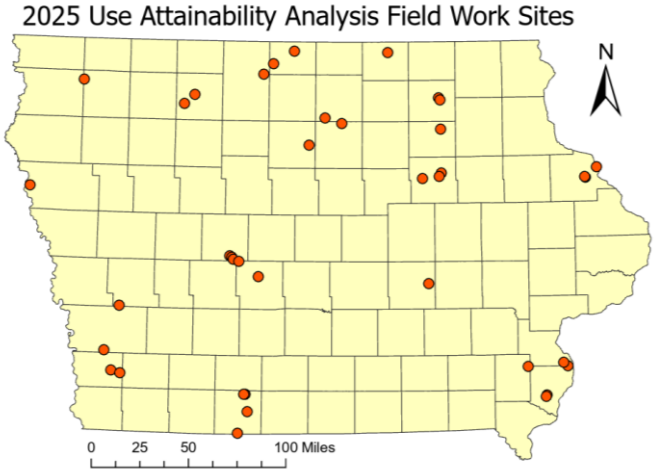
Water Quality Monitoring and Assessment (WQMA) Summary 2025

The Water Quality Monitoring and Assessment section (WQMA) is part of the Water Quality Bureau. The WQMA is comprised of 17 staff responsible for administering several different Federal Clean Water Act (CWA) related programs. The CWA is the primary Federal statute regulating the protection of the nation's water. The CWA's goal is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The WQMA lays the groundwork and foundation to implement the CWA in Iowa. All of WQMA's water quality results are in the online water quality database, AQuIA and the stream biological results are in the online biological monitoring and assessment database, BioNet.

Water Quality Standards (WQS): Iowa Administrative Code (IAC) Chapter 61 contains Iowa's WQS that describe the desired condition of waterbodies, how that condition will be protected or achieved, and consists of three core components:

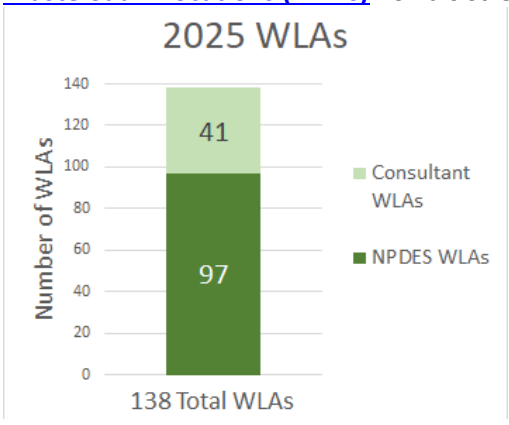
1. Designated Uses: specific goals and expectations for how each waterbody is used; the four designated use classes in Iowa are recreation, aquatic life, human health, and drinking water supply.
2. Criteria: levels of water quality that will protect the designated uses. Water quality criteria can be numeric values or narrative statements.
3. Antidegradation Requirements: framework for maintaining and protecting good water quality that has already been achieved.

States are required to review their WQS at least once every three years (triennial review). In 2025, WQS staff held two triennial review public hearings to solicit input on WQS priorities from the public and completed reports assigning recommended designated uses to approximately 100 stream segments based on UAA data (discussed next section).



