

SOUTH DAKOTA CLEAN WATER ACT SECTION 303(d) PROGRAM LONG-TERM VISION STRATEGY December, 2015

The Clean Water Act (CWA) Section 303(d) provides for an opportunity to more effectively restore and protect South Dakota's waters by using a systematic process of prioritizing Total Maximum Daily Load (TMDL) development and implementing alternative approaches and protection activities. A Long-Term Vision (hereafter referred to as Vision) has been developed by the USEPA and six actions have been identified as being important to this process. South Dakota's strategy includes the six actions discussed below.

1. 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 Nonpoint Source (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. A presentation about the Vision was given by DENR to the NPS Task Force on December 9, 2014. The USEPA 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 USEPA/State joint Nonpoint Source Pollution and Water Quality Meeting was held in Rapid City, South Dakota and brought together the states in EPA Region VIII as well as other regional interests. The Vision plans for each state was presented and each state responded to questions/comments about their Vision plan.

The primary mechanism to inform the general public about the Vision will be through the Public Notice process used when the availability of the South Dakota Integrated Report (IR) is announced. The IR is completed every even numbered year and the Public Notice process

allows the public and stakeholders the opportunity to formally comment on the contents of the IR. The South Dakota Vision Strategy will be included in the upcoming 2016 IR and subsequent IRs.

Additional efforts to inform the public and stakeholders about the Vision will occur on a “request” basis 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 another opportunity for public comment. The South Dakota Vision Strategy will also be included in the South Dakota NPS Management Plan.

2. Prioritization

USEPA 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 C.F.R. § 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 wasteload allocations for permits, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities. The 2014 Integrated Report has a two-tiered priority scheme and is slightly modified as follows:

Priority 1

- Documented health problems or a threat to human health;
- Waters listed as impaired because of bacteria, total suspended solids (TSS), temperature in waters assigned cold water 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

Priority 2

- Water where local support for TMDL development is expected but not documented;
- Waters having impairments not listed as a Priority 1
- Waters with no evident local support for water quality improvements; or
- Waters where impairments are believed to be due to largely to natural causes.

The change from “Imminent human health problems” to “Documented health problems or a threat to human health” was made because an imminent human health problem was not well defined and could be misinterpreted as an “immediate” health problem which would likely require swift action instead of TMDL development. Adding a requirement of documentation strengthens the selection but still leaves some leeway for interpretation. Adding a “threat to human health” makes sense because there could be some threats to human health that are documented but still allow enough time for TMDL development. Mercury in fish flesh is a cause that falls under this reasoning. South Dakota is blessed with waters containing much sought-after game fish such as walleye, perch and northern pike, and the economic importance of these game fish impels action to deal with the mercury issue. It is important for South Dakota to begin the arduous task of solving this problem and TMDL development is the first step.

The change from a “water having four or more causes” to a more selective process was made because waters having four or more causes of impairment often had causes that were naturally occurring (e.g. salinity, conductivity, or dissolved solids) and these would be more in line with changing a water quality standard instead of developing a TMDL. The causes due to bacteria and TSS were selected because DENR knows how to efficiently develop TMDLs for these causes and because there are well-known solutions to deal with these. Most of the current NPS Implementation projects in South Dakota are targeting bacteria and total suspended solids. Controlling TSS may also impact nutrients entering lakes which may, in turn, help control lake problems due to algae, high pH, and low dissolved oxygen.

It is also noteworthy that bacteria and TSS make up the bulk of the impairment causes in streams (Table 2) and by concentrating on these two types of causes, significant progress will be made in restoring or improving our streams.

