ECOLI , NH3 , NO3 , PH , Ra , Sal/SAR , Temp , TSS
Beaver Creek			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		SC, TDS	
			Irrigation Waters	NON		SC	
SD-CH-R-BEAVER_01_USGS	Near Buffalo Gap	R74	Warmwater Permanent Fish Life	INS	3		
Beaver Creek			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	INS			
			Irrigation Waters	INS			
SD-CH-R-BEAVER_02_USGS	S13, T5S, R4E to SD Hwy 79	R75	Coldwater Permanent Fish Life	FULL	1		DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
Beaver Creek			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-BOX_ELDER_01	Cheyenne River to S22, T2N, R8E	R76	Warmwater Marginal Fish Life	FULL	5		ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp , TSS
Box Elder Creek			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-BOX_ELDER_02	S16, T2N, R6E to S14, T3N, R4E	R77	Coldwater Permanent Fish Life	FULL	1		ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
Box Elder Creek			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-CASCADE_01	headwaters to Cheyenne River	R78	Coldwater Marginal Fish Life	FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
Cascade Creek			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-CASTLE_01	Deerfield Reservoir to Rapid Creek	R79	Coldwater Permanent Fish Life	FULL	1		ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
Castle Creek			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-R-CHERRY_01 Cherry Creek	Cheyenne River to Sulphur Creek	R80	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL INS FULL NON	5	 SC	DO , NH3 , NO3 , PH , TDS , Temp , TSS
SD-CH-R-CHEYENNE_01 Cheyenne River	WY border to Beaver Creek	R81	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL NON NON	5	TSS TDS Sal/ SAR, SC	
SD-CH-R-CHEYENNE_02 Cheyenne River	Beaver Creek to Cascade Creek	R82	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL NON	5	TSS ECOLI SC	As , DO , NH3 , NO3 , PH , Ra , Sal/SAR , TDS , Temp
SD-CH-R-CHEYENNE_02B Cheyenne River	Cascade Creek to Angostura Reservoir	R83	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL FULL FULL	5	TSS 	ALK , As , DO , ECOLI , NH3 , NO3 , PH , Ra , Sal/SAR , SC , TDS , Temp
SD-CH-R-CHEYENNE_03 Cheyenne River	Fall River to Cedar Creek	R84	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL FULL	5	TSS ECOLI 	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
SD-CH-R-CHEYENNE_04 Cheyenne River	Cedar Creek to Belle Fourche River	R85	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NON FULL FULL	5	TSS ECOLI ECOLI 	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
SD-CH-R-CHEYENNE_05 Cheyenne River	Belle Fourche River to Bull Creek	R86	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NON FULL FULL	5	TSS ECOLI ECOLI 	ALK , DO , MeHG , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-R-CHEYENNE_06 Cheyenne River	Bull Creek to Lake Oahe	R87	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NON FULL FULL	5	TSS ECOLI ECOLI	ALK , DO , NH3 , NO3 , PH Sal/SAR , SC , TDS , Temp
SD-CH-R-ELK_01_USGS Elk Creek	S9, T3N, R7E to S27, T4N, R3E	R88	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-FALL_01 Fall River	Hot Springs to mouth	R89	Warmwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-CH-R-FLYNN_01 Flynn Creek	SF Lame Johnny Creek to S23, T4S, R5E	R90	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-FRENCH_01 French Creek	S23, T3S, R3E to Custer	R91	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-CH-R-FRENCH_02 French Creek	Custer to Stockade Lake	R92	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-FRENCH_03 French Creek	Stockade Lake to SD HWY 79	R93	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-R-GRACE_COOLIDGE_01 Grace Coolidge Creek	S12, T3S, R5E to Battle Creek	R94	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-GRIZZLY_BEAR_01_USGS Grizzly Bear Creek	Near Keystone, SD	R95	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-HIGHLAND_01_USGS Highland Creek	Wind Cave Natl Park and near Pringle, SD	R96	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON INS INS INS	5	PH, Temp	
SD-CH-R-HORSEHEAD_01_USGS Horsehead Creek	At Oelrichs	R97	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS INS INS NON	5	 SC	
SD-CH-R-IRON_01 Iron Creek	From Battle Creek to S33, T2S, R5E	R98	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-RAPID_01 Rapid Creek	Headwaters to Pactola Reservoir	R99	Domestic Water Supply Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL FULL	1		Cl , DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , SO4 , TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-R-RAPID_02 Rapid Creek	Pactola Reservoir to Canyon Lake	R100	Domestic Water Supply	FULL	1		Cl , DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , SO4 , TDS , Temp , TSS
			Coldwater Permanent Fish Life	FULL			
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-RAPID_03 Rapid Creek	Canyon Lake to S15, T1N, R8E	R101	Domestic Water Supply	FULL	5		Cl , DO , NH3 , NO3 , PH , Sal/SAR , SC , SO4 , TDS , Temp , TSS
			Coldwater Permanent Fish Life	FULL			
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-RAPID_04 Rapid Creek	S15, T1N, R8E to above Farmingdale	R102	Warmwater Permanent Fish Life	FULL	5		DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp TSS
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-RAPID_05 Rapid Creek	Above Farmingdale to Cheyenne River	R103	Warmwater Permanent Fish Life	NON	4A	TSS	DO , MeHG , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
			Immersion Recreation	NON		ECOLI	
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-RAPID_N_FORK_01 North Fork Rapid Creek	From confluence with Rapid Creek to S8, T3N, R3E	R104	Coldwater Permanent Fish Life	FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-CH-R-RHOADS_FORK_01_USGS Rhoads Fork	Near Rochford, SD	R105	Coldwater Permanent Fish Life	FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-CH-R-SPRING_01 Spring Creek	S5, T2S, R3E to Sheridan Lake	R106	Coldwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-SPRING_02 Spring Creek	Sheridan Lake to SD HWY 79	R107	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-CH-R-VICTORIA_01_USGS Victoria Creek	Rapid Creek to S19, T1N, R6E	R108	Coldwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NA NA NA	5	Temp	

Grand River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-GR-L-EAST_LEMMON_01 East Lemmon Lake	Perkins County	L74	Warmwater Semipermanent Fish Life	NON	5	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-GR-L-FLAT_CREEK_01 Flat Creek Dam	Perkins County	L75	Warmwater Semipermanent Fish Life	INS	3		
			Immersion Recreation	INS			MeHG
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-GR-L-GARDNER_01 Lake Gardner	Harding County	L76	Warmwater Permanent Fish Life	FULL	1		
			Immersion Recreation	FULL			ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-GR-L-ISABEL_01 Lake Isabel	Dewey County	L77	Domestic Water Supply	INS	5		
			Warmwater Permanent Fish Life	NON		CHL-A, MeHg	
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-GR-L-PUDWELL_01 Pudwell Dam	Corson County	L78	Warmwater Permanent Fish Life	NON	5	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-GR-L-SHADEHILL_01 Shadehill Reservoir	Perkins County	L79	Warmwater Permanent Fish Life	NON	5	MeHg	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
			Irrigation Waters	NON		Sal/SAR	
SD-GR-R-BULL_01 Bull Creek	SF Grand River to S15, T21N, R5E	R109	Warmwater Marginal Fish Life	FULL	5		
			Limited Contact Recreation	NON		ECOLI	As , DO , NH3 , NO3 , PH , Ra , SC , TDS , Temp , TSS
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-GR-R-CROOKED_01		R110	Warmwater Marginal Fish Life	FULL	5		
Crooked Creek	ND border to S34, T23N, R5E		Limited Contact Recreation	FULL			As , DO , NH3 , NO3 , PH , Ra , TDS , Temp , TSS
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR, SC	
SD-GR-R-GRAND_01		R111	Coldwater Marginal Fish Life	NON	5	Temp	
Grand River	Shadehill Reservoir to Corson County line		Limited Contact Recreation	FULL			As , DO , ECOLI , NH3 , NO3 , PH , Ra , SC , TDS , TSS
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	
SD-GR-R-GRAND_02		R112	Warmwater Permanent Fish Life	NON	5	TSS	
Grand River	Corson County line to Bullhead		Limited Contact Recreation	FULL			DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	
SD-GR-R-GRAND_03		R113	Warmwater Permanent Fish Life	NON	5	TSS	
Grand River	Bullhead to mouth		Limited Contact Recreation	FULL			DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	
SD-GR-R-GRAND_N_FORK_01		R114	Warmwater Marginal Fish Life	FULL	5		
Grand River, North Fork	North Dakota border to Shadehill Reservoir		Immersion Recreation	FULL			DO , ECOLI , NH3 , NO3 , PH , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR, SC	
SD-GR-R-GRAND_S_FORK_01		R115	Warmwater Semipermanent Fish Life	NON	5	TSS	
Grand River, South Fork	S13, T18N, R3E to SD Hwy 79		Limited Contact Recreation	NON		ECOLI	As , DO , NH3 , NO3 , PH , Ra , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	
SD-GR-R-GRAND_S_FORK_02		R116	Warmwater Semipermanent Fish Life	NON	5	TSS	
Grand River, South Fork	SD Hwy 79 to Shadehill Reservoir		Immersion Recreation	NON		ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	

James River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-L-AMSDEN_01 Amsden Dam	Day County	L80	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL NON	4A	MeHg MeHg	ALK , CHL-A , DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-JA-L-BEAVER_01 Beaver Lake	Yankton County	L81	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS INS	3		
SD-JA-L-BIERMAN_01 Bierman Dam	Spink County	L82	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON FULL	5	CHL-A CHL-A CHL-A	ALK , NH3 , NO3 , SC , TDS , TSS
SD-JA-L-BULLHEAD_02 Bullhead Lake	Marshall County (formerly SD-BS-L-BULLHEAD_02)	L83	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NA NA NA NA	3		
SD-JA-L-BYRON_01 Lake Byron	Beadle County	L84	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON INS INS FULL INS	5	PH	MeHG
SD-JA-L-CARTHAGE_01 Lake Carthage	Miner County	L85	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON NON	5	CHL-A, MeHg CHL-A CHL-A MeHg	ALK , DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-JA-L-CATTAIL_01 Cattail Lake	Marshall County (formerly SD-BS-L-CATTAIL_01)	L86	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL NON	4A	MeHg MeHg	ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-L-CAVOUR_01 Lake Cavour	Beadle County	L87	Warmwater Marginal Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-CLEAR_M_01 Clear Lake	Marshall County (formerly SD-BS-L-CLEAR_M_01)	L88	Warmwater Permanent Fish Life	NON	5	MeHg	ALK , CHL-A , DO , NH3 , NO3 , PH , SC , TDS , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-CLUBHOUSE_01 Clubhouse Lake	Marshall County	L89	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-JA-L-COTTONWOOD_01 Cottonwood Lake	Spink County	L90	Warmwater Marginal Fish Life	NON	4A	MeHg	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-COTTONWOOD_M_01 Cottonwood Lake	Marshall County (formerly SD-BS-L-COTTONWOOD_01)	L91	Warmwater Semipermanent Fish Life	NON	5	PH	ALK , DO , NH3 , NO3 , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-JA-L-CRESBARD_01 Cresbard Lake	Faulk County	L92	Warmwater Semipermanent Fish Life	NON	5	CHL-A, PH	
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-DIMOCK_01 Dimock Lake	Hutchinson County	L93	Warmwater Semipermanent Fish Life	INS	3		MeHG
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	INS			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-L-ELM_01 Elm Lake	Brown County	L94	Domestic Water Supply	FULL	4A		ALK , NH3 , NO3 , PH , SC , TDS , TSS
			Warmwater Permanent Fish Life	NON		MeHg	
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-FAULKTON_01 Lake Faulkton	Faulk County	L95	Warmwater Semipermanent Fish Life	NON	5	CHL-A, DO, MeHg	ALK , NH3 , NO3 , PH , TDS , Temp , TSS
			Immersion Recreation	NON		CHL-A, DO	
			Limited Contact Recreation	NON		CHL-A, DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-FOUR_MILE_01 Four Mile Lake	Marshall County (formerly SD-BS-L-FOUR_MILE_01)	L96	Warmwater Marginal Fish Life	NON	5	PH	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-HANSON_01 Lake Hanson	Hanson County	L97	Warmwater Semipermanent Fish Life	INS	3		
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-HAZELDON_01 Hazeldon Lake	Day County	L98	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-JA-L-HENRY_01 Henry Reservoir	Near Scotland, SD	L99	Warmwater Permanent Fish Life	NON	5	DO, MeHg	ALK , ECOLI , NH3 , NO3 PH , SC , TDS , Temp , TSS
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-HORSESHOE_01 Horseshoe Lake	Marshall County	L100	Warmwater Marginal Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-L-JAIL_POND_01 Jail Pond	Aurora County	L101	Warmwater Marginal Fish Life	INS	3		
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-JONES_01 Jones Lake	Hand County	L102	Warmwater Semipermanent Fish Life	NON	5	PH	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-LARDY_01 Lardy Lake	Day County (Formerly SD-BS-L-LARDY_01)	L103	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-JA-L-LATHAM_01 Latham	Faulk County	L104	Warmwater Marginal Fish Life	NON	5	DO	
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-LILY_01 Lily Lake	Day County	L105	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-JA-L-LOUISE_01 Lake Louise	Hand County	L106	Warmwater Semipermanent Fish Life	NON	5	DO, MeHg, PH	
			Immersion Recreation	NON		DO	ALK , NH3 , NO3 , SC , TDS , TSS
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-LYNN_01 Lynn Lake	Day County	L107	Warmwater Marginal Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-MENNO_01 Menno, Lake	Hutchinson County	L108	Warmwater Semipermanent Fish Life	INS	3		
			Immersion Recreation	INS			MeHG
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-MID_LYNN_01 Middle Lynn Lake	Day County (formerly SD-BS-L-MID_LYNN_01)	L109	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-L-MINA_01 Mina Lake	Edmunds County	L110	Warmwater Permanent Fish Life	NON	5	DO, MeHg	ALK , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-MITCHELL_01 Lake Mitchell	Davison County	L111	Domestic Water Supply	NON	5	CHL-A	ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , TSS
			Warmwater Permanent Fish Life	NON		CHL-A, Temp	
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-JA-L-N_BUFFALO_01 North Buffalo Lake	Marshall County (formerly SD-BS-L-N_BUFFALO_01)	L112	Warmwater Semipermanent Fish Life	NON	5	MeHg	ALK , DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-NINE_MILE_01 Nine Mile Lake	Marshall County (formerly SD-BS-L-NINE_MILE_01)	L113	Warmwater Semipermanent Fish Life	NON	5	PH	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		PH	
SD-JA-L-NORTH_SCATTERWOOD_01 North Scatterwood Lake	Edmunds County	L114	Warmwater Marginal Fish Life	INS	3		
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-JA-L-OPITZ_01 Opitz Lake	Day County (Formerly SD-BS-L-OPITZ_01)	L115	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-JA-L-PIERPONT_01 Pierpont Lake	Day County	L116	Warmwater Permanent Fish Life	NON	5	Temp	ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-JA-L-PIYAS_01 Piyas Lake	Marshall	L117	Fish and Wildlife Prop, Rec, Stock	NON	5	MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-L-RAVINE_01 Ravine Lake	Beadle County	L118	Warmwater Semipermanent Fish Life	NON	5	DO, MeHg	ALK , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-REDFIELD_01 Lake Redfield	Spink County	L119	Warmwater Marginal Fish Life	NON	5	DO	ALK , MeHG, NH3 , NO3 PH , TDS , Temp , TSS
			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-JA-L-REETZ_01 Reetz Lake	Day County	L120	Fish and Wildlife Prop, Rec, Stock	NON	4A	MeHg	
SD-JA-L-RICHMOND_01 Richmond Lake	Brown County	L121	Warmwater Permanent Fish Life	NON	4A	MeHg	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-ROSETTE_01 Rosette Lake	Edmunds County	L122	Warmwater Marginal Fish Life	NON	5	CHL-A	
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-JA-L-ROY_01 Roy Lake	Marshall County (formerly SD-BS-L-ROY_01)	L123	Warmwater Permanent Fish Life	NON	5	MeHg	ALK , CHL-A , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-S_RED_IRON_01 South Red Iron Lake	Marshall County (formerly SD-BS-L-S_RED_IRON_01)	L124	Warmwater Permanent Fish Life	FULL	1		ALK , CHL-A , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-JA-L-SOUTH_BUFFALO_01 South Buffalo Lake	Marshall County (formerly SD-BS-L-SOUTH_BUFFALO_01)	L125	Warmwater Semipermanent Fish Life	NON	4A	MeHg	ALK , CHL-A , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-L-STAUM_01 Staum Dam	Beadle County	L126	Warmwater Semipermanent Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-STINK_01 Stink Lake	Codington County	L127	Fish and Wildlife Prop, Rec, Stock	NON	5	MeHg	
SD-JA-L-TWIN_01 Twin Lakes	Sanborn County	L128	Warmwater Semipermanent Fish Life	NON	5	CHL-A, DO	ALK , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	NON		CHL-A, DO	
			Limited Contact Recreation	NON		CHL-A, DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-JA-L-TWIN_02 Twin Lakes	Spink County	L129	Warmwater Semipermanent Fish Life	FULL	1		ALK , DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-JA-L-WILMARTH_01 Wilmarth Lake	Aurora County	L130	Warmwater Permanent Fish Life	NON	5	MeHg, PH	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-JA-L-WYLIE_01 Wylie Lake	Brown County	L131	Warmwater Marginal Fish Life	NA	3		
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NA			
SD-JA-R-DAWSON_01 Dawson Creek	James River to Lake Henry	R117	Warmwater Marginal Fish Life	NON	5	TSS	DO , NH3 , NO3 , PH , SC , TDS , Temp
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-R-ELM_01 Elm River	Elm Lake to mouth	R118	Domestic Water Supply Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-FIRESTEEL_01 Firesteel Creek	West Fork Firesteel Creek to mouth	R119	Domestic Water Supply Warmwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NON FULL FULL	5	TDS Temp, TSS ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC
SD-JA-R-FOOT_01_USGS Foot Creek	Near Aberdeen, SD	R120	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON INS INS	5	DO DO	
SD-JA-R-JAMES_01 James River	North Dakota border to Mud Lake Reservoir	R121	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , TSS
SD-JA-R-JAMES_02 James River	Mud Lake Reservoir	R122	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_03 James River	Columbia Road Reservoir	R123	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_04 James River	Columbia Road Reservoir to near US HWY 12	R124	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	DO, TSS DO	ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-R-JAMES_05 James River	US HWY 12 to Mud Creek	R125	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	DO DO	ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_06 James River	Mud Creek to James River Diversion Dam	R126	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_07 James River	James River Diversion Dam to Huron 3rd Street Dam	R127	Domestic Water Supply Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_08 James River	Huron 3rd Street Dam to Sand Creek	R128	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL NON FULL	4A	MeHg MeHg	DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_09 James River	Sand Creek to I-90	R129	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_10 James River	I-90 to Yankton County line	R130	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL NON FULL	5	MeHg MeHg	DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-JAMES_11 James River	Yankton County line to mouth	R131	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON NON FULL	5	MeHg, TSS ECOLI MeHg	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-R-MAPLE_01 Maple River	ND border to Elm River	R132	Domestic Water Supply Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL FULL FULL FULL	5	TDS	DO , ECOLI , NH3 , NO3 , PH , SAR , SC , Temp , TSS
SD-JA-R-MOCCASIN_01 Moccasin Creek	S24, T123N, R64W to headwaters	R133	Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS INS	3		
SD-JA-R-MOCCASIN_02 Moccasin Creek	James River to S24, T123N, R64W	R134	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-JA-R-MUD_01 Mud Creek	James River to Hwy 37	R135	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	DO DO	NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-PIERRE_01 Pierre Creek	James River to S11, T102N, R58W	R136	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-JA-R-SNAKE_01 Snake Creek	James River to confluence with SF Snake Creek	R137	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-JA-R-TURTLE_01 Turtle Creek	James River to S17, T113N, R65W	R138	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-JA-R-WOLF_01 Wolf Creek	Wolf Creek Colony to S5, T103N, R56W	R139	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-JA-R-WOLF_02 Wolf Creek	Just above Wolf Creek Colony to the mouth.	R140	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NON INS INS	5	ECOLI	
SD-JA-R-WOLF_SP_01 Wolf Creek	Turtle Creek to S10, T114N, R66W	R141	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS

Little Missouri River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-LM-R-LITTLE_MISSOURI_01 Little Missouri River	Montana border to North Dakota border	R142	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL NON FULL	5	MeHg, TSS MeHg	DO , ECOLI , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp

Missouri River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MI-L-ANDES_01	Charles Mix County	L132	Warmwater Marginal Fish Life	NON	5	DO, PH	ALK , NH3 , NO3 , SC , TDS , TSS
Lake Andes			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-MI-L-BRAKKE_01	Lyman County	L133	Warmwater Permanent Fish Life	NON	4A	CHL-A, MeHg	
Brakke Dam			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-MI-L-BURKE_01	Gregory County	L134	Warmwater Semipermanent Fish Life	NON	4A	CHL-A, DO	ALK , ECOLI , MeHG , NH3 , NO3 , PH , SC , TDS , TSS
Burke Lake			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-MI-L-BYRE_01	Lyman County	L135	Warmwater Permanent Fish Life	NON	4A	CHL-A	MeHG
Byre Lake			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-MI-L-CAMPBELL_01	Campbell County	L136	Warmwater Semipermanent Fish Life	NON	5	DO, PH	ALK , NH3 , NO3 , SC , TDS , Temp , TSS
Lake Campbell			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-MI-L-CORSICA_01	Douglas County	L137	Warmwater Semipermanent Fish Life	NON	5	CHL-A, PH	
Corsica Lake			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-MI-L-COTTONWOOD_01	Sully County	L138	Warmwater Semipermanent Fish Life	NON	4A	MeHg	
Cottonwood Lake			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MI-L-DANTE_01	Charles Mix County	L139	Warmwater Permanent Fish Life	NON	5	DO, Temp	
Dante Lake			Immersion Recreation	NON		DO	
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-MI-L-EUREKA_01	McPherson County	L140	Warmwater Semipermanent Fish Life	FULL	1		
Eureka Lake			Immersion Recreation	FULL			ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-MI-L-FAIRFAX_01	Gregory County	L141	Warmwater Semipermanent Fish Life	INS	3		
Fairfax Lake			Immersion Recreation	INS			MeHG
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-MI-L-FATE_01	Lyman County	L142	Warmwater Permanent Fish Life	NON	4A	MeHg	
Fate Dam			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-MI-L-GEDDES_01	Charles Mix County	L143	Warmwater Semipermanent Fish Life	NON	4A	CHL-A, DO	
Geddes Lake			Immersion Recreation	NON		CHL-A, DO	ALK , NH3 , NO3 , PH , SC TDS , Temp , TSS
			Limited Contact Recreation	NON		CHL-A, DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-MI-L-HIDDENWOOD_01	Walworth County	L144	Warmwater Semipermanent Fish Life	INS	3		
Lake Hiddenwood			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-MI-L-HURLEY_01	Potter County	L145	Warmwater Permanent Fish Life	NON	4A	MeHg	
Lake Hurley			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MI-L-MCCOOK_01 McCook Lake	Union County	L146	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL FULL	5	Temp	ALK , CHL-A , DO , NH3 , NO3 , PH , SC , TDS , TSS
SD-MI-L-PLATTE_01 Platte Lake	Charles Mix County	L147	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS INS	3		
SD-MI-L-POCASSE_01 Lake Pocasse	Campbell County	L148	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON FULL	5	CHL-A CHL-A CHL-A	ALK , DO , NH3 , NO3 , PH, SC , TDS , Temp , TSS
SD-MI-L-POTTS_01 Potts Dam	Potter County	L149	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NA NA NON	5	MeHg MeHg	
SD-MI-L-ROOSEVELT_01 Roosevelt Lake	Tripp County	L150	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON NON	5	DO, MeHg DO DO MeHg	
SD-MI-L-SULLY_01 Sully Lake	Sully County	L151	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON NON NON FULL	5	CHL-A CHL-A CHL-A	ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
SD-MI-L-SULLY_DAM_01 Sully Dam	Tripp County	L152	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NA NA NA NA	3		

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MI-L-SWAN_01 Swan Lake	Walworth County	L153	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS NA NA INS	3		
SD-MI-L-YANKTON_01 Lake Yankton	Yankton County	L154	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS NA NA INS	3		
SD-MI-R-CHOTEAU_01 Choteau Creek	Lewis & Clark Lake to S34, T96N, R63W	R143	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-MI-R-CROW_01 Crow Creek	Bedashosha Lake to Jerauld County line	R144	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	TSS ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
SD-MI-R-EMANUEL_01 Emanuel Creek	Lewis and Clark Lake to S20, T94N, R60W	R145	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	4A	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-MI-R-FRANCIS_CASE_01 Missouri River (Lake Francis Case)	Big Bend Dam to Fort Randall Dam	R146	Domestic Water Supply Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters Commerce / Industry	FULL FULL FULL FULL FULL FULL FULL	1		DO , ECOLI , MeHG , NO3, PH , Sal/SAR , SC , TDS , Temp , TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MI-R-LEWIS_AND_CLARK_01 Missouri River (Lewis and Clark Lake)	Fort Randall Dam to North Sioux City	R147	Domestic Water Supply	FULL	1		DO , ECOLI , MeHG , NH3 NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
			Warmwater Permanent Fish Life	FULL			
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
			Commerce / Industry	FULL			
SD-MI-R-MEDICINE_01 Medicine Creek	Lake Sharpe to US Hwy 83	R148	Warmwater Marginal Fish Life	FULL	5		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		TDS	
			Irrigation Waters	NON		SC	
SD-MI-R-MEDICINE_KNOLL_01 Medicine Knoll Creek	Lake Sharpe to confluence with its north and south forks	R149	Warmwater Marginal Fish Life	FULL	1		DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-MI-R-OAHE_01 Missouri River (Lake Oahe)	North Dakota border to Oahe Dam	R150	Domestic Water Supply	FULL	4A		DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
			Coldwater Permanent Fish Life	NON		MeHg	
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
			Irrigation Waters	FULL			
			Commerce / Industry	FULL			
SD-MI-R-OAK_01_USGS Oak Creek	S20, T21N, R28E to Oahe	R151	Warmwater Marginal Fish Life	INS	3		
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	INS			
			Irrigation Waters	INS			
SD-MI-R-PLATTE_01_USGS Platte Creek	Near Platte, SD	R152	Warmwater Marginal Fish Life	FULL	5		DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MI-R-PONCA_01		R153	Warmwater Semipermanent Fish Life	NON	5	TSS	
Ponca Creek	SD/NE border to US Hwy 183		Limited Contact Recreation	NON		ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-MI-R-SHARPE_01		R154	Domestic Water Supply	FULL	5		
Missouri River (Lake Sharpe)			Coldwater Permanent Fish Life	NON		Temp	
			Immersion Recreation	FULL			DO , ECOLI , NH3 , NO3 , PH , Sal/SAR , SC , TDS , TSS
	Oahe Dam to Big Bend Dam		Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
			Commerce / Industry	FULL			
SD-MI-R-SPRING_01		R155	Warmwater Semipermanent Fish Life	NON	5	DO	
Spring Creek	Lake Pocasse to US HWY 83		Limited Contact Recreation	NON		DO	ECOLI , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp , TSS
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Minnesota River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MN-L-ALICE_01 Lake Alice	Deuel County	L155	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON INS INS NON	4A	MeHg MeHg	
SD-MN-L-BIG_STONE_01 Big Stone Lake	Roberts County	L156	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON FULL FULL FULL FULL	5	Temp	ALK , DO , NH3 , NO3 , PH , SC , TDS , TSS
SD-MN-L-COCHRANE_01 Lake Cochrane	Deuel County	L157	Warmwater Permanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	FULL FULL FULL FULL	1		ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , TSS
SD-MN-L-DRYWOOD_NORTH_01 Lake Drywood North	Roberts County (formerly SD-BS-L-DRYWOOD_NORTH_01)	L158	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS NA NA INS	3		
SD-MN-L-FISH_01 Fish Lake	Deuel County	L159	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	FULL FULL FULL FULL	1		ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
SD-MN-L-HENDRICKS_01 Lake Hendricks	Brookings County	L160	Warmwater Semipermanent Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	FULL FULL FULL FULL	1		ALK , CHL-A , DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-MN-L-OAK_01 Oak Lake	Brookings County	L161	Warmwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	INS INS INS INS	3		

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MN-L-OLIVER_01 Lake Oliver	Deuel County	L162	Warmwater Marginal Fish Life	FULL	1		ALK , CHL-A , DO , ECOLI NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-MN-L-PUNISHED_WOMAN_01 Punished Woman Lake	Codington County	L163	Warmwater Semipermanent Fish Life	FULL	1		ALK , DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Immersion Recreation	FULL			
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-MN-L-SUMMIT_01 Summit Lake	Grant County	L164	Warmwater Semipermanent Fish Life	NON	4A	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-MN-L-TURTLE_FOOT_01 Turtle Foot Lake	Marshall County	L165	Warmwater Marginal Fish Life	INS	3		
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-MN-R-LAC_QUI_PARLE_W_BR_01 Lac Qui Parle River, West Branch	SD/MN border to S8, T115N, R47W	R156	Coldwater Marginal Fish Life	FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-MN-R-LITTLE_MINNESOTA_01 Little Minnesota River	Big Stone Lake to S24, T126N, R51W	R157	Warmwater Semipermanent Fish Life	FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			
SD-MN-R-LITTLE_MINNESOTA_02 Little Minnesota River	S24, T126N, R51W to S15, T128N, R52W	R158	Warmwater Semipermanent Fish Life	NON	5	DO	NH3 , NO3 , PH , SC , TDS Temp , TSS
			Limited Contact Recreation	NON		DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MN-R-MUD_01 Mud Creek	SF Yellowbank River to S22, T118N, R48W	R159	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
SD-MN-R-WHETSTONE_01 Whetstone River	SD/MN border to confluence with its north and south forks	R160	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-MN-R-WHETSTONE_N_FORK_01 North Fork Whetstone River	SD Hwy 15 to Whetstone River	R161	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-MN-R-WHETSTONE_S_FORK_01 South Fork Whetstone River	Headwaters to Lake Farley	R162	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-MN-R-WHETSTONE_S_FORK_02 South Fork Whetstone River	Lake Farley to mouth	R163	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-MN-R-YELLOW_BANK_N_FORK_01 North Fork Yellow Bank River	SD/MN border to S27, T120N, R48W	R164	Warmwater Permanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	4A	ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-MN-R-YELLOW_BANK_S_FORK_01 South Fork Yellow Bank River	SD/MN border to S33, T118N, R49W	R165	Coldwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp , TSS

Moreau River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-MU-L-COAL_SPRINGS_01	Perkins County	L166	Warmwater Permanent Fish Life	NON	5	MeHg, PH	
Coal Springs Reservoir			Immersion Recreation	INS			ALK , SC , TDS , Temp , TSS
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg, PH	
SD-MU-L-LITTLE_MOREAU_NO1_01	Dewey County	L167	Warmwater Permanent Fish Life	NON	5	MeHg, PH	
Little Moreau No. 1			Immersion Recreation	FULL			ALK , DO , NH3 , NO3 , SC TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg, PH	
SD-MU-R-MOREAU_01	North and South Forks to Ziebach/Perkins county line	R166	Warmwater Semipermanent Fish Life	NON	5	TSS	
Moreau River			Limited Contact Recreation	NON		ECOLI	As , DO , NH3 , NO3 , PH , Ra , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	
SD-MU-R-MOREAU_02	Ziebach/Perkins county line to Green Grass	R167	Warmwater Semipermanent Fish Life	NON	5	TSS	
Moreau River			Limited Contact Recreation	FULL			DO , ECOLI , NH3 , NO3 , PH , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	
SD-MU-R-MOREAU_03	Green Grass to mouth	R168	Warmwater Semipermanent Fish Life	NON	5	TSS	
Moreau River			Limited Contact Recreation	NON		ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	NON		Sal/SAR	
SD-MU-R-MOREAU_S_FORK_01	Alkali Creek to mouth	R169	Warmwater Marginal Fish Life	FULL	5		
South Fork Moreau River			Limited Contact Recreation	FULL			DO , ECOLI , NH3 , NO3 , PH , Temp , TSS
			Fish and Wildlife Prop, Rec, Stock	NON		SC, TDS	
			Irrigation Waters	NON		Sal/SAR, SC	
SD-MU-R-RABBIT_01	Antelope Creek to Moreau River	R170	Warmwater Marginal Fish Life	NON	5	TSS	
Rabbit Creek			Immersion Recreation	NON		ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Niobrara River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-NI-L-DOG_EAR_01 Dog Ear Lake	Tripp County	L168	Warmwater Semipermanent Fish Life	NON	5	MeHg	
			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-NI-L-RAHN_01 Rahn Lake	Tripp County	L169	Warmwater Permanent Fish Life	NON	5	CHL-A, DO	ALK , NH3 , NO3 , PH , Temp , TSS
			Immersion Recreation	NON		CHL-A, DO	
			Limited Contact Recreation	NON		CHL-A, DO	
			Fish and Wildlife Prop, Rec, Stock	FULL			
SD-NI-R-KEYA_PAHA_01 Keya Paha River	SD/NE border to confluence with Antelope Creek	R171	Warmwater Semipermanent Fish Life	NON	4A	TSS	DO , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp
			Limited Contact Recreation	NON		ECOLI	
			Fish and Wildlife Prop, Rec, Stock	FULL			
			Irrigation Waters	FULL			

Red River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-RD-L-TRAVERSE_01 Lake Traverse	Roberts County	L170	Warmwater Permanent Fish Life	NON	5	Temp	
			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
			Irrigation Waters	INS			
SD-RD-L-WHITE_01 White Lake	Marshall County	L171	Warmwater Permanent Fish Life	NON	4A	CHL-A	ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	FULL			

Vermillion River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-VM-L-E_VERMILLION_01	McCook County	L172	Warmwater Permanent Fish Life	NON	5	CHL-A, MeHg, Temp	
East Vermillion Lake			Immersion Recreation	NON		CHL-A	
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-VM-L-HENRY_01	Kingsbury County	L173	Warmwater Marginal Fish Life	NON	5	MeHg, PH	
Lake Henry			Immersion Recreation	FULL			ALK , NH3 , NO3 , SC , TDS , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-VM-L-MARINDAHL_01	Yankton County	L174	Warmwater Permanent Fish Life	INS	3		MeHG
Marindahl Lake			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-VM-L-SILVER_01	Hutchinson County	L175	Warmwater Marginal Fish Life	NON	5	PH	
Silver Lake			Immersion Recreation	INS			
			Limited Contact Recreation	INS			
			Fish and Wildlife Prop, Rec, Stock	INS			
SD-VM-L-SWAN_01	Turner County	L176	Warmwater Semipermanent Fish Life	NA	3		
Swan Lake			Immersion Recreation	NA			
			Limited Contact Recreation	NA			
			Fish and Wildlife Prop, Rec, Stock	NA			
SD-VM-L-THOMPSON_01	Kingsbury County	L177	Warmwater Permanent Fish Life	NON	5	CHL-A, MeHg	
Lake Thompson			Immersion Recreation	NON		CHL-A	ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
			Limited Contact Recreation	NON		CHL-A	
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	
SD-VM-L-WHITEWOOD_01	Kingsbury County	L178	Warmwater Marginal Fish Life	NON	4A	MeHg	
Whitewood Lake			Immersion Recreation	FULL			ALK , DO , NH3 , NO3 , PH SC , TDS , Temp , TSS
			Limited Contact Recreation	FULL			
			Fish and Wildlife Prop, Rec, Stock	NON		MeHg	

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-VM-R-LONG_01 Long Creek	Vermillion River to Highway 44	R172	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	TSS ECOLI	DO , NH3 , NO3 , PH , SC , TDS , Temp
SD-VM-R-VERMILLION_01 Vermillion River	Headwaters to Turkey Ridge Creek	R173	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	TSS ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
SD-VM-R-VERMILLION_02 Vermillion River	Turkey Ridge Creek to Baptist Creek	R174	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	TSS ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
SD-VM-R-VERMILLION_03 Vermillion River	Baptist Creek to mouth	R175	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	NON NON FULL FULL	5	TSS ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
SD-VM-R-VERMILLION_E_FORK_01 East Fork Vermillion River	McCook/Lake County line to Little Vermillion River	R176	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-VM-R-VERMILLION_E_FORK_02 East Fork Vermillion River	Little Vermillion River to mouth	R177	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp , TSS
SD-VM-R-VERMILLION_WEST_FORK_01_USGS West Fork Vermillion River	Vermillion River to McCook-Miner County Line	R178	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON INS INS	4A	ECOLI	TSS

White River Basin

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-WH-L-ALLAN_DAM_01 Allan Dam	Bennett County	L179	Coldwater Marginal Fish Life Immersion Recreation Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock	NON FULL FULL FULL	5	PH	ALK , DO , NH3 , NO3 , SC TDS , Temp , TSS
SD-WH-R-BLACKPIPE_01_USGS Black Pipe Creek	S25, T42N, R33W to White River	R179	Warmwater Marginal Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NA INS INS	3		
SD-WH-R-COTTONWOOD_01 Cottonwood Creek	Headwaters to White River	R180	Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NON	5	SC	
SD-WH-R-LITTLE_WHITE_01 Little White River	Rosebud Creek to mouth	R181	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , Sal/SAR , SC , TDS , Temp
SD-WH-R-LITTLE_WHITE_02_USGS Little White River	S6, T36N, R39W to Rosebud Creek	R182	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	INS NA INS INS	3		
SD-WH-R-WHITE_01 White River	NE/SD border to Willow Creek	R183	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL FULL FULL FULL	1		As , DO , ECOLI , NH3 , NO3 , PH , Ra , Sal/SAR , SC , TDS , Temp , TSS
SD-WH-R-WHITE_02 White River	Willow Creek to Pass Creek	R184	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp TSS

