

SUBJECT: Monitoring Program for Regulatory Plan for Commercial Dredging Activities on the Kansas River

1. The purpose of this memorandum is to document the changes in the Kansas River as described in the Regulatory Plan for Commercial Dredging Activities on the Kansas River, Appendix A. The baseline data was collected in 1992 and the most recent data was collected in 2005. The plot of the Kansas River average bed profile is enclosed.
2. Table 1 below shows five-mile-long reaches where the average reduction in riverbed elevation is near or greater than 2 feet. The reduction for the reach was calculated by averaging the difference between 1992 and 2005 riverbed elevations for the reach. According to the Regulatory Plan for Commercial Dredging Activities on the Kansas River, "If riverbed elevations in a 5-mile-long reach of river approach 2 feet of degradation, dredging activities which adversely affect bed elevations in that reach will be altered or terminated before unacceptable impacts occur. Further, if the average reduction of riverbed elevations in a 5-mile-long reach of river attains 2 feet (regardless of cause), dredging activities which adversely affect bed elevations in that reach will be terminated."

Table 1. Five-mile-long reaches where the average reduction in riverbed elevation is 2 feet or more.

Reach (River Miles)	Reach Length (Miles)	Avg Reduction (ft)	2005 Authorized Dredger	Dredging Boundaries
24.2 - 30.2	6.0	2.3	River Miles 24.2 - 39.1 are not currently open to commercial dredging.	
29.0 - 34.4	5.4	2.4		
32.9 - 39.1	6.2	2.5		
83.0 - 89.0	6.0	2.0	Kansas Sand Holliday Sand	84.5 - 85.8 86.3 - 86.5
86.0 - 91.1	5.1	2.2	Kansas Sand Holliday Sand Meirs Ready Mix	84.5 - 85.8 86.3 - 86.5 90.1 - 91.6

Certain manmade structures and natural formations along the Kansas River warrant close monitoring according to the Regulatory Plan for Commercial Dredging on the Kansas River Appendix A, Dredging Restrictions, Section VII and VIII. Signs of degradation negatively impacting these structures are examined through surveyed cross-sections downstream of these sites as well as average bed calculations. While the average bed calculations immediately downstream of the natural rock deposit located from river mile 12.2 to 12.4 indicate aggradations in this area, the cross-section shows an island, increasing in elevation, with deepening side channels. Similarly, the Water District No. 1 Weir, located just upstream at river mile 15.0 has seen minor changes in average bed elevations when compared to the baseline year. However, based on site visits performed by engineering staff, degradation was evident upon visual inspection. The natural rock deposit from miles 21.8 to 22.8 has seen minor changes in bed elevation when compared to the baseline year. Representative cross-sections for this location were not surveyed in 2005. Similarly, the Bowersock Dam located at river mile 51.8 has seen

only minor degradation with an average reduction in bed elevation of 2 feet over the past 13 years. Increased signs of degradation were seen downstream of the City of Topeka's intake structures, diversion jetties and weir. Downstream of the City's intake structures, at river miles 86.4, 86.6 and 86.8, the average bed elevation changes from 1992 to 2005 were 8.5 ft, 3.5 ft, and 3.4 ft, respectively. Because the City of Topeka's intake structures are an extremely important part of the City's water supply, continual lowering of bed elevations in this area is extremely unfavorable.

4. River miles 77 to 83 were analyzed for the purpose of adding a new permitted dredge site from miles 77.1 to 78.6. The reduction for the reach was calculated by averaging the difference between 1992 and 2005 riverbed elevations for the reach. Table 2 shows the results of the analysis.

Table 2. Average reduction in riverbed elevation surrounding proposed dredge site from river miles 77.1 to 78.6