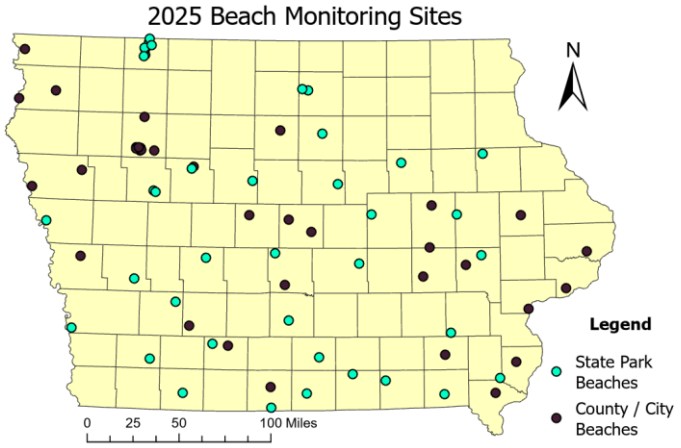
Use Attainability Analysis (UAA): A UAA is the process of gathering field data and assessing available information to determine if a stream is capable of supporting the highest level of recreation and aquatic life uses, and, if not, assigning more accurate recreation and aquatic life uses. Existing designated uses are listed in the Iowa Surface Water Classification document. In 2025, fish sampling, water quality sampling, and visual depth estimate field work for 52 UAAs covering 31 wastewater facilities was completed by State Hygienic Laboratory (SHL) Limnology staff.

Wasteload Allocations (WLAs): Iowa's streams, rivers, lakes, and wetlands are required to be protected for Iowa's designated uses. All facilities that discharge effluent (wastewater) from a point source into a surface water are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit from the DNR. A WLA considers a variety of factors and is needed to ensure that the NPDES permit limits will be protective of the waterbody's designated uses. WLA regulations are described in the Iowa Wasteload Allocation Procedure. Dischargers have the opportunity to adjust the WLA limits based on site-specific data collection such as hardness studies, chlorine demand studies, and mixing zone dye studies. The WLA webpage features the Ammonia Tool and the Chloride, Sulfate, and Copper (CSC) Tool to help facilities estimate potential new limits under different conditions. In 2025, 97 NPDES WLAs and an additional 41 consultant WLAs were completed.

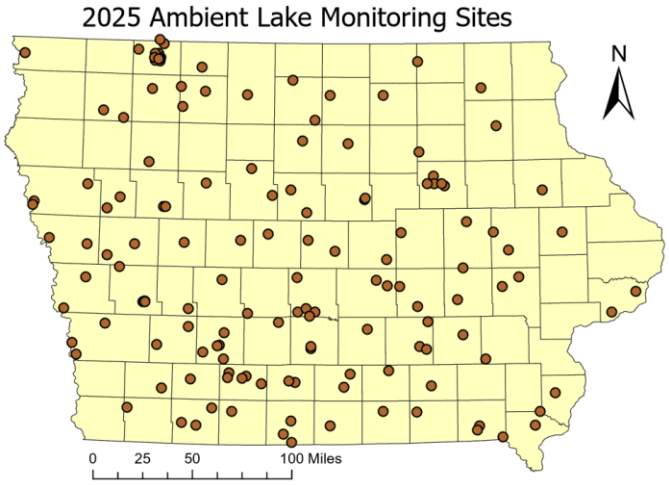


Beach Monitoring: The Beach Monitoring Program exists to provide up to date information for recreating at Iowa beaches while also providing data for Integrated Report (IR) water quality assessments. The DNR beach monitoring program samples state park beaches and participating city/county beaches each week throughout the summer for *E. coli* and microcystin. Dissolved oxygen, pH, temperature, and turbidity samples are also collected at the state park beaches. In 2025, 40 state park beaches were sampled by WQMA staff once a week for 15 weeks and an additional 35 county/city

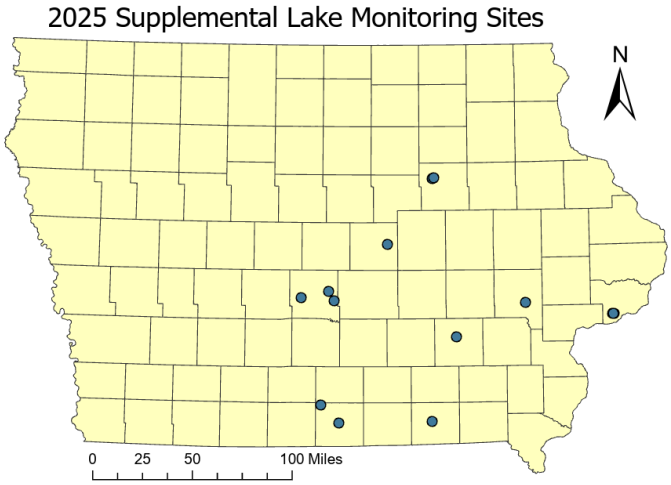
beaches participated in the program. In 2025, the Beach Monitoring Program collected 1049 *E. coli* samples that were analyzed at SHL and 577 Microcystin samples that were analyzed in the DNR laboratory. In addition, the Beach Monitoring Program also produced 2577 unique analytical results of the other parameters.