Table 2: Total Sizes of Water Impaired by Various Cause Categories in South Dakota

River/Streams	
Causes/Stressor Category	Miles
Cadmium	2
Fecal Coliform	1,880
Dissolved Oxygen	506
pH	26
Salinity/SAR	957
Specific Conductance	236
Temperature	333
Total Dissolved Solids	268
Total Suspended Solids	2,006
Unknown (narrative standards)	36
<i>E. coli</i>	2,079

Lakes/Reservoirs	
Cause/Stressor Category	Acres
Dissolved Oxygen	12,288
Chlorophyll- <i>a</i>	26,816
Mercury in fish tissue (consumption advisories)	14,082
Nitrates	55
pH	11,553
Selenium	55
Specific Conductance	55
Temperature	14,422
Total Dissolved Solids	55
Salinity/SAR	5,070

Mileage/acreae values generated by ADB are carried out to the 100th decimal place. The table reflects mileage values rounded to the nearest whole number. (Taken from the 2014 SD Integrated Report).

Temperature in waters assigned cold water fish life propagation was included after the state successfully modified the water quality standards for temperature in certain streams in the Black Hills region. Although some waters were removed from the 303(d) list because of this change, other waters still need a temperature based TMDL.

The attribute of having local support is retained under Priority 1. This is important because implementation activities will be most successful where local support is present and so TMDL development should be focused where there is local support. Priority 2 contains the attribute of having lesser or no local support. TMDL development in areas with little or no local support would likely not result in relatively swift implementation of remedial measures but TMDL development itself may generate enough local interest to inspire planning for implementation activities.

The TMDL prioritization process used for the Vision is a subset of that used to prioritize waters listed in South Dakota's Integrated Report. The Vision priority waters are those listed as impaired because of bacteria, total suspended solids (TSS), temperature in waters assigned cold water fisheries, or mercury in fish flesh. South Dakota's Vision currently contains the waters and impairments presented in Table 2.

Table 2. Impaired waters of the Vision.

State	Assessment Unit ID	Assessment Unit Name	Cause Name	IR Priority
SD	SD-BF-L-NEWELL_01	Newell Lake	MERCURY	1
SD	SD-BF-R-BELLE_FOURCHE_01	Belle Fourche River	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BS-L-BITTER_01	Bitter Lake	MERCURY	1

SD	SD-BS-L-ISLAND_N_01	North Island Lake	MERCURY	1
SD	SD-BS-L-LARDY_01	Lardy Lake	MERCURY	1
SD	SD-BS-L-LONG_COD_01	Long Lake	MERCURY	1
SD	SD-BS-L-MID_LYNN_01	Middle Lynn Lake	MERCURY	1
SD	SD-BS-L-MINNEWASTA_01	Minnewasta Lake	MERCURY	1
SD	SD-BS-L-OPITZ_01	Opitz Lake	MERCURY	1
SD	SD-BS-L-REID_01	Reid Lake	MERCURY	1
SD	SD-BS-L-SWAN_01	Swan Lake	MERCURY	1
SD	SD-BS-L-TWIN_01	Twin Lakes/W. Hwy 81	MERCURY	1
SD	SD-BS-L-TWIN_02	Twin Lakes	MERCURY	1
SD	SD-BS-R-BIG_SIOUX_01	Big Sioux River	ESCHERICHIA COLI (E. COLI)	1
SD	SD-JA-L-ELM_01	Elm Lake	MERCURY	1
SD	SD-MI-L-HURLEY_01	Lake Hurley	MERCURY	1
SD	SD-MI-L-ROOSEVELT_01	Roosevelt Lake	MERCURY	1
SD	SD-MU-L-COAL_SPRINGS_01	Coal Springs Reservoir	MERCURY	1
SD	SD-VM-R-LONG_01	Long Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-MN-R-YELLOW_BANK_N_FORK_01	North Fork Yellow Bank River	ESCHERICHIA COLI (E. COLI)	1
SD	SD-MN-R-YELLOW_BANK_S_FORK_01	South Fork Yellow Bank River	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BA-L-WAGGONER_01	Waggoner Lake	CHLOROPHYLL-A	1
SD	SD-BF-R-BEAR_BUTTE_01	Bear Butte Creek	TEMPERATURE, WATER	1
SD	SD-BF-R-BEAR_BUTTE_02	Bear Butte Creek	TEMPERATURE, WATER	1
SD	SD-BF-R-DEADWOOD_01	Deadwood Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BF-R-WHITEWOOD_01	Whitewood Creek	TEMPERATURE, WATER	1
SD	SD-BF-R-WHITEWOOD_04	Whitewood Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BF-R-WHITEWOOD_06	Whitewood Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BS-L-BULLHEAD_01	Bullhead Lake	CHLOROPHYLL-A	1
SD	SD-BS-L-MINNEWASTA_01	Minnewasta Lake	CHLOROPHYLL-A	1
SD	SD-BS-R-BEAVER_02	Beaver Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BS-R-BIG_SIOUX_05	Big Sioux River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-BS-R-BIG_SIOUX_06	Big Sioux River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-BS-R-BIG_SIOUX_13	Big Sioux River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-BS-R-BIG_SIOUX_14	Big Sioux River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-BS-R-BRULE_01	Brule Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BS-R-BRULE_01	Brule Creek	TOTAL SUSPENDED SOLIDS (TSS)	1
SD	SD-BS-R-EAST_BRULE_01	East Brule Creek	TOTAL SUSPENDED SOLIDS (TSS)	1
SD	SD-BS-R-SIXMILE_01	Six Mile Creek	ESCHERICHIA COLI (E. COLI)	1

