

LOWER ARKANSAS RIVER BASIN TOTAL MAXIMUM DAILY LOAD

Waterbody: Wellington Old City Lake
Water Quality Impairment: Siltation

1. INTRODUCTION AND PROBLEM IDENTIFICATION

Subbasin: Chikaskia

County: Sumner

HUC 8: 11060005

HUC 11 (HUC 14): 030 (040)

Drainage Area: Approximately 49.3 square miles.

Conservation Pool: Area = 325 acres, Maximum Depth = 5 meters

Designated Uses: Primary Contact Recreation; Expected Aquatic Life Support; Food Procurement; Drinking Water; Industrial Water Supply

1998 303(d) Listing: Table 4 - Water Quality Limited Lakes

Impaired Use: Expected Aquatic Life

Water Quality Standard: Suspended solids - Narrative: Suspended solids added to surface waters by artificial sources shall not interfere with the behavior, reproduction, physical habitat or other factor related to the survival and propagation of aquatic or semi-aquatic or terrestrial wildlife. (KAR 28-16-28e(c)(2)(D)).

2. CURRENT WATER QUALITY CONDITION AND DESIRED ENDPOINT

Monitoring Sites: Station 042201 in Wellington Old City Lake

Period of Record Used: Four surveys during 1985-1997

Current Condition: Wellington Old City Lake's total suspended solids (TSS) concentration averaged 33 mg/L for the period of record. Turbidity has remained high (extremely high in 1993) for all sample dates, averaging 85 formazin turbidity units near the surface of the water column. Average transparency (Secchi Disc depth) for the period is 0.21 meters.

Total monthly precipitation at Wellington (Gage 148670) for May 1993 was 12.26 inches; the largest recorded total at Wellington since June 1957. Typical erodibility factors (K) for most soils (Bethany, Kirkland and Tabler soils) in the drainage area are fairly high, ranging between 0.43 and 0.49. Wind may also act to resuspend fine materials in the lake.

Interim Endpoints of Water Quality (Implied Load Capacity) at Wellington Old City Lake over 2005 - 2009:

The endpoint for Wellington Old City Lake will be an increase in column transparency as measured by Secchi Disc to 0.3 meters or greater.

3. SOURCE INVENTORY AND ASSESSMENT

NPDES: There are no NPDES permitted dischargers within the watershed.

Land Use: Most of the watershed is cropland (72.5% of the area), grassland (26% of the area) or woodland (1.5% of the area). Most of the grassland is located in the lower portion of the watershed and on the steeper slopes within the drainage area. Both the off-season grazing density and growing season grazing density are low-average when compared to the rest of the Lower Arkansas River Basin.

Background Levels: Some sediment loading may be associated with background levels, especially when considering large runoff events. The scale of such loading is probably not a factor when compared to sediments loads from other land uses, under the same size runoff event.

4. ALLOCATION OF POLLUTANT REDUCTION RESPONSIBILITY

More detailed assessment of sources and confirmation of the siltation impairment of the lake must be completed before detailed allocations can be made. The general inventory of sources within the drainage does provide some guidance as to areas of load reduction.

Point Sources: A current Wasteload Allocation of zero is established by this TMDL because of the lack of point sources in the watershed. Should future point sources be proposed in the watershed and discharge into the impaired segments, the current wasteload allocation will be revised by adjusting current load allocations to account for the presence and impact of these new point source dischargers.

Nonpoint Sources: Based on the assessment of sources and the relationship of excursions to runoff conditions, non-point sources are seen as a significant cause of water quality violations. Background levels are not significant as a cause of the problem. Implementation of non-point source pollution control practices should be taken within the watershed. It appears silt loading occurs when runoff events cause poorly protected soils and stream banks to be washed into Wellington Old City Lake. Lake banks are eroded by waves, adding to the sediment load within the lake. Wind also acts to resuspend existing lake sediment. Based on the relationship between turbidity and Secchi depth at this lake, the Load Allocation within the lake is turbidity levels not to exceed 54.0 formazin turbidity units, a 30% reduction from current condition.

