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

APR 12 2013

ENTERED

RECEIVED
APR 2013

Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Review of Savannah River Site - Central Characterization Project Waste Stream Profile Form Number SR-BCLDP.003.001, *BCLDP CH Hydraulic Sludge and Debris*

Dear Mr. Kieling:

The Department of Energy, Carlsbad Field Office has approved the Waste Stream Profile Form (WSPF) Number SR-BCLDP.003.001, *BCLDP CH Hydraulic Sludge and Debris* for the Central Characterization Project at the Savannah River Site.

Enclosed is a copy of the WSPF as required by Section C-5a of the Waste Isolation Pilot Plant, Hazardous Waste Facility Permit, No. NM4890139088-TSDF.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have questions, please contact Mr. J. R. Stroble, Director of the Office of the National TRU Program, at (575) 234-7313.

Sincerely,

Jose R. Franco

Jose R. Franco, Manager
Carlsbad Field Office

Enclosure

cc: w/enclosure

S. Holmes, NMED	*ED
T. Kliphuis, NMED	ED
RCRA Chronology Record	ED
WIPP Operating Record	ED
CBFO M&RC	

*ED denotes electronic distribution

130407

CBFO:NTP:JRS:GL:13-0480:UFC 5900.00

Attachment 2 – CCP Waste Stream Profile Form

(1) Waste Stream Profile Number: SR-BCLDP.003.001					
(2) Generator site name: Savannah River Site			(3) Generator site EPA ID: SC1890008989		
(4) Technical contact: Beverly Schrock			(5) Technical contact phone number: 575-234-7444		
(6) Date of audit report approval by New Mexico Environment Department (NMED): May 23, 2012					
(7) Title, version number, and date of documents used for WIPP-WAP Certification: CCP-PO-001, CCP Transuranic Waste Characterization Quality Assurance Project Plan, Revision 20, June 16, 2011; CCP-PO-002, CCP Transuranic Waste Certification Plan, Revision 26, July 14, 2011; CCP-PO-004, CCP/SRS Interface Document, Revision 32, October 25, 2012					
(8) Did your facility generate this waste? YES		NO	X		
(9) If no, provide the name and EPA ID of the original generator: Battelle Memorial Institute – West Jefferson North Site OHT400013892					
Waste Stream Information					
(10) WIPP ID: SR-BCLDP.003.001			(11) Summary Category Group: S3000 – Homogeneous Solids		
(12) Waste Matrix Code Group: Solidified Organics			(13) Waste Stream Name: BCLDP CH Hydraulic Sludge and Debris		
(14) Description from the ATWIR: This waste consists of CH Hydraulic Sludge and Debris generated by the BCLDP program during the D&D of the Building JN-1 Hydraulic Room.					
(15) Defense TRU Waste: YES	X	NO			
(16) Check One: CH	X	RH			
(17) Number of SWBs: NA (17a) Number of SLB2 : NA	(18) Number of Drums: 2 55-gallon drums			(19) Number of Canisters: NA	
(20) Batch Data Report numbers supporting this waste stream characterization: See Characterization Information Summary (CIS) Correlation of Container Identification Numbers to Batch Data Report Numbers.					
(21) List applicable EPA Hazardous Waste Numbers: D004, D005, D006, D007, D008, D009, D011, D019, F002 and F005					
(22) Applicable TRUCON Content Numbers: SR 127 / SR 227					
(23)**Acceptable Knowledge Information**					
(For the following, enter the supporting documentation used [i.e., references and dates])					
Required Program Information					
(23A) Map of site: CCP-AK-SRS-530, Revision 4, October 29, 2012, Attachments 1, 2 and 3					
(23B) Facility mission description: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 4.1					
(23C) Description of operations that generate waste: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 4.2.2					
(23D) Waste identification/categorization schemes: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 2.2					
(23E) Types and quantities of waste generated: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 4.2.1					
(23F) Correlation of waste streams generated from the same building and process, as applicable: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 4.3					
(24) Waste certification procedures: CCP-TP-030, Revision 31, November 19, 2012					
(25) Required Waste Stream Information					
(25A) Area(s) and building(s) from which the waste stream was generated: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 5.1					