Waterbody / AU-ID	Location	Map ID	Use	Support	EPA Category	Nonsupporting Parameters:	Supporting Parameters:
SD-WH-R-WHITE_03 White River	Pass Creek to Little White River	R185	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL NON	5	ECOLI Sal/SAR	DO , NH3 , NO3 , PH , SC , TDS , Temp , TSS
SD-WH-R-WHITE_04 White River	Little White River to confluence with Missouri River	R186	Warmwater Semipermanent Fish Life Limited Contact Recreation Fish and Wildlife Prop, Rec, Stock Irrigation Waters	FULL NON FULL FULL	5	ECOLI	DO , NH3 , NO3 , PH , Sal/SAR, SC , TDS , Temp TSS

APPENDIX D

303(D) SUMMARY

AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-BA-L-FREEMAN_01	Freeman Lake	Jackson County	CHLOROPHYLL-*a*	2014	2027	Low
SD-BA-L-FREEMAN_01	Freeman Lake	Jackson County	DO	2010	2029	Low
SD-BA-L-HAYES_01	Hayes Lake	Stanley County	DO	2020	2032	Low
SD-BA-L-MURDO_01	Murdo Dam	Jones County	DO	2012	2024	High
SD-BA-L-WAGGONER_01	Waggoner Lake	Haakon County	CHLOROPHYLL-*a*	2010	2024	High
SD-BA-R-BAD_01	Bad River	Stanley County line to mouth	*E. COLI*	2016	2030	Low
SD-BF-L-IRON_CREEK_01	Iron Creek Lake	Lawrence County	TEMPERATURE	2010	2030	Low
SD-BF-L-MIRROR_EAST_01	Mirror Lake East	Lawrence County	TEMPERATURE	2006	2030	Low
SD-BF-L-MIRROR_WEST_01	Mirror Lake West	Lawrence County	TEMPERATURE	2008	2030	Low
SD-BF-L-NEWELL_CITY_01	Newell City Pond	Butte County	TEMPERATURE	2010	2030	Low
SD-BF-R-BELLE_FOURCHE_02	Belle Fourche River	Redwater River to Whitewood Creek	*E. COLI*	2020	2026	High
SD-BF-R-BELLE_FOURCHE_03	Belle Fourche River	Whitewood Creek to Willow Creek	*E. COLI*	2016	2026	High
SD-BF-R-BELLE_FOURCHE_04	Belle Fourche River	Willow Creek to Alkali Creek	*E. COLI*	2020	2026	High
SD-BF-R-DEADWOOD_01	Deadwood Creek	Rutabaga Gulch to Whitewood Creek	*E. COLI*	2014	2020	High
SD-BF-R-HORSE_01_USGS	Horse Creek	Indian Creek to mouth	*E. COLI*	2016	2026	High
SD-BF-R-WHITEWOOD_02	Whitewood Creek	Gold Run Creek to Deadwood Creek	*E. COLI*	2018	2030	Low
SD-BF-R-WHITEWOOD_04	Whitewood Creek	Spruce Gulch to Sandy Creek	*E. COLI*	2012	2024	High
SD-BF-R-WHITEWOOD_05	Whitewood Creek	Sandy Creek to I-90	PH	2006	2030	Low
SD-BF-R-WHITEWOOD_06	Whitewood Creek	I-90 to Crow Creek	PH	2008	2030	Low
SD-BF-R-WHITEWOOD_07	Whitewood Creek	Crow Creek to mouth	*E. COLI*	2016	2026	High
SD-BS-L-ALBERT_01	Lake Albert	Kingsbury County	CHLOROPHYLL-*a*	2020	2028	High
SD-BS-L-ALBERT_01	Lake Albert	Kingsbury County	DO	2014	2028	High
SD-BS-L-BLUE_DOG_01	Blue Dog Lake	Day County	PH	2016	2027	Low
SD-BS-L-BULLHEAD_01	Bullhead Lake	Deuel County	CHLOROPHYLL-*a*	2010	2028	Low
SD-BS-L-GRASS_01	Grass Lake	Codington County	MERCURY IN FISH	2020	2022	High
SD-BS-L-MINNEWASTA_01	Minnewasta Lake	Day County	CHLOROPHYLL-*a*	2014	2028	Low
SD-BS-L-SCOTT_01	Scott Lake	Minnehaha County	MERCURY IN FISH	2020	2022	High
SD-BS-L-WAUBAY_01	Waubay Lake	Day County	CHLOROPHYLL-*a*	2014	2027	Low
SD-BS-R-BACHELOR_01	Bachelor Creek	S28, T106N, R 50W to Big Sioux River	*E. COLI*	2020	2028	High

AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-BS-R-BEAVER_01	Beaver Creek	Big Sioux River to S9, T98N, R49W	*E. COLI*	2020	2028	High
SD-BS-R-BEAVER_02	Beaver Creek	Split Rock Creek to South Dakota-Minnesota border	*E. COLI*	2014	2022	High
SD-BS-R-BIG_SIOUX_01	Big Sioux River	S28, T121N, R52W to Lake Kampeska	DO	2004	2030	Low
SD-BS-R-BIG_SIOUX_01	Big Sioux River	S28, T121N, R52W to Lake Kampeska	*E. COLI*	2010	2020	High
SD-BS-R-BIG_SIOUX_02	Big Sioux River	Lake Kampeska to Willow Creek	DO	2014	2030	Low
SD-BS-R-BIG_SIOUX_02	Big Sioux River	Lake Kampeska to Willow Creek	*E. COLI*	2016	2024	High
SD-BS-R-BIG_SIOUX_04	Big Sioux River	Stray Horse Creek to near Volga	DO	2020	2032	Low
SD-BS-R-BIG_SIOUX_05	Big Sioux River	Near Volga to Brookings	TSS	2004	2022	High
SD-BS-R-BIG_SIOUX_06	Big Sioux River	Brookings to Brookings/Moody County Line	TSS	2004	2022	High
SD-BS-R-BIG_SIOUX_08	Big Sioux River	S2, T104N, R49W to I-90	MERCURY IN FISH	2020	2022	High
SD-BS-R-BIG_SIOUX_13	Big Sioux River	Above Brandon to Nine Mile Creek	*E. COLI*	2012	2026	High
SD-BS-R-BIG_SIOUX_13	Big Sioux River	Above Brandon to Nine Mile Creek	TSS	2004	2026	High
SD-BS-R-BIG_SIOUX_14	Big Sioux River	Nine Mile Creek to near Fairview	TSS	2004	2026	High
SD-BS-R-BRULE_01	Brule Creek	Big Sioux River to confluence of its east and west forks	*E. COLI*	2014	2020	High
SD-BS-R-BRULE_01	Brule Creek	Big Sioux River to confluence of its east and west forks	TSS	2018	2020	High
SD-BS-R-EAST_BRULE_01	East Brule Creek	confluence with Brule Creek to S3, T95N, R49W	*E. COLI*	2020	2026	High
SD-BS-R-EAST_BRULE_01	East Brule Creek	confluence with Brule Creek to S3, T95N, R49W	TSS	2008	2026	High
SD-BS-R-FLANDREAU_01	Flandreau Creek	Big Sioux River to Minnesota Border	*E. COLI*	2014	2028	High
SD-BS-R-HIDEWOOD_01	Hidewood Creek	Big Sioux River to U.S. Highway 15	*E. COLI*	2020	2028	High
SD-BS-R-MEDARY_01	Medary Creek	MN border to Big Sioux River	*E. COLI*	2020	2028	High
SD-BS-R-PIPESTONE_01	Pipestone Creek	SD/MN border in Minnehaha County to SD/MN border in Moody County	TSS	2020	2028	High
SD-BS-R-SIXMILE_01	Six Mile Creek	Big Sioux River to S30, T112N, R48W	DO	2020	2032	Low
SD-BS-R-SIXMILE_01	Six Mile Creek	Big Sioux River to S30, T112N, R48W	*E. COLI*	2014	2021	High
SD-BS-R-SKUNK_01	Skunk Creek	Brandt Lake to Big Sioux River	*E. COLI*	2014	2022	High

AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-BS-R-SPLIT_ROCK_01_USGS	Split Rock Creek	West Pipestone Creek to Big Sioux River	*E. COLI*	2018	2030	Low
SD-BS-R-SPLIT_ROCK_01_USGS	Split Rock Creek	West Pipestone Creek to Big Sioux River	TSS	2020	2032	Low
SD-BS-R-UNION_01	Union Creek	Big Sioux River to confluence with East and West Forks	TSS	2008	2024	High
SD-BS-R-WILLOW_01	Willow Creek	Big Sioux River to S7, T117N, R50W	*E. COLI*	2018	2028	High
SD-CH-L-CENTER_01	Center Lake	Custer County	DO	2020	2030	Low
SD-CH-L-CENTER_01	Center Lake	Custer County	TEMPERATURE	2008	2030	Low
SD-CH-L-COLD_BROOK_01	Cold Brook Reservoir	Fall River County	TEMPERATURE	2006	2030	Low
SD-CH-L-DEERFIELD_01	Deerfield Lake	Pennington County	TEMPERATURE	2010	2030	Low
SD-CH-L-DURKEE_01	Durkee Lake	Meade County	MERCURY IN FISH	2020	2022	High
SD-CH-L-NEW_WALL_01	New Wall Lake	Pennington County	MERCURY IN FISH	2018	2022	High
SD-CH-L-NEW_WALL_01	New Wall Lake	Pennington County	PH	2010	2032	Low
SD-CH-L-PACTOLA_01	Pactola Reservoir	Pennington County	TEMPERATURE	2020	2033	Low
SD-CH-L-SHERIDAN_01	Sheridan Lake	Pennington County	TEMPERATURE	2006	2033	Low
SD-CH-L-STOCKADE_01	Stockade Lake	Custer County	DO	2020	2032	Low
SD-CH-L-SYLVAN_01	Sylvan Lake	Custer County	DO	2020	2032	Low
SD-CH-L-SYLVAN_01	Sylvan Lake	Custer County	TEMPERATURE	2008	2032	Low
SD-CH-R-BEAVER_01	Beaver Creek	WY border to Cheyenne River	Sp Conductance	2004	2032	Low
SD-CH-R-BEAVER_01	Beaver Creek	WY border to Cheyenne River	TDS	2004	2032	Low
SD-CH-R-BOX_ELDER_01	Box Elder Creek	Cheyenne River to S22, T2N, R8E	*E. COLI*	2016	2026	High
SD-CH-R-CHERRY_01	Cherry Creek	Cheyenne River to Sulphur Creek	Sp Conductance	2018	2032	Low
SD-CH-R-CHEYENNE_01	Cheyenne River	WY border to Beaver Creek	Salinity/SAR	2018	2032	Low
SD-CH-R-CHEYENNE_01	Cheyenne River	WY border to Beaver Creek	Sp Conductance	2004	2032	Low
SD-CH-R-CHEYENNE_01	Cheyenne River	WY border to Beaver Creek	TDS	2004	2032	Low
SD-CH-R-CHEYENNE_01	Cheyenne River	WY border to Beaver Creek	TSS	2012	2026	High
SD-CH-R-CHEYENNE_02	Cheyenne River	Beaver Creek to Cascade Creek	*E. COLI*	2014	2028	High
SD-CH-R-CHEYENNE_02	Cheyenne River	Beaver Creek to Cascade Creek	Sp Conductance	2004	2032	Low
SD-CH-R-CHEYENNE_02	Cheyenne River	Beaver Creek to Cascade Creek	TSS	2004	2028	High
SD-CH-R-CHEYENNE_02B	Cheyenne River	Cascade Creek to Angostura Reservoir	TSS	2018	2028	High
SD-CH-R-CHEYENNE_03	Cheyenne River	Fall River to Cedar Creek	TSS	2004	2028	High

AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-CH-R-CHEYENNE_04	Cheyenne River	Cedar Creek to Belle Fourche River	TSS	2004	2028	High
SD-CH-R-CHEYENNE_05	Cheyenne River	Belle Fourche River to Bull Creek	TSS	2004	2028	High
SD-CH-R-CHEYENNE_06	Cheyenne River	Bull Creek to Lake Oahe	TSS	2004	2028	High
SD-CH-R-ELK_01_USGS	Elk Creek	S9, T3N, R7E to S27, T4N, R3E	*E. COLI*	2018	2028	High
SD-CH-R-HIGHLAND_01_USGS	Highland Creek	Wind Cave Natl Park and near Pringle, SD	PH	2006	2032	Low
SD-CH-R-HIGHLAND_01_USGS	Highland Creek	Wind Cave Natl Park and near Pringle, SD	TEMPERATURE	2006	2032	Low
SD-CH-R-HORSEHEAD_01_USGS	Horsehead Creek	At Oelrichs	Sp Conductance	2004	2032	Low
SD-CH-R-RAPID_03	Rapid Creek	Canyon Lake to S15, T1N, R8E	*E. COLI*	2018	2024	High
SD-CH-R-RAPID_04	Rapid Creek	S15, T1N, R8E to above Farmingdale	*E. COLI*	2014	2022	High
SD-CH-R-SPRING_01	Spring Creek	S5, T2S, R3E to Sheridan Lake	*E. COLI*	2014	2022	High
SD-CH-R-VICTORIA_01_USGS	Victoria Creek	Rapid Creek to S19, T1N, R6E	TEMPERATURE	2016	2032	Low
SD-GR-L-EAST_LEMMON_01	East Lemmon Lake	Perkins County	MERCURY IN FISH	2018	2022	High
SD-GR-L-ISABEL_01	Lake Isabel	Dewey County	CHLOROPHYLL-*a*	2010	2032	Low
SD-GR-L-ISABEL_01	Lake Isabel	Dewey County	MERCURY IN FISH	2016	2032	Low
SD-GR-L-PUDWELL_01	Pudwell Dam	Corson County	MERCURY IN FISH	2016	2032	Low
SD-GR-L-SHADEHILL_01	Shadehill Reservoir	Perkins County	Salinity/SAR	2004	2032	Low
SD-GR-R-BULL_01	Bull Creek	SF Grand River to S15, T21N, R5E	*E. COLI*	2016	2032	Low
SD-GR-R-BULL_01	Bull Creek	SF Grand River to S15, T21N, R5E	Salinity/SAR	2012	2032	Low
SD-GR-R-CROOKED_01	Crooked Creek	ND border to S34, T23N, R5E	Salinity/SAR	2012	2032	Low
SD-GR-R-CROOKED_01	Crooked Creek	ND border to S34, T23N, R5E	Sp Conductance	2014	2032	Low
SD-GR-R-GRAND_01	Grand River	Shadehill Reservoir to Corson County line	Salinity/SAR	2016	2032	Low
SD-GR-R-GRAND_01	Grand River	Shadehill Reservoir to Corson County line	TEMPERATURE	2004	2032	Low
SD-GR-R-GRAND_02	Grand River	Corson County line to Bullhead	Salinity/SAR	2004	2032	Low
SD-GR-R-GRAND_02	Grand River	Corson County line to Bullhead	TSS	2004	2032	Low
SD-GR-R-GRAND_03	Grand River	Bullhead to mouth	Salinity/SAR	2020	2032	Low
SD-GR-R-GRAND_03	Grand River	Bullhead to mouth	TSS	2004	2032	Low
SD-GR-R-GRAND_N_FORK_01	Grand River, North Fork	North Dakota border to Shadehill Reservoir	Salinity/SAR	2004	2032	Low

AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-GR-R-GRAND_N_FORK_01	Grand River, North Fork	North Dakota border to Shadehill Reservoir	Sp Conductance	2018	2032	Low
SD-GR-R-GRAND_S_FORK_01	Grand River, South Fork	S13, T18N, R3E to SD Hwy 79	*E. COLI*	2016	2032	Low
SD-GR-R-GRAND_S_FORK_01	Grand River, South Fork	S13, T18N, R3E to SD Hwy 79	Salinity/SAR	2006	2032	Low
SD-GR-R-GRAND_S_FORK_01	Grand River, South Fork	S13, T18N, R3E to SD Hwy 79	TSS	2004	2032	Low
SD-GR-R-GRAND_S_FORK_02	Grand River, South Fork	SD Hwy 79 to Shadehill Reservoir	*E. COLI*	2016	2032	Low
SD-GR-R-GRAND_S_FORK_02	Grand River, South Fork	SD Hwy 79 to Shadehill Reservoir	Salinity/SAR	2004	2032	Low
SD-GR-R-GRAND_S_FORK_02	Grand River, South Fork	SD Hwy 79 to Shadehill Reservoir	TSS	2004	2032	Low
SD-JA-L-BIERMAN_01	Bierman Dam	Spink County	CHLOROPHYLL-*a*	2010	2028	Low
SD-JA-L-BYRON_01	Lake Byron	Beadle County	PH	2010	2028	Low
SD-JA-L-CARTHAGE_01	Lake Carthage	Miner County	CHLOROPHYLL-*a*	2010	2028	Low
SD-JA-L-CLEAR_M_01	Clear Lake	Marshall County (formerly SD-BS-L-CLEAR_M_01)	MERCURY IN FISH	2020	2022	High
SD-JA-L-COTTONWOOD_M_01	Cottonwood Lake	Marshall County (formerly SD-BS-L-COTTONWOOD_01)	PH	2020	2032	Low
SD-JA-L-CRESBARD_01	Cresbard Lake	Faulk County	PH	2010	2032	Low
SD-JA-L-FAULKTON_01	Lake Faulkton	Faulk County	DO	2018	2032	Low
SD-JA-L-FOUR_MILE_01	Four Mile Lake	Marshall County (formerly SD-BS-L-FOUR_MILE_01)	PH	2012	2032	Low
SD-JA-L-HENRY_01	Henry Reservoir	Near Scotland, SD	DO	2020	2032	Low
SD-JA-L-JONES_01	Jones Lake	Hand County	PH	2006	2032	Low
SD-JA-L-LATHAM_01	Latham	Faulk County	DO	2012	2032	Low
SD-JA-L-LOUISE_01	Lake Louise	Hand County	DO	2014	2032	Low
SD-JA-L-LOUISE_01	Lake Louise	Hand County	PH	2008	2032	Low
SD-JA-L-MINA_01	Mina Lake	Edmunds County	DO	2012	2032	Low
SD-JA-L-MITCHELL_01	Lake Mitchell	Davison County	TEMPERATURE	2018	2032	Low
SD-JA-L-N_BUFFALO_01	North Buffalo Lake	Marshall County (formerly SD-BS-L-N_BUFFALO_01)	MERCURY IN FISH	2020	2022	High
SD-JA-L-NINE_MILE_01	Nine Mile Lake	Marshall County (formerly SD-BS-L-NINE_MILE_01)	PH	2010	2032	Low
SD-JA-L-PIERPONT_01	Pierpont Lake	Day County	TEMPERATURE	2012	2032	Low
SD-JA-L-PIYAS_01	Piyas Lake	Marshall	MERCURY IN FISH	2020	2022	High

AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-JA-L-RAVINE_01	Ravine Lake	Beadle County	DO	2012	2032	Low
SD-JA-L-REDFIELD_01	Lake Redfield	Spink County	DO	2010	2032	Low
SD-JA-L-ROSETTE_01	Rosette Lake	Edmunds County	CHLOROPHYLL-*a*	2014	2028	Low
SD-JA-L-ROY_01	Roy Lake	Marshall County (formerly SD-BS-L-ROY_01)	MERCURY IN FISH	2018	2022	High
SD-JA-L-STINK_01	Stink Lake	Codington County	MERCURY IN FISH	2020	2022	High
SD-JA-L-TWIN_01	Twin Lakes	Sanborn County	CHLOROPHYLL-*a*	2010	2026	High
SD-JA-L-TWIN_01	Twin Lakes	Sanborn County	DO	2016	2026	High
SD-JA-L-WILMARTH_01	Wilmarth Lake	Aurora County	PH	2012	2032	Low
SD-JA-R-DAWSON_01	Dawson Creek	James River to Lake Henry	TSS	2020	2026	High
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	*E. COLI*	2010	2028	High
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	TEMPERATURE	2004	2032	Low
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	TDS	2004	2032	Low
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	TSS	2018	2028	High
SD-JA-R-FOOT_01_USGS	Foot Creek	Near Aberdeen, SD	DO	2012	2032	Low
SD-JA-R-JAMES_04	James River	Columbia Road Reservoir to near US HWY 12	DO	2012	2032	Low
SD-JA-R-JAMES_04	James River	Columbia Road Reservoir to near US HWY 12	TSS	2016	2028	High
SD-JA-R-JAMES_05	James River	US HWY 12 to Mud Creek	DO	2020	2032	Low
SD-JA-R-JAMES_10	James River	I-90 to Yankton County line	MERCURY IN FISH	2020	2022	High
SD-JA-R-JAMES_11	James River	Yankton County line to mouth	*E. COLI*	2016	2028	High
SD-JA-R-JAMES_11	James River	Yankton County line to mouth	MERCURY IN FISH	2020	2022	High
SD-JA-R-JAMES_11	James River	Yankton County line to mouth	TSS	2004	2022	High
SD-JA-R-MAPLE_01	Maple River	ND border to Elm River	TDS	2020	2032	Low
SD-JA-R-MOCCASIN_02	Moccasin Creek	James River to S24, T123N, R64W	*E. COLI*	2018	2030	Low
SD-JA-R-MUD_01	Mud Creek	James River to Hwy 37	DO	2006	2032	Low
SD-JA-R-WOLF_01	Wolf Creek	Wolf Creek Colony to S5, T103N, R56W	*E. COLI*	2012	2020	High
SD-JA-R-WOLF_02	Wolf Creek	Just above Wolf Creek Colony to the mouth	*E. COLI*	2012	2020	High

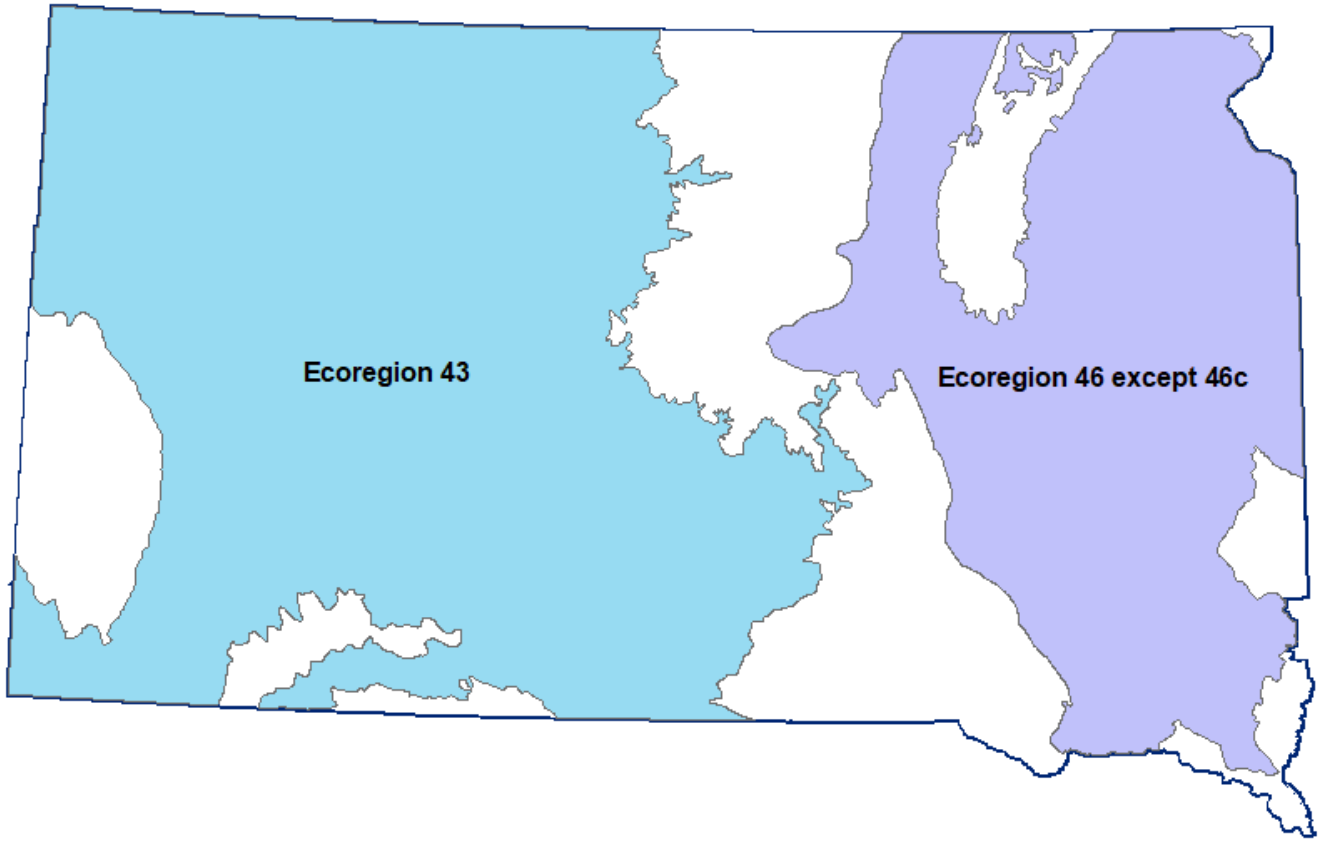
AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-LM-R-LITTLE_MISSOURI_01	Little Missouri River	Montana border to North Dakota border	TSS	2010	2025	High
SD-MI-L-ANDES_01	Lake Andes	Charles Mix County	DO	2006	2032	Low
SD-MI-L-ANDES_01	Lake Andes	Charles Mix County	PH, HIGH	2018	2032	Low
SD-MI-L-CAMPBELL_01	Lake Campbell	Campbell County	DO	2020	2032	Low
SD-MI-L-CAMPBELL_01	Lake Campbell	Campbell County	PH	2010	2032	Low
SD-MI-L-CORSICA_01	Corsica Lake	Douglas County	PH	2008	2032	Low
SD-MI-L-DANTE_01	Dante Lake	Charles Mix County	TEMPERATURE	2014	2032	Low
SD-MI-L-MCCOOK_01	McCook Lake	Union County	TEMPERATURE	2010	2032	Low
SD-MI-L-POCASSE_01	Lake Pocasse	Campbell County	CHLOROPHYLL-*a*	2010	2026	High
SD-MI-L-POTTS_01	Potts Dam	Potter County	MERCURY IN FISH	2020	2022	High
SD-MI-L-ROOSEVELT_01	Roosevelt Lake	Tripp County	DO	2018	2032	Low
SD-MI-L-SULLY_01	Sully Lake	Sully County	CHLOROPHYLL-*a*	2020	2026	High
SD-MI-R-CROW_01	Crow Creek	Bedashosha Lake to Jerauld County line	*E. COLI*	2016	2028	High
SD-MI-R-CROW_01	Crow Creek	Bedashosha Lake to Jerauld County line	TSS	2016	2028	High
SD-MI-R-MEDICINE_01	Medicine Creek	Lake Sharpe to US Hwy 83	Sp Conductance	2004	2032	Low
SD-MI-R-MEDICINE_01	Medicine Creek	Lake Sharpe to US Hwy 83	TDS	2018	2032	Low
SD-MI-R-PLATTE_01_USGS	Platte Creek	Near Platte, SD	*E. COLI*	2020	2026	High
SD-MI-R-PONCA_01	Ponca Creek	SD/NE border to US Hwy 183	*E. COLI*	2016	2026	High
SD-MI-R-SHARPE_01	Missouri River (Lake Sharpe)	Oahe Dam to Big Bend Dam	TEMPERATURE	2010	2032	Low
SD-MI-R-SPRING_01	Spring Creek	Lake Pocasse to US HWY 83	DO	2006	2032	Low
SD-MN-L-BIG_STONE_01	Big Stone Lake	Roberts County	TEMPERATURE	2012	2032	Low
SD-MN-R-LITTLE_MINNESOTA_02	Little Minnesota River	S24, T126N, R51W to S15, T128N, R52W	DO	2020	2032	Low
SD-MN-R-MUD_01	Mud Creek	SF Yellowbank River to S22, T118N, R48W	*E. COLI*	2020	2026	High
SD-MN-R-WHETSTONE_N_FORK_01	North Fork Whetstone River	SD Hwy 15 to Whetstone River	*E. COLI*	2020	2026	High
SD-MN-R-WHETSTONE_S_FORK_01	South Fork Whetstone River	Headwaters to Lake Farley	*E. COLI*	2012	2020	High

AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-MN-R-WHETSTONE_S_FORK_02	South Fork Whetstone River	Lake Farley to mouth	*E. COLI*	2012	2020	High
SD-MU-L-COAL_SPRINGS_01	Coal Springs Reservoir	Perkins County	PH	2012	2032	Low
SD-MU-L-LITTLE_MOREAU_NO1_01	Little Moreau No. 1	Dewey County	PH	2020	2032	Low
SD-MU-R-MOREAU_01	Moreau River	North and South Forks to Ziebach/Perkins county line	*E. COLI*	2016	2028	Low
SD-MU-R-MOREAU_01	Moreau River	North and South Forks to Ziebach/Perkins county line	Salinity/SAR	2016	2032	Low
SD-MU-R-MOREAU_01	Moreau River	North and South Forks to Ziebach/Perkins county line	TSS	2006	2028	Low
SD-MU-R-MOREAU_02	Moreau River	Ziebach/Perkins county line to Green Grass	Salinity/SAR	2016	2032	Low
SD-MU-R-MOREAU_02	Moreau River	Ziebach/Perkins county line to Green Grass	TSS	2016	2028	Low
SD-MU-R-MOREAU_03	Moreau River	Green Grass to mouth	*E. COLI*	2010	2028	Low
SD-MU-R-MOREAU_03	Moreau River	Green Grass to mouth	Salinity/SAR	2018	2032	Low
SD-MU-R-MOREAU_03	Moreau River	Green Grass to mouth	TSS	2004	2028	Low
SD-MU-R-MOREAU_S_FORK_01	South Fork Moreau River	Alkali Creek to mouth	Salinity/SAR	2018	2032	Low
SD-MU-R-MOREAU_S_FORK_01	South Fork Moreau River	Alkali Creek to mouth	Sp Conductance	2016	2032	Low
SD-MU-R-MOREAU_S_FORK_01	South Fork Moreau River	Alkali Creek to mouth	TDS	2004	2032	Low
SD-MU-R-RABBIT_01	Rabbit Creek	Antelope Creek to Moreau River	*E. COLI*	2020	2032	Low
SD-MU-R-RABBIT_01	Rabbit Creek	Antelope Creek to Moreau River	TSS	2020	2032	Low
SD-NI-L-DOG_EAR_01	Dog Ear Lake	Tripp County	MERCURY IN FISH	2020	2022	High
SD-NI-L-RAHN_01	Rahn Lake	Tripp County	CHLOROPHYLL-*a*	2010	2028	Low
SD-NI-L-RAHN_01	Rahn Lake	Tripp County	DO	2020	2028	Low
SD-RD-L-TRAVERSE_01	Lake Traverse	Roberts County	TEMPERATURE	2018	2032	Low
SD-VM-L-E_VERMILLION_01	East Vermillion Lake	McCook County	CHLOROPHYLL-*a*	2010	2026	High
SD-VM-L-E_VERMILLION_01	East Vermillion Lake	McCook County	TEMPERATURE	2012	2032	Low
SD-VM-L-HENRY_01	Lake Henry	Kingsbury County	PH, HIGH	2018	2032	Low
SD-VM-L-SILVER_01	Silver Lake	Hutchinson County	PH	2010	2032	Low
SD-VM-L-THOMPSON_01	Lake Thompson	Kingsbury County	CHLOROPHYLL-*a*	2014	2024	High

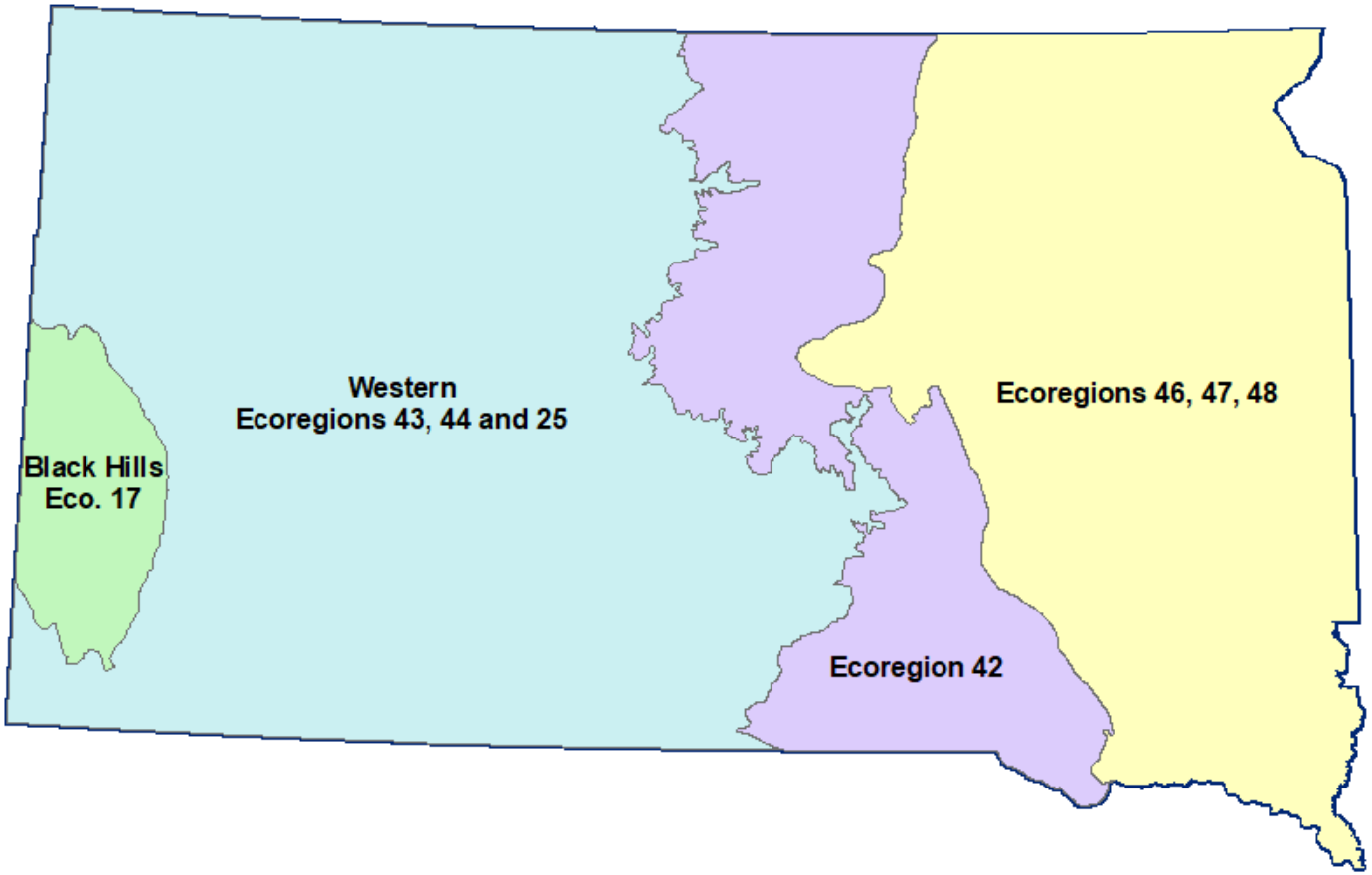
AUID	Waterbody Name	Location	Cause	Cycle First Listed	TMDL Schedule	Priority
SD-VM-R-LONG_01	Long Creek	Vermillion River to Highway 44	*E. COLI*	2010	2020	High
SD-VM-R-LONG_01	Long Creek	Vermillion River to Highway 44	TSS	2020	2024	High
SD-VM-R-VERMILLION_01	Vermillion River	Headwaters to Turkey Ridge Creek	*E. COLI*	2020	2026	High
SD-VM-R-VERMILLION_01	Vermillion River	Headwaters to Turkey Ridge Creek	TSS	2020	2026	High
SD-VM-R-VERMILLION_02	Vermillion River	Turkey Ridge Creek to Baptist Creek	*E. COLI*	2020	2026	High
SD-VM-R-VERMILLION_03	Vermillion River	Baptist Creek to mouth	*E. COLI*	2014	2021	High
SD-VM-R-VERMILLION_E_FORK_01	East Fork Vermillion River	McCook/Lake County line to Little Vermillion River	*E. COLI*	2016	2020	High
SD-WH-L-ALLAN_DAM_01	Allan Dam	Bennett County	PH	2014	2032	Low
SD-WH-R-COTTONWOOD_01	Cottonwood Creek	Headwaters to White River	Sp Conductance	2004	2032	Low
SD-WH-R-LITTLE_WHITE_01	Little White River	Rosebud Creek to mouth	*E. COLI*	2012	2028	Low
SD-WH-R-WHITE_02	White River	Willow Creek to Pass Creek	*E. COLI*	2010	2028	Low
SD-WH-R-WHITE_03	White River	Pass Creek to Little White River	*E. COLI*	2012	2028	Low
SD-WH-R-WHITE_03	White River	Pass Creek to Little White River	Salinity/SAR	2010	2032	Low
SD-WH-R-WHITE_04	White River	Little White River to confluence with Missouri River	*E. COLI*	2010	2028	Low