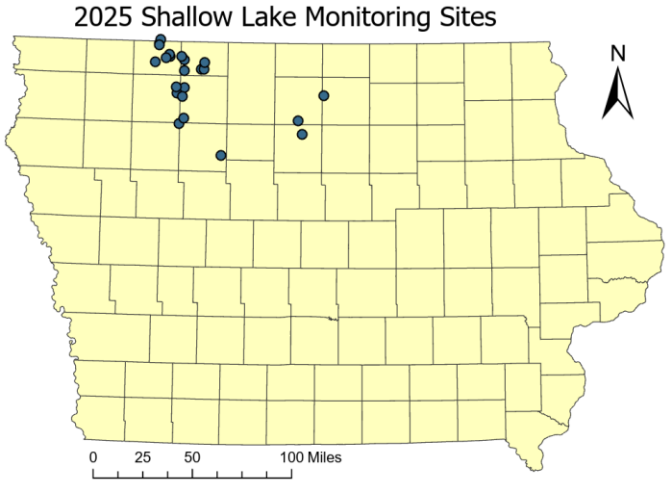


Ambient Lake Monitoring: The purpose of the Ambient Lake Monitoring Program is to define the condition of Iowa's lakes, measure changes or trends in water quality, and to fulfill CWA IR requirements, which includes lake water quality assessments, impaired waters listing, and total maximum daily load reports. Ambient lake sampling data are also used to allocate lake restoration funds and to evaluate the success of lake restoration projects. The Ambient Lake Monitoring Program samples the majority of approximately 135 lakes three times per year and a subset of lakes six times per year. The lakes are monitored for basic water chemistry, nutrients, plankton composition, algal toxins, and clarity. Monitoring is currently completed through a partnership with the Iowa State University Limnology Laboratory (ISU). In 2025, ISU completed 545 sampling sessions at 147 lake sampling locations which resulted in 16,228 unique analytical results.



Supplemental Lake Monitoring: The Supplemental Lake Monitoring Program is similar to the Ambient Lake Monitoring Program except that the monitoring is completed by the WQMA staff and the samples are analyzed by ISU. The supplemental lakes are selected based on impairment status, lakes with no recent monitoring, lakes of restoration interest, or lakes of significant fisheries interest. The supplemental lakes are monitored for three years and a minimum of 10 samples per site are collected to determine the ambient condition. The lakes are monitored for basic water chemistry, nutrients, plankton composition, algal toxins, and clarity. In 2025, WQMA staff completed 54 sampling sessions at 14 lakes which resulted in 1,580 unique analytical results.