(25B) Waste stream volume and time period of generation: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 5.2			
(25C) Waste generating process description for each building: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 5.3			
(25D) Waste Process flow diagrams: CCP-AK-SRS-530, Revision 4, October 29, 2012, Attachment 6 and 7			
(25E) Material inputs or other information identifying chemical/radionuclide content and physical waste form: CCP-AK-SRS-530, Revision 4, October 29, 2012, Section 5.4			
(25F) Waste Material Parameter Weight Estimates per unit of waste: See table entitled "Waste Stream SR-BCLDP.003.001 Waste Material Parameters Estimates" in Summation of Aspects of AK Summary Report: SR-BCLDP.003.001.			
(26) Which Defense Activity generated the waste:			
	Weapons activities including defense inertial confinement fusion	X	Naval Reactors development
	Verification and control technology	X	Defense research and development
	Defense nuclear waste and material by products management		Defense nuclear material production
	Defense nuclear waste and materials security and safeguards and security investigations		
(27) Supplemental Documentation:			
(27A) Process design documents: NA			
(27B) Standard operating procedures: See P001, P024, P032, P078, P079, P080 and P505 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27C) Safety Analysis Reports: See P024 and P032 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27D) Waste packaging logs: See C515, C516, DR009, P505, U514, U517 and U520 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27E) Test plans/research project reports: See P071 and P072 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27F) Site databases: NA			
(27G) Information from site personnel: See C001, C004, C006, C007, C012, C014, C019, C023, C045 and C506 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27H) Standard industry documents: NA			
(27I) Previous analytical data: See C013, C051, C056, C510, C511, DR005, DR006, DR011, DR015, P003, P012, P014, P016, P017, P019, U021, U510, U511, U514, U517 and U520 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27J) Material safety data sheets: See C006, C045, C049 and P025 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27K) Sampling and analysis data from comparable/surrogate Waste: See C013, C051, C056 and U021 in the Summation of Aspects of AK Summary Report: SR-BCLDP.003.001, Source Documents			
(27L) Laboratory notebooks: NA			
Confirmation Information			
For the following, when applicable, enter procedure title(s), number(s) and date(s)			
(28)	Radiography: CCP-TP-053, Revision 12, August 22, 2012		
	Visual Examination: NA		

(29) Comments: For a list of the waste characterization procedures used and date of respective procedures see the list of procedures on the attached CIS.

Reviewed by AK Expert:	YES [X]			Date: 2/27/2013
Reviewed by STR (if necessary):	YES [X]	N/A [ ]		Date: 2/21/2013

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.

BSschrock	Beverly Schrock	4/3/2013
Signature of Site Project Manager	Printed Name	Date

CHARACTERIZATION INFORMATION SUMMARY

WSPF #: SR-BCLDP.003.001
Lot #: 1

TABLE OF CONTENTS

Characterization Information Summary Cover Page..... 002

Correlation of Container Identification Numbers to Batch Data Report Numbers..... 003

Solids Analysis VOC UCL_{90} Evaluation Form..... 004

Solids Analysis SVOC UCL_{90} Evaluation Form..... 006

Solids Analysis Metals UCL_{90} Evaluation Form..... 007

Solid VOCs Summary Data..... 008

Solid SVOCs Summary Data..... 009

RTR/VE Summary of Prohibited Items and AK Confirmation..... 010

Reconciliation with Data Quality Objectives..... 011

CCP Characterization Information Summary Cover Page

Waste Stream # SR-BCLDP.003.001 Lot #: 1

AK Expert Review: N/A Date: N/A

SPM Review: Joshua Houghton Date: 3/14/2013

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF.

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity, and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:

Radiography (RTR/NDE):

CCP-TP-053	Rev. 10	03/04/11	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
CCP-TP-053	Rev. 11	07/20/11	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
CCP-TP-053	Rev. 12	08/22/12	CCP Standard Real-Time Radiography (RTR) Inspection Procedure

Non Destructive Assay (NDA):

CCP-TP-193	Rev. 2	01/31/11	CCP Data Reviewing, Validating, and Reporting Procedure for the Nondestructive Assay Box Counters
CCP-TP-193	Rev. 3	08/08/11	CCP Data Reviewing, Validating, and Reporting Procedure for the Nondestructive Assay Box Counters

Solids Sampling:

INST-OI-73	Rev. 4	04/07/09	Manual Drum Coring Operations
INST-OI-16	Rev. 30	04/07/09	Drum Coring Operations

Solids Analysis:

CCP-TP-180	Rev. 2	12/29/10	CCP Analytical Sample Management
CCP-TP-180	Rev. 3	01/17/13	CCP Analytical Sample Management
CCP-TP-181	Rev. 0	05/02/07	CCP Determination of Mercury by CVAA for TRU Waste Characterization
CCP-TP-182	Rev. 1	01/26/09	CCP Determination of Metals by ICP-AES for TRU Waste Characterization
CCP-TP-183	Rev. 0	05/02/07	CCP Microwave Assisted Digestion of Homogeneous Solids and Soil/Gravel
CCP-TP-184	Rev. 0	05/02/07	CCP Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry
CCP-TP-184	Rev. 1	02/21/13	CCP Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry
CCP-TP-185	Rev. 1	11/18/06	CCP Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
CCP-TP-185	Rev. 2	02/21/13	CCP Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
CCP-TP-186	Rev. 1	08/22/07	CCP Determination of Nonhalogenated Volatile Organic Compunds by Gas Chromatography
CCP-TP-186	Rev. 2	02/21/13	CCP Determination of Nonhalogenated Volatile Organic Compunds by Gas Chromatography
CCP-TP-187	Rev. 1	11/18/06	CCP Sample Preparation for Semivolatile Organic Compounds
CCP-TP-188	Rev. 2	12/29/10	CCP Analytical Data Recording, Review, and Reporting

