



REGION 7

LENEXA, KS 66219

MEMORANDUM

SUBJECT: Documenting Minor Post-Record of Decision Change, Contaminated Sediments in Willow Creek, Cherokee County Superfund Site, Operable Unit 03, Baxter Springs Subsite Cherokee County, Kansas SSID 0737

FROM: Jason Gunter, Remedial Project Manager
Special Emphasis Section

THRU: Elizabeth Hagenmaier, Section Supervisor
Special Emphasis Section

TO: Site File

**JASON
GUNTER**

Digitally signed by JASON
GUNTER
Date: 2026.07.21
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This memorandum documents a minor post-ROD change to the remedy at Operable Unit (OU) 3 of the Cherokee County Superfund Site (site), Cherokee County, Kansas, to include the remediation of portions of Willow Creek.

Background

The site is part of the Tri-State Mining District (TSMD). OU3 is the Baxter Springs Subsite. The Record of Decision (ROD) for OU3 and OU4 was issued in 1997 and amended by a ROD Amendment in 2006, or "Amendment No. 1."¹ The following are the major components of the remedy for the OU3 subsite in the ROD, as amended:

- As the remedy relates to OU3, outwash tailings and mine waste near and in streams will be excavated and consolidated. Removing this mine waste from the erosional reach of streams will prevent their further contamination.
- Utilize subaqueous mine waste disposal to the maximum extent practicable.
- Encourage source reduction via responsible chat sales before and during remedy implementation.

¹ There have been several changes to the OU4 remedy that did not affect OU3. They include a second ROD Amendment, referred to as "Amendment No. 2," which was published in September 2016 and addressed the contaminated intermittent stream sediments within the non-perennial portion of Tar Creek (known as the "Northwest Tributary of Tar Creek" or "NW Tributary"). In 2020, the EPA issued a Memo to File Documenting a Minor Post-ROD Change, which extended the OU4 remedy to an unnamed tributary of Tar Creek. Finally, a 2024 Explanation of Significant Differences utilized the same strategy and technology included in the 2016 Amendment No. 2, but geographically expanded the remedy to include the main stem of Tar Creek.



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- Adopt Institutional Controls for future development specified in an earlier ROD.

Description of Minor Change in the Selected Remedy

The purpose of this memo is to document the intent to include the remediation of the co-located contaminated sediment beneath mine waste in Willow Creek due to the erosion of adjacent piles. The current remedy includes the removal of visible mine waste from streams; however, the residual sediment located in the layer beneath the visible mine waste may contain elevated COCs. This memo will allow the EPA to address the contaminated residual sediment along with the visible mine waste in Willow Creek concurrently with the ongoing remedial actions (RAs) in OU3 under the 2006 ROD Amendment.

During the development of the Remedial Design (RD) for OU3, Phase 3, specifically in Distal Area-8 (DS-8), the EPA identified approximately 1,125 cubic yards of contaminated sediment in Willow Creek beneath the visible instream mine waste within a 15,000 square foot area and below the normal flowline of the creek (within the banks of the channel). The DS-8 Area is the portion of Willow Creek that contains discontinuous areas of shallow mine waste mixed with soil and streambed materials. Based on information and data from the RD, the EPA will remove contaminated instream mine waste from the area depicted on Figure 1. Mine waste and contaminated sediment within the banks of the creek channel shall be removed to the depths described in the design drawings or until the cleanup goals are met.

This minor change allows for more efficient remediation and optimizes the performance of the remedial work. The EPA has determined that addressing the sediments in Willow Creek adjacent to mine waste areas in OU3 will reduce overall project costs rather than addressing these sediments during the OU2, Spring River Watershed remedial action, which will address the perennial portions of Spring River and its tributaries. For example, mobilization, disturbance of capped areas, and/or construction of newly capped areas for the Willow Creek sediments will be conducted simultaneously with the remediation of mine waste, which allows for greater efficiency and involves only a small increase in volume relative to the total mine waste and sediment cleanup work under the OU3 ROD Amendment. See Tables 1-4 for the description of the volume and cost increase.