SD	SD-BS-R-SIXMILE_01	Six Mile Creek	TOTAL SUSPENDED SOLIDS (TSS)	1
SD	SD-BS-R-SKUNK_01	Skunk Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-BS-R-SKUNK_01	Skunk Creek	TOTAL SUSPENDED SOLIDS (TSS)	1
SD	SD-BS-R-UNION_01	Union Creek	TOTAL SUSPENDED SOLIDS (TSS)	1
SD	SD-CH-R-BATTLE_01_USGS	Battle Creek	TOTAL SUSPENDED SOLIDS (TSS)	1
SD	SD-CH-R-BATTLE_02	Battle Creek	TEMPERATURE, WATER	1
SD	SD-CH-R-CHEYENNE_02	Cheyenne River	ESCHERICHIA COLI (E. COLI)	2
SD	SD-CH-R-CHEYENNE_02	Cheyenne River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-CH-R-GRACE_COOLIDGE_01	Grace Coolidge Creek	TEMPERATURE, WATER	1
SD	SD-CH-R-GRIZZLY_BEAR_01_USGS	Grizzly Bear Creek	TEMPERATURE, WATER	1
SD	SD-CH-R-RAPID_04	Rapid Creek	ESCHERICHIA COLI (E. COLI)	2
SD	SD-CH-R-SPRING_01	Spring Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-CH-R-SPRING_01	Spring Creek	TOTAL SUSPENDED SOLIDS (TSS)	1
SD	SD-JA-L-BIERMAN_01	Bierman Dam	CHLOROPHYLL-A	1
SD	SD-JA-L-CARTHAGE_01	Lake Carthage	CHLOROPHYLL-A	1
SD	SD-JA-L-ROSETTE_01	Rosette Lake	CHLOROPHYLL-A	1
SD	SD-JA-L-TWIN_01	Twin Lakes	CHLOROPHYLL-A	1
SD	SD-JA-R-FIRESTEEL_01	Firesteel Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-JA-R-JAMES_08	James River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-JA-R-JAMES_09	James River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-JA-R-JAMES_10	James River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-JA-R-JAMES_11	James River	TOTAL SUSPENDED SOLIDS (TSS)	2
SD	SD-JA-R-WOLF_01	Wolf Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-JA-R-WOLF_02	Wolf Creek	ESCHERICHIA COLI (E. COLI)	1
SD	SD-MI-L-POCASSE_01	Lake Pocasse	CHLOROPHYLL-A	1
SD	SD-MN-R-WHETSTONE_S_FORK_01	South Fork Whetstone River	ESCHERICHIA COLI (E. COLI)	1
SD	SD-MN-R-WHETSTONE_S_FORK_02	South Fork Whetstone River	ESCHERICHIA COLI (E. COLI)	1
SD	SD-NI-L-RAHN_01	Rahn Lake	CHLOROPHYLL-A	1
SD	SD-VM-L-THOMPSON_01	Lake Thompson	CHLOROPHYLL-A	1
SD	SD-VM-R-VERMILLION_03	Vermillion River	ESCHERICHIA COLI (E. COLI)	2
SD	SD-VM-R-VERMILLION_E_FORK_02	East Fork Vermillion River	ESCHERICHIA COLI (E. COLI)	1
SD	SD-VM-R-VERMILLION_WEST_FORK_01_USGS	West Fork Vermillion River	ESCHERICHIA COLI (E. COLI)	1

3. 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.