Project Level Data Validation / DQO Reconciliation:

CCP-TP-001	Rev. 19	12/29/10	CCP Project Level Data Validation and Verification
CCP-TP-001	Rev. 20	09/27/12	CCP Project Level Data Validation and Verification
CCP-TP-002	Rev. 23	12/29/10	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-002	Rev. 24	12/28/11	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-002	Rev. 25	2/11/2013	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-003	Rev. 18	12/29/10	CCP Data Analysis for S3000, S4000, and S5000 Characterization
CCP-TP-003	Rev. 19	11/02/12	CCP Data Analysis for S3000, S4000, and S5000 Characterization
CCP-TP-005	Rev. 22	04/21/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 23	08/30/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 24	11/28/11	CCP Acceptable Knowledge Documentation
CCP-TP-030	Rev. 29	04/26/11	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
CCP-TP-030	Rev. 30	05/21/12	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
CCP-TP-030	Rev. 31	11/19/12	CCP CH TRU Waste Certification and WWIS/WDS Data Entry

WAP Certification:

CCP-PO-001	Rev. 20	06/16/11	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-002	Rev. 26	07/14/11	CCP Transuranic Waste Certification Plan
CCP-PO-004	Rev. 29	07/05/11	CCP/SRS Interface Document
CCP-PO-004	Rev. 30	10/17/11	CCP/SRS Interface Document
CCP-PO-004	Rev. 31	10/01/12	CCP/SRS Interface Document
CCP-PO-004	Rev. 32	10/25/12	CCP/SRS Interface Document

CIS-002

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: # SR-BCLDP.003.001

Lot # 1

Container ID Number	NDA BDR	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR	Load Management/ Overpack Yes	Headspace Gas BDR		
							Sample	Analysis	
BC0151	SRLBC0742	SRLBR0050	N/A	SSC12-00006	ALD12031: M, N, S, V	N/A	N/A	N/A	N/A
BC0166	SRLBC0742	SR4RTR0271	N/A	SSC12-00006	ALD12031: M, N, S, V	N/A	N/A	N/A	N/A
BC0151 #2	N/A	N/A	N/A	SSC12-00006	ALD12031: M, N, S, V	N/A	N/A	N/A	N/A
BC0151 #3	N/A	N/A	N/A	SSC12-00006	ALD12031: M, N, S, V	N/A	N/A	N/A	N/A
BC0166 #2	N/A	N/A	N/A	SSC12-00006	ALD12031: M, N, S, V	N/A	N/A	N/A	N/A

Note: BC0151 was sampled three times (shown by the "#2" and "#3" for second and third samples) and BC0166 was sampled twice (additional sampled shown by "#2" after drum number) to fulfill RCRA sampling reqirements. These additional sampling events are included on the CIS for completeness.

Signature of Site Project Manager

Joshua Houghton
Printed Name

3/14/2013
Date

CES-003

CCP Solids Analysis VOC UCL_{90} Evaluation Form

WSPF #: SR-BCLDP.003.001 **Solids Summary Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	UCL_{90} (mg/kg)	PRQL (mg/kg)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA HWN
Benzene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Bromoform	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Carbon Disulfide	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Carbon Tetrachloride	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Chlorobenzene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Chloroform	Log	0	5	-1.6607	-1.7268	0.0467	-1.6948	10	2.30		
1,1-Dichloroethylene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
1,2-Dichloroethane	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Ethyl benzene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Methylene Chloride	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
m,p-Xylene[a]	No	3	5	3.9000	1.8320	1.6205	2.9431	10	10.00		
o-Xylene	No	3	5	1.8000	0.8360	0.7385	1.3424	10	10.00		
1,1,2,2-Tetrachloroethane	Log	0	5	-1.6607	-1.7268	0.0467	-1.6948	10	2.30		
Tetrachloroethylene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Toluene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Trans-1,2-Dichloroethylene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
1,1,1-Trichloroethane	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Trichloroethylene	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
1,1,2-Trichloro-1,2,2-trifluoroethane	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
1,1,2-Trichloroethane	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Trichlorofluoromethane	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	10	2.30		
Vinyl Chloride	Log	0	5	-2.3539	-2.4200	0.0467	-2.3880	4	1.39		
Acetone	Log	0	5	3.9120	3.7664	0.1380	3.9166	100	4.61		
Butanol	Log	0	5	3.9120	3.7664	0.1380	3.9166	100	4.61		
Methanol	SQRT	0	5	6.7823	6.1382	0.6355	6.5739	100	10.00		
Methyl ethyl ketone	Log	0	5	3.9120	3.7664	0.1380	3.9166	100	4.61		
Ethyl ether	Log	0	5	3.9120	3.7664	0.1380	3.9166	100	4.61		
Isobutanol	Log	0	5	3.9120	3.7664	0.1380	3.9166	100	4.61		

