

KANSAS-LOWER REPUBLICAN BASIN TOTAL MAXIMUM DAILY LOAD

Waterbody: Jamestown Wildlife Management Area
Water Quality Impairment: Fecal Coliform Bacteria

1. INTRODUCTION AND PROBLEM IDENTIFICATION

Subbasin: Lower Republican **County:** Cloud

HUC 8: 10250017 **HUC 11:** 030

Drainage Area: Approximately 137.5 square miles.

Conservation Pool: Area 1265 acres, Maximum Depth 1.0 meter

Designated Uses: Secondary Contact Recreation; Aquatic Life Support

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

Impaired Use: Secondary Contact Recreation

Water Quality Standard: 2000 colonies per 100 ml for Secondary Contact Recreation
(KAR 28-16-28e(c)(7)(C))

2. CURRENT WATER QUALITY CONDITION AND DESIRED ENDPOINT

Monitoring Sites: Station 052801 in Jamestown WMA.

Period of Record Used: Five complete surveys—1989, 1992, 1995, 1997, & 1998

Current Condition:

Over the five years that surveys were taken, the FCB count was high twenty percent of the time. The average concentration of FCB was 3304 colonies per 100 ml, ranging from 110 to 25,000 colonies per 100 ml.

Interim Endpoints of Water Quality (Implied Load Capacity) at Jamestown WMA over 2004 - 2008:

To have all fecal coliform bacteria samples fall below 2000 colonies per 100 ml.

3. SOURCE INVENTORY AND ASSESSMENT

Land Use: Fecal coliform bacteria from animal waste (wildlife and livestock) is the main contributing factor. Twenty-nine percent of land around the wildlife management area is grassland. Grazing density of livestock is moderate for the watershed (29 -31 animal units/sq. mi.), with most of the projected livestock accounted within the permitted facilities. Manure applied to cropland (64% of the watershed) is another source of fecal coliform bacteria. Some organic pollution is contributed by wildlife; it is likely that the population of animals such as deer and water fowl is high in the Wildlife Management Area.

On-Site Waste Systems: The population density in the watershed is low. Rural population projections for Cloud County through 2020 show the density declining. Failing on-site waste systems can contribute bacteria loadings.

Contributing Runoff: The watershed has an average soil permeability of 1.4 inches/hour according to NRCS STATSGO data base. Runoff would be produced from storms one hour in duration, having a recurrence interval of five, ten or twenty five years and from storm 2 hours in duration having a recurrence interval of ten and twenty five years. Runoff is chiefly generated as infiltration excess with rainfall intensities greater than soil permeabilities. Generally, 9 percent of the watershed would generate runoff under dryer conditions or smaller storms. Moderate or wet conditions or larger storms would see runoff contributed from 46 or 79 percent of the watershed respectively.

4. ALLOCATION OF POLLUTION REDUCTION RESPONSIBILITY

More detailed assessment of sources and confirmation of the fecal coliform impairment 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: Since this impairment is primarily associated with agricultural and natural non-point source pollution, there will be no Wasteload Allocation assigned to point sources for nutrients under this TMDL.

Non-Point Sources: Water quality violations are due to non-point source pollution. The assessment suggests that animal waste contribute to the fecal coliform bacteria impairment. Given the runoff characteristics of the watershed, overland runoff can easily carry the bacteria into the wildlife management area. 1,900 colonies per 100 ml will be used for Secondary Contact Recreation.

Defined Margin of Safety: The margin of safety will be 100 colonies per 100 ml, which allows evaluation of future water quality conditions.

State Water Plan Implementation Priority: Because the water quality impairment in Jamestown WMA are partially caused by natural sources (wildlife waste), this TMDL will be a Low Priority for implementation

Unified Watershed Assessment Priority Ranking: This watershed lies within the Lower Republican Subbasin (HUC 8: 10250017) with a priority ranking of 2 (Medium Priority for restoration work).

Priority HUC 11s: The entire watershed is within HUC 11 (030).

