

# LOWER ARKANSAS RIVER BASIN TOTAL MAXIMUM DAILY LOAD

**Waterbody: Cow Creek**  
**Water Quality Impairment: Chlordane**

## 1. INTRODUCTION AND PROBLEM IDENTIFICATION

**Subbasin:** Cow

**Counties:** Reno and Rice

**HUC 8:** 11030011

**HUC 11 (HUC 14s):** 030 ( 040, 050, 060, 070, and 080)

**Drainage Area:** 227.3 square miles (*with unimpaired 888.8 square miles*)

**Main Stem Segments:** 1; starting at the confluence with the Arkansas River and ending at the confluence with Little Cow Creek; headwaters in Rice County

**Designated Uses:** Expected Aquatic Life Support; Primary Contact Recreation; Domestic Water Supply; Food Procurement; Ground Water Recharge; Industrial Water Supply Use; Irrigation Use; Livestock Watering Use for Main Stem Segment

**1998 303(d) Listing:** Table 1 - Predominant Non-point Source Impacts

**Impaired Use:** Food Procurement.

**Water Quality Standard:** 0.00048  $\mu\text{g/l}$  (KAR 28-16-28e(c)(4)(A))

Surrogate used for Food Procurement WQS of 0.02 mg/kg (Fish Consumption Advisory Level) - Substances that can bioaccumulate in the tissues of edible aquatic or semiaquatic life or wildlife through bioconcentration or biomagnification shall be limited in surface waters to concentrations that result in no harm to human consumers of these tissues. (KAR 28-16-28e(c)(4)(B))

