Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

ENTERED

AUG 5 2004

Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
New Mexico Environment Department
2905 E. Rodeo Park Drive, Bldg. 1
Santa Fe, NM 87505

Subject: Transmittal of Approved RFETS Waste Stream Profile Form Number RF 122.04 TRU Mixed Inorganic Sludge

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Rocky Flats Environmental Technology Site (RFETS) Waste Stream Profile Form (WSPF) RF 122.04 TRU Mixed Inorganic Sludge.

Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP Hazardous Waste Facility Permit, No. NM4890139088-TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or (505) 706-0066.

Sincerely,

Kerry W. Watson
CBFO Assistant Manager
Office of National TRU Program

Enclosure

cc: w/o enclosure
J. Kieling, NMED
C. Walker, TechLaw
M. Strum, WTS *ED
R. Chavez, WRES *ED
L. Greene, WRES
S. Calvert, CTAC *ED
WIPP Operating Record
CBFO M&RC

*ED denotes Electronic Distribution

CBFO:NTP:KWW:JGW:04-1659:UFC:5822

040806

WASTE STREAM PROFILE FORM

Waste Stream Profile Number: RF122.04

Generator site name: RFETS | Technical contact: Eric D'Amico

Generator site EPA ID: CO7890010526 | Phone number: (303) 966-5362

Date of audit report approval by NMED: March 9, 2000 as amended February 6, 2001; May 24, 2001; June 5, 2001; April 5, 2002; April 8, 2002; August 20, 2002; August 29, 2002; December 20, 2002; April 8, 2003; September 19, 2003; December 30, 2003 and July 14, 2004

Title, version number, and date of documents used for WAP certification: Rocky Flats Environmental Technology Site TRU Waste Characterization Program Quality Assurance Project Plan, 95-QAPjP-0050, Version 9, February 2004. Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001, February 2004. Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 1.0, March 2004.

Did your facility generate this waste? ☑ Yes ☐ No If no, provide the name and EPA ID of the original generator:

Waste Stream Information[1]

WIPP ID: RF122.04[2]

Summary Category Group: S3000[2] Waste Matrix Code Group: Solidified Inorganics

Waste Stream Name: TRM Inorganic Sludge (D006, D007, D008, D009, D011)[2]

Description from the WTWBIR: This waste consists of sludge type material.[2]

Defense TRU Waste: ☑ Yes ☐ No

Check one: ☑ CH ☐ RH Number of SWBs N/A Number of Drums 265 Number of Canisters N/A

Batch Data Report numbers supporting this waste stream characterization: See Table 7.

List applicable EPA Hazardous Waste Codes[3]: D006, D007, D008, D009, D011

Applicable TRUCON Content Codes: RF 111A/211A, RF 111B/211B, RF 111D/211D, RF 111DF/211DF, RF 111E/211E, RF 111H/211H, RF 111J/211J, RF 111K/211K, RF 111P/211P, RF 111PF/211PF, RF 127/227A

Acceptable Knowledge Information[1]

Required Program Information

- Map of site: Reference List, No. 4
- Facility mission description: Reference List, No. 4
- Description of operations that generate waste: Reference List, Nos. 1, 2, 3, 4, 7
- Waste identification/categorization schemes: Reference List, Nos. 14, 15
- Types and quantities of waste generated: Reference List, Nos. 1, 2, 3, 4, 7
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 2, 3, 7
- Waste certification procedures: Reference List, No. 6

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 2, 3, 7
- Waste stream volume and time period of generation: Reference List, Nos. 5, 7
- Waste generating process description for each building: Reference List, Nos. 1, 2, 3, 7
- Process flow diagrams: Reference List, Nos. 1, 2, 3
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: Reference List, Nos. 1, 2, 3; 4, 7
- Which Defense Activity generated the waste: (Check one) Reference List, No. 4

☑ Weapons activities including defense inertial confinement fusion
☐ Naval Reactors development
☐ Verification and control technology
☐ Defense research and development
☐ Defense nuclear waste and material by products management
☐ Defense nuclear materials production
☐ Defense nuclear waste and materials security and safeguards and security investigations

Supplemental Documentation:

- Process design documents: Note 4
- Standard operating procedures: Note 4
- Safety Analysis Reports: Note 4
- Waste packaging logs: Note 4
- Test plans/research project reports: Note 4
- Site data bases: Note 4
- Information from site personnel: Note 4
- Standard industry documents: Note 4
- Previous analytical data: Note 4
- Material safety data sheets: Note 4
- Sampling and analysis data from comparable/surrogate Waste: Note 4
- Laboratory notebooks: Note 4

Sampling and Analysis Information[1]

[For the following, when applicable, enter procedure title(s), number(s) and date(s)]

☑ Radiography: Reference List, Nos. 22, 23, 24,
☑ Visual Examination: Reference List, Nos. 18, 25, 26
☑ Headspace Gas Analysis
VOCs: Reference List, No. 8, 20, 21
Flammable: Reference List, No. 8, 20, 21
Other gases (specify): N/A
☑ Homogeneous Solids/Soils/Gravel Sample Analysis
Total metals: Reference List, Nos. 11, 12, 13
PCBs: N/A
VOCs: Reference List, No. 9
Nonhalogenated VOCs: Reference List, No. 9
Semi-VOCs: Reference List, No. 10
Other (specify): N/A

Waste Stream Profile Form certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

R J Ballenger for Signature of Site Project Manager	G. A. O'Leary, Manager TRU Programs Printed Name and Title	8/3/04 Date
C L Ferrera Signature of Site QA Officer	C. L. Ferrera, TWCP Site QAO Printed Name and Title	8/3/04 Date

NOTE (1) Use back of sheet or continuation sheets, if required.

(2) This waste stream is not specifically identified in the WTWBIR but is similar to inorganic sludge waste streams RF-MR-0299 and RF-MT-0299. The WTWBIR is different in that sludge in this waste stream is not a semi-fluid material and has not had cement added to solidify it. The WTWBIR also differs in the assignment of EPA hazardous waste numbers. The WIPP ID assigned corresponds to the Waste Stream Profile Number. The Waste Stream Name, Summary Category Group, Waste Matrix Code Group and Waste Matrix Code are based on acceptable knowledge (see attached Acceptable Knowledge Summary).

(3) EPA Hazardous Waste Codes were determined using acceptable knowledge and confirmed using solids and headspace gas sampling and analysis (see attached Characterization Information Summary documenting this determination).

(4) See the References section in the Acceptable Knowledge Summary (attached) for additional backup documentation associated with this waste stream.

REFERENCE LIST

1. Backlog Waste Reassessment Baseline Book, Waste Form 46, Particulate Sludge, May 2004.
2. Backlog Waste Reassessment Baseline Book, Waste Form 55, Building 774 Aqueous Sludge, May 2004.
3. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, April 2004, and archived versions.
4. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 13, April 2004.
5. Waste and Environmental Management System (WEMS) database.
6. Transuranic (TRU) Waste Certification, PRO-X05-WC-4018, Version 7, March 2004.
7. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.25, Revision 0, May 2004.
8. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
9. GC/MS Determination of Volatile Organic Compounds (Solids, Liquids, and TCLP Extracts), L-4165- M, March 2003.
10. GC/MS Determination of Total SVOCs for WIPP, L-4215-F, March 2003.
11. Waste Analysis by Atomic Absorption Spectroscopy, L-4151-L, October 2003.
12. Mercury Analysis in Waste (Cold-Vapor Technique), L-4152- L, October 2003.
13. Trace Metals by ICP Spectrometry (Solids, Liquids, and TCLP Extracts), L-4153-J, October 2003.
14. Waste Characterization, Generation, and Packaging; 1-PRO-079-WGI-001, Revision 4, May 2002.
15. Waste Characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
16. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF122.04 (TRM Inorganic Sludge [D006, D007, D011]) Lot 1, TRG-179-04, June 2004.
17. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Statistical Solid Analysis Data Evaluation Report For Waste Stream Profile RF122.04 (Transuranic Mixed Inorganic Sludge Waste [D006, D007, D011]) Lot 1, TRG-136-04, April 2004.
18. TRU/TRM Waste Visual Verification (V^2) and Data Review, PRO-1031-WIPP-1112, Version 3, March 2004.
19. Interoffice Memorandum from V. S. Sendelweck to E. L. D'Amico, Tentatively Identified Compounds in TRM Inorganic Sludge (D006, D007, D011) Waste Lot 1, VSS-021-2004, May 2004.
20. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002
21. Headspace Gas Sampling and Analysis Using An On-Line Integrated System, PRO-1676-HGAS-S&A, Version 2, January 2004.
22. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Version 10, March 2004.
23. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-I19-NDT-00569, Revision 5, January 2002.
24. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Version 3, March 2004.
25. Glovebox and C-Cell Waste Operations, PRO-1358-440-VERP, Version 6, March 2004.
26. RTR Visual Examination Confirmation, Building 371, PRO-1608-VECRTR-371, Revision 0, October 2002.
27. Interoffice Memorandum from E. L. D'Amico to WIPP Records, Solid Sampling Control Chart Effectiveness Evaluation for Waste Stream RF122.04, ELD-042-04, April 2004.
28. Building 774 and Tank T207 Aqueous Sludge Removal and Characterization Plan, PRO-1265-SS-001, Version 3, February 2004.
29. Solid Sampling, Building 371; PRO-860-RS-0156; Version 1; September 2002.

Form A
Reconciliation with Data Quality Objectives

I certify by signature (below) that sufficient data have been collected to determine the following Program-required waste parameters:

WSPF # RF122.04

Item	Check Box[a]	Reconciliation Parameter
1	✓	Waste Matrix Code as reported in WEMS.
2	✓	Waste Material Parameter Weights for individual containers as reported in WEMS.
3	✓	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	✓	Container mass and activities of each radionuclide of concern as reported in WEMS.
5	✓	Each waste container of waste contains TRU radioactive waste.
6	✓	Mean concentrations, UCL_{90} for the mean concentrations, standard deviations, and the number of samples collected for each VOC in the headspace gas of waste containers in the waste stream/waste stream lot.
7	✓	Mean concentrations, UCL_{90} for the mean concentrations, standard deviations, and number of samples collected for VOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
8	✓	Mean concentrations, UCL_{90} for the mean concentrations, standard deviations, number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
9	✓	Mean concentrations, UCL_{90} for the mean concentrations, standard deviations, and number of samples collected for metals in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
10	✓	Sufficient number of samples was taken to meet statistical sampling requirements.
11	✓	Only validated data were used in the above calculations, as documented through the site data review and validation forms and process.
12	✓	Waste containers were selected randomly for sampling, as documented in site procedures.
13	✓	The potential flammability of TRU waste headspace gases.
14	✓	Sufficient number of waste containers was visually examined to determine with a reasonable level of certainty that the UCL_{90} for the miscertification rate is less than 14 percent.
15	✓	Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C.
16	✓	All TICs were appropriately identified and reported in accordance with the requirements of the WIPP WAP prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
17	✓	The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WIPP WAP Sections B3-2 through B3-9 prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
18	✓	The RTLs (i.e., PRQLs) for all analyses were met prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
19	✓	Appropriate packaging configuration and DAC were met and documented in the headspace gas sampling documentation and the drum age was met prior to sampling.
20	✓	Whether the waste stream can be classified as hazardous or non-hazardous at the 90-percent confidence limit.

[a] Check (✓) indicates that data or acceptable knowledge are sufficient to determine the waste parameters and that the waste parameters have been reported in the listed document or database. N/A indicates parameter does not apply to waste stream. NO indicates data are insufficient.

R Balduge for — Signature of Site Project Manager

G. A. O'Leary — Printed Name

8/3/04 — Date

Data Summary Report— Table 1: Solid Sampling Summary

WSPF # RF122.04

Determination of Number of Retrievably Stored Waste Containers to Sample (S3000,S4000)

Preliminary Estimates of Mean, Variance, and Coefficient of Variation:

Attach a table(s) that correlates container identification numbers to data packages if different from containers used for characterization.

Description of Source Data: Preliminary samples were collected and analyzed in compliance with all requirements (specified in the WIPP Waste Analysis Plan Section B2-2a) and are being counted as part of the total number of calculated required samples. Sufficient preliminary samples were collected to demonstrate sampling sufficiency – i.e., collection of additional samples other than the preliminary samples was not required. See Reference List, No 17.

Samples Randomly Selected from Waste Stream (yes/no)? Yes. See Reference List, No. 28.

Treatment of less-than-detectable measurements: This pertains only to data for analytes in which at least one detectable measurement was obtained. Data were evaluated using one half the method detection limit (MDL) for less-than-detectable observations. See Reference List, No. 17.

Analytes that are listed spent solvents and therefore not included in the calculation to determine the number of containers to sample: None.

Largest Calculated Sample Size selection and associated analyte: Pertains only to toxicity characteristic or listed waste analytes and only to those analytes where the associated EPA hazardous waste number is not assigned (i.e., it only applies to those cases where a site intends to establish that the constituent is below the regulatory threshold and the associated EPA hazardous waste number does not apply). Largest value is 0.010 for barium.

Minimum number of containers to sample: 5 (based on WIPP Waste Analysis Plan Section B2-2a requirement that preliminary estimates be based on samples from a minimum of 5 waste containers).

Attach preliminary estimates: See Reference List, No. 17. Preliminary estimates are identical to final results because sufficient preliminary samples were collected and analyzed in compliance with all requirements for being used as required samples.

Data Summary Report— Table 1: Solid Sampling Summary (continued)

Retrievably Stored Waste Sampling Results

Analytes that are listed spent solvents and therefore not included in the UCL_{90} estimate calculation to determine the toxicity characteristic: None.

Largest Calculated Sample Size and associated analyte: Pertains only to toxicity characteristic or listed waste analytes and only to those analytes where the associated EPA hazardous waste number is not assigned (i.e., it only applies to those cases where a site intends to establish that the constituent is below the regulatory threshold and the associated EPA hazardous waste number does not apply). Largest value is 0.010 for barium.

Comparison of largest calculated sample size with largest calculated sample size selected from preliminary estimate: 0.010 vs. 0.010 (for barium).

Treatment of less-than-detectable measurements: This pertains only to data for analytes in which at least one detectable measurement was obtained. Data were evaluated using one half the method detection limit (MDL) for less-than-detectable observations. See Reference List, No. 17.

Transformations applied to data and justification: Logarithmic or Square Root transformations were applied to the data as necessary to achieve (or better achieve) a normal probability distribution of the data for UCL_{90} comparison to RTL values.

Drums overpacked for shipment/WWIS tracking (Yes/No)? No.
If yes, overpack container identification number: _____

Sampled drums included in waste stream lot reported here (Yes/No)? Yes.
If no, WSPF # including sampled drums: _____

Newly Generated Waste Sampling Results

Batch or continuous process? N/A[a]

Samples randomly selected from Waste Stream? (yes/no) N/A[a]

Sample locations (part of process): N/A[a]

Treatment of less-than-detectable measurements: N/A[a]

Transformations applied to data and justification: N/A[a]

NOTES:

[a] Control charting for this waste stream was determined not to be applicable and sampling and analysis was conducted using the retrievably-stored characterization strategy (see Reference 27).

Data Summary Report— Table 2: Headspace Gas Summary Data

WSPF # RF122.04

Sampling and Analysis Method (check one):

☐ 100% Sampling ☑ Reduced Sampling

2A

ANALYTE[a]	# Samples[b]	Transform Applied[c]	Normality Test (Pass/Fail)[d]	Min. Sample Size[d]	Max. Value (ppmV)	Mean[a]	Std. Dev.[a]	UCL_{95}[d]	Trans-Formed RTL[e]	Un-Transformed RTL[e] (ppmV)	EPA Code[f]
1,1-Dichloroethane	0				2.6	1.254				10	
1,2-Dichloroethane	0				2.7	1.296				10	
1,1-Dichloroethylene	0				3.2	1.108				10	
cis-1,2-Dichloroethylene	0				3.2	1.304				10	
trans-1,2-Dichloroethylene	0				2.5	1.096				10	
1,1,2,2-Tetrachloroethane	0				3.4	1.081				10	
1,1,1-Trichloroethane	0				2.9	1.338				10	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0				2.6	0.95				10	
1,2,4-Trimethlybenzene	0				2.4	1.177				NA	
1,3,5-Trimethylbenzene	0				2.9	0.965				NA	
Acetone	0				36	12.5				100	
Benzene	0				2.7	1.042				10	
Bromoform	0				2.3	1.081				10	
Butanol	0				33	10.808				100	
Carbon disulfide	1	Log	Fail9	N/A	8.4	0.426	0.529	0.625	2.303	10	
Carbon tetrachloride	0				2.9	1.335				10	
Chlorobenzene	0				2.8	0.788				10	
Chloroform	0				2.5	1.15				10	
Cyclohexane	0				3.4	1.262				NA	
Ethyl benzene	0				2.1	0.965				10	
Ethyl ether	0				3.5	1.254				10	
Methanol	0				30	10.808				100	
Methyl ethyl ketone	0				34	13.231				100	
Methyl isobutyl ketone	0				25	10.423				100	
Methylene chloride	0				3.0	1.254				10	
o-Xylene	0				2.6	1.031				10	
m,p-Xylene	0				4.9	1.877				10	
Tetrachloroethylene	0				2.5	1.227				10	
Toluene	5	Log	Fail9	0.1511	41	1.139	1.347	1.645	4.2769	72.02[h]	
Trichloroethylene	0				2.4	0.973				10	

NOTES:

[a] A total of 13 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited.

[b] Identifies the number of samples in which the associated analyte was detected.

[c] Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

NOTES (continued):

[d] Statistics calculated based on using ½ the MDL for less-than-detectable observations with data transformation as identified (Reference 16). When transformation was applied, the Mean, Standard Deviation and UCL_{90} values presented are the transformed values (Reference 16). With no detectable concentrations, listed mean reflects average of one-half of reported MDL values for analyte and calculation of standard deviation and UCL_{90} values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL_{90} are subject to potentially large relative error.

[e] RTLs for headspace gas analysis results correspond to the analyte PRQL for analytes that are WIPP WAP target analytes. "NA" means the analyte is not a WIPP WAP target analyte, but instead a flammable VOC that is analyzed for compliance with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC).

[f] No entry indicates that the respective UCL_{90} value did not exceed the associated RTL.

[g] Data set (with or without transformation) did not pass the test for normality. The data set that most approximated a normal distribution was used for computation of statistics.

[h] Limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 4).

Data Summary Report— Table 2: Headspace Gas Summary Data (continued)

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2B

TENTATIVELY IDENTIFIED COMPOUND (TIC)	Maximum Observed Estimated Concentrations (ppmV)	# Samples Containing TIC
2-Butoxy ethanol (CAS No. 111-76-2).	35	1

No TIC listed in 40 CFR 261, Appendix VIII was detected in greater than or equal to 25 percent of the waste containers sampled.

Did the data verify the acceptable knowledge? ☑ Yes ☐ No

Data as reported in Data Summary Report – Table 2 confirms acceptable knowledge in that no EPA codes, other than those already assigned by acceptable knowledge, are applicable.

If not, describe the basis for assigning the EPA Hazardous Waste Codes:

Data Summary Report— Table 3: Metals Summary Data

WSPF # RF122.04

Sampling and Analysis Method/Units (check one):

☑ Totals (units are in mg/kg) ☐ TCLP (units are in mg/l)

ANALYTE[a]	# Samples[b]	Transform Applied[c]	Normality Test (Pass/Fail)[d]	Min. Sample Size[d]	Mean[d]	UCL_{90}[d]	Transformed RTL[e]	Un-Transformed RTL[e] (mg/kg)	EPA Code[f]
Antimony	4	Log	Fail[h]	0.243	2.219	2.591	4.605	100	
Arsenic	2	None	Fail[h]	0.003	6.695	8.267	N/A	100	
Barium	9	Sq. Rt.	Pass	0.010	6.865	8.069	44.721	2000	
Beryllium[g]	10	Sq. Rt.	Pass	1.644	21.727	26.482	10	100	None
Cadmium	9	Log	Pass	110.931	3.237	4.039	2.996	20	D006
Chromium	10	Sq. Rt.	Pass	1.796	34.029	44.212	10	100	D007
Lead	9	Sq. Rt.	Fail[h]	4.827	17.704	23.057	10	100	D008
Mercury	9	Sq. Rt.	Pass	69.006	1.801	2.323	2	4	D009
Nickel	10	Sq. Rt.	Pass	13.349	12.041	14.399	10	100	None
Selenium	4	None	Fail[h]	0.001	0.76	0.909	N/A	20	
Silver	9	Sq. Rt.	Pass	2.530	21.427	27.174	10	100	D011
Thallium	0				4.995			100	
Vanadium	8	Log	Pass	0.527	2.571	3.038	4.605	100	
Zinc	10	Sq. Rt.	Pass	1.645	21.776	26.553	10	100	None

Did the data verify the acceptable knowledge? ☐Yes ☑ No

If not, describe the basis for assigning the EPA Hazardous Waste Codes.

EPA codes D006 (cadmium), D007 (chromium), and D011 (silver) were initially assigned to this waste stream based on acceptable knowledge and were confirmed by homogeneous solid sampling and analysis (see attached acceptable knowledge summary). EPA codes D008 (lead) and D009 (mercury) were added to the waste stream because their UCL_{90} values exceed the RTL (see Reference No. 17).

NOTES:

[a] A total of 10 samples were collected and analyzed. Analysis was performed for all analytes identified.
[b] Identifies the number of samples in which the associated analyte was detected.
[c] Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.
[d] Statistics calculated based on using ½ the MDL values for all less-than-detectable observations with data transformation as identified (Reference 17). When transformation was applied, the Mean and UCL_{90} values presented are the transformed values (Reference 17). No entry indicates no detectable measurements available for statistics.
[e] RTLs correspond to the analyte PRQL for analytes that are not characteristic hazardous waste constituents.
[f] No entry indicates that the applicable UCL_{90} value did not exceed the associated RTL.

Data Summary Report—Table 3: Metals Summary Data (continued)

NOTES (continued):

g Solid sampling results indicate that beryllium is present at levels above the PRQL; however, EPA hazardous waste number P015, beryllium powder, is not applicable to this waste stream. The applicable regulations controlling the identification of U and P listed hazardous wastes are given in 40 CFR 261.33, Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof. Within this regulation, it states that "The phrase 'commercial chemical product or manufacturing chemical intermediate having the generic name listed in...' refers to a chemical which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraph (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraph (e) or (f), such waste will be listed in either Sec. 261.31 or Sec. 261.32 or will be identified as a hazardous waste by the characteristics set forth in subpart C of this part." Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. As a result beryllium is present in the solidified inorganic waste. The beryllium is present as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste.

h Data transformation did not pass the test for normality. The data transformation that most approximated a normal distribution was used for computation of statistics.

Data Summary Report— Table 4: Total VOC Summary Data

WSPF # RF122.04

4A

ANALYTE[a]	# Samples [b]	Transform Applied [c]	Normality Test (Pass/Fail) [d]	Min. Sample Size[d]	Mean[d]	UCL_{90} [d]	Transformed RTL[e]	Un-Transformed RTL[e] (mg/kg)	EPA Code[f]
1,1-Dichloroethylene	0				0.5			14	
trans-1,2-Dichloroethylene	0				0.5			10	
1,2-Dichloroethane	0				0.5			10	
1,1,1-Trichloroethane	0				0.5			10	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0				0.5			10	
1,1,2-Trichloroethane	0				0.5			10	
1,1,2,2-Tetrachloroethane	0				0.5			10	
Acetone	0				5			100	
Benzene	0				0.5			10	
Bromoform	0				0.5			10	
Butanol	0				5			100	
Carbon disulfide	0				0.5			10	
Carbon tetrachloride	0				0.5			10	
Chloroform	0				0.5			120	
Chlorobenzene	0				0.5			10	
Chloromethane	0				0.5			10	
Ethyl benzene	0				0.5			10	
Ethyl ether	0				5			100	
Isobutanol	0				5			100	
Methanol	0				5			100	
o-Xylene	0				0.5			10	
m,p-Xylene	0				0.5			10	
Methyl ethyl ketone	0				5			100	
Methylene chloride	0				0.5			10	
Tetrachloroethylene	0				0.5			10	
Toluene	4	None	Fail[g]	0.006	0.87	1.084	N/A	10	
Trichloroethylene	0				0.5			10	
Trichlorofluoromethane	0				0.5			10	
Vinyl chloride	0				0.5			4	

NOTES:

[a] A total of 10 samples were collected and analyzed. Analysis was performed for all analytes identified.
[b] Identifies the number of samples in which the associated analyte was detected.
[c] Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.
[d] Statistics calculated based on using ½ the MDL values for all less-than-detectable observations with data transformation as identified (Reference 17). No entry indicates no detectable measurements available for statistics.
[e] RTLs correspond to the analyte PRQL for analytes that are F-listed hazardous waste constituents or to the applicable total RTL value as calculated from the TC RTL. RTLs correspond to the analyte PRQL for analytes that are not F-listed or characteristic hazardous waste constituent.

Data Summary Report—Table 4: Total VOC Summary Data (continued)

NOTES (continued):

[f] No entry indicates that the applicable UCL_{90} value did not exceed the associated RTL.
[g] Data transformation did not pass the test for normality. The data transformation that most approximated a normal distribution was used for computation of statistics.

Data Summary Report— Table 4: Total VOC Summary Data (continued)

WSPF # RF122.04

4B

TENTATIVELY IDENTIFIED COMPOUND (TIC) CHEMICAL ABSTRACTS SERVICE (CAS) Number	Maximum Observed Estimated Concentrations (mg/kg)	# Samples Containing TIC
No TICs identified in the solid VOC samples for the waste stream lot.		

Did the data verify acceptable knowledge? ☑ Yes ☐ No

Data as reported in Data Summary Report – Table 4 confirm acceptable knowledge in that no toxicity characteristic organic or F-listed solvent EPA codes, are applicable.

If no, describe the basis for assigning EPA Hazardous Waste Codes.

Data Summary Report—Table 5: Total SVOC Summary Data

WSPF # RF122.04

5A

ANALYTE[a]	# Samples[b]	Transform Applied [c]	Normality Test (Pass/Fail)[d]	Min. Sample Size [d]	Mean[d]	UCL_{90} [d]	Transformed RTL[e]	Un-Transformed RTL[e] (mg/kg)	EPA Codes[f]
Acetophenone	0				0.949			40	
1,2-Dichlorobenzene	0				0.949			10	
1,4-Dichlorobenzene	0				0.949			150	
2,4-Dinitrophenol	0				0.949			40	
2,4-Dinitrotoluene	0				0.19			2.6	
2-Methylphenol (o-Cresol)	0				0.949			40	
3-&4-Methylphenol (m,p-Cresol)	0				0.949			40	
Hexachlorobenzene	0				0.19			2.6	
Hexachloroethane	0				0.949			60	
Nitrobenzene	0				0.949			40	
Pentachlorophenol	0				0.949			2,000	
Pyridine	0				0.949			100	

NOTES:

[a] A total of 10 samples were collected and analyzed. Analysis was performed for all analytes identified.
[b] Identifies the number of samples in which the associated analyte was detected.
[c] Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.
[d] Statistics calculated based on using ½ the MDL values for all less-than-detectable observations with data transformation as identified (Reference 17). No entry indicates no detectable measurements available for statistics.
[e] RTLs correspond to the analyte PRQL for analytes that are F-listed hazardous waste constituents or to the applicable total RTL value as calculated from the TC RTL. RTLs correspond to the analyte PRQL for analytes that are not F-listed hazardous waste constituents or characteristic hazardous waste constituents.
[f] No entry indicates that the applicable UCL_{90} value did not exceed the associated RTL.

Data Summary Report— Table 5: Total SVOC Summary Data (continued)

WSPF # RF122.04

5B

TENTATIVELY IDENTIFIED COMPOUND (TIC) CHEMICAL ABSTRACTS SERVICE (CAS) Number	Maximum Observed Estimated Concentrations (mg/kg)	# Samples Containing TIC
p-Xylene (CAS No. 106-42-3)	0.74	1
Methyl isobutyl ketone (CAS No. 108-10-1)[a,b]	2.1	8
m-Xylene (CAS No. 108-38-3)	1.2	2
Toluene (CAS No. 108-88-3)	1.3	2
1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester (CAS No. 117-81-7)[c]	47	4
Fluoranthene (CAS No 206-44-0)[d]	15	6
1-Methyl-4-(1-methylethyl)-benzene (CAS No. 99-87-6)[a,b]	2.2	9

Did the data verify acceptable knowledge? ☑ Yes ☐ No

Data as reported in Data Summary Report – Table 5 confirm acceptable knowledge in that no toxicity characteristic organic or F-listed solvent EPA codes are applicable.

If no, describe the basis for assigning EPA Hazardous Waste Codes.

NOTES:

[a] Not listed in 40 CFR 261, Appendix VIII.

[b] TIC was detected in the sample method blanks for all samples in which it was detected. This indicates that the source of the TIC was due to laboratory contamination. Therefore, the TIC does not satisfy the criterion for addition of the TIC to the target analyte list for the waste stream.

[c] TIC is a constituent in an F-listed waste whose presence is attributable to waste packaging materials and so was not added to the target analyte list for the waste stream. TIC was determined not to be a listed hazardous waste based on comparison of the TIC identification to acceptable knowledge (see Reference No. 19).

[d] TIC is being added to the target analyte list for this waste stream. TIC was determined not to be a listed hazardous waste based on comparison of the TIC identification to acceptable knowledge (see Reference No. 19).

Data Summary Report— Table 6: Exclusion of Prohibited Items

WSPF # RF122.04

The absence of prohibited items is documented through acceptable knowledge. Radiography or visual examination is performed on each container in this waste stream to verify the absence of the following prohibited items:

- Liquid waste (waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1-inch or 2.5-centimeters of liquid in the bottom of the container. Total residual liquid in any payload container (e.g., 55-gallon drum or standard waste box) may not exceed 1 percent volume of that container.)
- Non-radionuclide pyrophoric materials
- Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes
- Explosives or compressed gases
- Waste exhibiting the characteristics of ignitability, corrosivity or reactivity
- Non-mixed hazardous waste

Newly generated waste is characterized by visual verification (VV) at the time of waste packaging using the visual examination (VE) technique unless the use of radiography in lieu of, or in combination with, visual verification is justified by any of the following criteria:

- Visual verification was conducted during packaging, but was unacceptable,
- Visual verification requires extensive handling of high gram content waste that results in high radioactive exposure for the VV personnel,
- Situations where waste packaging is conducted at numerous locations generating small quantities of transuranic waste requiring a large number of VV personnel, and/or
- Where waste was originally packaged as low-level waste, but subsequently determined to be transuranic.

Each container of waste is certified and shipped only after radiography and/or VE either:

- Did not identify any prohibited items in the waste container, or
- All prohibited items found in a waste container by radiography or VE are identified and corrected (i.e., eliminated or removed) through the site non-conformance reporting system.

Data Summary Report— Table 7: Correlation of Container Identification to Batch Data Reports

WSPF # RF122.04

Package No.	Inner Package No.	Radioassay Data Package	Solid Sample Batch No.[a]	Metals Data Package[a]	VOC Data Package[a]	SVOC Data Package[a]	Headspace Sample Batch No.[b]	Headspace VOC Data Package[b]	VE or VV Data Package[c]
DB6239[d]	X31001	440IP1-DP-040204	TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			VV-371-00141
	X31002		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31005		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31219		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31220		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31222		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31225		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31942		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31943		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
	X31945		TSL-SB-1002	MTLS-DP-00041	VOCS-DP-00045	SVOA-DP-00045			
DD3738		440IP1-DP-060904					04W0242	HGAS-DP-00958	VV-774-00004
DD4350		440IP1-DP-052804					04W0289	HGAS-DP-01005	VV-774-00006
DD5468		440IP1-DP-060804					04W0272	HGAS-DP-00988	VV-774-00007
DD5525		440IP1-DP-060904					04W0299	HGAS-DP-01014	VV-771-00052
DD6283		440IP1-DP-052704					04W0287	HGAS-DP-01003	VV-774-00014
DD6291		440IP1-DP-052604					04W0244	HGAS-DP-00960	VV-774-00011
DD6295		440IP1-DP-052704					04W0287	HGAS-DP-01003	VV-774-00012
DD6302		440IP1-DP-060804					04W0298	HGAS-DP-01013	VV-774-00008
DD6669		440IP1-DP-052504					04W0243	HGAS-DP-00959	VV-774-00011
DD6672		440IP1-DP-060804					04W0247	HGAS-DP-00963	VV-774-00014
DD6683		440IP1-DP-052604					04W0249	HGAS-DP-00965	VV-774-00013
DD7229		440IP1-DP-060804					04W0301	HGAS-DP-01016	VV-774-00015
DD7241		440IP1-DP-060904					04W0298	HGAS-DP-01013	VV-774-00014

NOTES:

[a] No entry indicates container was not selected or used for solid sampling.
[b] No entry indicates container was not selected or used for reduced headspace sampling.
[c] All containers were characterized by visual verification using the visual examination (VE) technique at the time of packaging. None of the containers were examined by radiography.
[d] Waste material was collected into small containers (4 liters or smaller in size) from randomly selected tank locations and packaged into the identified drum in accordance with Reference 28. The small containers were subsequently sampled in accordance with Reference 29.

Acceptable Knowledge Summary

WSPF # RF122.04

RMRS-WIPP-98-100, Acceptable Knowledge TRU/TRM Waste Stream Summaries, Section 7.25, TRM Inorganic Sludge (D006, D007, D008, D009, D011) (attached).

Rocky Flats Environmental Technology Site

ACCEPTABLE KNOWLEDGE INFORMATION

ACCEPTABLE KNOWLEDGE TRU/TRM WASTE STREAM SUMMARIES

RMRS-WIPP-98-100

Section 7.25

TRM Inorganic Sludge (D006, D007, D008, D009, D011)

Profile No. RF122.04

Revision 4

Reviewed for Classification/UCNI
By: Unclassified not UCNI (U/NU)
Reference Exemption Number CEX-032-00
Date: August 4, 2004

Approval signatures in Site Document Control history file

7.25 Transuranic Mixed (TRM) Inorganic Sludge (D006, D007, D008, D009, D011)

Profile No. RF122.04

Acceptable Knowledge (AK) Waste Stream Summary

Waste Stream Name: TRM Inorganic Sludge (D006, D007, D008, D009, D011)

Generation Buildings: Building 774 (5,9)

Waste Stream Volume (Retrievably Stored): None (5,9)

Generation Dates (Retrievably Stored): N/A

Waste Stream Volume (Newly Generated): 265 55-gallon drums (5,9)

Generation Dates (Newly Generated): June 2002 - December 2003 (5,9)

Waste Stream Volume (Projected): None (9)

Generation Dates (Projected): N/A (9)

TRUCON Content Code (1): RF 111A/211A, RF 111B/211B, RF 111D/211D, RF 111DF/211DF, RF 111E/211E, RF 111H/211H, RF 111J/211J, RF 111K/211K, RF 111P/211P, RF 111PF/211PF, RF127/227A

Process knowledge demonstrates that flammable volatile organic compounds (VOCs) in the headspace are less than 500 ppm: Yes (see Section 7.25.6)

7.25.1 Transuranic Waste Baseline Inventory Report Information (2)

WIPP Identification Number(s): RF 122.04

Summary Category Group: S3000 Waste Matrix Code Group: Solidified Inorganics

Waste Matrix Code: S3129

Waste Stream Name: TRM Inorganic Sludge (D006, D007, D008, D009, D011)

Description from the WIPP Transuranic Waste Baseline Inventory Report (WTWBIR):
This waste consists of sludge type material.

NOTE: This waste stream is not specifically identified in the WTWBIR but is similar to inorganic sludge waste streams RF-MR-0299 and RF-MT-0299. The WTWBIR is different in that sludge in this waste stream is not a semi-fluid material and has not had cement added to solidify it. The WTWBIR also differs in the assignment of Environmental Protection Agency (EPA) Hazardous Waste Numbers. The Waste Isolation Pilot Plant (WIPP) identification (ID) assigned corresponds to the Waste Stream Profile Number. The Waste Stream Name, Summary Category Group, Waste Matrix Code Group, and Waste Matrix Code are based on AK.

7.25.2 Waste Stream Description

TRM inorganic sludge assigned United States Environmental Protection Agency (EPA) Hazardous Waste Numbers D006, D007, D008, D009, and D011 consists of solid aqueous sludge [Item Description Code (IDC) 299]. This material was generated from clean out and decommissioning of storage tanks utilized for aqueous liquid waste treatment operations. The sludge material residing in these storage tanks had settled and dried inside the tanks for several years prior to tank decommissioning. Consequently, the sludge material removed and packaged from the tanks existed as a solid homogeneous material that did not require any solidification treatment prior to or during the removal and packaging operation. Small amounts of absorbent material may have been added to the sludge material during packaging to absorb any potential residual liquid separation. The sludge is similar in material, physical form, and hazardous constituents, and is therefore considered a single waste stream. Table 7.25-1 presents the waste matrix code and waste material parameters for TRM inorganic sludge. [3,13]

Table 7.25-1, TRM Inorganic Sludge (D006, D007, D008, D009, and D011)

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
299	Miscellaneous Inorganic Sludge	S3129, Unknown/Other Inorganic Sludges	Other Inorganic Materials	100%

Note: The above waste material parameters address the IDC only and do not include internal packaging (e.g. inner bags), container packaging (e.g. fiberboard liner), absorbent, secondary waste, etc.

IDC 299, Miscellaneous Inorganic Sludge: This material consists of solid inorganic sludge from the clean out of aqueous liquid waste storage tanks utilized in the Building 774 Aqueous Liquid Waste Treatment System. The sludge is a solid material that may vary somewhat in moisture content and is broken up and scooped or vacuumed into waste containers. Small quantities of absorbent were added when necessary to absorb potential residual liquid.[4,6,13,14]

7.25.3 Areas of Operation

TRM inorganic sludge assigned EPA Hazardous Waste Numbers D006, D007, D008, D009, and D011 was generated by the following defense operations in Building 774.[3,4,6]

- Decontamination and Decommissioning

7.25.4 Generation Processes

TRM inorganic sludge assigned EPA Hazardous Waste Numbers D006, D007, D008, D009, and D011 was generated from clean out and decommissioning of storage tanks utilized for aqueous liquid waste treatment operations in Building 774. During historical operations, aqueous liquid wastes from Building 771 plutonium recovery operations and Building 774 waste treatment operations were fed to the Building 774 aqueous liquid waste treatment process. The process consisted of two-stage basic waste treatment, precipitation, and filtration process, which generated aqueous sludge. Acidic wastes fed to the process were neutralized with sodium hydroxide in stage one. Ferric sulfate and Purifloc flocculant were added to the neutralized waste (containing metal ions) to precipitate the sludge prior to filtration. In stage two, ferric sulfate, magnesium sulfate, calcium chloride, and Purifloc flocculant were added to basic wastes during the two-stage treatment to precipitate sludge. Following system shutdown, inorganic sludge remaining in the aqueous liquid treatment system tanks was broken up and scooped or vacuumed into waste containers (as IDC 299) as part of system decontamination and decommissioning.[4,6,7,8]

Process flow diagrams can be found in the Backlog Waste Reassessment (BWR) Baseline Book and Waste Stream and Residue Identification and Characterization (WSRIC) Building Books referenced in Section 7.25.8.

Section B-3a(1)(i) of the WIPP Waste Analysis Plan (WAP) allows for reduced headspace gas sampling for homogeneous solid waste streams with no VOC-related Hazardous Waste Numbers. Specifically, a waste stream may qualify for reduced headspace gas sampling if it complies with the following three criteria:

- The waste stream or waste stream lot must consist of more than 10 containers.
- The waste stream must be a homogeneous solid waste stream that has no VOC-related Hazardous Waste Numbers assigned to it.
- The results of the solid sampling and analysis must confirm that no VOC-related Hazardous Waste Numbers should be assigned to the waste stream.

The TRM Inorganic Sludge (D006, D007, D008, D009, D011) waste stream complies with each of these criteria as follows:

- The waste stream consists of 265 containers of waste.[9]
- The waste stream is a homogeneous solid that has no VOC-related Hazardous Waste Numbers assigned to it.[3,4]
- Reference 10 provides the documentation of the solid sampling and analysis results that confirmed no VOC-related Hazardous Waste Numbers need to be assigned to this waste stream.[10]

7.25.5 Resource Conservation and Recovery Act (RCRA) Characterization

This waste stream is characterized as a mixed waste. The specific BWR Baseline Book Subpopulations and WSRIC Process Numbers associated with TRM inorganic sludge assigned EPA Hazardous Waste Numbers D006, D007, D008, D009, and D011 are listed in the Waste and Environmental Management System (WEMS) AK Waste Stream Summary for Profile Number RF122.04.[5]

Visual examination of waste contents at the time of packaging is used to verify that the waste stream is not a liquid waste and does not contain explosives, non-radionuclide pyrophoric materials, compressed gasses, or reactive waste. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).

Some containers in this waste stream may be characterized by Real-time Radiography (RTR) in lieu of visual examination as justified by the following criteria:

- Visual verification (VV) was conducted during packaging, but was unacceptable,
- VV requires extensive handling of high gram content waste that results in high radioactive exposure for the VV personnel,
- Situations where waste packaging is conducted at numerous locations generating small quantities of transuranic waste requiring a large number of VV personnel, and/or
- Where waste was originally packaged as low-level waste, but subsequently determined to be transuranic.

RCRA-regulated organic compounds were not contaminants in feed liquids to the Building 774 aqueous liquid waste treatment system or used in the generating or tank clean out processes. [4]

The materials in this waste stream are toxicity characteristic for RCRA metals. Cadmium, chromium, and silver are present in liquids treated in the Building 774 aqueous liquid waste treatment system. Cadmium and silver are present as contaminants in aqueous liquids from the Building 774 Silver Recovery process, which were fed to the Building 774 aqueous liquid treatment system. Chromium is present as a contaminant in ion exchange effluent from Building 771 Anion Exchange, Cation Exchange, and Special Recovery Anion Exchange processes, which were also fed to the Building 774 aqueous liquid treatment system. Confirmatory sampling/analysis for total metals identified cadmium (D006), chromium (D007) and silver (D011) at levels above their associated regulatory threshold limits (RTLs). Additionally, lead (D008) and mercury (D009) were also identified at levels above their associated RTLs. In accordance with the WIPP WAP, AK was revised to add EPA Hazardous Waste Numbers D008 and D009 to the waste stream. Therefore, D006, D007, D008, D009, and D011 are assigned to this waste stream. [4,10]

Confirmatory solid samples were also analyzed for total VOC and SVOC constituents. Statistics were calculated based on using one-half the method detection limit (MDL) for less-than-detectable observations with data transformation applied where appropriate.

Using this "WIPP-directed" method, the calculated 90 percent upper confidence limit (UCL_{90}) of the mean concentrations did not exceed its associated program required quantitative limit (PRQL) value for any of the analytes. Consequently, no toxicity characteristic organic or F-listed EPA Hazardous Waste Numbers are required to be added to the EPA Hazardous Waste Numbers assigned by AK for this waste stream.[10]

The materials in this waste stream do not contain, are not mixed with, and/or derived from the treatment of F-listed hazardous constituents. Liquids fed to the Building 774 aqueous liquid waste treatment system were generated in Building 771 or Building 774 and were not F-listed wastes. F-listed hazardous constituents were not used in the aqueous liquid waste treatment process. Therefore, this waste stream is not F-listed waste.[4]

Solid sampling and analysis results indicate that beryllium is present in the waste stream in concentration greater than the PRQL. Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred; therefore, trace quantities (less than one weight percent) of beryllium may be present in the inorganic sludge. The beryllium is present as a contaminant of the process, not as unused commercial chemical product, and therefore is not a P015-listed waste.[3,4]

No discarded chemical products, off-specification species, chemical residues, and spill residues thereof [40 Code of Federal Regulations (CFR) 261.33] were included in this waste stream, and no hazardous waste from specific sources (40 CFR 261.32) was generated at the site. Therefore no K, U, or P listings have been applied to this waste stream.[4]

Headspace gas sampling and analysis of containers assigned to this waste stream by AK detected 2 VOCs. Statistics were calculated based on using one-half the method detection limit (MDL) for less-than-detectable observations with data transformation applied where appropriate. Using this "WIPP directed" method, the calculated 90 percent upper confidence limit (UCL_{90}) of the mean concentrations for none of the analytes were found to exceed their associated RTL values. Therefore, the headspace data confirms the AK characterization that no characteristic volatile organic or F-listed solvent EPA codes are applicable.[11]

1,2-Benzenedicarboxylic acid, bis (2-ethylhexyl) ester [Chemical Abstract Service (CAS) 117-81-7] and fluoranthene (CAS 206-44-0), which are U-listed compounds, were detected as tentatively identified compounds (TICs) in the solid sampling data. An evaluation was completed that determined these compounds were not used in the processes that generated this waste stream and are not present as unused commercial chemical products. Therefore, the presence of these TICs does not render the waste stream a U-listed hazardous waste.[12]

7.25.6 Transportation

The payload containers in the waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable VOCs were not identified in this waste stream based on the descriptions in the BWR Baseline Book and WSRIC Building Books. Therefore, flammable VOCs in the payload container headspace do not exceed 500 ppm.[4]

7.25.7 Radionuclides

Table 7.25-2 summarizes the radionuclides that may be present in TRM inorganic sludge assigned EPA Hazardous Waste Numbers D006, D007, D008, D009, and D011.[3]

Table 7.25-2, TRM Inorganic Sludge (D006, D007, D008, D009, and D011) Radionuclides

WIDG	Description	Radionuclides	Rationale
299	Misc. Inorganic Sludge	WG Pu, Am-241, DU, EU, Np-237, Am-243	The sources of radionuclides fed to the generating process for this waste stream originated from several buildings.

Key: WG Pu weapons-grade plutonium
Am-241 americium-241
DU depleted uranium
EU enriched uranium
Np-237 neptunium-237
Am-243 americium-243

7.25.8 References

1. RFETS 2004. Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001.

2. DOE 1995. Transuranic Waste Baseline Inventory Report, Revision 2. DOE/CAO-95-1121.

3. RMRS 2004. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 13.

4. RFETS 2004. Backlog Waste Reassessment Baseline Book, Waste Form 46, Particulate Sludge.

5. Waste and Environmental Management System (WEMS) database.

6. RFETS 2002. Waste Stream and Residue Identification and Characterization Building 774, Version 7.0.

7. RFETS 1993. Waste Stream and Residue Identification and Characterization Building 774, Version 5.0.

8. RFETS 2004. Backlog Waste Reassessment Baseline Book, Waste Form 55, Building 774 Aqueous Sludge.

9. Wastren 2004. Interoffice Memorandum from Scott Smith to Waste Records Center. Current and Projected Waste Volumes for TRM Inorganic Sludge (D006, D007, D008, D009, D011) RF122.04, SMS-009-2004, May 24, 2004.

10. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Statistical Solid Analysis Data Evaluation Report For Waste Stream Profile RF122.04 (Transuranic Mixed Inorganic Sludge Waste [D006, D007, D011]) Lot 1, TRG-136-04, April 30, 2004.

11. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF122.04 (TRM Inorganic Sludge [D006, D007, D011]) Lot 1, TRG-179-04, June 15, 2004.

12. Interoffice memorandum from Vivian S. Sendelweck to Eric D'Amico, Tentatively Identified Compounds in TRM Inorganic Sludge (D006, D007, D011) Waste, Solid Sampling Lot 1, VSS-021-2004, May 13, 2004.

13. RFETS 2004. Tank Aqueous Sludge Removal and Characterization Plan, PRO-1265-SS-001, February 2004.

14. RFETS 2004. Solid Radioactive Waste Packing Requirements Manual, 1-M12-WO-4034, Version 10.