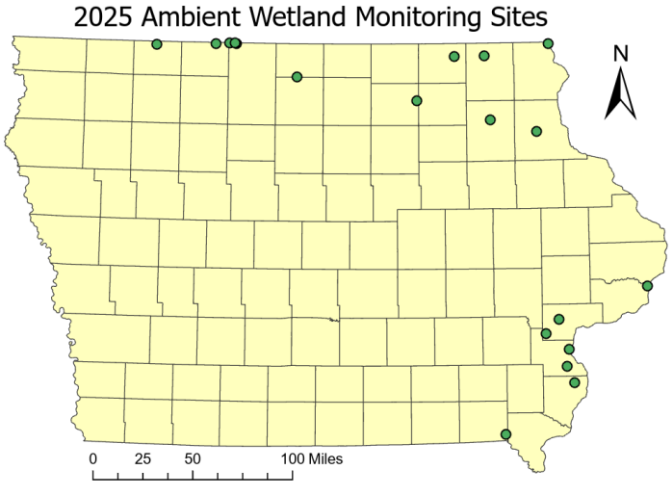




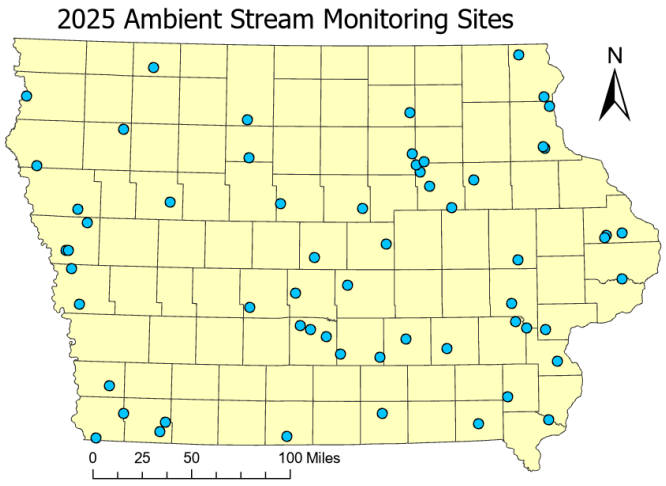
Shallow Lake Monitoring: The Shallow Lake Monitoring Program is a targeted monitoring program designed to show changes in water quality after restoration activities on Iowa's shallow lakes. WQMA collaborates with stakeholders each spring to identify the 25 highest priority shallow lakes (and several alternates) for water quality, vegetation, and invertebrate monitoring. Shallow lakes are monitored by WQMA staff five times throughout the summer for 18 different physical and chemical characteristics of water quality and the laboratory samples are analyzed at SHL. Invertebrate communities and vegetation (plants) are sampled in June and are identified by WQMA staff. In 2025, WQMA staff completed 124 water quality sampling events at

25 shallow lakes resulting in 2232 unique water quality results. In addition, 24 invertebrate samples were collected and six vegetation surveys were conducted.

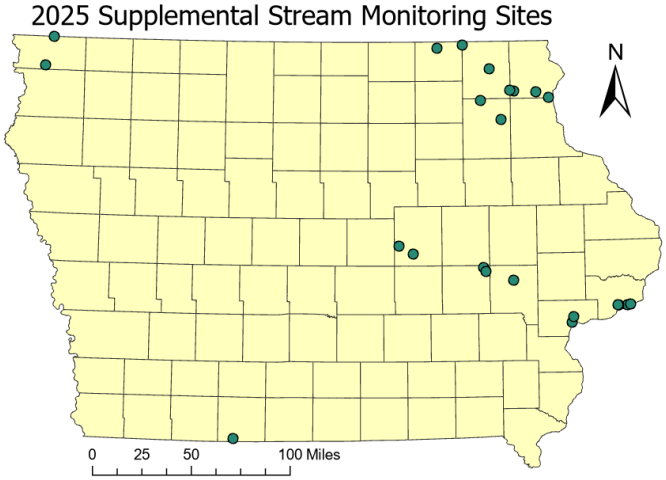
Ambient Wetland Monitoring: The statewide Ambient Wetland Monitoring Program exists to enable the DNR to determine the ecological condition of wetlands while also documenting the leading contaminants and stressors found in these systems. Each year, 10 “Least Disturbed” wetlands and 10 “Random” wetlands are monitored. The wetlands are monitored by WQMA staff three times a summer for 16 different physical and chemical characteristics of water quality and the laboratory samples are analyzed at SHL. In addition, select wetlands are sampled once per season for invertebrates, vegetation, and vertebrates. Fens receive the same water quality monitoring as wetlands and a Fen Rapid Assessment Method (FenRAM) is conducted to quantify the overall assessment of each fen. In 2025, 49 water quality sampling events were conducted at 19 wetlands resulting in 784 unique water quality results. In addition, 14 invertebrate samples were collected, 15 vegetation surveys were conducted, and five vertebrate trapping events were completed.



