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(0067767H)

WASTE SITE RECLASSIFICATION FORM

Operable Unit: 600 Area

Control No.: 2017-033

Waste Site Code(s)/Subsite Code(s): 600-403

Reclassification Category: Interim Final

Reclassification Status: Closed Out No Action Rejected
RCRA Post closure Consolidated None

Approvals Needed: DOE Ecology EPA

Description of current waste site condition:

The 600-403 waste site was a small surface soil area with thorium-232 contamination near the 300-288:2 waste site and 618-13 Burial Ground in the 300 Area. Radiological surveys indicated an area of contamination of approximately 20 by 40 feet. The contamination was limited to hot spots detected with handheld instruments. The 600-403 waste site was located just west of Route 4 South, adjacent to the road that loops around the 618-13 waste site at coordinates N116259/E592843.

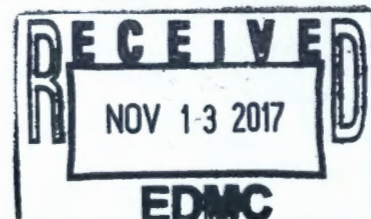
Remediation of the 600-403 waste site was performed on September 5, 2017, using an excavator to remove the area of contamination to approximately two to five feet below ground surface in two distinct trenches. After the initial removal of contaminated material, a radiological survey (GPERS) was performed, and indicated no residual contamination. Approximately 30 bank cubic meters (39 bank cubic yards) of soil were removed from the 600-403 waste site and disposed at the Environmental Restoration Disposal Facility (ERDF). Verification soil samples were collected on September 14, 2017.

Remedial action at the 600-403 waste site has been performed in accordance with the remedial action objectives and goals established by the "Hanford Site 300 Area Record of Decision for the 300-FF-2 and 300-FF-5, and Record of Decision Amendment for 300-FF-1," U.S. Environmental Protection Agency, Region 10, Seattle, Washington (300 Area ROD) (EPA 2013) and the "Remedial Design Report/Remedial Action Work Plan for 300-FF-2 Soils," DOE/RL-2014-13-ADD1, 2016, U.S. Department of Energy, Richland Operations Office, Richland, Washington. The selected remedy involved (1) excavating the site to the extent required to meet the specified remedial action goals, (2) disposing of contaminated excavation materials at the ERDF, (3) demonstrating through verification sampling that cleanup goals have been achieved, and (4) proposing the site for reclassification as Final Closed Out.

Basis for reclassification:

Verification sampling conducted on September 14, 2017, determined that the 600-403 waste site has been remediated in accordance with the 300-FF-2 RDR/RAWP (DOE/RL-2014-13-ADD1) to meet the cleanup levels specified in the 300 Area ROD (EPA 2013). The cleanup verification sampling results were evaluated in comparison to the cleanup levels. In accordance with this evaluation, the verification sampling results support a reclassification of the 600-403 waste site to Final Closed Out. The current site conditions achieve the remedial action objectives and goals established in the (300 Area ROD) (EPA 2013) and the 300-FF-2 RDR/RAWP (DOE/RL-2014-13-ADD1).

The results of verification sampling show that residual contaminant concentrations do not preclude any future uses (as bounded by the residential scenario) and allow for unrestricted use of shallow zone soils. The results also demonstrate that residual contaminant concentrations are protective of groundwater and the Columbia River. The site does not have residual contamination concentrations in the vadose zone that would require any institutional controls.



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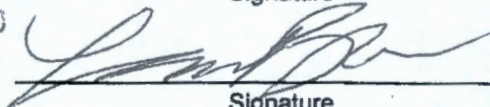
Regulator comments:

Waste Site Controls:

Engineered Controls: Yes No Institutional Controls: Yes No O&M Requirements: Yes No

If any of the Waste Site Controls are checked Yes, specify control requirements including reference to the Record of Decision, TSD Closure Letter, or other relevant documents:

Residual soil at the 600-403 waste site has been sampled, analyzed, and compared to cleanup levels. Results indicate the site has met the criteria for unlimited use and unrestricted exposure. Consequently, the 600-403 Waste Site is verified to be remediated in accordance with the 300 Area ROD (EPA 2013) and may be backfilled.

Mark French DOE Federal Project Director (printed)	E.T.G.  Signature	10/10/17 Date
N/A	N/A	N/A
Ecology Project Manager (printed) Ben Simes <i>for</i> EPA Project Manager (printed)	<i>Laura Brelow</i>  Signature	10/23/17 Date

Backup information for Waste Site Reclassification Form #2017-033

600-403 Thorium Contamination Found Near 618-13

The 600-403 site is a small surface soil area with thorium-232 contamination near the 300-288:2 waste site and 618-13 Burial Ground in the 300 Area. Radiological surveys indicated an area of contamination of approximately 20 by 40 feet. The contamination was limited to hot spots detected with handheld instruments. Remediation was performed on September 5, 2017, using an excavator to remove the area of contamination to approximately two to five feet in depth in two distinct trenches (Figure 2). After the removal of contaminated material, a radiological survey (GPERS) was performed, and indicated no residual contamination (Figure 3).

Six random sample locations were identified using Visual Sample Plan software (Figure 1). One sample included a duplicate and a split. Uranium is the contaminant of concern (COC) identified in the ROD Amendment that included this waste site in the scope of the 300 Area Final ROD for remediation. The COCs to be analyzed for this site are uranium (metal), isotopic uranium and thorium-232 (Table 1). Analytical results, included on Table 2, indicate this remediated site meets cleanup standards for the residential scenario. Although there are no thorium-232 cleanup levels in the 300 Area Final ROD, it is included for analysis to confirm that the contamination was removed.

Specific requirements for sample handling, custody, preservation, containers, holding times, field and laboratory quality control (QC), instrument calibration and maintenance, field documentation, and waste management are specified in the 300 Area SAP. Verification sampling was performed to support a determination that this waste site can be reclassified as Final Closed Out in accordance with the remedial action objectives specified in the 300 Area ROD.

Figure 1. Verification Sample Locations for 600-403

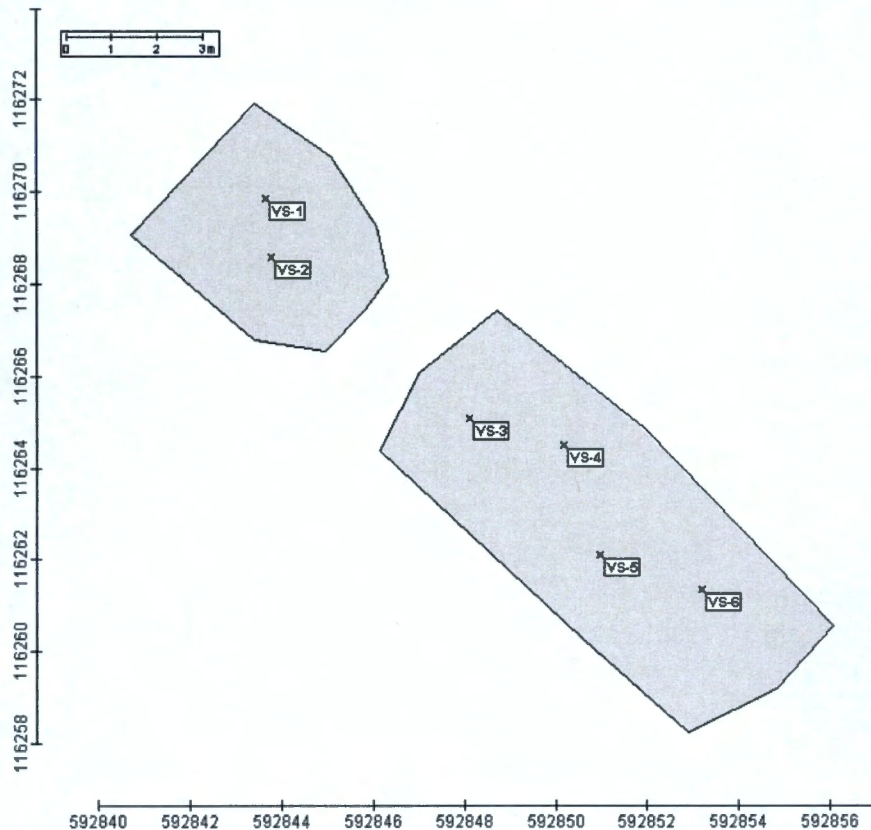


Table 1. Sample Summary Table for 600-403

Waste Site	Sample Location	WSP Coordinate Locations (m)		COCs ^a
		Northing	Easting	
600-403	VS-1	116269.84	592843.66	Thorium-232 Total Uranium Isotopes Uranium (metal)
	VS-2	116268.57	592843.78	
	VS-3	116265.08	592848.12	
	VS-4	116264.50	592850.21	
	VS-5	116262.10	592850.98	
	VS-6	116261.35	592853.20	
Duplicate	Duplicate of VS-3	116265.08	592848.12	
Split	Split VS-3	116265.08	592848.12	
Equipment blank ^b	NA	NA	NA	Thorium-232 Total Uranium Isotopes Uranium (metal)

^a Grab samples were collected at each location and sample analysis was performed using the methods specified in Table 1, consistent with DOE/RL-2001-48, 2014, *300 Area Remedial Action Sampling and Analysis Plan*, requirements.

^b If samples are collected with disposable tools (e.g. plastic sampling scoops and bags), then an equipment blank is not required, per the 300 Area SAP.

COC = contaminant of concern
 NA = not applicable
 WSP = Washington State Plane

Table 2. 600-403 Final Data (Analytical Report 9/29/17)

Sample Number	Sample Date	Uranium Metal, mg/kg	Q	MDL	Th-232 ^a , pCi/g	Q	MDC	U-233/234, pCi/g	Q	MDC
B3DCC8	9/14/17	0.61	D	0.19	0.515	B	0.0461	0.373		0.0580
B3DCD0	9/14/17	1.50	D	0.18	0.529	B	0.0408	0.495		0.0260
B3DCD2 (Original)	9/14/17	0.74	D	0.20	0.659	B	0.0524	0.338		0.0520
B3DCD4	9/14/17	0.70	D	0.18	0.435	B	0.0460	0.330		0.0435
B3DCD6	9/14/17	0.65	D	0.17	1.52	B	0.0288	0.507		0.0432
B3DCD8	9/14/17	0.92	D	0.19	0.486	B	0.0446	0.242		0.0493
B3DCF0 (DUP of B3DCD2)	9/14/17	0.73	D	0.19	0.607	B	0.0492	0.268		0.0486
B3DCF2* (SPLIT of B3DCD2)	9/14/17	0.699	D	0.0125	0.634		0.474	0.907		0.486
95% UCL of Data		1.129			1.339			0.465		

*SPLIT not used in 95% UCL of Data calculation. Shading indicates the data points used in the 95% UCL calculation. The higher of the Original or the Duplicate is used as the data point.

Sample Number	Sample Date	U-235, pCi/g	Q	MDC	U-238, pCi/g	Q	MDC
B3DCC8	9/14/17	0.000	U	0.0304	0.309		0.0244
B3DCD0	9/14/17	0.0432		0.0324	0.518		0.0419
B3DCD2 (Original)	9/14/17	0.0209	U	0.0314	0.352		0.0251
B3DCD4	9/14/17	0.0224	U	0.0336	0.231		0.0434
B3DCD6	9/14/17	0.0333		0.0333	0.468		0.0499
B3DCD8	9/14/17	0.00821	U	0.0530	0.288		0.0425
B3DCF0 (DUP of B3DCD2)	9/14/17	0.0250	U	0.0375	0.451		0.0300
B3DCF2* (SPLIT of B3DCD2)	9/14/17	0.131	U	0.356	0.784		0.396
95% UCL of Data		0.118			0.473		

*SPLIT not used in 95% UCL of Data calculation. Shading indicates the data points used in the 95% UCL calculation. The higher of the Original or the Duplicate is used as the data point.

Qualifiers and Acronyms

B = Possible laboratory contamination: analyte was detected in the method blank above the MDC.

D = The reported value is from a dilution.

MDC = Minimum detectable concentration

MDL = Method detection limit

Q = Qualifier

Cleanup Levels (CULs)

Thorium-232^a – no CUL value in ROD; Hanford Site 90th percentile of background is 1.32 pCi/g

Uranium Metal CUL = 81 mg/kg (residential)

Uranium-233/234 CUL = 27.2 pCi/g

Uranium-235 CUL = 2.7 pCi/g

Uranium-238 CUL = 26.2 pCi/g

^a As referenced in DOE/RL-2014-13-ADD1, 2014, Remedial Design Report/Remedial Action Work Plan for 300-FF-2 Soils, "Potassium-40, radium-226, radium-228, thorium-228 and thorium 232 may be detected in waste site samples, but are excluded from evaluation ... because these isotopes are not related to the operational history of the Hanford Site. The thorium and radium detected in environmental samples are associated with background quantities of uranium naturally present in soil." Therefore, detected thorium in the analytical results for waste site 600-403 are considered to be within the range of Hanford Site background.

Figure 2. Photos of 600-403 thorium-232 waste site



600-403 In-process remediation



600-403 Post-excavation

Figure 3. GPERS Gamma Track Survey 600-403

