environmental
properties management, LLC

June 7, 2019

Mr. Ken Kalman
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Mr. Paul Davis
Oklahoma Department of Environmental Quality
707 North Robinson
Oklahoma City, OK 73101

Mr. Robert Evans
U.S. Nuclear Regulatory Commission
1600 East Lamar Blvd; Suite 400
Arlington, TX 76011-4511

Re: Docket No. 70-925; License No. SNM-928
Survey of Sediment/Spoils Mixture from 1206 Drainage in Subarea B

Dear Sirs:
Solely as Trustee for the Cimarron Environmental Response Trust (CERT), Environmental Properties Management LLC (EPM) submitted a technical memorandum entitled *1206 Drainage Sediment Evaluation*[1], addressing the remediation of sediment in the 1206 Drainage, on April 2, 2018. Section 8.2.4 of *Facility Decommissioning Plan – Rev 1*[2] (the DP) stated "The 1206 Drainage is unique in that it is the only area in which excavation and disposition of sediment will be performed as a groundwater remediation strategy." Section 8.2.4 referenced the April 2018 technical memorandum and briefly described excavating the sediment and mixing it with excess material excavated from injection trenches (hereinafter referred to as "spoils"). The sediment/spoils mixture will then be placed in a laydown area.

During its review of the DP, the NRC observed that the sediment/spoils mixture may be placed in Subarea B, which has been released for unrestricted use and is no longer licensed by the NRC. The NRC requested more information on radiological surveys to be performed on this material to confirm that the material placed in Subarea B does not exceed the license criterion for soil (hereinafter referred to as "the Criterion") of 30 picoCuries per gram (pCi/g) above background. This letter provides a description of the radiological survey that will be performed to demonstrate that the sediment/spoils mixture will comply with the Criterion.

Background Information
Analytical results for 90 sediment samples collected from the 1206 Drainages (located in Subarea H) were reported in *Final Status Survey Report for Subarea H*[3]. In a letter dated June

[1] Environmental Properties Management LLC, April 2018
[2] Environmental Properties Management LLC, November 2018
[3] Cimarron Corporation, November 1998

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18, 2018, those data were tabulated, and the average and maximum values were reported. For these 90 samples, the ***average*** total uranium activity was 9.7 pCi/g; the ***maximum*** total uranium activity for any single sample was 24 pCi/g. The NRC released Subarea H for unrestricted use in License Amendment #17, issued April 9, 2001.

The technical memorandum *1206 Drainage Sediment Assessment and Remedial Alternative Evaluation*[4] proposed to excavate sediment from the drainage, transport it to a laydown area east of Uranium Pond #2 (UP2) and mix it with spoils excavated from groundwater injection trenches prior to spreading the mixture and establishing a vegetative cover over the soil.

Proposed Radiological Survey for Material Placed in the Laydown Area

The laydown area will be graded to minimize the unevenness of the "base" upon which the sediment/spoils mixture will be placed. As sediment is excavated from the 1206 Drainages, it will be mixed with spoils excavated from the injection trenches. The sediment/spoils mixture will then be spread over the laydown area in lifts approximately one foot in thickness.

A radiological survey was designed based on guidance in NUREG/CR-5849, *Manual for Conducting Radiological Surveys in Support of License Termination*[5]. License condition 27(c) stipulates NUREG/CR-5849 as guidance for final status surveys. Although a final status survey should not be needed, because sediment from an area that has already been released from the license will be mixed with spoils from an area that has already been released from the license and placed in an area that has already been released from the license, NUREG/CR-5849 provides a reasonable sampling approach for the radiological survey of this material. After placement of the sediment/spoils mixture is complete, a 10-meter grid will be established over the laydown area. Samples of the mixture will be collected at each grid location. Composite samples representing each one-foot depth interval will be collected from each location. Duplicate samples will be collected at a minimum of 10% of the 10-meter grid locations.

Samples and duplicate samples collected from the 10-meter grid locations will be submitted for isotopic analysis of U-234, U-235, and U-238 by method HASL 300. An additional set of 20 "confirmatory" samples will be collected from randomly selected 10-meter grid locations. These samples will be retained so that the NRC can analyze those samples for confirmatory survey or inter-laboratory comparison. Because the spoils will be excavated from injection trenches outside of or at a depth exceeding the bottom of the impoundments, this material is expected to contain close to background concentrations of uranium. The spoils will be mixed with sediment from which no samples exceeded the Criterion. Consequently, none of the sediment/spoils mixture should exceed the Criterion. However, the 10-meter grid complies with the sample density for land surfaces in an ***affected area*** per NUREG/CR-5849 to provide assurance that this is the case.