4. Integration

The Department of Environment and Natural Resources 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 nonpoint source 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, Bureau of Reclamation, or Bureau of Land Management may also be involved in DENR’s NPS control effort if activities will occur or impact lands managed by the those agencies. In addition, the U.S. Geological Survey provides much needed data about water flow and water quality 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 (e.g. the Intermittent Stream Study or the Northern Great Plains Reference Site Development Project). It is anticipated that this effort will expand to include a Northwestern Great Plains Reference Site Development Project.

5. Alternatives

Alternative approaches that incorporate adaptive management or are tailored to specific circumstances where such approaches are better suited to implement priority watershed or water actions to restoration may be used in addition to TMDLs. Generally, DENR currently requires a TMDL to be developed before funds are allocated towards a Nonpoint Source 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 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 Program that may be useful in circumstances where public outreach and education can resolve an issue.

6. Assessment

The goal of this element is to identify the extent of healthy and CWA Section 303(d) impaired waters in each State’s priority watersheds or waters through site-specific assessments.

South Dakota uses a number of methods and data sources to assess waters included in the Vision and they are highlighted below. Additional details of these methods can be found in the Integrated Report.

- Fixed ambient stream monitoring of rivers and streams. This Program samples the major rivers in the state (sampling frequency varies from monthly to twice yearly) and analyzes the samples for a select suite of parameters;
- Data are also obtained from regional sources or federal agencies (e.g. the U.S. Geological Survey or the volunteer lake monitoring program);
- Lakes are sampled as part of a statistically based Statewide Lakes Assessment (SWLA) each year. Usually 25-50 lakes are randomly selected and sampled for a standard suite of parameters;
- Intensive water monitoring is sometimes conducted to assess specific point or nonpoint source problems;
- Site-specific assessments are often used during TMDL studies if more general data methods/surveys do not provide adequate data. NPS implementation projects may also use site-specific studies to document water quality improvements due to NPS implementation project activities.

South Dakota's Vision and its list of waters needing TMDLs are primarily based on data gathered in the first three bullets. Stream data are usually available for the major streams but other streams may not have any data. Lakes are sampled randomly as part of the state's Statewide Lakes Assessment so individual lakes may or may not have enough data to develop a TMDL. So intensive monitoring and site-specific assessments are initiated when data are lacking for a particular waterbody or if specific information is needed when cause/effect relationships are sought. DENR has scheduled ten lakes for TMDL development that are impaired by chlorophyll a as part of the Vision and intensive water quality sampling will likely be scheduled in the upcoming years.

In addition, the State is working with the USEPA to develop scientifically defensible thresholds for chlorophyll a and/or nutrients (nitrogen and phosphorus) in lakes. Thresholds for lakes in Ecoregions 17 and 43 will be developed first and thresholds for lakes in the remaining ecoregions will be completed at a later date. Numeric targets for nutrients in streams may also be developed in the future.

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 water body is within reasonable travel distance or by a regional entity/contractor if funds are available and DENR involvement is not the best option. Computer modelling, scientific literature and reference conditions may also be used to assess waters.

Summary

The South Dakota strategy for the Long-Term Vision under the CWA Section 303(d) Program contains the six elements stressed by the USEPA. The primary goal is to prioritize TMDL development for the Vision where implementation activities can be focused so there is a better chance of improving water quality. However, much time, effort, and funds have been spent assessing and working on other TMDLs so those TMDLs will also play into South Dakota's broader TMDL development effort.