APPENDIX E

ECOREGION MAPS



Ecoregion Map for Nutrient Criteria- Streams

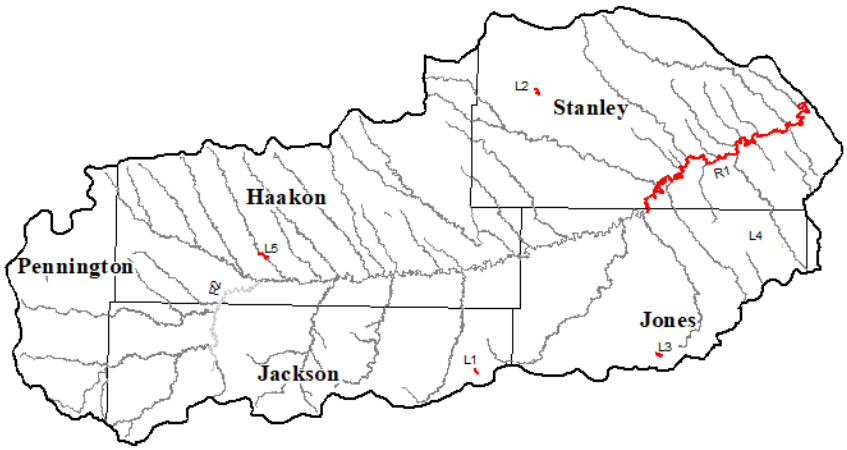


Ecoregion Map for Nutrient Criteria- Lakes

APPENDIX F

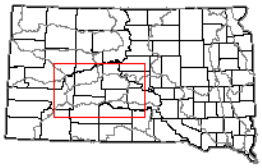
GIS - BASIN SUPPORT MAPS

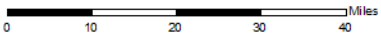
Bad River Basin



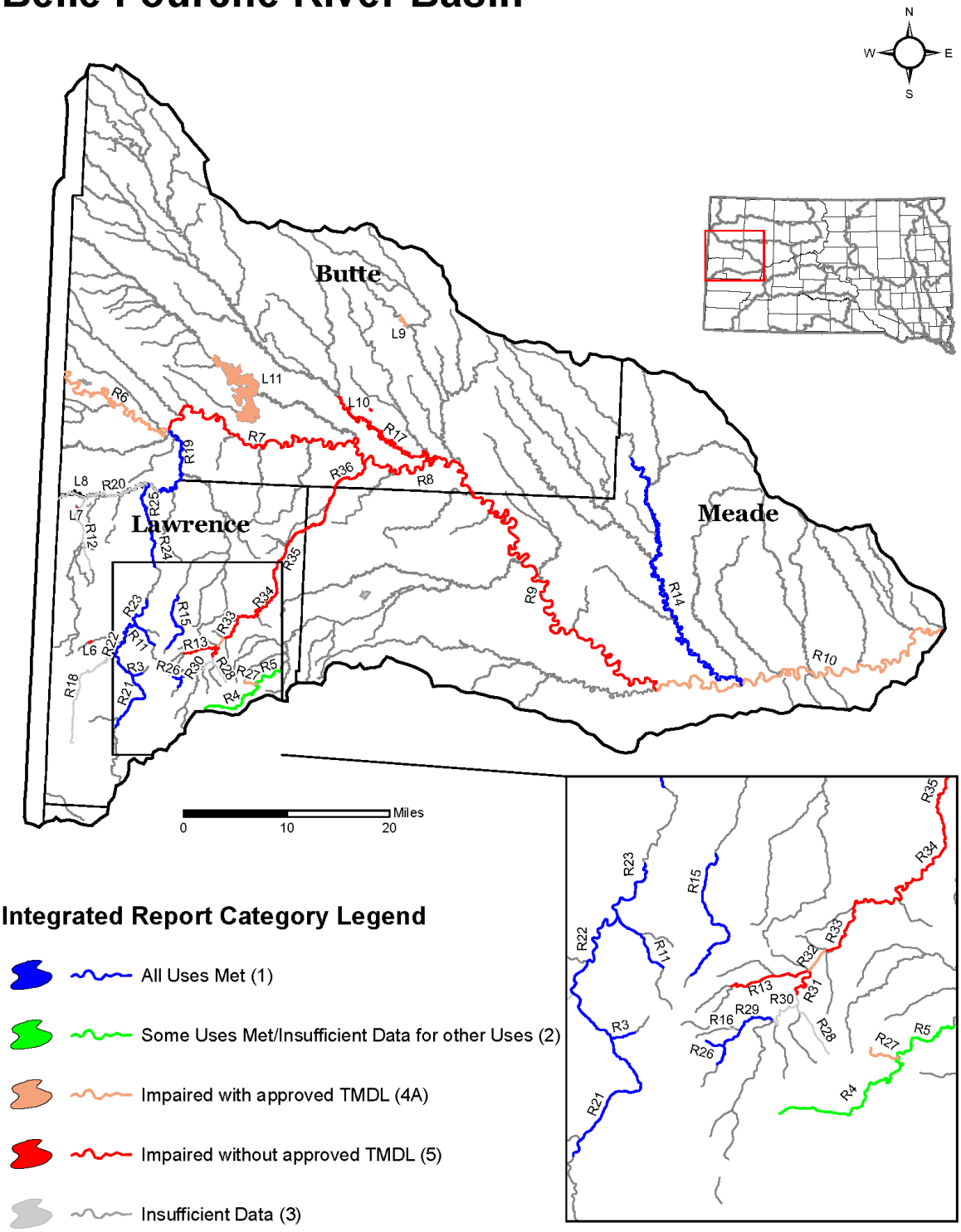
Integrated Report Category Legend

- All Uses Met (1)
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)





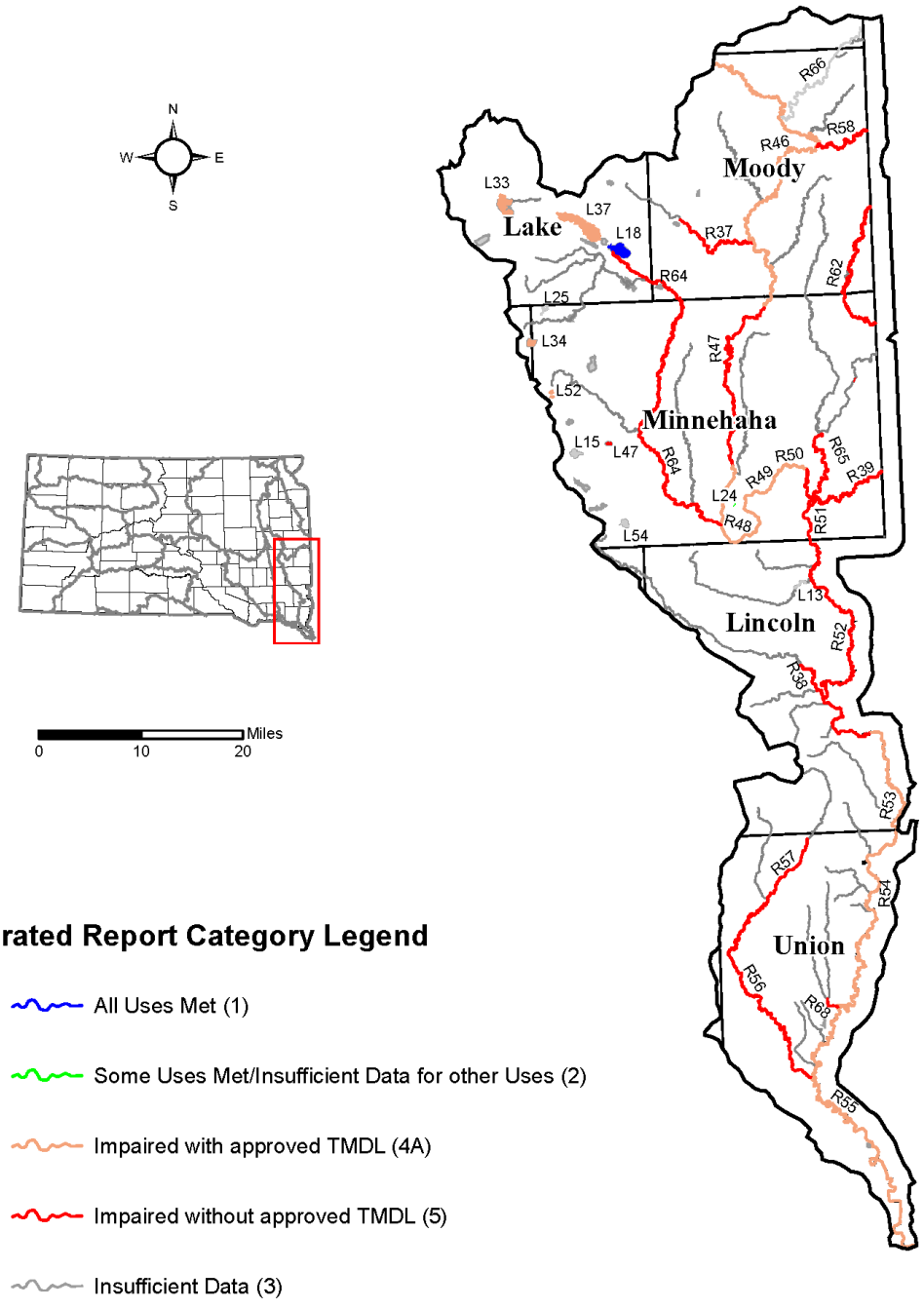
Belle Fourche River Basin



Integrated Report Category Legend

- All Uses Met (1)
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)

Lower Big Sioux River Basin



Integrated Report Category Legend

- All Uses Met (1)
- Some Uses Met/Insufficient Data for other Uses (2)
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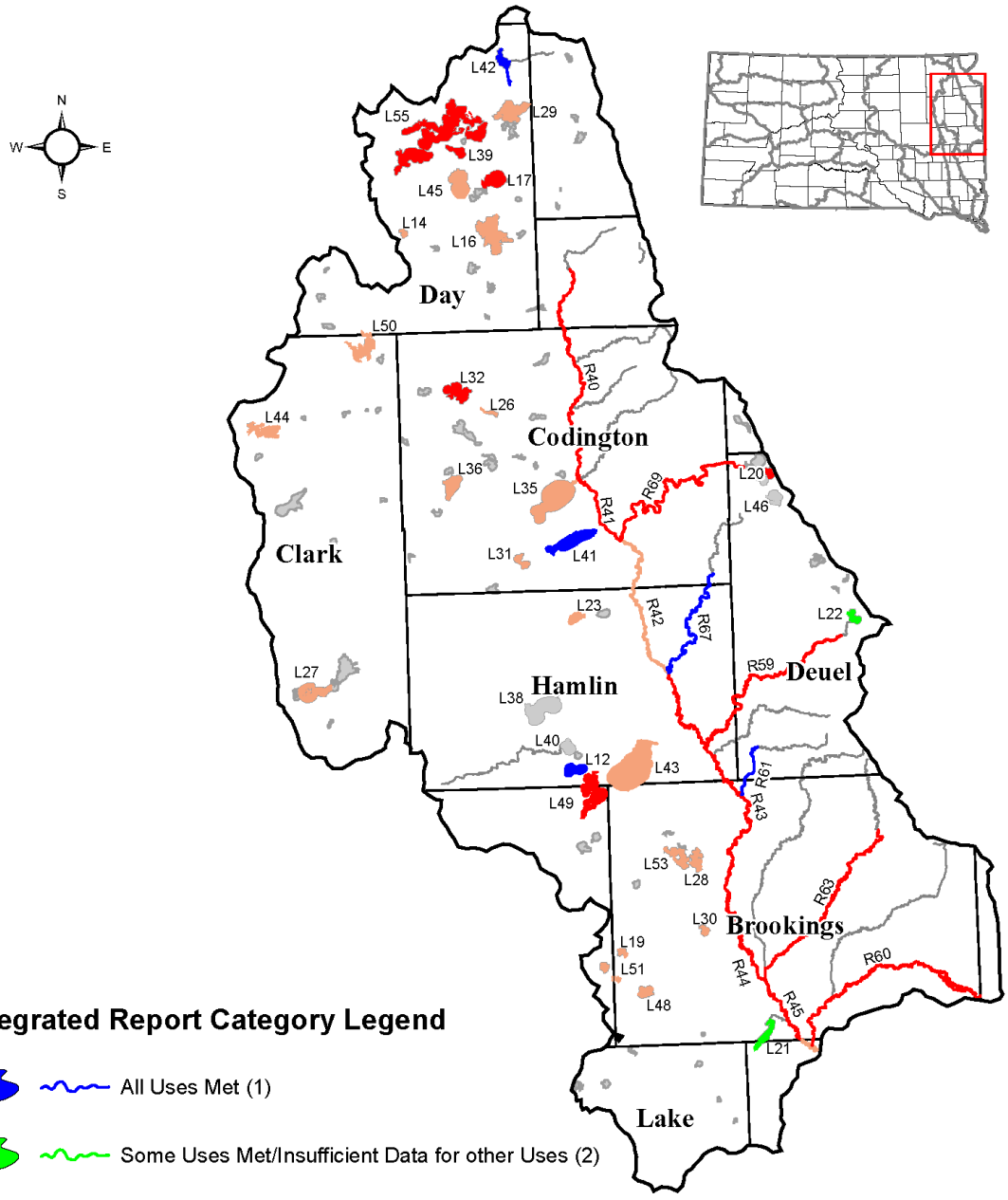
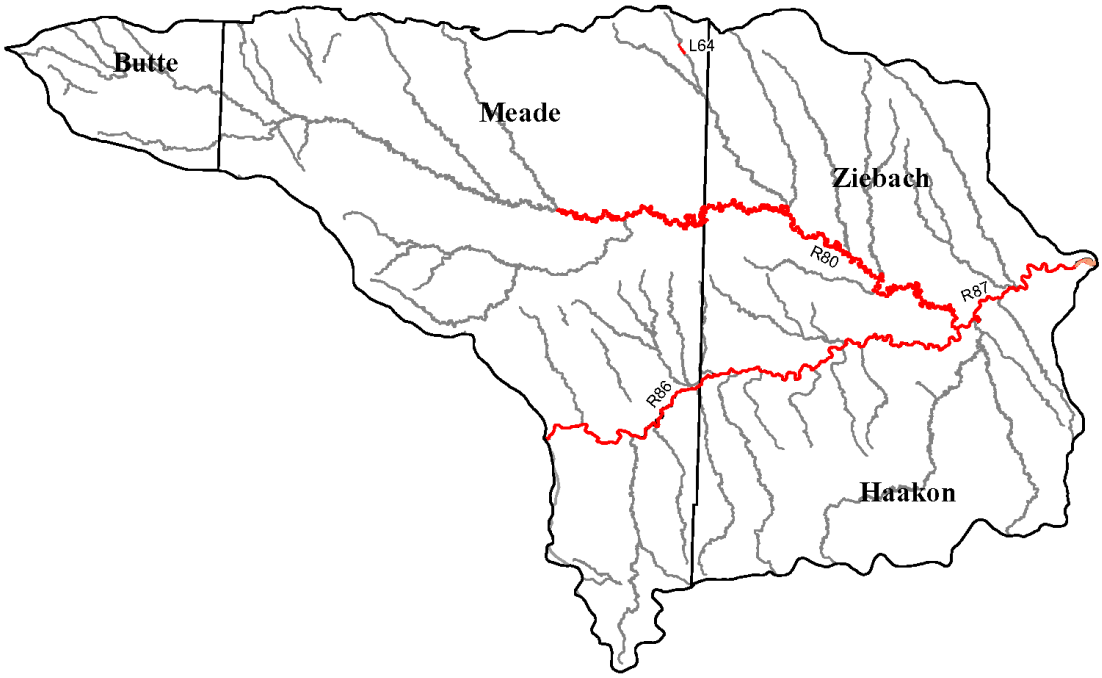
Upper Big Sioux River Basin

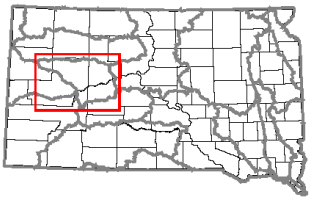


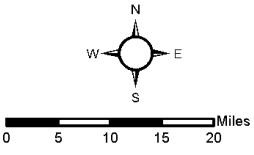
Lower Cheyenne River Basin



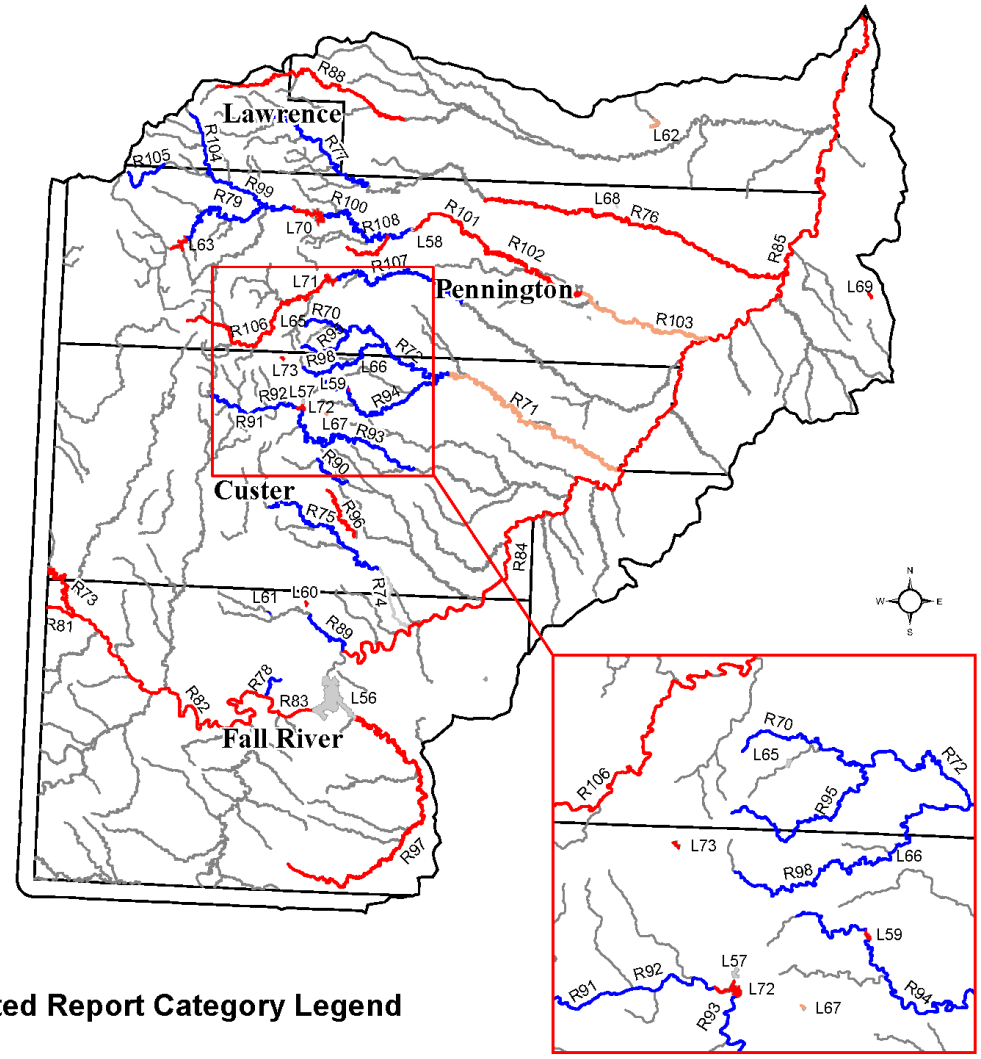
Integrated Report Category Legend

- All Uses Met (1)
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)