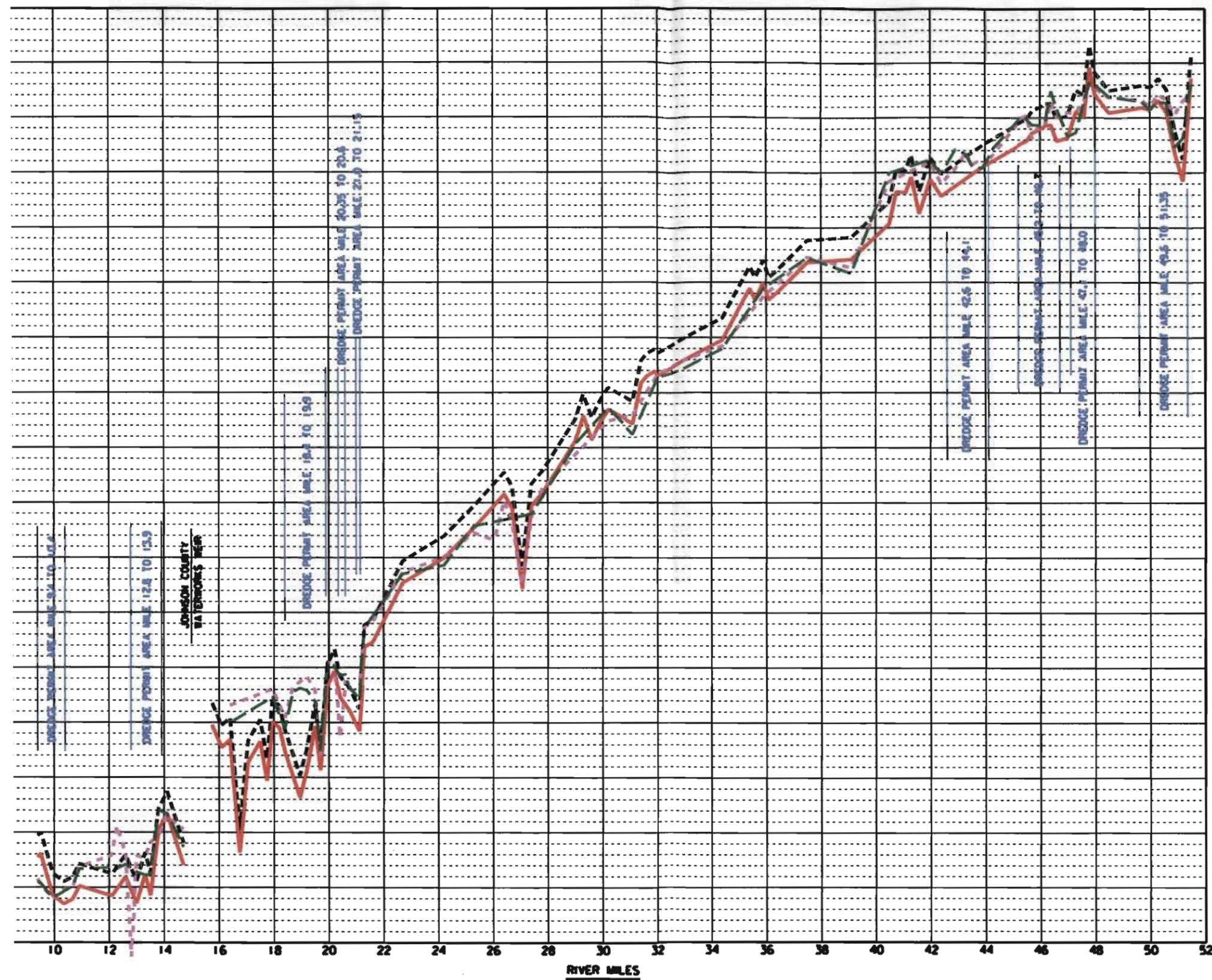
Reach (River Miles)	Reach Length (Miles)	Avg Reduction (ft)
77 - 81.5	4.5	0.3
77 - 83	6.0	0.1
80 - 85.2	5.2	0.3

As shown in table 2 above, some degradation has occurred in the river surrounding the proposed reach. Cross-section data for river mileage downstream of river mile 77 was not available for the analysis. If dredging is allowed to take place within the proposed reach, new permit specific ranges will need to be established within the reach for monitoring purposes. A subsequent memo regarding specific requirements for the data collection of channel cross-section surveys will follow. It should be noted that this reach is already degrading and that commencement of dredging within this reach will accelerate the degradation process. Since roughly 0.3' of degradation has already occurred, and the monitoring plan requires alteration of dredging activities when degradation approaches 2', it is likely that unrestricted dredging within this reach will not be sustainable for an extended period of time. Suggest that this reach be closely monitored to minimize adverse impacts.