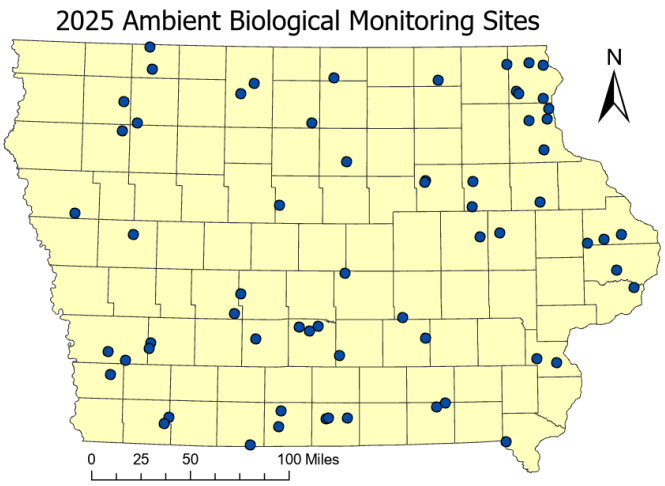
Ambient Stream Monitoring: The data collected from the Ambient Stream Monitoring Program are used to analyze status and trends, complete water quality assessments, and can also be used to develop strategies to protect and improve water quality in Iowa. There are currently 60 sites in the ambient water quality stream monitoring network. The monthly samples from the ambient stream sites in 2025 were analyzed for approximately 22 different physical and chemical characteristics of water quality and the quarterly samples were analyzed for approximately 56 pharmaceutical and pesticide compounds. The DNR contracted SHL Limnology to collect and analyze approximately 960 samples from the 60 sites which resulted in over 29,000 unique water quality results in 2025.



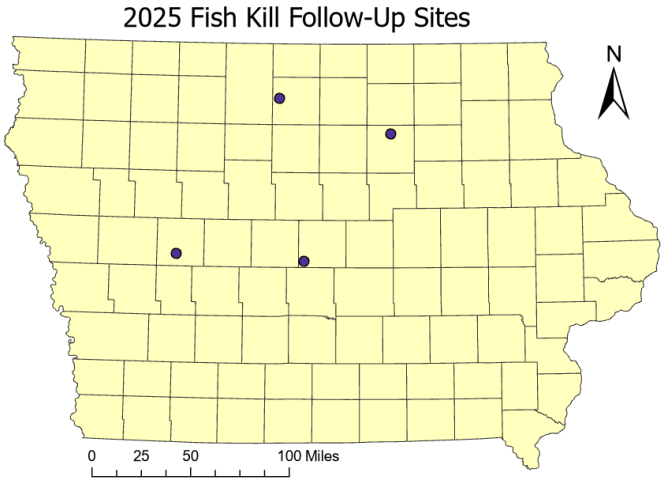
Supplemental Stream Monitoring: The main purpose of the Supplemental Stream Monitoring program is to confirm or remove the water quality impairment(s) on Iowa’s Impaired Waters List. The program also assists in the TMDL program in collecting indicator bacteria data from priority watersheds. On a three-year cycle, select stream segments on the state’s impaired waters list are chosen for supplemental monitoring as part of WQMA’s targeted monitoring. The field sampling is completed by WQMA staff and the laboratory samples are analyzed at SHL. In 2025, a total of 897 samples were collected from 23 sites. These samples included five chloride, hardness carbonate, and sulfate samples from one site, 231 dissolved oxygen, pH, and temperature samples from 23 sites. In addition, 190 *E. coli* samples were collected at 12 sites to gather data in TMDL priority watersheds.