Rationale for Minor Change

The EPA is documenting this minor change in the OU3 ROD in accordance with the ROD Guidance,² which directs the agency's categorization of a post-ROD change. See 40 C.F.R. § 300.435(c)(2). This change will not have a significant impact on the scope, performance, or cost of the remedy, as discussed in further detail below. Although EPA does not expect to encounter additional mine waste beyond DS-8 in Willow Creek and/or other tributaries in OU3, there is the potential for the inclusion of additional areas with instream mine waste and stream sediments due to changes in site conditions and/or changes in the Remedial Design. If additional instream mine waste is included in future OU3 RAs, EPA will remediate the residual contaminated sediment under the OU3 remedy, as approved through this Memo.

² A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Documents, EPA 540-R-98-031 (July 1999).

A. Scope and Performance

Sediments represent a category of source materials that have been transported, or may be transported in the future, to aquatic environments where they potentially affect water quality and streambed substrate, thereby posing risks to human receptors and aquatic biota. The surface water Remedial Action Objectives (RAOs) specify the prevention of ecological risks by reducing the exposures related to metals-contaminated surface water. These RAOs, in combination with the soil and source materials actions, will reduce or eliminate levels of heavy metals in surface water.

For OU3 and OU4, the selected alternative is expected to accomplish a reduction of cadmium, lead, and zinc loading on the Spring and Neosho Rivers as well as their tributaries (Willow Creek, Spring Branch, Tar Creek, and their tributaries). The RAOs in the 2006 ROD Amendment addressing current and future potential risks associated with OU3 subsite surface water are as follows:

1. Prevent ingestion and dermal exposure of biota to surface waters exceeding Kansas Aquatic Chronic Life Criteria, resulting from the release and transport of COCs (cadmium, lead, and zinc) from source materials (mine wastes) and non-residential soils within the subsites. The Kansas Chronic Aquatic Life Criteria for each of the three metals is calculated from an equation included in the Tar Creek Total Maximum Daily Load (TMDL) and is hardness dependent.
2. Prevent ingestion and dermal exposure to aquatic biota of COCs (cadmium, lead and zinc) by controlling the erosion and transport of mine wastes to surface water.

The proposed action of including residual sediment along with visible instream mine waste is consistent with and will help achieve the Surface Water RAOs and does not change the scope or performance of the RAOs.

B. Cost

The total volume of contaminated material to be remediated under Phase 3 is 121,000 cubic yards. Including the co-located sediment in Willow Creek will increase the total by 1,125 cubic yards, or less than 1%. The cost estimate for the completion of OU03 Phase 3 is approximately \$11.5 million. This estimate is compared to the cost to include the additional 1,125 cubic yards of estimated residual contaminated sediments, which is estimated at \$124,135, or approximately 1% of the Phase 3 cost. The OU3 Ceiling is \$17,675,000. The cost associated with the additional volume of sediment is approximately 0.7% of the total cost of remaining remedial actions at the OU3 Baxter Springs subsite.

Conclusion

Based on the available information, EPA has concluded that the inclusion of the residual contaminated sediment in Willow Creek, specifically in DS-8, has insignificant impacts on the scope, performance, and cost of the OU3 remedy. If there are additional instream areas within OU3 that are identified in future projects, EPA will use this Memo as rationale to remediate those areas, provided that the inclusion of those areas does not significantly change the scope, performance, or overall cost of the OU3 remedy.

If the inclusion of the additional contaminated sediment (beyond Phase 3) significantly increases the scope, performance, or cost of the OU3 remedy, the EPA will follow the ROD Guidance by documenting any significant change accordingly.

FIGURE 1



EXCAVATION AND RESTORATION PLAN DS-8

EXCAVATION PLAN NOTES:
(REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION)

1. THE DS-8 DISTAL SITE IS A PORTION OF WILLOW CREEK THAT CONTAINS DISCONTINUOUS AREAS OF SHALLOW CHAT AND OTHER MINE WASTE MIXED WITH SOIL AND STREAMBED MATERIALS. IT IS LOCATED WITHIN AN AGRICULTURAL PROPERTY CONSISTING PRIMARILY OF CATTLE GRAZING. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCING FOR LIVESTOCK CONTROL DURING THE REMEDIAL ACTIVITIES IN ACCORDANCE WITH APPROVED LIVESTOCK MANAGEMENT PLAN.

2. ACCESS FOR SITE DS-8 IS THROUGH A GATE ON HIGHWAY 166 AND THEN NORTH ALONG THE EXISTING GRAVEL DRIVE. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNER TO OBTAIN ACCESS TO THE WORK AREA. A LOW WATER CROSSING USED FOR A PREVIOUS REMEDIAL ACTION AT A SITE FURTHER NORTH IS PRESENT IN WILLOW CREEK BUT MAY REQUIRE IMPROVEMENT FOR USE BY HAUL TRUCKS AND MOTORIZED EQUIPMENT.