5. IMPLEMENTATION

Desired Implementation Activities

BMPs may be able to curtail excessive bacterial inputs. Some of the recommended agricultural practices are as follows:

1. Install proper manure storage
2. Implement nutrient management plans to manage manure application to land

Implementation Programs Guidance

Until additional assessment of probable non-point sources is made, no direction can be made to those implementation programs.

Timeframe for Implementation: Pollution reduction practices should be installed within the lake drainage during the years 2008-2012.

Targeted Participants: Primary participants for implementation will be agricultural producers within the drainages of the lake. Initial work in 2004 should include local assessments by conservation district personnel and county extension agents to locate within the lake drainage:

1. Total rowcrop acreage
2. Cultivation alongside stream
3. Drainage alongside or through animal feeding lots
4. Livestock use of riparian areas
5. Fields with manure applications
6. On-site wastewater discharges to stream

County Local Environment Protection staff will conduct the inspection of on-site wastewater systems. Based on the local assessment, implementation activities should focus participation within those areas with greatest potential for impact on stream resources.

Milestone for 2004: The year 2004 marks the mid-point of the ten year implementation window for the watershed. Additionally, sampled data from Jamestown WMA should indicate evidence of reduced fecal coliform bacteria levels in the conservation pool elevations relative to the conditions seen over 1988-1998.

Delivery Agents: 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 Extension.

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.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.
4. 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.
5. 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.
6. K.S.A. 82a-951 creates the State Water Plan Fund to finance the implementation of the *Kansas Water Plan*.
7. The *Kansas Water Plan* and the Kansas-Lower Republican 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 pollution 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 Low Priority consideration and should not receive funding until after 2004..

Effectiveness: The key to success will be widespread utilization of waste management within the watersheds cited in this TMDL.

6. MONITORING

KDHE will collect fecal coliform bacteria samples from Jamestown WMA in 2001 and 2003. If lake impairment is confirmed in 2004, further sampling and evaluation should occur in 2005 and 2007.

7. FEEDBACK

Public Meetings: Public meetings to discuss TMDLs in the KLR Basin were held March 10, 1999 in Topeka, April 27 in Lawrence and April 29 in Manhattan. 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 Kansas-Lower Republican Basin.

Public Hearing: A Public Hearing on the TMDLs of the Kansas-Lower Republican Basin was held in Topeka on June 3, 1999.

Basin Advisory Committee: The Kansas-Lower Republican Basin Advisory Committee met to discuss the TMDLs in the basin on December 3, 1998; January 14, 1999; February 18, 1999; March 10, 1999; May 20, 1999 and June 3, 1999.

Discussion with Interest Groups: Meetings to discuss TMDLs with interest groups include:
Agriculture: November 10, 1998; December 18, 1998; February 10, 1999; April 10, 1999, May 4, 1999, June 8, 1999 and June 18, 1999.
Municipal: November 12, 1998, January 25, 1999; March 1, 1999; May 10, 1999 and June 16, 1999.
Environmental: November 3, 1998; December 16, 1998; February 13, 1999; March 15, 1999, April 7, 1999 and May 3, 1999.
Conservation Districts: March 16-18, 24-25, 1999

Milestone Evaluation: In 2004, evaluation will be made as to the degree of impairment which has occurred within the drainage and current condition of Jamestown WMA. Subsequent decisions will be made regarding implementation approach, follow up of additional implementation and implementation in the non-priority subwatersheds.

Consideration for 303d Delisting: Jamestown WMA will be evaluated for delisting under Section 303d, based on the monitoring data over the period 2004-2008. Therefore, the decision for delisting will come about in the preparation of the 2004 303d list. Should the lake continue to be listed as impaired in 2004, the next evaluation for delisting will occur with the preparation of the 2008 Section 303d list. Should modifications be made to the applicable nutrient criterion during the ten year implementation period, consideration for delisting, development of desired endpoints of this TMDL and implementation activities will 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 January 26, 2000.