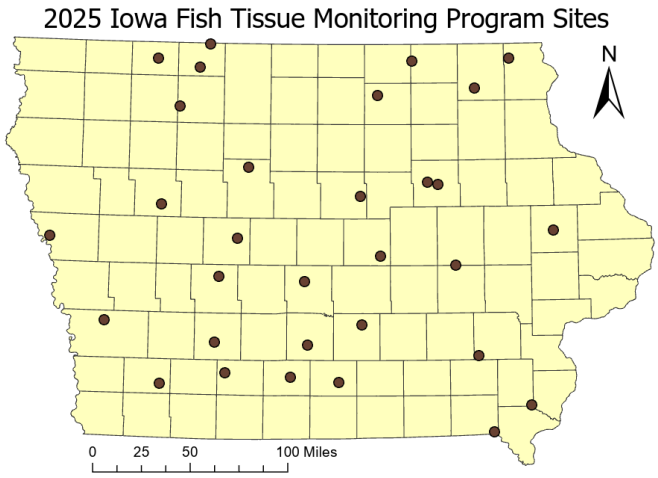
Ambient Biological Monitoring (AMBIO): Since 1994, the WQMA has sampled Iowa's interior streams and rivers for fish and benthic macroinvertebrates and conducted physical habitat assessments to assess the biological integrity of those resources. A water sample is also collected during the sampling event and is analyzed for 20 different physical and chemical characteristics of water quality. Benthic macroinvertebrates are aquatic insects, crustaceans, leeches, and snails that live on the stream bottom. Sampling is conducted during the index period of July 15 to October 15. The numbers and types of aquatic organisms found in a stream are useful indicators of the stream's health because they reflect changes in water quality and habitat. In 2025, the SHL Limnology section collected and analyzed 51 fish community samples, 66 benthic macroinvertebrate community samples, and water quality samples from 67 sites.



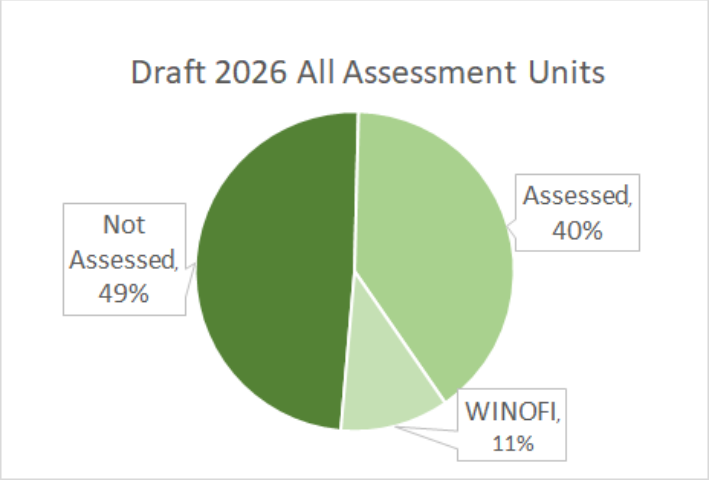
Fish Kill Follow-up (FKF): A fish kill is when a large number of fish die in one event due to anthropogenic or natural causes. When a fish kill is reported, the affected waterbody could be added to the Impaired Waters List. Once added, the waterbody will not be removed from the impaired list until a follow-up survey on the fish population is conducted and the data indicate that the fish community has recovered. The FKF program's priority is to sample streams impaired for fish kills to determine if the fish community has recovered to expected levels and there are no lingering effects from the initial cause. In 2025, four sites were sampled by WQMA staff as part of WQMA's targeted monitoring and all four sites passed Iowa's methodology to remove a fish-kill impairment.