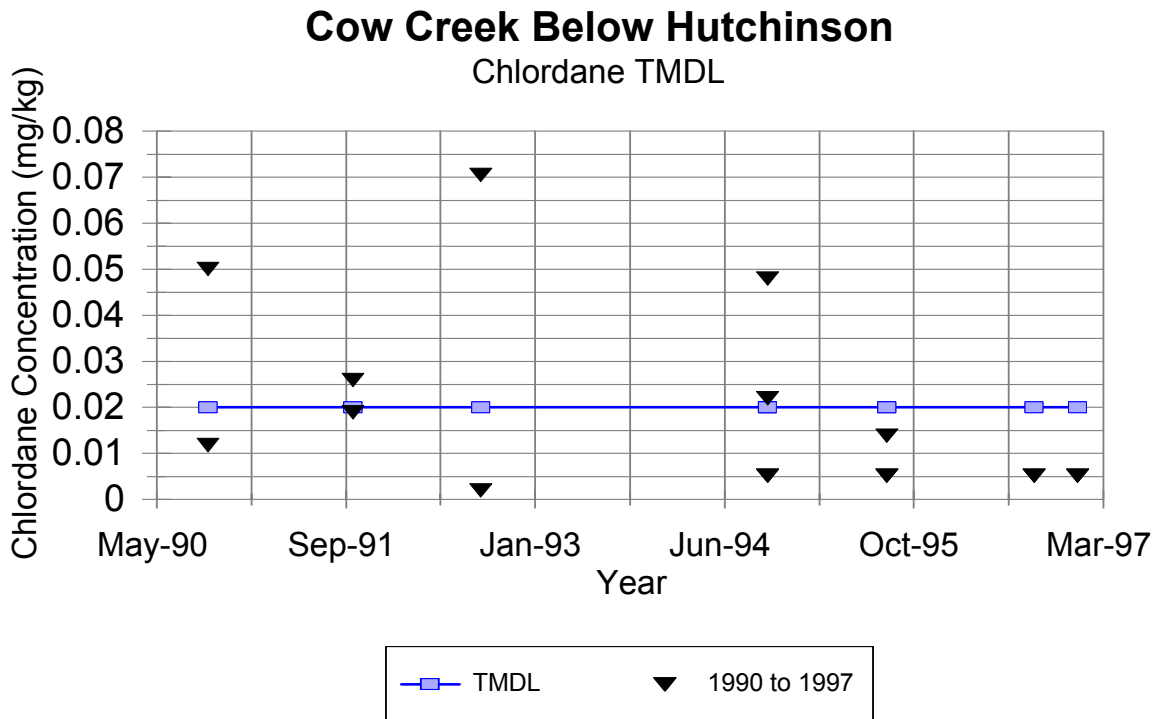
## 2. CURRENT WATER QUALITY CONDITION AND DESIRED ENDPOINT

**Level of Support for Designated Use under 1998 303(d):** Not Supporting Food Procurement.

**Monitoring Sites:** Fish Tissue samples were taken at Cow Creek below Hutchinson

**Period of Record Used:** 1990 - 1997

**Current Conditions:** The fish tissue monitoring and survey program was implemented to analyze fish tissue samples for chlordane in order to define water body segments impacted by contamination and provide long term monitoring on segments with past or present fish consumption advisories. Bottom feeding fish such as carp are sampled because of their feeding or dwelling preferences near the stream bed where chlordane remains in the sediments. Fish tissue samples were collected in 1990-1997. The plot of samples indicates a declining trend in Cow Creek watershed.



**Desired Endpoints of Water Quality on Cow Creek over 2005 - 2009:**

Fish tissue concentrations are declining as chlordane is purged or degraded in the stream sediments during high flows. Given this trend and the suspended status of chlordane use nationwide, the endpoint delineating sufficient water quality to fully support the designated use will be average fish tissue concentrations below 0.02 mg/kg, leading to removal of fish consumption advisories. There is no seasonal variation associated with this TMDL.

### 3. SOURCE INVENTORY AND ASSESSMENT

The original source of chlordane has been runoff, particularly from urban areas where widespread termite eradication occurred around homes in the 1970's- 1980's. Chlordane is very persistent in the environment, yet very insoluble in water. Samples taken from water rarely contain chlordane. The chlordane is attached to sediments which allows for transportation into streams and accumulation in the bed sediments. Chlordane was banned (all uses) in 1988. No additional loading should occur.

### 4. ALLOCATION OF POLLUTION REDUCTION RESPONSIBILITY

**Point Sources:** A current Wasteload Allocation of zero is established by this TMDL because the product is banned and there will be no discharge of chlordane into the stream via wastewater treatment plants.

**Non-Point Sources:** With the banning of the product, there will be no application of chlordane anywhere it might be discharged under runoff conditions and enter the stream. Therefore, the Load Allocation will be set at zero under this TMDL.

**Margin of Safety:** In order to ensure there is no threat of chlordane levels impairing the food procurement use of the river, fish advisories will remain in place until all samples taken from fish tissue have concentrations below 0.02 mg/kg for three consecutive sampled years.

**State Water Plan Implementation Priority:** Because no additional loading is expected, this TMDL will be a Low Priority for implementation.

**Unified Watershed Assessment Priority Ranking:** This watershed lies within the Cow Subbasin (HUC 8: 10270104) with a priority ranking of 27 (Medium Priority for restoration work).

**Priority HUC 11s and Stream Segments:** Pending additional monitoring and assessment, no priority subwatersheds or stream segments should be identified.

### 5. IMPLEMENTATION

#### Desired Implementation Activities

1. Maintain fish consumption advisories.

#### Implementation Programs Guidance

KDHE will continue to assess trends of fish tissue samples through 2005.

**Timeframe for Implementation:** Continued monitoring over the years 2000-2005.

**Targeted Participants:** None.

**Milestone for 2005:** The year 2005 marks the mid-point of the ten year implementation window for the watershed. At that point in time, additional monitoring data from fish tissue samples will be re-examined to confirm the impaired status of the river.

**Delivery Agents:** None.

### **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. 2-2439 empowers the Secretary of Agriculture to oversee pesticide management, registration and use in the state.

**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 TMDL is a Low Priority consideration and should not receive funding.

**Effectiveness:** Substance banned from use, continued flushing flows down river will purge chlordane from bed sediments.

## **6. MONITORING**

KDHE will continue to collect fish tissue samples in river. Three consecutive years of sampling should occur between 2000-2005. Based on that sampling, the status of 303(d) listing will be evaluated in 2006.

## 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 2006, evaluation will be made as to the degree of impairment which has occurred within the watershed and current condition of Cow Creek. Subsequent decisions will be made regarding implementation approach and follow up on additional implementation in subwatersheds.

**Consideration for 303(d) Delisting:** Cow Creek will be evaluated for delisting under Section 303(d), based on the monitoring data over the period 2000-2005. Therefore, the decision for delisting will come about in the preparation of the 2006 303(d) list. Should modifications be made to applicable 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 2005.

Approved July 27, 2001.