3. SOME TEST PITS AND A LIMITED AMOUNT OF XRF SCREENING WERE CONDUCTED HERE DURING THE 2019 INVESTIGATION (ATTACHMENT 1 TO SPECIFICATIONS). THE MAJORITY OF THE WASTE APPEARS TO BE LIMITED TO A FEW ISOLATED PILES WITHIN THE CREEK. CONTRACTOR IS RESPONSIBLE FOR DEFINING THE ACTUAL LIMITS OF WASTE AND SOIL REMOVAL THROUGH ADDITIONAL XRF SCREENING, AS NEEDED, AS WELL AS CONFIRMATION SAMPLING FOLLOWING WASTE REMOVAL. THE CONTRACTOR SHALL CONDUCT ADDITIONAL XRF ANALYSIS (FIELD SCREENING WITH PORTABLE INSTRUMENT) OF SURFACE MATERIALS AS DESCRIBED IN THE PERFORMANCE WORK STATEMENT TO IDENTIFY AREA(S) REQUIRING REMEDIATION. THE CONTRACTOR SHALL PROVIDE EPA WITH A SITE PLAN SHOWING THE GRID LOCATIONS, XRF RESULTS, AND INTERPRETED AREAS REQUIRING EXCAVATION. THE PROPOSED AREAS OF EXCAVATION SHALL BE APPROVED BY EPA PRIOR TO EXCAVATION.

4. FOR PURPOSES OF BIDDING, REFER TO TABLE 2 ON SHEET G-02 FOR ESTIMATED WASTE AND CONTAMINATED SOIL VOLUMES. THE ACTUAL DEPTH AND HORIZONTAL EXTENT OF EXCAVATION SHALL BE BASED ON CONFIRMATION SAMPLING IN ACCORDANCE WITH SECTION 02111.

5. EXCAVATE MINE WASTE IN ACCORDANCE WITH SECTION 02111. EXCAVATED MINE WASTE AND CONTAMINATED SOIL SHALL BE TRANSPORTED AND DISPOSED OF IN ACCORDANCE WITH TABLE 2 ON SHEET G-02. THE FINAL EXCAVATION SURFACE SHALL BE GRADED IN ACCORDANCE WITH SECTION 02111.

6. VEGETATIVE DEBRIS FROM CLEARING AND GRUBBING SHALL BE DISPOSED OF IN ACCORDANCE WITH SECTION 02230. MISCELLANEOUS DEBRIS SHALL BE DISPOSED OFF SITE IN ACCORDANCE WITH SPECIFICATION SECTION 02121.

7. MAINTAIN EXISTING DRAINAGE PATTERNS DURING CONSTRUCTION.

8. IMPLEMENT AND MAINTAIN SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH SECTION 02910.

RESTORATION PLAN NOTES:
(REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION)

1. THE GRADING AND RESTORATION PLAN IS CONCEPTUAL AND MAY BE ADJUSTED OR MODIFIED BASED ON SITE CONDITIONS. IF EXCAVATION OF CREEK BANKS IS REQUIRED, THEY SHALL BE RESTORED BY CUTTING BACK TO MATCH THE ANGLE OF ADJACENT BANK ON EITHER SIDE. IF EXCAVATION OCCURS IN THE BASE OF THE CREEK, BACKFILL TO WITHIN 1' OF PRECONSTRUCTION FLOWLINE ELEVATION.

2. MAINTAIN SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH SECTION 02910.

3. COMPLETION OF SITE RESTORATION SHALL CONFORM TO SECTION 02300.

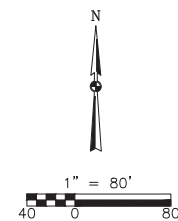
4. ALL DISTURBED AREAS SHALL BE SEEDED IN ACCORDANCE WITH SECTION 02921 USING A PASTURE OR NATIVE SEED GRASS MIXTURE.

5. REPLACE BARBED WIRE FENCE AND GATES WITH LIKE MATERIALS AND IN THE PRE-CONSTRUCTION LOCATION, AS REQUIRED.

6. RETURN THE EXISTING LOW WATER CROSSING TO ITS PRECONSTRUCTION CONDITION. CONSTRUCT NEW LOW WATER CROSSING IN THE VICINITY OF TP-2 AT DIRECTION OF EPA FIELD REPRESENTATIVE.