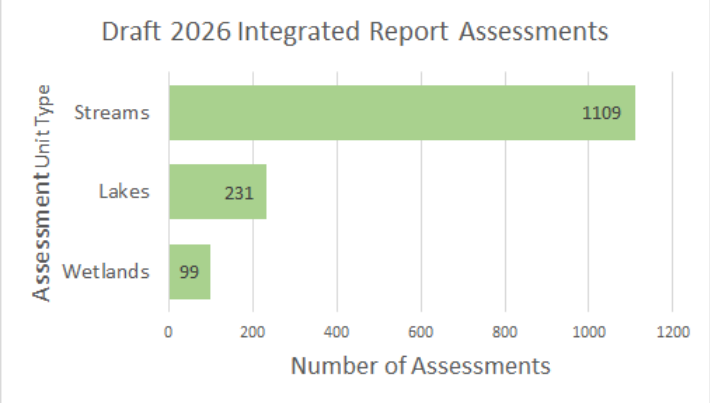


Iowa Fish Tissue Monitoring Program (IFTMP): One of the primary public health concerns regarding water quality is whether or not the fish in Iowa waters are safe to eat. WQMA, in partnership with the Fisheries Bureau, conducts fish tissue monitoring to identify Iowa lakes and rivers where high levels of contaminants in fish potentially threaten the health of fish-consuming Iowans and to assess the human health designated use for the IR. The fish tissue monitoring program falls into WQMA's ambient and targeted monitoring and currently consists of status and trend monitoring. The objective of status monitoring is to determine whether the waterbodies meet the "fish consumption" portion of the fishable goal of the CWA. Trend monitoring was established in 1994 to sample sites at regular intervals to determine trends in levels of contamination. Both status and trend sites are monitored for chlordane, DDT/DDD/DDE, dieldrin, PCBs, lead, selenium, and mercury. In 2025, 26 status samples were collected from significant publicly owned lakes and in each sample three whole bottom feeding fish were collected. Six common carp status samples and 20 channel catfish status samples were collected from 26 sites. The fish tissue samples were shipped to the laboratory in January 2026 and will be analyzed by June 2026. In 2025 Iowa DNR also participated in the EPA RAFT (Regional Ambient Fish Tissue) monitoring program. A total of 46 fish tissue samples from 5 sites were analyzed for mercury, cadmium, lead, and selenium.