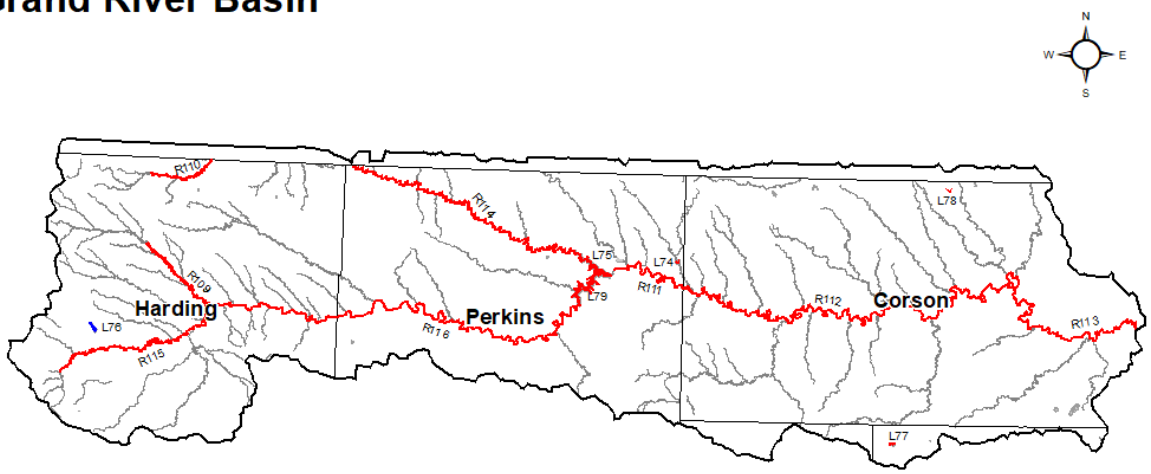
Upper Cheyenne River Basin



Integrated Report Category Legend

- All Uses Met (1)
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)

Grand River Basin



Integrated Report Category Legend

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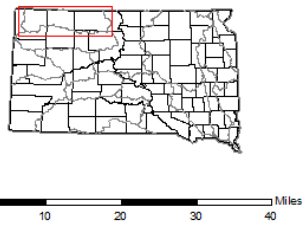
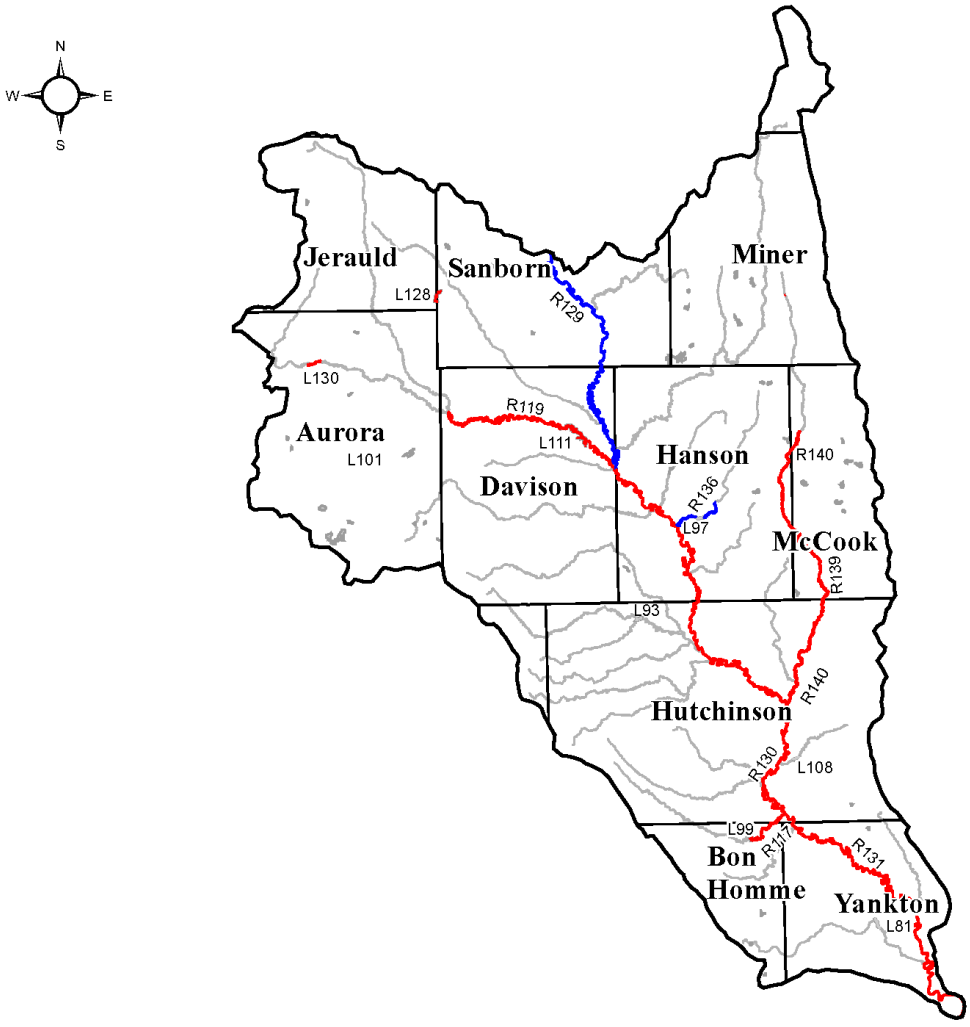
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)



Lower James River Basin



Integrated Report Category Legend

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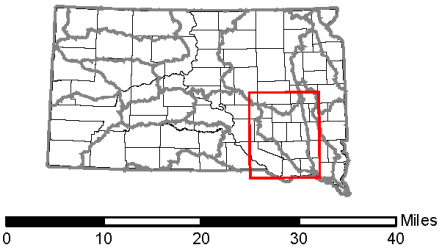
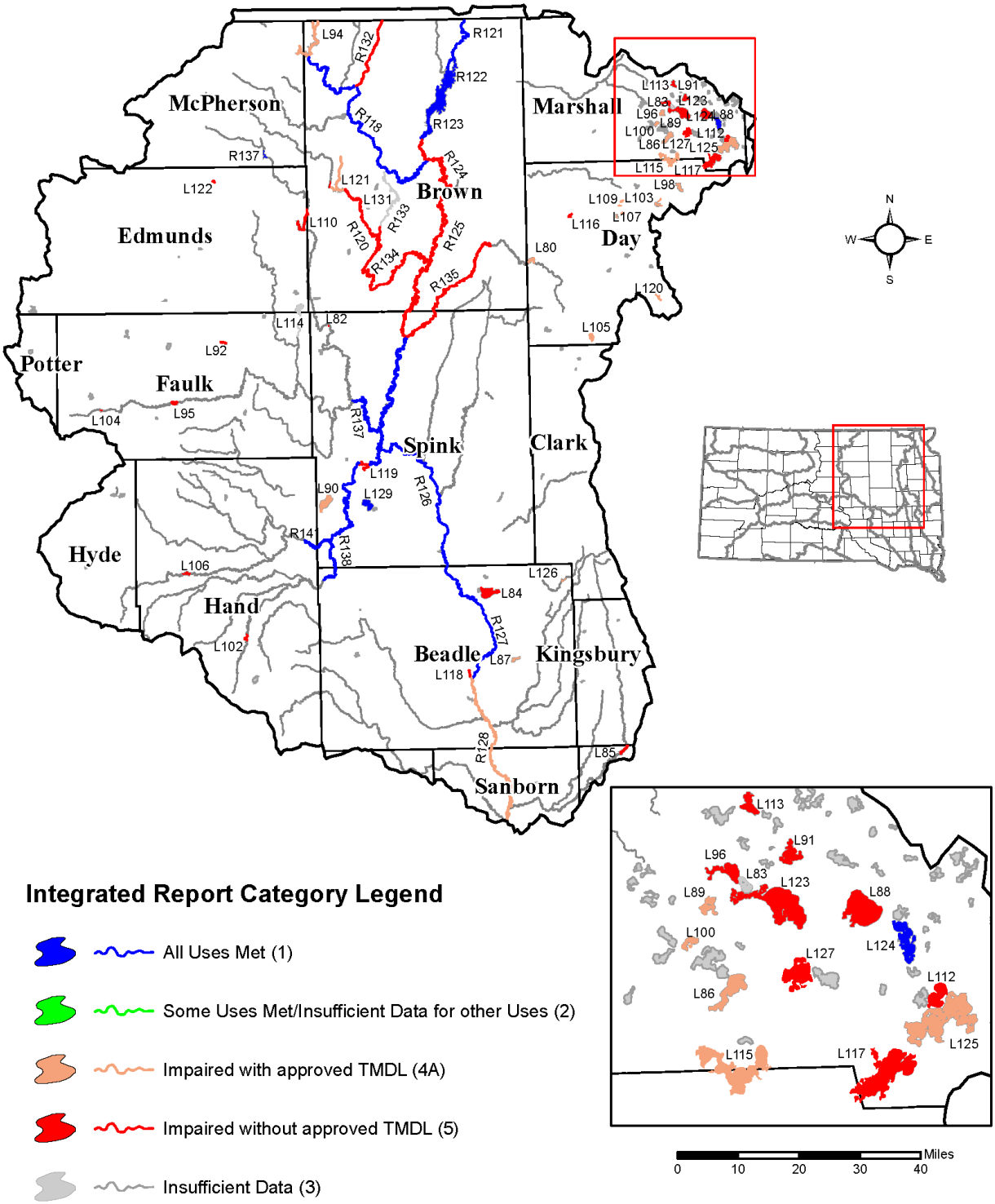
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)



Upper James River Basin



Integrated Report Category Legend

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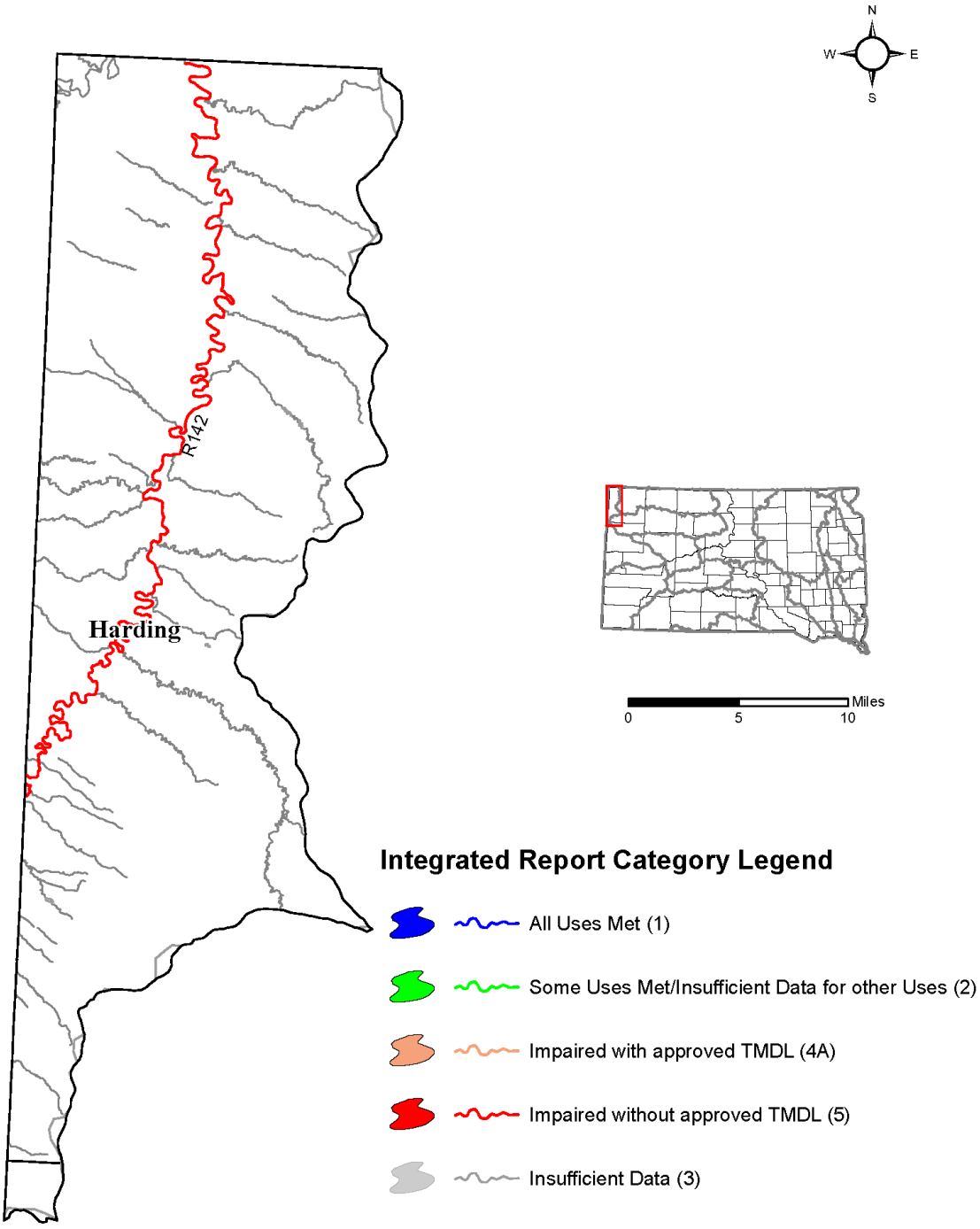
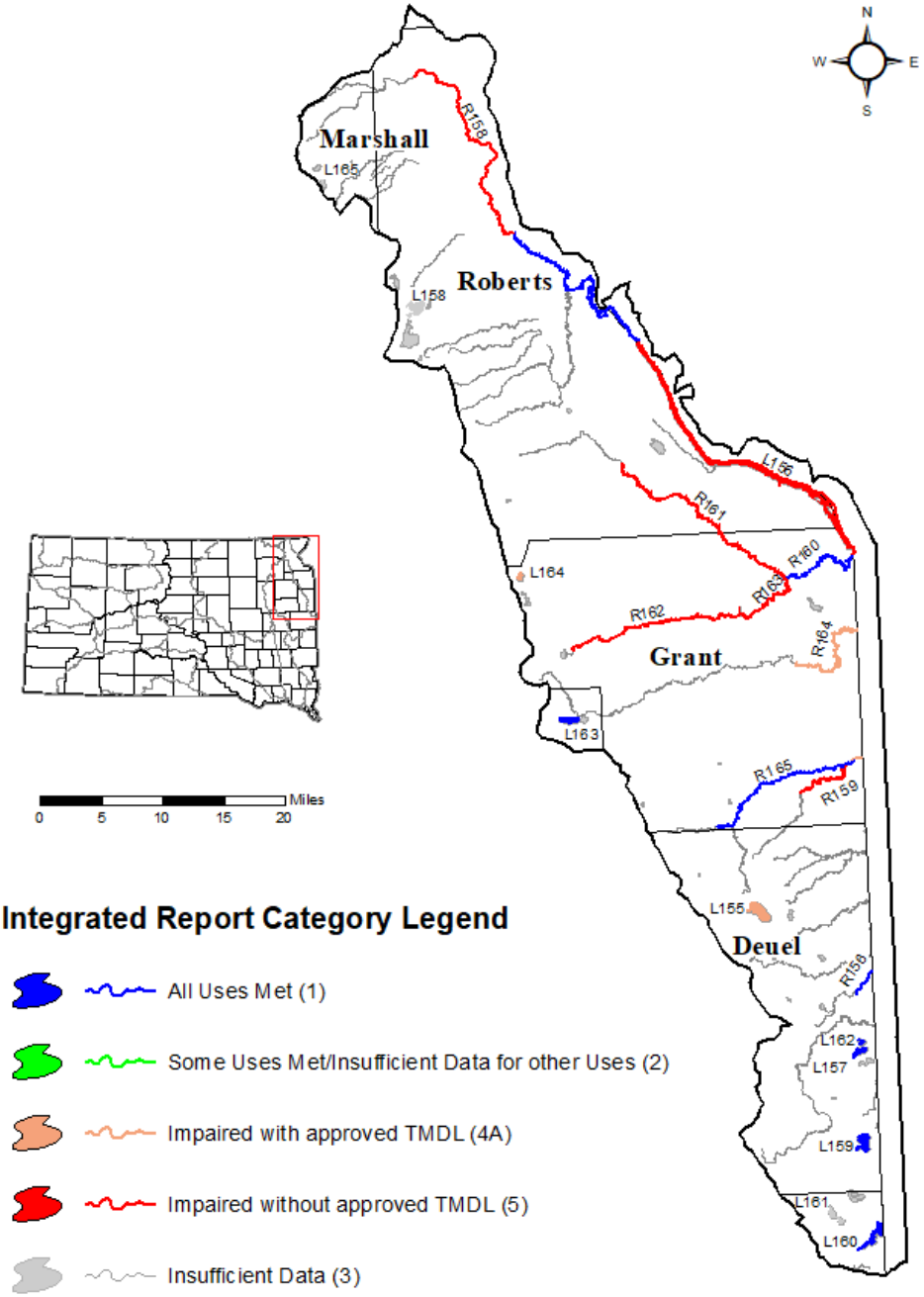
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)