[4] Burns & McDonnell Engineering Company, March 2018
[5] Oak Ridge Associated Universities, June 1992

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If every 10-meter sample yields less than 30 picoCuries per gram (pCi/g) total uranium above background, the material will have been demonstrated to comply with the Criterion. Should a sample from a 10-meter grid location exceed 30 pCi/g above background, samples of the sediment/spoils mixture will be collected from the same depth interval on a 5-meter grid surrounding that sample to demonstrate that the average activity over a 100 m^2 area complies with the Criterion. If the average activity for the 10-meter grid sample and the four surrounding 5-meter grid locations is less than the Criterion, the material will have been demonstrated to comply with the Criterion.

Should any sediment/spoils mixture exceed the Criterion, that material will be excavated, placed in drums (along with sufficient absorbent to ensure that there will be no free liquid), and stored for eventual disposal as low level radioactive waste.

The radiological survey described herein is expected to confirm that no sediment/spoils mixture exceeding the Criterion will be present in Subarea B, and Subarea B will remain released for unrestricted use. Drawings BMCD-GWREMED-C002 and BMCD-GWREMED-C004 from Appendix K2 of the DP have been revised to show the location of the laydown area and are provided as Attachment 1 to this letter.

Drawing BMCD-GWREMED-C002 includes the outlines of the Subareas for your convenience. Proposed revisions to the "1206-NORTH" part of Section 8.2.4 of the DP, providing additional information on the management of sediment removed from the 1206 Drainages, and referencing the survey plan described herein, are provided as Attachment 2 to this letter.

Please call me at (405) 642-5152 or e-mail me at jlux@envpm.com if you have questions or desire clarification. Thank you.

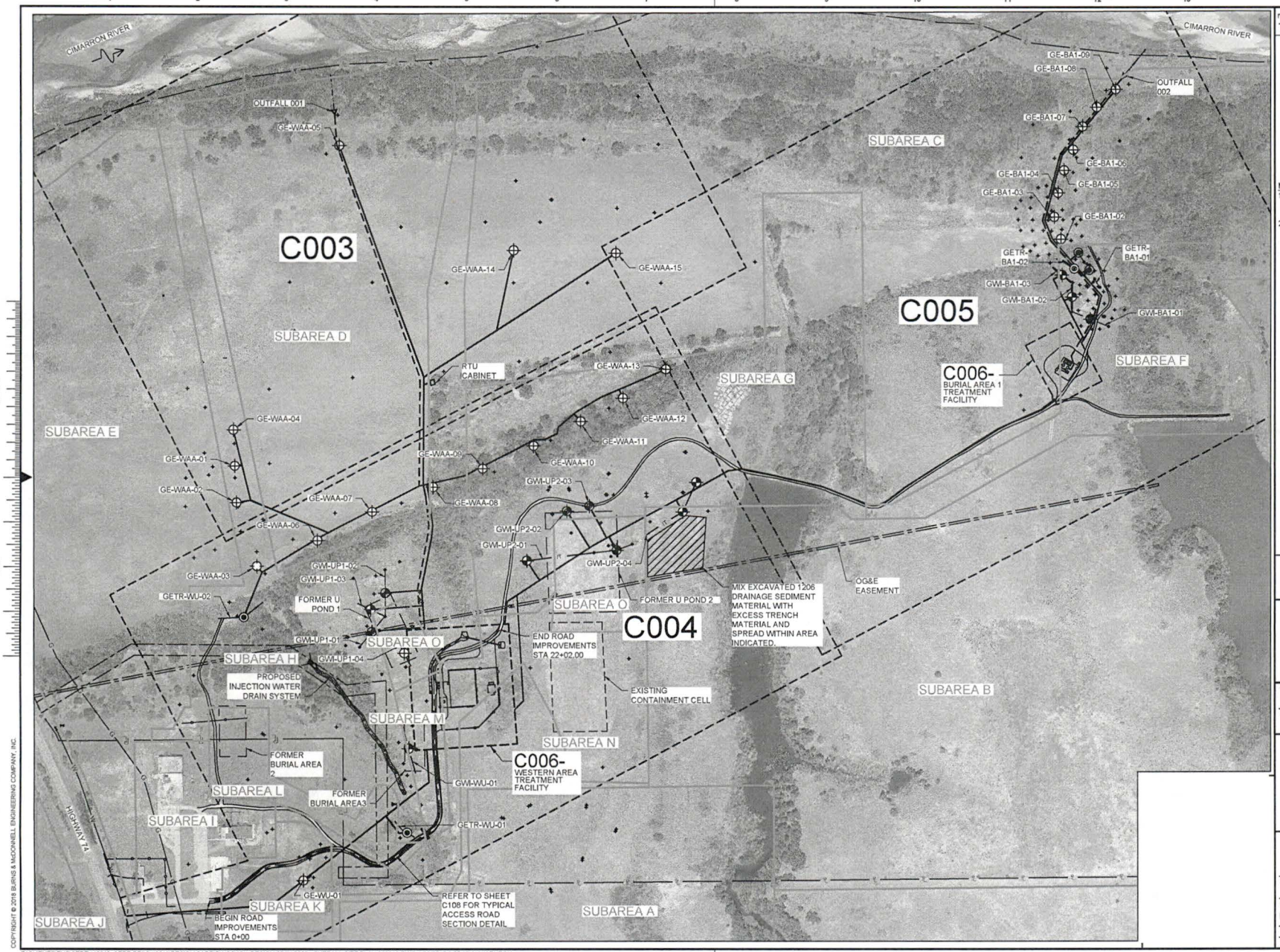
Sincerely,

Jeff Lux, P.E.
Project Manager

cc: Michael Broderick, DEQ Land Protection Division
NRC Public Document Room

ATTACHMENT 1
PROPOSED REVISED DRAWINGS FROM APPENDIX J-2
FACILITY DECOMMISSIONING PLAN – REV 1

BMCD-GWREMED-C002
BMCD-GWREMED-C004



no.	date	by	ckd	description
A	6/--/19	BCW	RTB	FOR REVIEW

NOTES:

1. AERIAL FEATURES SHOWN ARE FROM AN AERIAL SURVEY DATED MAY 2014.
2. PIPE & CONDUIT ALIGNMENT SHOWN REPRESENTS THE CENTERLINE OF TRENCH WHICH MAY CONTAIN WATER SUPPLY PIPES, GROUNDWATER INJECTION SUPPLY PIPES, GAS PIPES, COMPRESSED AIR HOSE, GROUNDWATER EXTRACTION PIPES, DISCHARGE PIPING, ELECTRICAL POWER SUPPLY CABLE CONDUITS, FIBER OPTIC CONDUITS, AND COMMUNICATION CABLE CONDUITS, AS DETAILED. SEE SHEETS C003, C004, AND C005 FOR INDIVIDUAL PIPE AND CABLE RUNS.

PRELIMINARY - NOT FOR CONSTRUCTION

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816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	detailed
JUNE 2019	B. WEIS
designed	checked
B. WEIS	R. BETTMENG

Cimarron Environmental Response Trust

OVERALL SITE PLAN AND SHEET LAYOUT KEY

project	contract
104407	-

drawing BMCD-GWREMED-C002 — rev. A

sheet 2 of 14 sheets

file C002_ OVERALL SITE PLAN 060619.DWG

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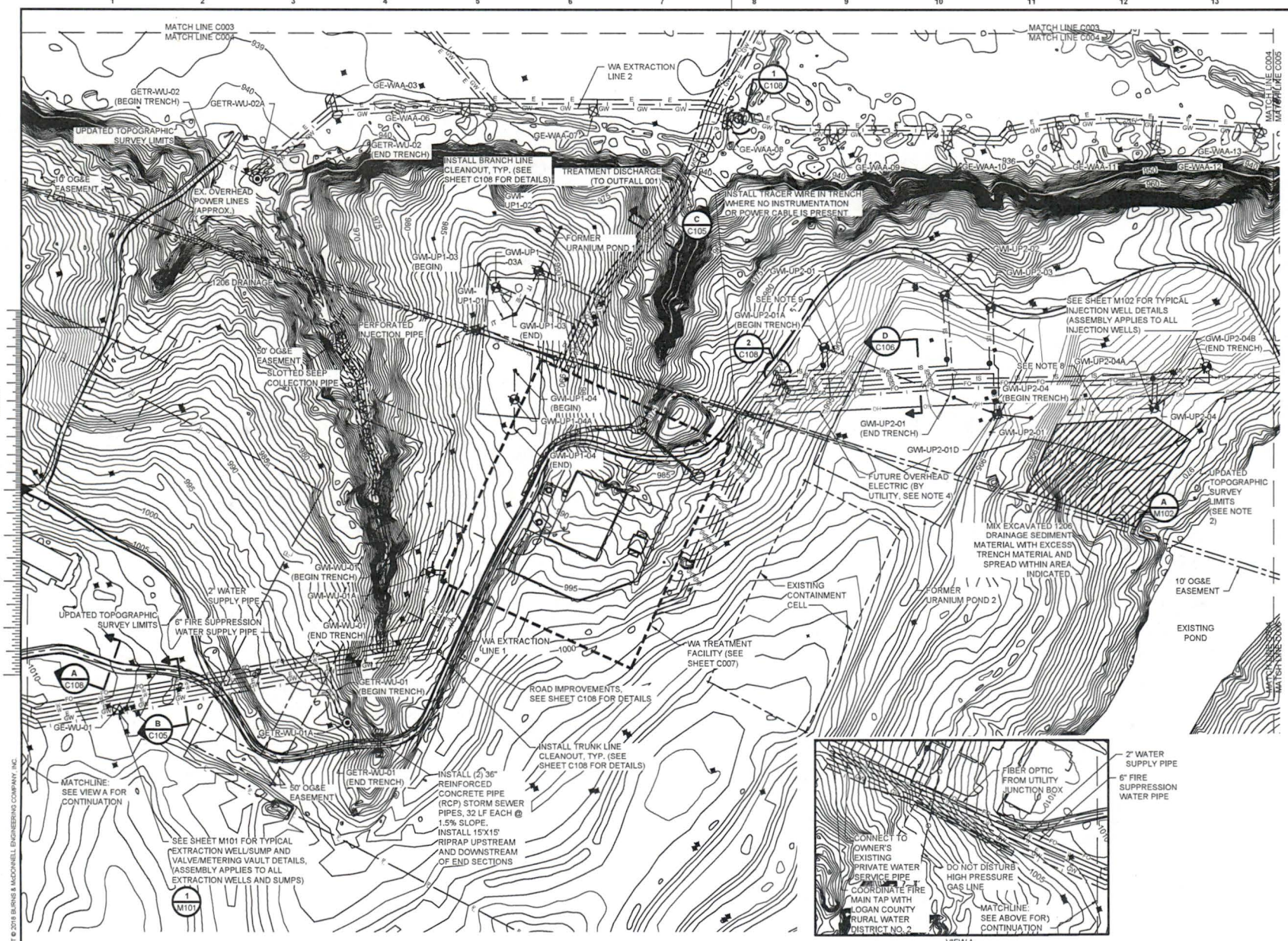

no.	date	by	ckd	description
A	8/10/18	BCW	RTB	FOR REVIEW

NOTES:

1. TOPOGRAPHY SHOWN IS FROM AN AERIAL SURVEY DATED MAY 2014.
2. TOPOGRAPHY UPDATED WITH GROUND SURVEY PERFORMED NOVEMBER 11, 2016 WITHIN BOUNDARIES INDICATED.
3. PIPE AND CONDUIT LINE SPACING HAS BEEN EXAGGERATED FOR CLARITY IN PARTIAL SITE PLANS. REFER TO TRENCH SECTION DETAILS FOR TYPICAL PIPE AND CONDUIT SPACING. FIELD ADJUSTMENTS OF PIPE ALIGNMENTS TO AVOID CONFLICTS SHALL BE APPROVED BY THE ENGINEER.
4. CONTRACTOR SHALL CLEAR 15 FEET EACH SIDE ALONG FUTURE OVERHEAD POWER LINE ALIGNMENT.
5. FUTURE OVERHEAD POWER LINE EASEMENT HAS BEEN PRELIMINARILY APPROVED BY UTILITY (30' TOTAL WIDTH ALONG THE ALIGNMENT SHOWN).
6. REFER TO SHEETS C101-C104 FOR EXTRACTION AND INJECTION TRENCH DETAILS.
7. REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR DETAILS REGARDING APPLICABLE SITE PLAN COMPONENTS.
8. PROVIDE PULL BOXES EVERY 500' (MAX.) FOR ELECTRICAL AND INSTRUMENTATION CONDUITS.
9. IMPERVIOUS TRENCH BARRIER SHALL BE INSTALLED ON THE SOUTH FACE OF GWI-UP2-01 AND ON THE SOUTH / SOUTHEAST FACE OF GWI-UP2-04.
10. INSTALL AIR RELEASE VALVES AT THE HIGH POINTS ON ALL PRESSURE WATER PIPE SYSTEMS. SEE AIR RELEASE VALVE DETAIL, SHEET C108.
11. REPAIR OR REPLACE ANY EXISTING FENCING THAT IS DAMAGED DURING CONSTRUCTION ACTIVITIES.

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KANSAS CITY, MO 64114
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OKLAHOMA FIRM LICENSEE NO. 421

date	detailed
AUGUST 2018	B.WEIS
designed	checked
B. WEIS	R. BETTMENG

Cimarron Environmental Response Trust
PARTIAL SITE PLAN - SOUTH

project	contract
104407	-
drawing	rev.
BMCD-GWREMED-C004	A
sheet 4 of 14 sheets	
file C004_PART SITE PLAN - SOUTH 060619.DWG	

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ATTACHMENT 2
PROPOSED REVISIONS TO SECTION 8.2.4
FACILITY DECOMMISSIONING PLAN – REV 1

1206-NORTH

Uranium in groundwater exceeds the NRC Criterion within the 1206-NORTH area and the State Criteria for uranium, nitrate, and fluoride. Impacted groundwater in this area will be recovered by extraction trench GETR-WU-02 (see Figure 8-1). GETR-WU-02 will also capture seepage from the WU-BA3 area resulting from the injection of treated water in that area (see below). GETR-WU-02 will continue to operate until in-process monitoring indicates that uranium groundwater concentrations throughout the 1206-NORTH area have remained below the NRC Criterion for at least three consecutive months. Operation of GETR-WU-02 may continue until in-process monitoring indicates that uranium, nitrate, and fluoride concentrations have remained below State Criteria for at least three consecutive months. Operation of GETR-WU-02 will cease if operation of the WATF is terminated.

The 1206 Drainage is unique in that it is the only area in which excavation and disposition of sediment will be performed as a groundwater remediation strategy. As reported in the technical memorandum *1206 Drainage Sediment Assessment and Remedial Alternative Evaluation* (Burns & McDonnell, 2018), the west and east branches of the 1206 Drainage contain ~~very~~ small quantities of impacted sediment, and excavation and disposition of this sediment will expedite groundwater remediation in this area. ~~Because t~~The sediment contains concentrations of uranium that are below the NRC Criterion, but near the EPA screening ~~level for residential soil. Because most of the seepage from the UP1 Area flows through this~~ sediment, it represents an impediment to its flow to GETR-WU-02. Consequently, the sediment will be mixed with excess spoils generated during injection trench excavation and placed in a soil laydown area. Following mixing and placement, the material will be covered with topsoil and vegetated.

After placement of the sediment/spoils mixture is complete, a 10-meter grid will be established over the laydown area. Samples of the mixture will be collected at each grid location. Composite samples representing each one-foot depth interval will be collected from each location. Duplicate samples will be collected at a minimum of 10% of the 10-meter grid locations.

Samples and duplicate samples collected from the 10-meter grid locations will be submitted for isotopic analysis of U-234, U-235, and U-238 by method HASL 300. An additional set of 20 "confirmatory" samples will be collected from randomly selected 10-meter grid locations.

These samples will be retained so that the NRC can analyze those samples for confirmatory survey or inter-laboratory comparison.

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Should any sediment/spoils mixture exceed the Criterion, that material will be excavated, placed in drums (along with sufficient absorbent to ensure that there will be no free liquid), and stored for eventual disposal as low level radioactive waste.

To facilitate the transfer of seepage from WU-BA3 to GETR-WU-02, a slotted pipe will be installed in the east branch of the 1206 drainage to convey the seepage directly to the transition zone material in which GETR-WU-02 is constructed. The same non-reactive gravel used in the construction of injection and extraction trenches will be used as backfill to maintain the integrity of the drainage channel and protect the slotted pipe. The extent of sediment excavation and the installation of the slotted pipe and gravel backfill are shown on Drawing C004 (Appendix J-2).

GETR-WU-02 is projected to produce 8 gpm from the 1206-NORTH area. This water will be combined with groundwater from the WAA U>DCGL, WAA-WEST, WU-PBA, and WU-1348 areas.