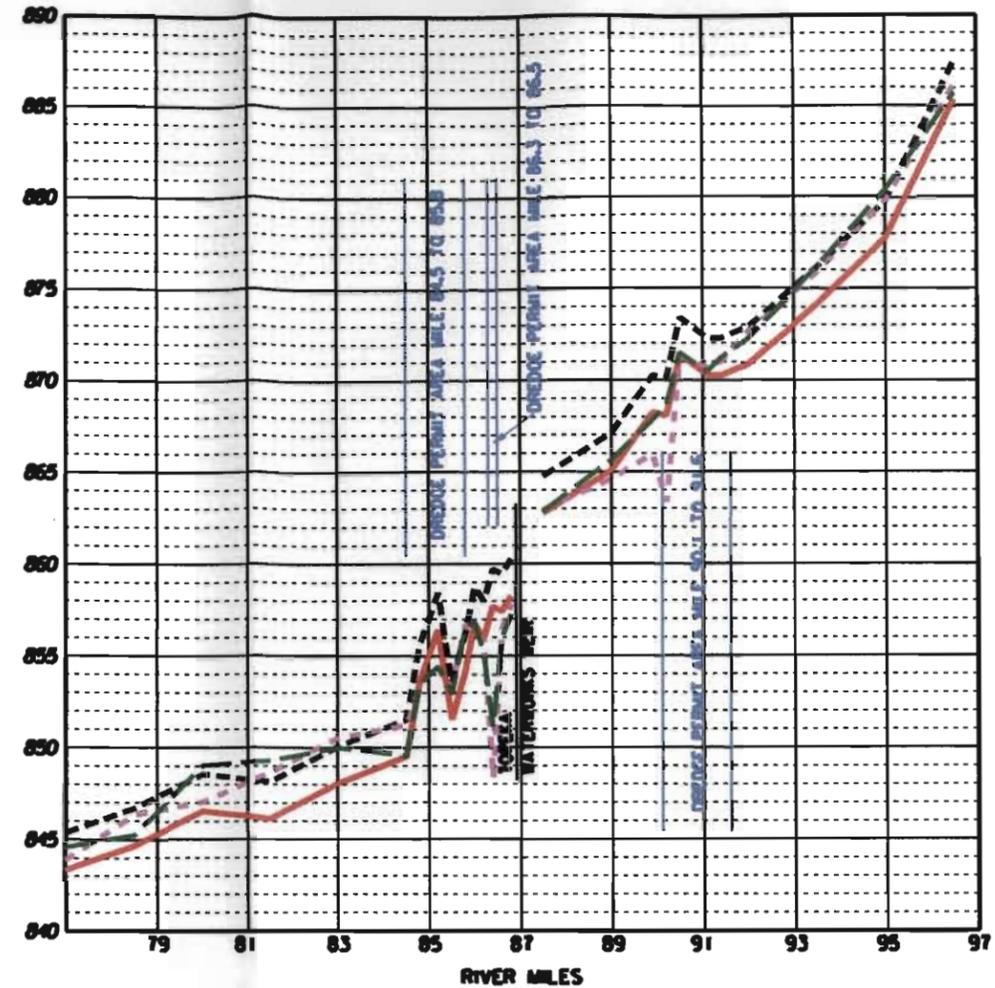


KARI J. COULTER
Hydraulic Engineer

Enclosure



TURNER BRIDGE	-----	MILE 9.3
J.C.W.D. NO. 1 WEIR	-----	MILE 15.0
I-435 BRIDGE	-----	MILE 15.6
K-7 BRIDGE	-----	MILE 20.2
DESOTO BRIDGE	-----	MILE 31.0
ELDORA BRIDGE	-----	MILE 42.5
BOWERSOCK DAM	-----	MILE 51.8
SARDOU AVE BRIDGE	-----	MILE 83.0
U.P. R.R. BRIDGE	-----	MILE 83.7



LEGEND

- 1992 MEAN BED BASELINE EL. (MINUS 2 FEET) ———
- 2003 MEAN BED EL. - - - - -
- 2005 MEAN BED EL. - - - - -
- 1992 MEAN BED BASELINE EL. - - - - -

Revisions		
Symbol	Descriptions	Date

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by KANSAS RIVER
COMMERCIAL DISTRICT