Little Missouri River Basin



Minnesota River Basin



Integrated Report Category Legend

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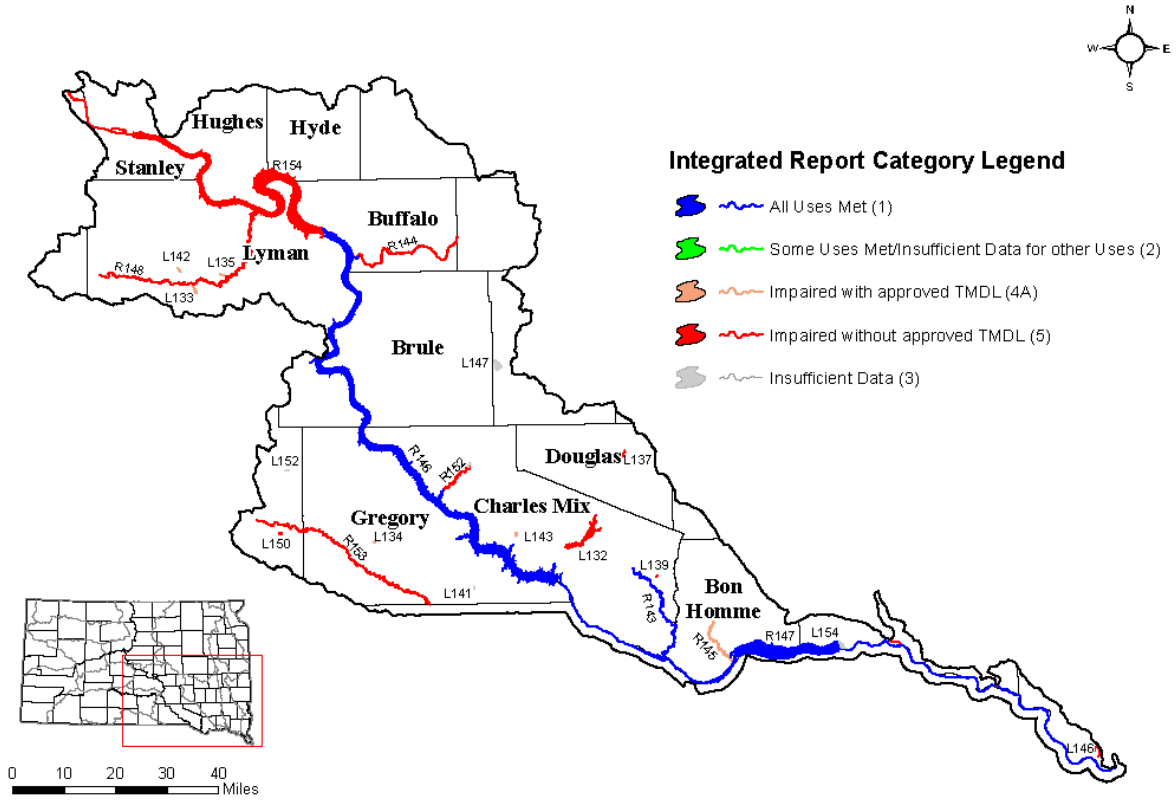
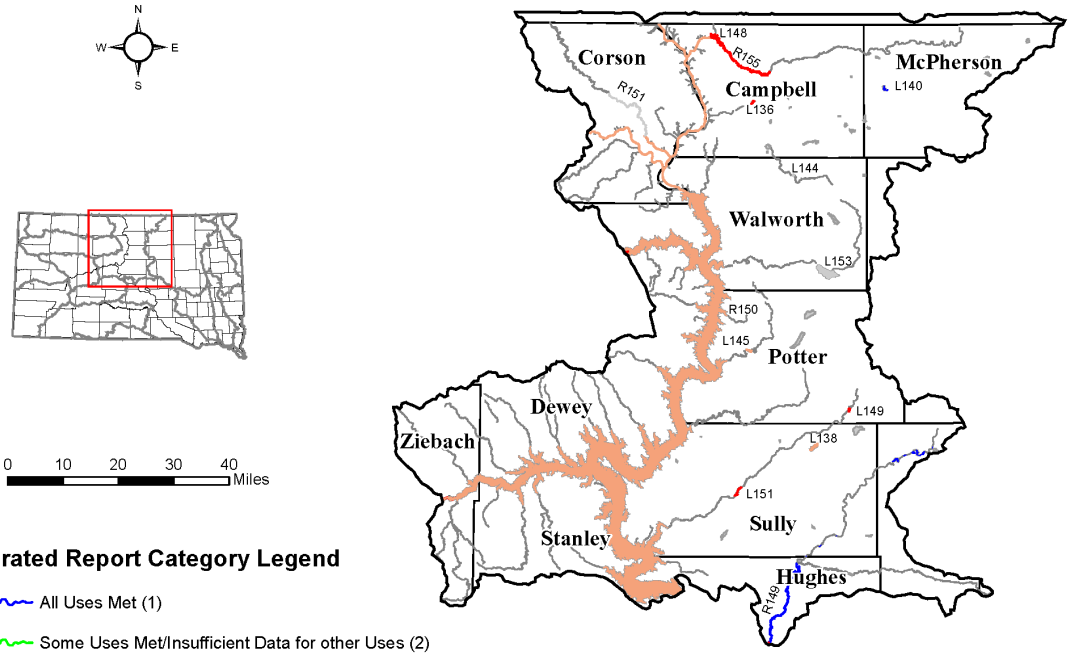
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)

Lower Missouri River Basin



Upper Missouri River Basin



Integrated Report Category Legend

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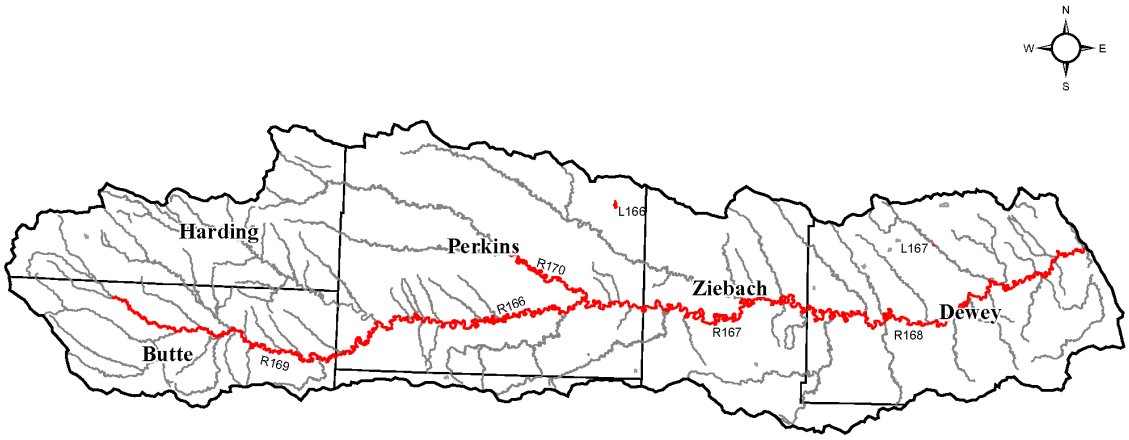
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)

Moreau River Basin



Integrated Report Category Legend

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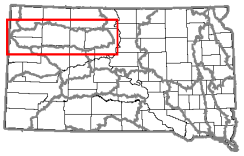
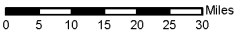
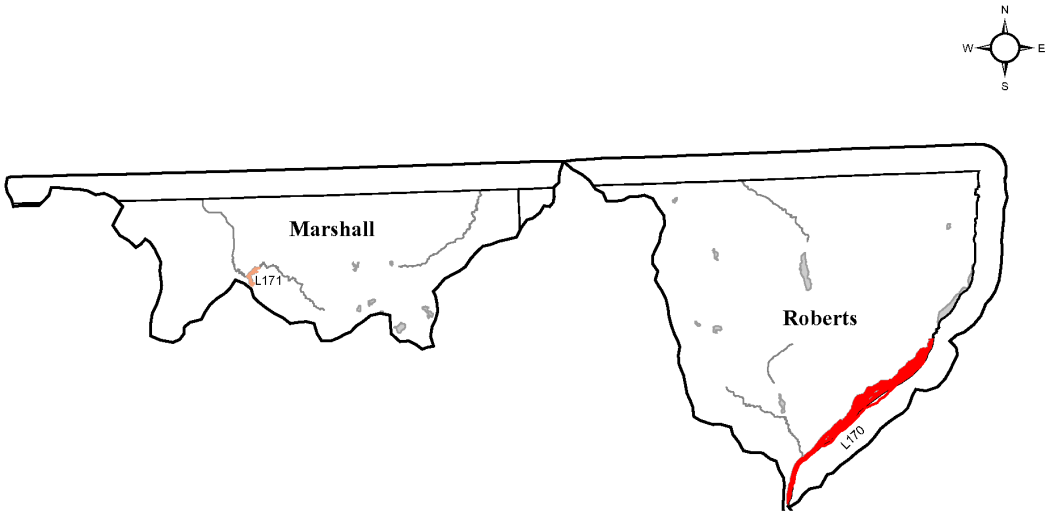
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)





Red River Basin



Integrated Report Category Legend

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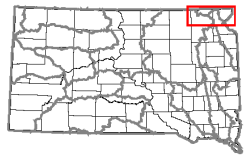
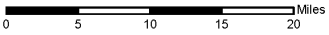
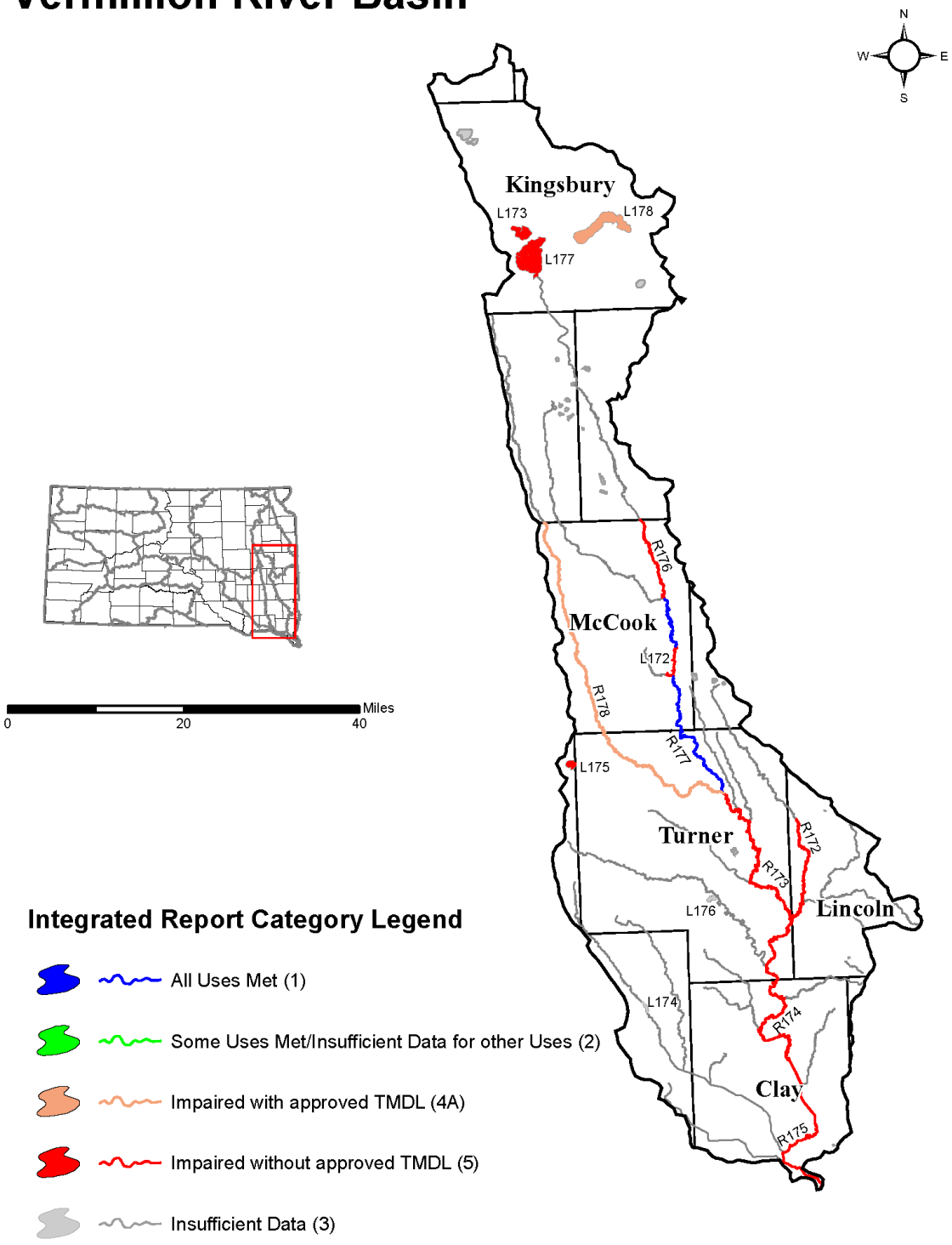
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)

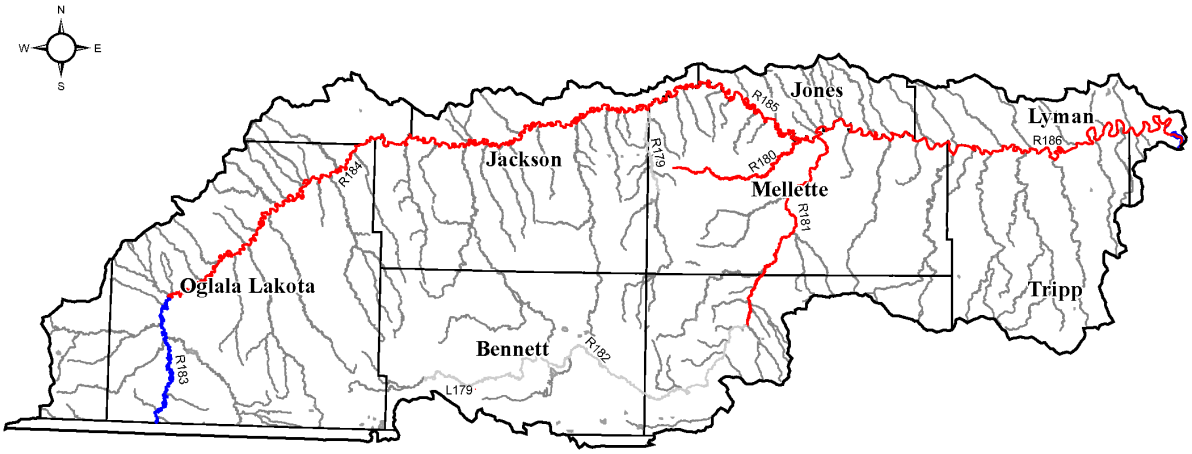




Vermillion River Basin



White River Basin



Integrated Report Category Legend

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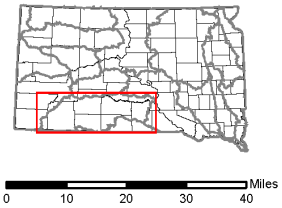
- Some Uses Met/Insufficient Data for other Uses (2)
- Impaired with approved TMDL (4A)
- Impaired without approved TMDL (5)
- Insufficient Data (3)



APPENDIX G

Median TSI Chlorophyll-a by Waterbody

Assessment Unit	Lake Acres	Years Sampled	Mean Chl-a	Median Chl-a	Median TSI	Trophic State
SD-BA-L-FREEMAN_01	50	4	79.19	88.37	74.52	H
SD-BA-L-HAYES_01	51.1	3	22.77	21.63	60.73	E
SD-BA-L-MURDO_01	62.73	2	18.90	18.90	59.40	E
SD-BA-L-SHERIFF_01	20.6					U
SD-BA-L-WAGGONER_01	81.6	5	99.38	30.02	63.94	E
SD-BF-L-IRON_CREEK_01	23	4	2.46	2.37	39.06	O
SD-BF-L-MIRROR_EAST_01	3.8	4	2.72	2.65	40.16	M
SD-BF-L-MIRROR_WEST_01	4.3					U
SD-BF-L-NEWELL_01	154	3	3.11	3.06	41.57	M
SD-BF-L-NEWELL_CITY_01	23					U
SD-BF-L-ORMAN_01	6146.2	6	4.50	4.44	45.21	M
SD-BS-L-ALBERT_01	3619.39	5	97.46	50.14	68.96	E
SD-BS-L-ALVIN_01	98.3	4	57.48	57.21	70.26	H
SD-BS-L-ANTELOPE_01	197.2					U
SD-BS-L-BEAVER_01	324.97					U
SD-BS-L-BITTER_01	3142	3	81.65	75.10	72.92	H
SD-BS-L-BLUE_DOG_01	1495.6	4	14.57	9.43	52.59	E
SD-BS-L-BRANT_01	1033.5	9	15.72	13.62	56.19	E
SD-BS-L-BRUSH_01	291.9					U
SD-BS-L-BULLHEAD_01	343.47	6	32.50	33.54	65.03	E
SD-BS-L-CAMPBELL_01	975.9	11	103.35	115.34	77.13	H
SD-BS-L-CLEAR_D_01	527.5	6	45.29	36.58	65.88	E
SD-BS-L-CLEAR_H_01	705.7					U
SD-BS-L-COVELL_01	11.2	2	54.03	54.03	69.70	E
SD-BS-L-DIAMOND_01	176.8					U
SD-BS-L-DRY_01	218.62	2	57.24	57.24	70.26	H
SD-BS-L-DRY_NO2_01	1817.3					U
SD-BS-L-E_OAKWOOD_01	866.4	4	77.41	37.67	66.16	E
SD-BS-L-ENEMY_SWIM_01	2118.17	7	6.03	5.34	47.02	M
SD-BS-L-GOLDSMITH_01	289	4	30.39	24.47	61.94	E
SD-BS-L-GOOSE_01	488.5					U
SD-BS-L-GRASS_01	2275.66					U
SD-BS-L-HERMAN_01	1236.41	7	15.16	18.24	59.05	E
SD-BS-L-ISLAND_N_01	280.2					U
SD-BS-L-KAMPESKA_01	5010.63	5	5.88	6.63	49.13	M
SD-BS-L-LONG_COD_01	1226					U
SD-BS-L-MADISON_01	2683.08	12	58.71	18.22	59.05	E
SD-BS-L-MARSH_01	3016.27					U
SD-BS-L-MINNEWASTA_01	585	3	27.47	30.30	64.03	E
SD-BS-L-NORDEN_01	704.3	3	36.98	16.75	58.22	E
SD-BS-L-PELICAN_01	2781.2	5	38.68	23.69	61.62	E
SD-BS-L-PICKEREL_01	655.24	6	14.35	10.46	53.60	E

Assessment Unit	Lake Acres	Years Sampled	Mean Chl-a	Median Chl-a	Median TSI	Trophic State
SD-BS-L-POINSETT_01	7793.8	13	32.45	7.86	50.80	E
SD-BS-L-REID_01	1660					U
SD-BS-L-RUSH_01	2152.2					U
SD-BS-L-SCHOOL_01	1014.5	4	39.87	34.79	65.38	E
SD-BS-L-SCOTT_01	111.2					U
SD-BS-L-SINAI_01	646.1	2	8.40	8.40	51.46	E
SD-BS-L-ST_JOHN_01	1249.7	5	52.83	46.46	68.22	E
SD-BS-L-SWAN_01	1928					U
SD-BS-L-TWIN_01	513	2	13.77	13.77	56.30	E
SD-BS-L-TWIN_02	150					U
SD-BS-L-W_OAKWOOD_01	1101.69	8	88.32	65.91	71.65	H
SD-BS-L-WALL_01	215	6	50.10	24.73	62.04	E
SD-BS-L-WAUBAY_01	9455.3	7	25.46	26.93	62.87	E
SD-CH-L-ANGOSTURA_01	4195.95	4	3.81	3.73	43.50	M
SD-CH-L-BISMARK_01	22.93	3	26.20	14.51	56.81	E
SD-CH-L-CANYON_01	30.52	2	2.45	2.45	39.36	O
SD-CH-L-CENTER_01	24	5	6.30	5.09	46.54	M
SD-CH-L-COLD_BROOK_01	33.7	4	2.16	1.78	36.23	O
SD-CH-L-COTTONWOOD_SPRINGS_01	29.9	5	2.47	2.59	39.94	O
SD-CH-L-CURLEW_01	152.6	3	24.87	22.03	60.90	E
SD-CH-L-DEERFIELD_01	338.2	6	6.55	3.17	41.90	M
SD-CH-L-DURKEE_01	152.26					U
SD-CH-L-HORSETHIEF_01	17.2	5	10.91	9.03	52.17	E
SD-CH-L-LAKOTA_01	8.1	4	7.48	5.78	47.79	M
SD-CH-L-LEGION_01	5.5	3	7.47	3.78	43.62	M
SD-CH-L-NEW_UNDERWOOD_01	32.37					U
SD-CH-L-NEW_WALL_01	33.8	2	9.40	9.40	52.56	U
SD-CH-L-PACTOLA_01	822.14	4	2.65	1.57	35.05	O
SD-CH-L-SHERIDAN_01	367.92	6	6.16	6.22	48.51	M
SD-CH-L-STOCKADE_01	125.4	5	11.44	12.44	55.31	E
SD-CH-L-SYLVAN_01	18.1	3	11.32	11.87	54.85	E
SD-GR-L-EAST_LEMMON_01	168					U
SD-GR-L-FLAT_CREEK_01	161.2	3	33.86	29.50	63.77	E
SD-GR-L-GARDNER_01	190.13	3	7.42	7.36	50.16	E
SD-GR-L-ISABEL_01	112.6	2	21.86	21.86	60.83	E
SD-GR-L-PUDWELL_01	105					U
SD-GR-L-SHADEHILL_01	5069.93	3	9.13	5.39	47.10	M
SD-JA-L-AMSDEN_01	199.49	5	14.86	6.41	48.80	M
SD-JA-L-BEAVER_01	130.12	4	35.72	33.35	64.97	E
SD-JA-L-BIERMAN_01	15.14	5	25.71	21.17	60.52	E
SD-JA-L-BULLHEAD_02	157.4					U
SD-JA-L-BYRON_01	1773.8	3	36.08	25.73	62.43	E

