REF: 03-RF-00839; JLB-042-03

NO FURTHER ACCELERATED ACTION JUSTIFICATION FOR TRENCHES T-3 AND T-4

PAC REFERENCE NUMBER: NE-111.1 (Buried T3/T4 Soil Enveloped in Geotextile Fabric)

IHSS Reference Number: 111.1, Buffer Zone Operable Unit

Unit Name: Trench T-4

Approximate Location: N750,000; E2,087,500

Date(s) of Operation or Occurrence

Not Applicable (see Description of Operation or Occurrence)

Description of Operation or Occurrence

In 1996, a removal action was conducted for trenches T-3 and T-4 in the East Trenches area. The waste in the trenches were a source for groundwater VOC contamination in this area. The action consisted of excavating approximately 5,000 cubic yards of material from the trenches, followed by thermal desorption processing of the material. With concurrence from the regulatory ageneices, approximately 250 cubic yards of the processed material was returned to the trench enveloped in a geotextile fabric because contaminants exceeded the 1996 draft RFCA Tier II radionuclide soil actions levels.

Physical/Chemical Description of Constituents Released

The soil that is wrapped in a geotextile fabric and buried in Trench T-4 contains low levels of radionuclides. The soil was treated using thermal desorption, therefore, volatile organic compounds are not expected to be present.

Responses to Operation or Occurrence

Not applicable.

Fate of Constituents Released to Environment

No Further Action (NFA) for T-4 was proposed in the 1997 Annual Update for the Historical Release Report. Regulatory agency approval of the NFA proposal is documented in a letter from CDPHE and EPA to Mr. Joe Legare dated July 9, 1999 (attached). Comments provided with the approval letter indicate the approval may need to be reviewed if the radionuclide soil action levels are revised in the future. New soil action levels (ALs) for protection of a wildlife refuge worker have been proposed in a modification to RFCA Attachment 5 dated 11/12/02. The modification also includes an integrated risk-based approach (application of the Soil Risk Screen) for evaluating the

need for, or extent of accelerated actions at PACs. Therefore, the buried soil in Trench T-4 that is enveloped in a geotextile fabric has been reassessed to render a No Further Accelerated Action (NFAA) determination using the new ALs and the Soil Risk Screen.

APPLICATION OF THE SOIL RISK SCREEN

Screen 1 – Are Contaminant of Concern (COC) Concentrations Below Table 3 Wildlife Refuge Worker (WRW) Soil Action Levels?

No. As shown in Table 1, one sample of the material in the geotextile fabric exceeds the uranium-238 AL of 351 pCi/g. The concentration of uranium-238 in the sample is 358 pCi/g, a value just above the AL. The mean concentration of all samples is 139 pCi/g, which is substantially below the AL.

Table 1 – Radiochemical Results for T3/T4 Soil with FIDLER Readings Greater Than 5000 CPM

Sample Number	U-234 Result (pCi/g) AL = 300	U-235 Result (pCi/g) AL = 8	U-238 Result (pCi/g) Al = 351	Am-241 Result (pCi/g) AL =76	Pu-239/240 Result (pCi/g) AL = 50
SS01019RM	3.32	1.05	36.40	1.17	5.83
SS01020RM	3.17	1.24	53.03	1.14	5.70
SS01021RM	3.18	1.03	32.05	1.47	7.36
SS01022RM	3.19	1.92	103.77	0.85	4.23
SS01023RM	3.33	1.08	40.83	0.72	3.59
SS01024RM	3.35	0.78	31.62	0.81	4.06
SS01025RM	3.15	2.50	144.55	1.25	6.27
SS01026RM	3.13	1.44	76.81	0.91	4.57
SS01027RM	3.79	2.00	130.55	1.77	8.85
SS01028RM	3.67	4.35	274.99	2.39	11.97
SS01029RM	4.23	5.75	358.44	3.11	15.57
SS01030RM	3.84	2.84	181.23	1.29	6.44
SS01031RM	4.36	5.30	293.17	1.87	9.34
SS01032RM	3.76	2.76	148.81	2.30	11.49
SS01033RM	3.86	3.04	149.77	1.24	6.18
SS01034RM	3.48	4.65	173.90	1.25	6.24
Average	3.55	2.61	139.37	1.47	7.36

Shading indicates exceedance of the AL.
Ref. Completion Report for the Source Removal at Trenches T-3 and T-4 (IHSSs 110 and 111.1), September 23, 1996

Screen 2 – Is there potential for subsurface soil to become surface soil?

No. T-4 is not in an area prone to landslides as shown in the attached Figure 1.

Screen 3 – Does subsurface soil radiological contamination exceed criteria in Section 5.3 and Attachment 14?

No. As shown in Table 1, plutonium concentrations are well below the soil action level of 50 pCi/g, and therefore, further analysis with respect to the allowable higher concentrations for subsurface soil as identified in ALF Section 5.3(C)(2) is not required.

Screen 4 – Is there an environmental pathway and sufficient quantity of COC that would cause exceedance of surface water standards (SWS)?

No. Contaminant migration via erosion and groundwater are the two possible pathways whereby surface water could become contaminated by Trench T-4. However, erosion is an insignificant pathway because Trench T-4 is in a flat-lying area not prone to erosion, and the waste material is covered by approximately two feet of soil. The East Trenches Plume Groundwater Collection and Treatment System is located downgradient of T-4. The zero-valence iron treatment system is effective in the removal of uranium, which is the principal contaminant of concern (COC).

Screen 5 – Are COC concentrations above Table 3 Action Levels for ecological receptors?

No. Radionuclides are the COCs, and the ALs for protection of ecological receptors are higher than for protection of a wildlife refuge worker.

Stewardship Analysis

Application of the Soil Risk Screen to NE-111.1 indicates No Further Accelerated Action (NFAA) is necessary for protection of public health and environment. However, because subsurface soil at this PAC has contaminant concentrations that exceed soil ALs, both near-term and long-term stewardship actions have been recommended[1]. They are discussed below.

Near-Term Management Recommendations

Near-term recommendations for environmental stewardship include the following:

- Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process; and
- Site access and security controls will remain in place pending implementation of long-term controls.

Long-Term Stewardship Recommendations

Based on remaining environmental conditions at NE-111.1, no specific long-term stewardship activities are recommended beyond the generally applicable Site requirements that may be imposed on this area in the future, which are dependent upon the final remedy selected. Institutional controls that will be used as appropriate for this area include the following:

- Prohibitions on construction of buildings;
- Restrictions on excavation or other soil disturbance; and

[1] NE-111.1 is contiguous with other PACs (other trenches) with subsurface soil contaminant concentrations that exceed soil ALs. Therefore, there would be no reduction in the area requiring near-term and long-term stewardship actions if the subsurface soil in the PAC were removed.

- Prohibitions on groundwater pumping in the area of NE-111.1.

These specific long-term stewardship recommendations will also be summarized in the Rocky Flats *Long Term Stewardship Strategy*. No engineered controls, environmental monitoring, or physical controls (e.g., fences) are recommended as a result of the conditions remaining at NE-111.1.

NE-111.1 will be evaluated as part of the Sitewide Comprehensive Risk Assessment, which is part of the RCRA Facility Investigation/Remedial Investigation (RFI/RI) and Corrective Measures Study/Feasibility Study (CMS/FS) that will be conducted for the Site. The need for and extent of any, more general, long-term stewardship activities will also be analyzed in RFI/RI and CMS/FS and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement.

NFAA Summary

Trench T-4 is proposed for NFAA. The Soil Risk Screen and soil ALs proposed in the RFCA Attachment 5 Modification dated 11/12/02 have been applied to the buried soil that is enveloped in a geotextile filter in this PAC. Uranium-238 is the only analyte whose concentration in the soil exceeds the ALs, and it exceeds the uranium-238 AL in only one sample (and only by 2%). Furthermore, T-4 is not in an area prone to landslides where the soil could become exposed at the surface in the future; and there is a downgradient groundwater collection and treatment system to capture contamination, if any, that may be released at T-4. There is no potential for surface water standards to be exceeded at a POC because of the downgradient groundwater system and the insignificance of erosion as a contaminant transport pathway. Accordingly, removal of the buried soil in Trench T-4 is not required.

Figure 1

Area of Landslides and High Erosion Potential

EXPLANATION

- Areas of landslides and high erosion. Contaminated sites within these areas must be evaluated per Risk Screen 2 of Figure 3.
- The anticipated boundary of areas that will be subject to institutional controls is subject to modification based upon characterization, future response actions, the results of the comprehensive risk assessment, and the final remedial/corrective action decision in the final CAD/ROD. See Section 1.2.
- Approximately 25 acres identified as proposed Wind Technology Expansion Area in Rocky Flats National Wildlife Refuge Act 2001.

Standard Map Features

- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Rocky Flats Environmental Technology Site boundary
- Paved roads
- Dirt roads

T-4

NOTES:

References:

1. Report on Soil Erosion and Surface Water Sediment Transport Modeling for the Actinide Migration Evaluation at the Rocky Flats Environmental Technology Site (August 2000)
2. Geologic Mapping: Shroba, R.R., and Carrara, P.E. Preliminary Surficial Geologic Map of the Rocky Flats Plant and Vicinity, Jefferson and Boulder Counties, Colorado: U.S. Geological Survey Open-File Report 94-162, Scale 1:6000 Site source of topo base; see OFR 94-162 (on map)

500 0 1000 1000 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

April 15, 2003

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