Defined Margin of Safety: The margin of safety provides some hedge against the uncertainty of the Secchi disc depth endpoint. Therefore, the margin of safety will be 6.0 formazin turbidity units (10%) taken from the load capacity to ensure that adequate load reduction occurs to meet the endpoint.

State Water Plan Implementation Priority: Because dredging can be used to correct the siltation impairment, this TMDL will be a Medium Priority for implementation.

Unified Watershed Assessment Priority Ranking: This watershed lies within the Chikaskia River Subbasin (HUC 8: 11060005) with a priority ranking of 30 (Medium Priority for restoration work).

Priority HUC 11s: The lake is located in HUC 11 (030).

5. IMPLEMENTATION

Desired Implementation Activities

There is a very good potential that agricultural best management practices coupled with stream and lake bank stabilization will allow full use support to take place in Wellington Old City Lake. Despite such potential improvements, turbidity may still remain a problem due to the wind-mixed conditions. Removal of sediment by dredging will serve to alleviate wind resuspension of fine materials. Some of the recommended practices are as follows:

1. Maintain conservation tillage and contour farming to minimize cropland erosion.
2. Install grass buffer strips along streams.
3. Reduce activities within riparian areas.
4. Sediment dredging
5. Stabilize lake banks

Implementation Programs Guidance

Nonpoint Source Pollution Technical Assistance - KDHE

- a. Support Section 319 demonstration projects for reduction of sediment runoff from agricultural activities as well as nutrient management.
- b. Provide technical assistance on practices geared to establishment of vegetative buffer strips.
- c. Provide technical assistance for lake dredging activities.

Water Resource Cost Share Program - SCC

- a. Apply conservation farming practices, including terraces and waterways, sediment control basins, and constructed wetlands.

Nonpoint Source Pollution Control Program - SCC

- a. Provide sediment control practices to minimize erosion and sediment and nutrient transport.

Riparian Protection Program - SCC

- a. Establish or reestablish natural riparian systems, including vegetative filter strips and streambank vegetation.
- b. Develop riparian restoration projects.

Buffer Initiative Program - SCC

- a. Install grass buffer strips near streams and lake edges.
- b. Leverage Conservation Reserve Enhancement Program to hold riparian land out of production.

Small Lake Program - SCC

- a. Stabilized banks along lake shore.

Extension Outreach and Technical Assistance - Kansas State University

- a. Educate agricultural producers on sediment, nutrient, and pasture management.
- b. Provide technical assistance on buffer strip design and minimizing cropland runoff.

Time frame for Implementation: Source inventory should be completed within the priority subwatersheds during the years 2001-2005, pollutant reduction practices installed over 2005-2009.

Targeted Participants: Primary participants for implementation will be agricultural producers within the drainage of the lake and lake managers. Initial work in 2005 should include local assessments by conservation district personnel and county extension agents to locate within the lake drainage:

- 1. Total row crop acreage on highly erodible land
- 2. Unstable stream and lake banks

Milestone for 2005: The year 2005 marks the midpoint of the ten-year implementation window for the watershed. At that point in time, additional monitoring data from Wellington Old City Lake will be reexamined to confirm the impaired status of the lake. Should the case of impairment remain, source assessment review, allocation and implementation activities will ensue.

Delivery Agents: Depending upon confirmation of impairment and assessment of probable sources, the primary delivery agents for program participation will be the conservation districts for programs of the State Conservation Commission and the Natural Resources Conservation Service. Producer outreach and awareness will be delivered by Kansas State.

Reasonable Assurances

Authorities: The following authorities may be used to direct activities in the watershed to reduce pollution.

- 1. K.S.A. 65-164 and 165 empowers the Secretary of KDHE to regulate the discharge of sewage into the waters of the state.

2. K.S.A. 65-171d empowers the Secretary of KDHE to prevent water pollution and to protect the beneficial uses of the waters of the state through required treatment of sewage and established water quality standards and to require permits by persons having a potential to discharge pollutants into the waters of the state.
3. K.A.R. 28-16-69 to -71 implements water quality protection by KDHE through the establishment and administration of critical water quality management areas on a watershed basis.
4. K.S.A. 2-1915 empowers the State Conservation Commission to develop programs to assist the protection, conservation and management of soil and water resources in the state, including riparian areas.
5. K.S.A. 75-5657 empowers the State Conservation Commission to provide financial assistance for local project work plans developed to control non-point source pollution.
6. K.S.A. 82a-901, et seq. empowers the Kansas Water Office to develop a state water plan directing the protection and maintenance of surface water quality for the waters of the state.
7. K.S.A. 82a-951 creates the State Water Plan Fund to finance the implementation of the Kansas Water Plan.
8. The *Kansas Water Plan* and the Lower Arkansas Basin Plan provide the guidance to state agencies to coordinate programs intent on protecting water quality and to target those programs to geographic areas of the state for high priority in implementation.

Funding: The State Water Plan Fund, annually generates \$16-18 million and is the primary funding mechanism for implementing water quality protection and pollutant reduction activities in the state through the Kansas Water Plan. The state water planning process, overseen by the Kansas Water Office, coordinates and directs programs and funding toward watersheds and water resources of highest priority. Typically, the state allocates at least 50% of the fund to programs supporting water quality protection. This watershed and its TMDL is a Medium Priority consideration.

Effectiveness: Silt loads can be reduced through improvements to erosion control and bank stabilization within the watershed. Minimal control can be exerted on natural contributions to loading.

6. MONITORING

Additional data, to establish source loading, would be of value prior to 2005. Further sampling and evaluation should occur once before 2005 and once between 2005 and 2010.

7. FEEDBACK

Public Meetings: Public meetings to discuss TMDLs in the Lower Arkansas Basin were held March 9, 2000 and April 26-27, 2000 in Wichita, Hutchinson, Arkansas City and Medicine Lodge. An active Internet Web site was established at <http://www.kdhe.state.ks.us/tmdl/> to convey information to the public on the general establishment of TMDLs and specific TMDLs for the Lower Arkansas Basin.

Public Hearing: A Public Hearing on the TMDLs of the Lower Arkansas Basin will be held in Wichita on June 1, 2000.

Basin Advisory Committee: The Lower Arkansas Basin Advisory Committee met to discuss the TMDLs in the basin on September 27, November 8, 1999; January 13, 2000; March 9, 2000;

Discussion with Interest Groups: Meetings to discuss TMDLs with interest groups include:

Agriculture: January 12, February 2 and 29, 2000

Environmental: March 9, 2000

Conservation Districts: November 22, 1999

Industry: December 15, 1999, January 13, February 9 and 22, 2000

Local Environmental Protection Groups: September 30, November 2, December 16, 1999

Milestone Evaluation: In 2005, evaluation will be made as to the degree of impairment which has occurred within the drainage and current condition of Wellington Old City Lake. Subsequent decisions will be made regarding implementation approach and follow up of additional implementation.

Consideration for 303(d) Delisting: Wellington Old City Lake will be evaluated for delisting under Section 303(d), based on the monitoring data over the period 2005-2009. Therefore, the decision for delisting will come about in the preparation of the 2010 303(d) list. Should modifications be made to the applicable nutrient criterion during the ten year implementation period, consideration for delisting, desired endpoints of this TMDL and implementation activities may be adjusted accordingly.

Incorporation into Continuing Planning Process, Water Quality Management Plan and the Kansas Water Planning Process: Under the current version of the Continuing Planning Process, the next anticipated revision will come in 2002 which will emphasize revision of the Water Quality Management Plan. At that time, incorporation of this TMDL will be made into both documents. Recommendations of this TMDL will be considered in Kansas Water Plan implementation decisions under the State Water Planning Process after Fiscal Year 2004.

Approved November 13, 2000.