Assessment Unit	Lake Acres	Years Sampled	Mean Chl-a	Median Chl-a	Median TSI	Trophic State
SD-JA-L-CARTHAGE_01	206.93	5	51.27	43.25	67.52	E
SD-JA-L-CATTAIL_01	594.53	4	29.42	15.32	57.35	E
SD-JA-L-CAVOUR_01	234.92					U
SD-JA-L-CLEAR_M_01	1198.8	9	12.88	12.86	55.63	E
SD-JA-L-CLUBHOUSE_01	208.1					U
SD-JA-L-COTTONWOOD_01	1443.96	2	16.27	16.27	57.94	E
SD-JA-L-COTTONWOOD_M_01	338.1	5	25.24	8.43	51.49	E
SD-JA-L-CRESBARD_01	66.5	3	72.23	90.79	74.78	H
SD-JA-L-DIMOCK_01	95.84					U
SD-JA-L-ELM_01	1220	3	14.34	18.50	59.19	E
SD-JA-L-FAULKTON_01	103.7	5	45.34	47.49	68.43	E
SD-JA-L-FOUR_MILE_01	369.85					U
SD-JA-L-HANSON_01	58.06					U
SD-JA-L-HAZELDON_01	319					U
SD-JA-L-HENRY_01	43.3	4	32.88	29.99	63.93	E
SD-JA-L-HORSESHOE_01	137.3					U
SD-JA-L-JAIL_POND_01	0.9	2	66.04	66.04	71.66	H
SD-JA-L-JONES_01	98.8	3	25.65	29.09	63.63	E
SD-JA-L-LARDY_01	121.4					U
SD-JA-L-LATHAM_01	23	2	24.45	24.45	61.93	E
SD-JA-L-LILY_01	539.8					U
SD-JA-L-LOUISE_01	163.72	4	33.80	29.95	63.91	E
SD-JA-L-LYNN_01	56.7					U
SD-JA-L-MENNO_01	39.9	2	40.19	40.19	66.80	E
SD-JA-L-MID_LYNN_01	435					U
SD-JA-L-MINA_01	696.7	3	12.80	8.08	51.08	E
SD-JA-L-MITCHELL_01	701.35	10	26.67	21.07	60.47	E
SD-JA-L-N_BUFFALO_01	421.2	5	11.63	10.69	53.82	E
SD-JA-L-NINE_MILE_01	244.81					U
SD-JA-L-NORTH_SCATTERWOOD_01	931.9					U
SD-JA-L-OPITZ_01	1799					U
SD-JA-L-PIERPONT_01	74.16	2	14.38	14.38	56.73	E
SD-JA-L-PIYAS_01	1954.51					U
SD-JA-L-RAVINE_01	64.29	3	29.07	36.85	65.95	E
SD-JA-L-REDFIELD_01	152.26	3	36.59	36.04	65.73	E
SD-JA-L-REETZ_01	245					U
SD-JA-L-RICHMOND_01	739.2					U
SD-JA-L-ROSETTE_01	16.35	4	72.64	75.91	73.03	H
SD-JA-L-ROY_01	1720.7	6	9.51	7.29	50.07	M
SD-JA-L-S_RED_IRON_01	623.8	7	16.22	13.68	56.23	E
SD-JA-L-SOUTH_BUFFALO_01	2041.3	7	24.44	18.69	59.29	E
SD-JA-L-STAUM_01	39.7					U

Assessment Unit	Lake Acres	Years Sampled	Mean Chl-a	Median Chl-a	Median TSI	Trophic State
SD-JA-L-STINK_01	788.62					U
SD-JA-L-TWIN_01	186.7	5	52.49	36.53	65.86	E
SD-JA-L-TWIN_02	977	3	48.94	32.66	64.76	E
SD-JA-L-WILMARTH_01	106.2	3	11.50	9.83	52.99	E
SD-JA-L-WYLIE_01	6.76					U
SD-MI-L-ANDES_01	4603.1	3	199.64	112.94	76.92	H
SD-MI-L-BRAKKE_01	86.4	2	34.48	34.48	65.29	E
SD-MI-L-BURKE_01	30.7	6	72.81	33.33	64.96	E
SD-MI-L-BYRE_01	80.4	2	9.11	9.11	52.25	E
SD-MI-L-CAMPBELL_01	47.4	4	17.66	17.87	58.85	E
SD-MI-L-CORSICA_01	97.1	3	83.69	111.02	76.75	H
SD-MI-L-COTTONWOOD_01	450.1	4	24.68	19.49	59.71	E
SD-MI-L-DANTE_01	15.47	3	33.05	18.02	58.93	E
SD-MI-L-EUREKA_01	188.4	4	12.63	13.40	56.03	E
SD-MI-L-FAIRFAX_01	24.11	2	22.87	22.87	61.27	E
SD-MI-L-FATE_01	99.47	3	32.23	24.56	61.97	E
SD-MI-L-GEDDES_01	79.23	4	150.66	150.11	79.71	H
SD-MI-L-HIDDENWOOD_01	20.74	3	65.71	73.65	72.73	U
SD-MI-L-HURLEY_01	106					U
SD-MI-L-MCCOOK_01	295.81	10	11.87	11.01	54.11	E
SD-MI-L-PLATTE_01	116.81					U
SD-MI-L-POCASSE_01	1370.8	10	2181.40	43.87	67.66	E
SD-MI-L-POTTS_01	47.1					U
SD-MI-L-ROOSEVELT_01	86.5	4	20.47	18.80	59.35	E
SD-MI-L-SULLY_01	212.3	5	70.99	51.29	69.19	E
SD-MI-L-SULLY_DAM_01	75.3					U
SD-MI-L-SWAN_01	2462.69					U
SD-MI-L-YANKTON_01	322.2					U
SD-MN-L-ALICE_01	1056	2	35.93	35.93	65.70	E
SD-MN-L-BIG_STONE_01	5753.1	2	29.36	29.36	63.72	E
SD-MN-L-COCHRANE_01	359	14	11.50	10.87	53.98	E
SD-MN-L-DRYWOOD_NORTH_01	918.09					U
SD-MN-L-FISH_01	735	3	63.46	74.72	72.88	H
SD-MN-L-HENDRICKS_01	880.8	6	41.52	9.07	52.20	E
SD-MN-L-OAK_01	400.44	2	45.84	45.84	68.09	E
SD-MN-L-OLIVER_01	152	13	15.85	14.07	56.51	E
SD-MN-L-PUNISHED_WOMAN_01	479	5	9.61	9.01	52.15	E
SD-MN-L-SUMMIT_01	170.4					U
SD-MN-L-TURTLE_FOOT_01	122.2					U
SD-MU-L-COAL_SPRINGS_01	91	2	9.09	9.09	52.23	E
SD-MU-L-LITTLE_MOREAU_NO1_01	34	4	52.68	53.65	69.63	E
SD-NI-L-DOG_EAR_01	178.25					U

Assessment Unit	Lake Acres	Years Sampled	Mean Chl-a	Median Chl-a	Median TSI	Trophic State
SD-NI-L-RAHN_01	19.11	3	16.87	17.53	58.66	E
SD-RD-L-TRAVERSE_01	5120.7	2	14.79	14.79	57.00	E
SD-RD-L-WHITE_01	173.8	2	42.56	42.56	67.36	E
SD-VM-L-E_VERMILLION_01	530.9	4	11.98	10.99	54.09	E
SD-VM-L-HENRY_01	1157.36	3	52.78	22.96	61.31	E
SD-VM-L-MARINDAHL_01	106.81	2	31.73	31.73	64.48	E
SD-VM-L-SILVER_01	389.4	3	268.41	181.45	81.57	H
SD-VM-L-SWAN_01	172.74					U
SD-VM-L-THOMPSON_01	5325.63	4	24.05	21.78	60.79	E
SD-VM-L-WHITEWOOD_01	4335.4	3	65.14	67.63	71.90	H
SD-WH-L-ALLAN_DAM_01	4.7	3	212.14	222.54	83.57	H

APPENDIX H

PUBLIC COMMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8WP-CWB

MAR 03 2020

Shannon Minerich
Surface Water Quality Program
Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol Avenue
Pierre, SD 57501-3181

Re: 2020 South Dakota Integrated Report for Surface Water Quality Assessment

Dear Ms. Minerich:

We have reviewed the Department's draft 2020 Integrated Report (IR) for Surface Water Quality Assessment and appreciate the opportunity to provide feedback. The Department's draft IR is well organized, and we commend your ongoing efforts to utilize common sense language when possible. The Department has done an excellent job updating charts, tables and graphics, making complex data more easily understandable by the public. We also want to recognize the Department's continued efforts to refine an assessment methodology for nutrient-related narrative standards, and providing overall clarity and transparency on the Department's assessment methodologies. We look forward to continuing efforts with the Department in this endeavor. We found that information in the IR, GIS files, and the Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) are consistent.

We have some additional comments that should be addressed prior to finalizing the document; these can be found in the attachment. We look forward to receiving your final 2020 IR, and continuing our cooperative efforts. If you have any questions or wish to discuss these comments further, please contact me at (303) 312-6974 or rogers.liz@epa.gov. Again, thank you for your commitment and hard work on the 2020 Integrated Report.

Sincerely,

Elizabeth Rogers
Monitoring and Assessment Team
Water Quality Section
Clean Water Branch
Water Division

Attachment

EPA Comments on South Dakota's 2020 Draft Integrated Report (IR)

Main Body of the IR:

The VISION (Page 18):

- Priorities posted online and referenced in the IR are outdated. Please update website to match current priorities that are public noticed in the 2020 IR and consider adding a version/date stamp to track changes on the website: (https://denr.sd.gov/dfta/wp/tmdl/tmdlvision.pdt)

- EPA records show that DENR removed 25 waters, not 29, from SD's Vision priority list in 2018. A total of 26 waterbody-impairments combinations were removed, however two of those causes were associated with the same water (i.e., segment 2 of the Cheyenne River).

DENR response:

- *The Vision Strategy section documented in the draft 2020 IR intended to represent the most updated version accounting for open season changes submitted to EPA in August 2018. The updated Vision Strategy also contained narrative revisions to specific sections due to changes implemented since the 2018 reporting cycle (i.e. assessment section). The draft Vision Strategy was not updated on the DENR website for the public notice period by mistake. DENR revised the Vision Strategy section in the draft 2020 IR to address comments received by EPA during the public notice period. The revised Vision Strategy documented in the draft 2020 IR was placed on the DENR website (http://denr.sd.gov/dfta/wp/tmdl/tmdlvision.pdf) to maintain consistency. A header was placed on the updated version on the website to indicate current status based on the 2020 reporting cycle.*

- *The draft Vision Strategy indicated that 29 waters were removed during the open season in 2018. DENR agrees that the actual number of waters removed should be 25. The text was revised to 25 waters on page 18, paragraph two.*

Table 3-1:

- AUIDs for Lardy, Middle Lynn and Opitz lakes are incorrect. These IDs all changed from "SD-BS-L..." to "SD-JA-L. .." in the 2016 IR. Please correct Table 3-1.
- Table 3-1 is missing SD-BF-R-WHITEWOOD_06, E. coli. EPA recognizes this waterbody-pollutant combination is proposed for delisting this cycle because "applicable WQS attained" (see Appendix B) however because this priority has not been formally removed during an open season, EPA still considers it on DENR's Vision Priority List.

Website link directs reader to same outdated Vision Priority document mentioned above

DENR response:

- *Table 3-1 was updated to reflect the correct AUIDs (SD-JA-L…) for Lardy, Middle Lynn, and Opitz lakes.*

- *Table 3-1 was updated to add SD-BF-R-WHITEWOOD_06, for E. coli. The status column indicates the water as "2020 IR delist". DENR agrees this water should remain on the Vision Priority List until a process is identified to justify removal. Implementing this change required a change to the number of new Vision Priority waterbodies from 43 to 44, which was updated on page 18, paragraph two.*

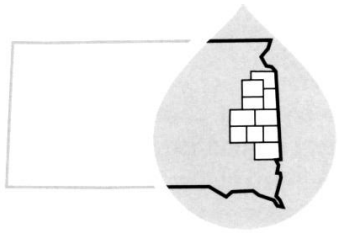
- *The Vision Strategy was revised in accordance with comments received during the public notice period. The revised version documented in the draft 2020 IR was placed on the DENR website (http://denr.sd.gov/dfta/wp/tmdl/tmdlvision.pdf) to maintain consistency.*

Appendix B (2020 Delisting Report Page 96):

- Not clear why Murdo Dam and Bad River are included in this cycle's delisting report. The delisting rationale provided points to TMDLs, however these TMDLs were approved many years ago. Please clarify.

DENR response:

During the 2016 cycle, the causes of mercury in fish tissue (Murdo) and TSS (Bad River) were nonsupporting with an approved TMDL and were in Category 4a. During the 2018 cycle, in our switch from ADB to ATTAINS, the TMDL links did not carry over and these causes inadvertently reverted to Category 5. DENR staff did not identify this issue until this 2020 cycle and relinked the TMDLs. Because these causes were in Category 5 and subsequently on the 303(d) list during the last cycle, DENR delisted the causes and relinked the existing TMDLs.



EAST DAKOTA
WATER
DEVELOPMENT
DISTRICT

RECEIVED
MAR - 9 2020
Division of Financial
& Technical Assistance

March 5, 2020

Anine Rosse
SD DENR - Watershed Protection Program
523 East Capitol Avenue
Pierre, South Dakota 57501-3181

Dear Ms. Rosse,

I am writing to offer comments on behalf of the East Dakota Water Development District on the DRAFT 2020 South Dakota Integrated Report for Surface Water Quality Assessment (DRAFT IR). For each I have included a page reference from the DRAFT document.

1. Kudos for re-inserting Table 2: Numeric Criteria Assigned to Beneficial Uses of Surface Waters of the State ARSD 74:51:01, absent in the past two versions.

DENR Response:

Table 2 contains selected numeric criteria for beneficial uses. This table is not inclusive of all water quality standards. Please refer to ARSD 74:51 for the complete list of water quality standards.

2. Page 55. The first full paragraph, discussing recent efforts along Skunk Creek, can be removed. This effort is no longer active, and no formal water quality monitoring is ongoing.

DENR Response:

Water monitoring on Skunk Creek continued through 2018, an EPA success story was published in 2019 which are new efforts since the 2018 Integrated Report was published. Implementation efforts on Skunk Creek continue, however updated language was added.

3. Page 55. Roughly two-thirds through the fourth full paragraph, there is a sentence that reads, "Thirty-seven waterbodies in the Big Sioux Basin were monitored for mercury in fish tissue." I would suggest alternate language of, "Mercury in fish flesh data were available for thirty-seven waterbodies in the Big Sioux River Basin." Similar language appears on page 58 with regard to the James River Basin.

DENR Response:

Thank you for your suggestion; however, the language will remain as is.

4. Page 55. In the second to last sentence of the final paragraph, I would suggest inserting", non-contributing" after the word "upper."

DENR Response:
Thank you for your suggestion, DENR inserted the word 'noncontributing'.

5. Page 59. In the third paragraph in the Minnesota River Basin section, reference is made to the counties covered by the Northeast Glacial Lakes project, specifically citing Day and Marshall Counties. The project also includes Grant and Roberts Counties.

DENR Response:
The language was updated to include Grant and Roberts counties.

6. Page 70. The third paragraph in the section describing Fish Flesh Contaminants describes the difference between the two established standards for mercury in South Dakota. Under the oversight of the Department of Health, a fish consumption advisory is issued if total mercury is present in excess of 1.0 mg/kg in fish tissue. However, the Department has established a lower threshold (0.3 mg/kg) when considering whether or not surface water quality is acceptable.

For the general public, I would suspect that these differences create an unsettling contradiction. If a water body is considered impaired as a result of the amount of mercury in fish flesh, then why would it not also be considered unsuitable for consumption? It would seem appropriate for the two respective executive branch agencies to resolve this conflict in advance of the next iteration of this report.

DENR Response:
Thank you for your suggestion.

7. Appendix C, page 147. For the first listed water body, Lake Alice (SD-MN-L-ALICE_0l), the Support status is listed only for one of the four designated beneficial uses. I suspect that what is missing is INS, INS and NON, respectively.

DENR Response:
DENR has corrected Appendix C to include the support status for the beneficial uses listed.

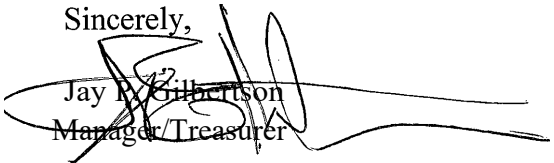
Finally, I will raise a recurring issue regarding information about mercury in fish flesh, and the support status of the various listed water bodies. Mercury in fish tissue data is available for only a limited number of water bodies. In the case of the Big Sioux River, data has been collected, as I understand things, in only three of the sixteen separate segments found in the report. My continuing concern is that anyone looking over Appendix C with regard to the Big Sioux River would conclude that while segments 7 and 8 are problematic, all remaining sections are ok. We actually only know(?) that segment 9 is 'ok," and we do not know the status of the rest of the river. The presentation of this critical information needs to be amended in such a way as to reflect what is actually known.

DENR Response:

As stated on page 50, DENR does not sample all waterbodies for all possible contaminants. DENR has added a column to the basin tables (Appendix C) that includes parameters that meet criteria. Therefore, if mercury in fish tissue (MeHG) appears in either the "Nonsupporting Parameters" or the "Supporting Parameters" column, then the reader can easily ascertain if the waterbody has been sampled and is meeting that criteria. Also stated on page 50, if a parameter is not included in either column, then the waterbody was not sampled for the parameter or has insufficient data to make a support determination. DENR believes most readers can easily understand the information provided in the tables.

Thank you for your consideration of these comments. If you have any questions about the points that I have raised, please do not hesitate to contact me. As always, I applaud the Department's work on what can only be described as a herculean effort.

Sincerely,



Jay P. Gilbertson
Manager/Treasurer
J: