

1999 ANNUAL REPORT

WATER QUALITY MANAGEMENT PROGRAM

MISSOURI RIVER REGION LAKE PROJECTS

1. INTRODUCTION

a. Authorization

This report summarizes the Water Quality Management Program for Corps lake projects within the boundaries of the Northwestern Division, Missouri River Region (MRR). It outlines the program objectives, describes ongoing water quality management activities, organizational and laboratory capabilities, major water quality problems, special studies and significant activities of 1999. This report is prepared in accordance with reporting requirements outlined in ER 1110-2-8154.

b. Objectives

The MRR and its field offices, the Omaha (NWO) and Kansas City (NWK) Districts, have established the following objectives for management of the Division Water Quality Program:

(1) Insure the impounded waters and releases from each lake project are of suitable quality for the established project uses.

(2) Establish base line conditions by defining pre-project (pre-impoundment) and post-project water quality conditions at each lake project.

(3) Determine if project waters are in compliance with applicable state and Federal water quality standards.

(4) Quantitatively identify and assess the magnitude of existing and potential water quality problems associated with project waters. Detect changes over time which may be either beneficial or degrading.

(5) Study special problems or develop criteria for such solutions as structural modification or modification of reservoir regulation procedures aimed at controlling or enhancing environmental conditions and meeting water quality objectives.

(6) Provide an understanding of project conditions to facilitate coordination with state agencies in regard to implementing watershed pollution control.

(7) Maintain an adequate water quality monitoring program for the purpose of achieving the above stated objectives.

c. Summary of Significant Problems

Water quality problems identified in Omaha District projects during 1998 include pesticide and fertilizer contamination from agricultural practices, storm water run-off from urbanization especially during construction, sediment and nutrient inputs to the lakes, contaminants in fish tissue and shoreline erosion. Details of these problems are discussed in section 4. a. Water Quality Issues and Problems in MRR. Following is a summary of significant problems identified in the Omaha District.

Shoreline erosion is prevalent at all Omaha District projects. The erosion destroys littoral zone habitat, decreases light penetration, decreases lake depth all of which in turn impact the ecology, chemistry and recreational longevity of the lake.

Pesticides and mercury continue to be detected in Omaha District projects and both have been detected in fish tissue in the Zorinsky, Wehrspann, Garrison, Bowman-Haley, Pipestem, and Audubon Projects. Polychlorinated biphenyls (PCBs) and dieldrin have also been detected in tissue taken from fish collected in both the Salt Creek and Papillion Creek. Although these creeks are not Corps of Engineer (COE) managed the contaminants in these streams may have passed through COE projects

Extensive urbanization in the basins of tributary reservoirs has caused problems with excessive sediment, nutrients and other pollutant inputs. Cherry Creek, Chatfield, Bear Creek, Holmes, Zorinsky, Wehrspann, Glenn Cunningham and Standing Bear lakes are experiencing urbanization associated problems.

The Old Williston Landfill Area, located on the Garrison Project, is presently undergoing ground water and sediment monitoring. The City of Williston, North Dakota, is conducting the ground water and sediment monitoring while the Omaha District is conducting water sampling in the Little Muddy River adjacent to the site. 1999 was the final year of the study; review of the data by the North Dakota Department of Health will determine if continued sampling is necessary. This determination is expected in early 2000.

The EPA water quality data storage system, STORET, has undergone complete reorganization at the EPA level. Consequently, the Omaha District along with the rest of the USCOE has stored very little data from late 1998 through 1999. The change in the data storage and retrieval process has resulted in the need to create batch storage and retrieval programs and changes in the way data is received from the WES laboratory. Little data has been stored, thus data cannot be retrieved and compared to the various state and Federal water quality standards and criteria. Without the data in this format the Part II of this report will not be produced for 1999.

2. ORGANIZATION AND COORDINATION

a. Organization and Assigned Responsibilities

The Omaha District is responsible for the implementation of the Water Quality Management Program at the Corps lake projects located within the district boundaries. The MRR office provides policy guidance and monitors the overall Water Quality Management Program. The Waterways Experiment Station Chemistry and Materials Quality Assurance Laboratories (CMQAL) performs water quality analyses for both the Omaha and Kansas City Districts and is responsible for technical supervision of water analyses performed at district, project and commercial laboratories. The CMQAL has established and maintains a laboratory quality control program. Engineering organizational elements in the district offices are responsible for the water quality program, although the activities are coordinated with Operations and Planning elements. A biologist and a hydrologic technician coordinate the water quality sampling program in the Omaha District. A limnologist coordinates water quality problems, data analysis and non-routine monitoring. The following table provides further staffing information:

TITLE	GRADE	YEARS OF EXPERIENCE	AREAS OF EXPERTISE
Biological Aide (co-op)	7	1	General biological study
Hydrologic Technician	9	4	STORET data entry
Biologist	11	15	Sample collection
Limnologist	12	34	Limnology, Chemistry, Aquatic ecology, Ichthyology, Phycology, Environmental remediation, Wetlands

Additionally, approximately 30 area personnel are involved in sample collection and mainstem release water monitoring in the water quality monitoring program.

Those Operation Division elements assigned with this responsibility are as follows:

PROJECT OFFICE	STATE
Fort Peck	Montana
Garrison	North Dakota
Oahe	South Dakota
Big Bend	South Dakota
Fort Randall	South Dakota
Gavins Point	South Dakota
Rocky Mountain Area	Colorado

b. Coordination with Others

Water quality activities conducted jointly or under contract with other groups or agencies are as follows:

AGENCY/CONTRACTOR	PROJECT	TYPE OF INVESTIGATION	TYPE OF WORK
USGS	Fort Peck	Surveillance	Sample Collection
USGS	Garrison	Surveillance	Sample Collection
Wayne Kromarek, Contractor	Bowman-Haley	Surveillance	Sample Collection

Routine coordination of sample collection and analyses is conducted with other state organizations within the Omaha District to avoid duplication of sampling effort.

3. WATER QUALITY ACTIVITIES IN MRR

a. Investigations

Three types of investigations are performed on reservoir projects: pre-impoundment, surveillance and comprehensive investigations. A pre-impoundment investigation is made before completion of a project to establish base line conditions. A surveillance investigation is an annual post-project investigation consisting of fixed station sample collection and analysis of basic water quality parameters to establish water quality trends. A comprehensive investigation is an extensive post-project investigation conducted at several locations in the lake to obtain a more thorough understanding of reservoir water quality. Additional water quality parameters are analyzed if a specific problem is being investigated and to obtain a comprehensive evaluation of the present project conditions.

Field investigations conducted during 1999 are as follows:

(1) Pre-impoundment Investigations - none.

(2) Surveillance Investigations

MAINSTEM PROJECTS	TRIBUTARY PROJECTS		
Fort Peck	Pipestem	Standing Bear	Branched Oak
Garrison	Bowman-Haley	Zorinsky	Pawnee
Oahe	Cherry Creek	Glenn Cunningham	Stagecoach
Fort Randall	Bear Creek	Lake Audubon	Olive Creek
Gavins Point	Coldbrook	Lake Pocasse	Wagon Train Lake
Big Bend	Yankton	East Twin	West Twin
	Chatfield	Wehrspann	Yankee Hill
	Conestoga	Bluestem	Holmes

3. COMPREHENSIVE INVESTIGATIONS

b. Special Studies - none

4. WATER QUALITY ISSUES AND PROBLEMS IN MRR

a. Issues and Problems of 1999

(1) Pesticides and Heavy Metal Contamination. Pesticide application throughout the Missouri River basin has affected most Omaha District projects. Pesticides detected in the past five years include atrazine, alachlor, diazinon, dachthal, metolachlor, dieldrin, simazine, metribuzin, propachlor, dicamba and trifluralin. Not all the listed pesticides are covered by Federal criteria or state water quality standards.

Due to the widespread occurrence of pesticides, bioaccumulation of some pesticides in tissue of aquatic organisms is a potential threat to all consumers of these organisms. A 1986 fish tissue analyses program evaluated the extent of bioaccumulation of pesticides and metals in fish of the Salt Creek and Papillion Creeks Lake projects. Results of those tests show that chlordane, dieldrin, DDT and several metals were detectable, but below the level set by the Food and Drug Administration (FDA) to limit or restrict human consumption. Similar studies have not been undertaken to update this information.

Fish tissue collected from Zorinsky and Wehrspann Lakes by the Nebraska Department of Environmental Quality in the past three years has exceeded FDA recommended human consumption limits based on mercury levels in the tissue. The Nebraska Department of Health (NEDH) has issued an advisory against consumption of fish caught in these impoundments. Although not a COE project, the NEDH has issued advisories on eating fish caught in the Salt Creek from Lincoln to the Platte River.

Tissue collected in the Salt Creek has contained both poly chlorinated biphenyls (PCB) and dieldrin. The levels of these toxins were high enough to issue a consumption advisory.

The following sites, tested by the NEDH, have shown no fish contamination that would warrant a consumption advisory under Nebraska protocol: Branched Oak, Bluestem, Conestoga, Holmes, Olive Creek, Pawnee, Wagon Train, Yankee Hill, Glen Cunningham, and Lewis and Clark Lake.

The U.S. Fish and Wildlife Service (USFWS) in Pierre, South Dakota, collected blood, liver, and muscle tissue from shovelnose sturgeon and walleye from the Missouri River near Pierre and Yankton, South Dakota, in spring 1994. The tissue was to be tested for 23 elements and reproductive hormones. Results of the testing may be combined with data from similar studies in Montana and North Dakota.

Similar analysis was performed on blue suckers and paddlefish collected from the

Missouri River in 1993. These results may be combined with the 1994 data as well.

The USFWS has also conducted studies concerning fish collected in irrigation return water. The studies will measure heavy metals and organochlorine pesticides in the fish tissue. Data were collected in 1996 in Lake Pocasse and in 1997 in the Cheyenne arm of Lake Oahe. Results of the 1996 testing are being combined with similar studies conducted in Colorado, Utah, Montana, North and South Dakota, Kansas and Nebraska. A report of the findings was to be published in 1999 but is now expected in 2000.

The Oglala Sioux Tribe and the Bureau of Reclamation collected fish tissue in the upper Cheyenne River near Angostura, South Dakota, in 1998. The tissue will be analyzed for heavy metals and pesticides.

The North Dakota Department of Health and Consolidated Laboratories (NDDHCL) in Bismarck, North Dakota, has issued an advisory on consumption of fish caught in some streams and lakes in North Dakota. Bowman-Haley Lake and Lake Sakakawea are included in the advisory. The detection of mercury in the fish fillets precipitated the advisory. The advisory was not intended to discourage anglers from eating fish, but offered advice on how fish caught in these impoundments could be eaten safely. Anglers are advised to consume small younger fish and release older fish. Additional analyses will be conducted by the NDDHCL and the advisory updated annually.

The NDDHCL had undertaken a study on mercury in fish tissue from Lake Sakakawea. The study involved the release of mercury from vegetation inundated by the 1993 flood. The study concluded that walleye, sauger and chinook salmon populations all demonstrated a significant increase in mercury content.

(2) Urbanization. Urbanization is on-going around many Omaha District reservoirs. Reservoirs with urbanizing watersheds include Cherry Creek, Chatfield, Bear Creek, Holmes, Zorinsky, Glen Cunningham, Standing Bear, and Wehrspann Lakes. Urbanization to a lesser degree is occurring at additional projects.

Construction methods normally involve laying the land bare allowing sediment laden run-off to impact nearby streams and lakes. Best Management Practices (BMP) to minimize construction associated sedimentation damages are rarely used effectively. Methods of minimizing construction impact include; temporary sediment ponds, staging construction so that large areas are not denuded, using hay bales, silt curtains, etc. Efforts should be made to prevent off-project construction sedimentation from causing on-project impacts. This could be accomplished by working with developers and appropriate state, city, or county agencies.

Post construction problems are commonly associated with storm drainage and urban pollution. The conversion of grasslands or forests to roads, rooftops, sidewalks, and other water impervious surfaces make stream flows more variable and increases the frequency of high flow events. In addition, pollutants associated with urban drainage can cause severe impacts to downstream water bodies. Urban storm flows detrimental to receiving water

can be permitted under the National Pollutant Discharge Elimination System thus requiring treatment. Storm sewer exits can be allowed on project lands provided detention in the form of ponds, swales, or wetlands exist on private property. A developer may be asked to construct a series of wetlands to slow downhill flows and provide time for bacterial die-off, chemical degradation, reduced flow rates, and sediment fall out.

(3) Sedimentation Sedimentation is the process which ultimately eliminates the usefulness of reservoirs. In the design and construction of reservoirs, the COE will commonly allow for additional volume to accommodate sedimentation. The inflowing sediment destroys the reservoirs ecology, fisheries, benthos, and in general makes the reservoir less valuable than originally intended. The reservoir will suffer severe ecological damage long before a volume function such as flood control is impacted. The influx of sediment eliminates fish habitat, adds nutrients, destroys aesthetics, and decreases biodiversity. Sediment traps should be an integral part of any reservoir project. Closely working with the project sponsors in an effort to manage sediment input would ultimately prolong reservoir life. Wetlands could be constructed at the upper end of a reservoir either upstream of the reservoir, or by taking a portion of the reservoir's upper end, making a wetland. It is much more cost effective to keep the sediment out of the reservoir than to renovate the reservoir after the damage is done.

(4) Shoreline Erosion. Shoreline erosion is a major problem occurring on nearly all reservoirs located in areas of erodible soils such as the Midwest. The Omaha District alone has over 6000 miles of reservoir shoreline of which between 70 and 90 percent is eroding. Some facilities have been protected, such as recreational and archaeological sites, but most of the shoreline continues to erode. Continued loss of the shoreline habitat (littoral zone) results in the loss of fishery habitat as well as loss of habitat for other biota such as aquatic vegetation and benthos. Past shoreline erosion efforts should be evaluated for effectiveness so that successes can be repeated and failures rejected. An "ad hoc" committee has been formed to resolve shoreline erosion problems.

b. Water Quality Classification

The water quality conditions in each project have been classified in accordance with the following criteria:

CLASS	CRITERIA
I	High Water Quality No Known Problems
II	Generally Good Water Quality: Minor or Suspected Problems
III	Continuing Water Quality Problems Requires Close Monitoring of Trends and Careful Examination of Problems

The following is a list of projects evaluated according to the above classifications.

(1) Class I: None

(2) Class II

Fort Peck	Chatfield	Garrison	Oahe
Big Bend	Fort Randall	Gavins Point	Audubon
Pipestem	Lake Pocasse	Lake Yankton	Coldbrook
Cottonwood Springs			

(3) Class III

Zorinsky	Standing Bear	Pawnee	Wehrspann
Yankee Hill	Glenn Cunningham	Stagecoach	Conestoga
Cherry Creek	Bowman-Haley	Holmes	Bluestem
Bear Creek	Branched Oak	East Twin	West Twin
Olive Creek	Wagon Train		

5. TECHNICAL ASSISTANCE TO OTHERS

A large part of the technical assistance to others consisted of aiding district elements. An increasing portion of the workload has been assisting outside agencies such as states, Natural Resource Districts or project sponsors with specific water quality problems. The following identifies assistance provided to various Corps elements and outside agencies.

a. Technical Assistance - Engineering Division.

1. Reviewed Section 1135 projects
2. Reviewed the Zorinsky Lake development proposals
3. Assisted on the draw down portion of the Lake Sharpe Environmental Impact Statement. This involved a number of environmental problems such as sedimentation, loss of benthos, impacts to fisheries, and shoreline erosion
4. Developed an "ad hoc" committee with the approval of Operations Division to develop environmentally friendly methods of shoreline erosion control
5. Provided data on the Chatfield/Bear Creek Re-allocation study
6. Worked with other COE elements on evaluating dredging test results
7. Worked with UNL on contracts for evaluating Salt Creek Lakes and researching problems for quantifying long term changes in reservoir chemistry,

physics and biology

b. Technical Assistance - Operations Division.

1. Review and comment on Standing Bear Lake construction
2. Provide assistance to the Gavins Point Project on a proposed hog lot operation
3. Assisted the Missouri River Project Office to utilize tire bales as a shoreline erosion preventative measure as well as to provide littoral zone habitat fisheries production
4. Assisted numerous area offices on shoreline problems and evaluations of the effectiveness of their efforts
5. Assisted the Bowman-Haley ranger with fishery problems involving fish ladders and the disappearance of some fishes in the area of a constructed wetland
6. Provided alternatives to rock for purposes of halting shoreline erosion to various project offices
7. Provided assistance involving the use of scrap tires for fishery management and shoreline prevention
8. Developed life histories for fishes potentially impacted by the Spring Creek diversion
9. Provided information on agitation dredging
10. Attended Salt Creek coordination meetings
11. Worked on willow seed for shoreline erosion

c. Technical Assistance - Real Estate Division.

1. Assisted Real Estate Division and developers to resolve sedimentation problems associated with construction at Chatfield Reservoir (Chatfield Green Development)

d. Technical Assistance - Other Corps Elements.

1. Water quality personnel are members of several groups and committees including two COE Field Review Groups.
2. Assisted OCE on a variety of COE efforts such as reviewing Section 1135 projects, handbooks and other reports and in updating the Water Quality Engineering Manual
3. Assisted OCE and WES on a variety of new environmental programs and efforts such as Ecosystem Management and Restoration Resources Programs and the Roadmap Conference to provide environmental direction to COE efforts
4. Worked with a variety of COE elements on the use of tires for fishery habitat and for stopping shoreline erosion
5. Attended Corps committee on Water Quality Meetings and Field Review Group meetings
6. Worked on assessing and guiding the COE Research and Development program
7. Worked with WES in developing environmentally friendly methods and guiding

- research efforts for submittal to district and division offices
- 8. Provided input at OCE meetings pertinent to new environmental missions
- 9. Provided information and expertise at OCE meeting involving new COE environmental initiatives
- 10. Provided Part III of the Annual Water Quality report to OCE

e. Assistance to Outside Agencies.

- 1. Assisted the United States Geological Survey (USGS) as a member of the National Water Quality Assessment (NAWQA) Liaison Committee on matters pertaining to the Platte River
- 2. Assisted the City of Omaha on a Zorinsky Lake Watershed Development Plan
- 3. Assisted the State of Nebraska in developing and maintaining their Non-Point Pollution Source Program
- 4. Assisted the Nebraska Department of Environmental Quality to protect water sources for numerous cities SWAP program
- 5. Worked with the State of Nebraska on resolving fish tissue pollutant problems in Nebraska waters
- 6. Provided the City of Omaha with environmentally friendly methods of dealing with sedimentation and shoreline erosion within the Zorinsky Lake watershed
- 7. Worked with Boystown in evaluating their reservoir problems and identifying solutions and obtaining financing
- 8. Assisted the State of Nebraska in developing and implementing the Source Water Assessment Program for Nebraska
- 9. Worked with the City of Omaha on Papio sampling
- 10. Worked with the State of Nebraska in evaluation Non-Point Source projects. This involved evaluation which in turn resulted in the awarding of millions of dollars for environmental projects
- 11. Worked with the State of Nebraska in resolving fish tissue contaminant problems
- 12. Worked with the State of Nebraska and area offices in attempting to resolve odor problems associated with the development of hog lots
- 13. Worked on shoreline erosion problems on Salt and Papio Creek Lakes. Provided information to project office and Nebraska Game and Parks

f. Water Quality Sample Collection Training. The Omaha District Water Quality Unit utilizes approximately 30 area personnel for water quality sample collection and support of the continuous recording water quality monitors. Periodic training of new personnel and refresher training is necessary to maintain the present quality of field sampling. The following Projects were provided with training:

- 1. Gavins Point

6. POSITIVE ACTIONS

As a result of the water quality unit's involvement, a variety of efforts to improve lake

quality are being accomplished. These efforts improve water quality and recreation and have the potential to extend the recreational life of the lake. Examples of positive actions include:

a. Major programs are on-going at Cherry Creek and Zorinsky Lakes. These programs are aimed at maintaining and improving water quality and reservoir ecosystems.

b. Water quality personnel are involved in many shoreline erosion prevention projects and wetland creation projects which will benefit water quality, aesthetics, fisheries, and recreation. An “ad hoc” committee was formed to involve Planning, Operations, and Engineering in the resolution of shoreline erosion problems.

c. The following ideas have been provided by water quality personnel and have been initiated or are being considered for action:

(1) Utilizing riprap in new ways to increase habitat diversity and decreasing the cost of riprap per linear foot.

(2) Resolving shoreline erosion problems using sound ecological methods.

(3) Working with state agencies on warning fishermen about reservoirs with contaminants in fish flesh.

7. GOALS AND RECOMMENDATIONS

The following actions are recommended to improve and maintain the overall water quality program.

a. Maintain a balanced Water Quality Management Program that is responsive to project and agency needs.

b. Assist Operations elements with the development of action plans for dealing with emergency situations such as fish kills or algal problems and assist Real Estate with easement problems pertinent to water quality applications.

c. Expand on the use and training of project personnel to collect water quality data.

d. Maintain a viable Water Quality Data Collection Program to determine if project waters are in compliance with applicable State water quality standards.

e. Cooperate with state and Federal agencies in evaluation of stream flow needs and resolving problems beyond Corps management boundaries to insure beneficial usage of impounded waters.

f. Assist other district elements in the assessment of potential of actual water quality issues.

g. Identify and resolve point source pollution problems such as inadequate sewage treatment.

h. Maintain a viable monitoring program at all the projects in accordance with ranked priorities, concentrating more effort on Class III projects, as identified in 4.b.

i. Facilitate coordination with state agencies in regard to implementing water shed pollution control by providing an understanding of project conditions.

**WATER QUALITY PROBLEMS AND ISSUES
IN MRR LAKES 1999
OMAHA DISTRICT**

Project	Algal Blooms	Fish Kills	Actual/Potential Problem Areas*	State Standard Exceedance
Fort Peck, Montana Missouri River Main Stem	None Reported	None Reported	Coal and Oil Development, Algal Blooms	Data collected but unable to be retrieved due to changes in the STORET system
Lake Sakakawea, North Dakota Missouri River Main Stem	Yes	None Reported	Oil Drilling, Strip Mining, Algal blooms, Low Dissolved Oxygen	Data collected but unable to be retrieved due to changes in the STORET system
Lake Audubon, North Dakota Subimpoundment Lake Sakakawea	Yes	None Reported	Winter Kills	Data collected but unable to be retrieved due to changes in the STORET system
Lake Oahe, South Dakota Missouri River Main Stem	None Reported	None Reported	Agricultural runoff containing pesticides and other contaminants, Bioaccumulation of Mercury	Data collected but unable to be retrieved due to changes in the STORET system
Lake Pocasse, South Dakota Subimpoundment, Lake Oahe	None Reported	None Reported	Agricultural runoff Winter kills	Data collected but unable to be retrieved due to changes in the STORET system
Lake Sharpe, South Dakota Missouri River Main Stem	None Reported	None Reported	Agricultural runoff	Data collected but unable to be retrieved due to changes in the STORET system
Lake Francis Case, South Dakota Missouri River Main Stem	None Reported	None Reported	Intrusion of the White River Delta	Data collected but unable to be retrieved due to changes in the STORET system
Lewis and Clark, South Dakota Missouri River Main Stem	None Reported	None Reported	Emergent aquatic vegetation	Data collected but unable to be retrieved due to changes in the STORET system
Lake Yankton, South Dakota Forebay of Gavins Point	None Reported	None Reported	Schistosome Dermatitis	Data collected but unable to be retrieved due to changes in the STORET system
Bowman-Haley, North Dakota Tributary	Yes	None Reported	Algal blooms	Data collected but unable to be retrieved due to changes in the STORET system
Pipestem, North Dakota Tributary	Yes	None Reported	Winter kills	Data collected but unable to be retrieved due to changes in the STORET system
Cottonwood Springs, South Dakota	None Reported	None Reported		Data collected but unable to be retrieved due to changes in the STORET system
Cold Brook, South Dakota Tributary	None Reported	None Reported		Data collected but unable to be retrieved due to changes in the STORET system
Cherry Creek, Colorado Tributary	None Reported	None Reported	Rapid urbanization Winter kills Bacterial contamination	Data collected but unable to be retrieved due to changes in the STORET system
Bear Creek, Colorado Tributary	None Reported	None Reported	Bacterial contamination Urbanization Low dissolved oxygen Winter kills	Data collected but unable to be retrieved due to changes in the STORET system

Project	Algal Blooms	Fish Kills	Actual/Potential Problem Areas*	State Standard Exceedance
Chatfield, Colorado Tributary	None Reported	None Reported	Urbanization, Potential Contamination from Martin Marietta, Low dissolved oxygen,	Data collected but unable to be retrieved due to changes in the STORET system
Pawnee Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Sedimentation, Shoreline erosion	Data collected but unable to be retrieved due to changes in the STORET system
Olive Creek lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Sedimentation, Shoreline erosion	Data collected but unable to be retrieved due to changes in the STORET system
Yankee Hill Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
Wagon Train Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
Holmes Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
Blue Stem Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
East Twin Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Winter kills, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
West Twin Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Winter kills, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
Stagecoach Lake, Salt Valley Reservoir Nebraska Tributary	Yes	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
Conestoga Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
Branched Oak Lake, Salt Valley Reservoir Nebraska Tributary	None Reported	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Shoreline erosion, Sedimentation	Data collected but unable to be retrieved due to changes in the STORET system
Glen Cunningham Lake Papillion Creek Reservoir Nebraska, Tributary	Yes	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Sedimentation, Shoreline erosion, Oil spills	Data collected but unable to be retrieved due to changes in the STORET system
Standing Bear Lake Papillion Creek Reservoir Nebraska, Tributary	Yes	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Sedimentation, Shoreline erosion	Data collected but unable to be retrieved due to changes in the STORET system
Wehrspann Lake Papillion Creek Reservoir Nebraska, Tributary	Yes	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Sedimentation, shoreline erosion	Data collected but unable to be retrieved due to changes in the STORET system
Zorinsky Lake Papillion Creek Reservoir Nebraska, Tributary	Yes	None Reported	Bioaccumulation of metals and pesticides, Algal toxins, Sedimentation, Shoreline erosion	Data collected but unable to be retrieved due to changes in the STORET system