LOCATION	TEST DEPTH		LEAD	ZINC
	FEET	INCHES		
258	1	0-1	100	1,550
		1-2	75	1,850
	2	0-1	100	2,110
		1-2	141	2,490
259	1	0-1	75	1,470
		1-2	133	2,710

ACKNOWLEDGMENTS



FOR EPA USE IN PREPARING
CONTRACT DOCUMENTS



U.S. Environmental
Protection Agency
Region 7
Lenexa, Kansas

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 HGL Surveying the Possibilities Printing the Future	
USPSA REGION 7 LENEXA, KANSAS	
DESIGNED BY: C. HERGUND	DATE: APRIL 2026
DRAWN BY: A. SPEARMAN	TASK ORDER NO.: 68H5U2H0088
SUBMITTED BY: HGL	CONTRACT NO.: 68H5U2H0000
PLOT SCALE: 1:80	FILE NUMBER: E2703X
SIZE: ANSI D	FILE NAME:

CHEROKEE COUNTY SUPERFUND SITE
OPERABLE UNIT 3 - BAXTER SPRINGS
SUBSITES - PHASE 3 REMEDIAL DESIGN
CHEROKEE COUNTY, KANSAS

SHEET
IDENTIFICATION
C-05

Table 1

Volume Estimate - OU3 Distal Site 8 Sediment Removal
Cherokee County Superfund Site
Cherokee County, Kansas

Subsite	Disturbed Area (sf)	Sediment Excavation Volume assuming 18" Removal (BCY)	Sediment Excavation Volume with 25% Contingency (BCY)
DS-8	15,000	900	1,125

Notes:

The disturbed area represents estimated area of sediment removal, which is isolated to the estimated stream bed within the proposed removal area at DS-8.

A contingency of 25 percent has been added to o accommodate unanticipated additional mine waste or contaminated soil at depth that may be encountered during the RA.

BCY = bank cubic yards

sf = square feet

Table 2

**Cost Summary - OU3 Distal Site 8 Sediment Removal
Cherokee County Superfund Site
Cherokee County, Kansas**

Item	Description	Project Cost^{1,2}
01	Work Element 01 - General Requirements	\$22,755
02	Work Element 02 - Remediation of Sediment at DS-8	\$101,381
Total		\$124,135

Notes:

1. The Project Cost includes an escalation of 3.43% and a contingency of 10%.
2. The costs presented in this estimate are considered Class 2 with an accuracy range of +20%/-10% of actual cost according to the American Society for Testing and Materials (ASTM) Standard Classification for Cost Estimate Classification System (Designation E 2516-06). This cost estimate is an Opinion of Probable Construction Cost only, as defined by the documents provided at the level of design indicated. HydroGeoLogic, Inc. (HGL) has no control over the cost of labor, materials, equipment, or services furnished, over schedules, over contractor's methods of determining prices, market or negotiating conditions. HGL does not guarantee that this opinion will not vary from actual cost.

General Requirement Costs - OU3 Distal Site 8 Sediment Removal
Cherokee County Superfund Site
Cherokee County, Kansas

Table 3

Work Element 01 - General Requirements

Item	Description	Estimated Quantity	Unit of Measure	Unit Cost	Contract Cost	Contingency ¹ 10%	Escalation ² 3.43%	Project Cost ³	Notes
01 - Mobilization and Demobilization					\$14,000	\$1,400	\$528	\$15,928	
01	Mobilization								
01A	Work Plans, Permits, Etc.	1	LS	\$5,000	\$5,000	\$500	\$189	\$5,689	Minimal cost assuming this work will be performed as part of larger construction effort
01B	Temporary Facilities	1	LS	\$2,000	\$2,000	\$200	\$75	\$2,275	Assume only 1 month of temporary facilities is needed
01C	Mobilize Equipment and Crew	1	LS	\$3,000	\$3,000	\$300	\$113	\$3,413	Minimal cost assuming this work will be performed as part of larger construction effort
02	Demobilization	1	LS	\$3,000	\$3,000	\$300	\$113	\$3,413	Minimal cost assuming this work will be performed as part of larger construction effort
03	Site Cleanup	1	LS	\$1,000	\$1,000	\$100	\$38	\$1,138	Minimal cost assuming this work will be performed as part of larger construction effort
02 - Submittals					\$6,000	\$600	\$226	\$6,826	
04	Plans and Submittals	1	LS	\$6,000	\$6,000	\$600	\$226	\$6,826	Minimal cost assuming this work will be performed as part of larger construction effort
				Total:	\$20,000	\$2,000	\$755	\$22,755	

Note:

1. The contingency of 10% reflects the unknown costs associated with constructing a given project, such as adverse weather conditions, materials costs, or unfavorable market conditions.
2. The escalation of 3.43% reflects cost increases from the date of estimate preparation to assumed midpoint of construction.
3. The Project Cost includes an Escalation of 3.43% and a Contingency of 10%.
4. The average Consumer Price Index from the last three years (3.43%) was used for inflation calculations.
5. The costs presented in this estimate are considered Class 2 with an accuracy range of +20%/-10% of actual cost according to the American Society for Testing and Materials (ASTM) Standard Classification for Cost Estimate Classification System (Designation E 2516-06). This cost estimate is an Opinion of Probable Construction Cost only, as defined by the documents provided at the level of design indicated. HydroGeoLogic, Inc. (HGL) has no control over the cost of labor, materials, equipment, or services furnished, over schedules, over contractor's methods of determining prices, market or negotiating conditions. HGL does not guarantee that this opinion will not vary from actual cost.

Construction Costs - OU3 Distal Site 8 Sediment Removal
Cherokee County Superfund Site
Cherokee County, Kansas

Table 4

Work Element 02 - Remediation of Sediment at DS-8

Item	Description	Estimated Quantity	Unit of Measure	Unit Cost	Contract Cost	Contingency ¹ 10%	Escalation ² 3.43%	Project Cost ³	Notes
01 - Initial Activities					\$5,181	\$518	\$195	\$5,894	
01	Temporary Access/Haul Road Improvements	1	LS	\$5,000	\$5,000	\$500	\$189	\$5,689	Assumed minor improvements to existing trail to access DS-8
02	XRF Grid Survey	16	EA	\$11.29	\$181	\$18	\$7	\$206	Field tech, XRF rental, and supplies at 8 samples/hr, 64 samples per acre
02 - Site Preparation					\$27,152	\$2,715	\$1,024	\$30,892	
03	Construction Survey and Staking	1	DY	\$1,493	\$1,493	\$149	\$56	\$1,699	2019 TO39 field investigation daily rate; assume 1 day/10 ac (mostly for setting benchmarks)
04	Temporary Erosion and Sediment Controls - Pre-Construction								
05	Silt Fence, materials and trenched installation	900	LF	\$4.07	\$3,663	\$366	\$138	\$4,168	RSM 31 25 14.16.1000 - assume silt fence along both sides of excavation area
06	Inspection and Maintenance	1	EA	\$2,084	\$2,084	\$208	\$79	\$2,371	During construction, assume 50% of initial cost
07	Clearing and Grubbing	0.5	AC	\$9,998	\$4,992	\$499	\$188	\$5,680	RSM 31 11 10.10.0350 - dozer to clear heavy brush and medium trees to 24" dia - assume 75% clearing of excavation area and for haul road
08	Solid Waste Removal and Disposal	1	LS	\$2,500	\$2,500	\$250	\$94	\$2,844	Haul misc debris to local dump, assume limited debris is present at DS-8
09	Construct Diversion Berm and Sump	1	EA	\$5,000	\$5,000	\$500	\$189	\$5,689	Engineering estimate for 1/2 day of light dozer and misc work to construct berm(s) and set up a sump for pumping, per location
10	Dewatering, 4" Diaphragm Pump	5	DY	\$1,484	\$7,420	\$742	\$280	\$8,442	RSM 31 23 19.2.0650; 8 hrs/day, includes 20' suction hose and 100' discharge hose + 500' extra hose (RSM 01 54 33.403270)
03 - Disposal of Mine Waste & Contaminated Soil					\$13,646	\$1,365	\$515	\$15,525	
08	Excavation by Excavator	1,125	BCY	\$2.39	\$2,689	\$269	\$101	\$3,059	RSM 31 23 16.42.0250 - medium excavator 1.5CY bucket
09	Hauling for Off-Site Consolidation, 18-CY 8-Wheel Dump Truck	1,350	CY	\$6.86	\$9,261	\$926	\$349	\$10,537	RSM 31 23 23.9056 - 18 CY truck 10-mi cycle at 30 mph hauling to WCA
10	XRF Confirmation Sampling	18	EA	\$11.29	\$203	\$20	\$8	\$231	XRF assumptions above +10% QC samples
11	Post-Excavation Survey	1	DY	\$1,493	\$1,493	\$149	\$56	\$1,699	2019 TO39 rate; assume 1 day = 4 ac field survey plus office/drafting time
04 - Restoration					\$43,129	\$4,313	\$1,627	\$49,069	
12	Import and Place Fill from Off-Site Borrow Sources								
13	Purchased and Delivered	1,125	BCY	\$18.01	\$20,257	\$2,026	\$764	\$23,047	2019 K11004 Newtn Cnty unit prices; assume available within 5 miles - does not include free mat'l if available on site
14	Spread and Track/Compact Material	1,350	LCY	\$2.65	\$3,578	\$358	\$135	\$4,070	RSM 31 23 23.17.0020 - dump and spread with dozer (no compaction)
15	Soil Testing (Geotech)	1	EA	\$533	\$533	\$53	\$20	\$606	RSM 01 45 23.50; incl. grain size, moisture, Proctor compaction, and Atterberg Limits (1/2,500 CY); assume 1/4 of the material is tested
16	Soil Testing (Chemical Analytical)	1	EA	\$112	\$112	\$11	\$4	\$128	Total sulfur and pyrite plus three Target Analyte List (TAL) Metals incl digestion/prep and 10% shipping; testing at 1 per 2,500 CY
17	Finish Grading	1.0	AC	\$2,010	\$2,010	\$201	\$76	\$2,287	RSM 31 23 23.xxxx; all disturbed areas plus swales, ditches, etc.
18	Replace Barbed Wire Fence	250	LF	\$9.14	\$2,285	\$229	\$86	\$2,600	RACER 18040110; replacement of fence removed to provide haul road access
19	Final As-Built Survey	1.0	DY	\$1,523	\$1,523	\$152	\$57	\$1,733	2019 TO39 rate; assume 1 day = 4 ac field survey plus office/drafting time
20	Erosion and Sediment Control								
21	Silt Fence	450	LF	\$4.07	\$1,832	\$183	\$69	\$2,084	RSM 31 25 14.16.1000 - assume half of the original length
22	Inspection and Maintenance, with Travel	1	LS	\$11,000	\$11,000	\$1,100	\$415	\$12,515	2 trips for inspections + \$5k allotment for reseeding with misc on-site work
Total:					\$89,108	\$8,911	\$3,362	\$101,381	

Notes:

1. The contingency of 10% reflects the unknown costs associated with constructing a given project, such as adverse weather conditions, materials costs, or unfavorable market conditions.
2. The escalation of 3.43% reflects cost increases from the date of estimate preparation to assumed midpoint of construction.
3. The Project Cost includes an Escalation of 3.43% and a Contingency of 10%.
4. Unless otherwise stated, unit costs derived from RS Means (RSM) *Building Construction Costs* (v.2026), TO39 field investigation cost proposal (2019), or the K11004 Newton County unit prices (2019).
5. An annual inflation rate of 2% has been added to the unit cost for dated items in Note 4 to bring them forward to year 2026 costs.
6. City Cost Index of 89.8 (Joplin, MO) was not applied to RSM items in order to make the unit costs more conservative.
7. The costs presented in this estimate are considered Class 2 with an accuracy range of +20%/-10% of actual cost according to the American Society for Testing and Materials (ASTM) Standard Classification for Cost Estimate Classification System (Designation E 2516-06). This cost estimate is an Opinion of Probable Construction Cost only, as defined by the documents provided at the level of design indicated. HydroGeoLogic, Inc. (HGL) has no control over the cost of labor, materials, equipment, or services furnished, over schedules, over contractor's methods of determining prices, market or negotiating conditions. HGL does not guarantee that this opinion will not vary from actual cost.

Abbreviations:

AC=acre	LCY = loose cubic yard
BCY=bank cubic yards	LF=linear feet
CY=cubic yards	LS=lump sum
DY=day	RSM=RS Means
EA=each	SY=square yard
HDPE=high density polyethylene	WCA= waste consolidation area
KSU=Kansas State University	