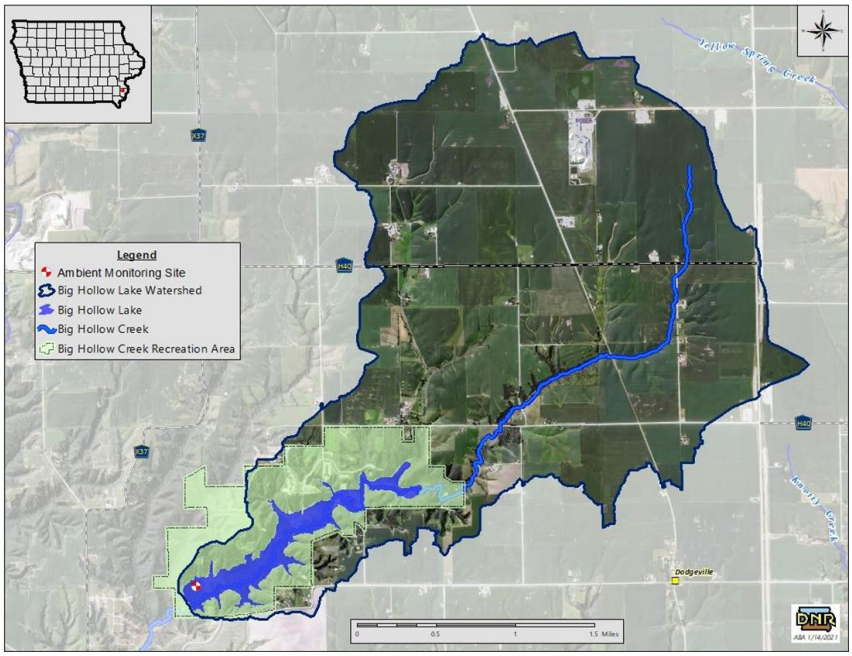


Integrated Report (IR): All of the sampling data collected through the WQMA's sampling programs and many other agencies are used to complete water quality assessments of Iowa's streams, rivers, wetlands, lakes, and reservoirs. These assessments, known as the Integrated Report, use quantitative data to determine the quality of Iowa's water resources. The assessments are prepared under guidance provided by the US EPA under Section 305(b) and 303(d) of the Clean Water Act to estimate the extent to which Iowa's waterbodies meet the goals of the Clean Water Act and attain State water quality standards. DNR shares this information with planners, citizens and other partners in basin planning and watershed management activities. The assessments are prepared every two years, and can be found in the ADBNet assessment online database. DNR submitted the 2026 IR in Spring 2026. To prepare the 2026 IR, WQMA staff gathered approximately 213,000 individual water quality results covering 61 different analytes from DNR and outside agency sampling, 1491 DNR fish and benthic macroinvertebrate community results, DNR Fisheries Bureau trout natural reproduction data, DNR fish kill investigations, DNR fresh water mussel sampling, DNR Wildlife and Fisheries Bureau's best professional judgement, and historic IR assessments. Utilizing all of the aforementioned data and information, DNR completed 2487 individual designated use assessments from 1440 assessment units (stream segments, lakes, wetlands, and reservoirs).





Total Maximum Daily Loads (TMDLs): A TMDL is a calculation that determines how much of a pollutant can enter a specific water body in one day and still allow the water body to meet the state's WQS. The process to create a TMDL is a requirement of the CWA Section 303(d), which requires identifying impaired water bodies, determining the cause of the impairment, and then developing a TMDL for any impairment causing pollutants. In Iowa, the process goes beyond a calculation and becomes part of a Water Quality Improvement Plan (WQIP) that relies on the support and participation of Iowans in the watershed.



There were 2 new TMDLs and 3 addendums covering a total of 7 impairments approved in 2025. TMDLs were completed for Hawthorn Lake (Algae) and for Big Hollow Lake (Algae, Turbidity, and pH). Addendums were completed for Lake Anita (Turbidity), Green Valley Lake (pH), and Meadow Lake (Turbidity), connecting new impairments to previous phosphorus issues. Completion of the Big Hollow Lake TMDL set new and approved phosphorus loading limits for the watershed coordinator to target via nonpoint source reductions.

Section 401 Water Quality Certifications (401 certifications): Section 401 of the CWA gives states the authority to grant, deny, or waive certification for certain proposed federal permits or licenses, typically for dredge or fill projects in Waters of the United States (WOTUS). The DNR's role is different from, but complimentary to, the U.S. Army Corps of Engineers' (USACE) responsibilities. A 401 certification may be granted if an applicant demonstrates that a project will not violate state water quality requirements and is required alongside a USACE Section 404 permit before work may commence. The 401 certifications typically contain project conditions that the applicant is required to follow. Iowa's 401 certification regulations are described in IAC Chapter 61. In some cases, the DNR may grant state certification of a regional (RP) or nationwide (NWP) Section 404 permit covering certain categories of projects. Projects fitting into that category will not require an individual 401 certification, with the exception of any project which may impact an Outstanding Iowa Water. Any projects not completely covered by a certified regional or nationwide Section 404 permit will require an individual 401 certification. In 2025, the WQMA 401 certification program issued 25 certifications. Of those, 21 were individual 401 certifications, three were 401 certifications of RPs (bank stabilization projects, commercial and institutional development projects, and residential development projects), and one was the 401 certification of 46 NWPs.

2025 Section 401 Water Quality Certification Sites