CFS-004

CCP Solids Analysis VOC UCL_{90} Evaluation Form

WSPF #: SR-BCLDP.003.001 **Solids Summary Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	UCL_{90} (mg/kg)	PRQL (mg/kg)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA HWN
Pyridine	Log	0	5	3.9120	3.7664	0.1380	3.9166	100	4.61		
Formaldehyde	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
Hydrazine	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		

* These xylene isomers cannot be resolved by the analytical methods employed in the program. m-Xylene and p-Xylene will be reported as "Total m-p-Xylene."

Comments:

(1) For analytes where there were no samples measured above the MDL value, 1/2 of the MDL value was used. (Per section C4 of the WAP, 1/2 of the MDL value is used in calculating the mean concentration.)

C33-005

Signature of Site Project Manager

Joshua Houghton
Printed Name

3/14/2013
Date

CCP Solids Analysis SVOC UCL_{90} Evaluation Form

WSPF #: SR-BCLDP.003.001

Solids Summary Waste Stream Lot Number 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	UCL90 (mg/kg)	PRQL (mg/kg)	Transformed PRQL	UCL_{90} > PRQL Yes	EPA HWN
1,2-Dichlorobenzene	No	0	5	15.5000	7.9720	7.2552	12.9467	40	N/A		
1,4-Dichlorobenzene	No	0	5	15.5000	7.9720	7.2552	12.9467	40	N/A		
2,4-Dinitrophenol	No	0	5	7.5000	3.9350	3.5653	6.3796	40	N/A		
2,4-Dinitrotoluene	No	0	5	0.0900	0.0875	0.0035	0.0952	2.6	N/A		
Hexachlorobenzene	No	0	5	0.0900	0.0875	0.0035	0.0952	2.6	N/A		
Hexachloroethane	No	0	5	15.5000	7.9720	7.2552	12.9467	40	N/A		
2-Methylphenol (cresol)	No	0	5	7.5000	3.9350	3.5653	6.3796	40	N/A		
3&4-Methylphenol (cresol)	No	0	5	7.5000	3.9350	3.5653	6.3796	40	N/A		
Nitrobenzene	No	0	5	15.5000	7.9720	7.2552	12.9467	40	N/A		
Pentachlorophenol	No	0	5	7.5000	3.9350	3.5653	6.3796	40	N/A		

Comments:

(1) For analytes where there were no samples measured above the MDL value, 1/2 of the MDL value was used. (Per C4 of the WAP, 1/2 of the MDL value is used in calculating the mean concentration.)

Signature of Site Project Manager

Joshua Houghton
Printed Name

3/14/2013
Date

CFS-006

CCP Solids Analysis Metals UCL_{90} Evaluation Form

WSPF #: SR-BCLDP.003.001 **Solids Summary Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	UCL90 (mg/kg)	PRQL (mg/kg)	Transformed PRQL	UCL_{90} > PRQL Yes	EPA HWN
Antimony	No	5	5	21.00	13.06	7.58	18.26	100	n/a		
Arsenic	Log	5	5	3.37	2.33	1.39	3.28	100	4.61		
Barium	Log	5	5	4.87	3.74	1.55	4.80	2000	7.60		
Beryllium	Log	2	5	-1.43	-2.53	0.70	-2.04	100	4.61		
Cadmium	No	5	5	2.20	1.55	0.89	2.16	20	n/a		
Chromium	No	5	5	17.00	9.41	8.03	14.92	100	n/a		
Lead	Log	5	5	10.78	6.80	2.24	8.33	100	4.61	Yes	D008
Mercury	No	5	5	94.00	57.80	42.08	86.65	4	n/a	Yes	D009
Nickel	No	5	5	11.00	5.58	4.94	8.97	100	n/a		
Selenium	No	0	5	0.50	0.50	0.00	0.50	20	n/a		
Silver	SQRT	3	5	1.64	0.77	0.59	1.17	100	10.00		
Thallium	Log	1	5	0.26	-0.91	0.66	-0.46	100	4.61		
Vanadium	No	5	5	23.00	13.30	9.11	19.54	100	n/a		
Zinc	No	5	5	330.00	200.60	168.11	315.87	100	n/a	Yes	None (2)

Comments:

(1) For analytes where there were no samples measured above the MDL value, 1/2 of the MDL value was used. (Per section C4 of the WAP, 1/2 of the MDL value is used in calculating the mean concentration.)

(2) Zinc is not listed under 40 CFR 261.24.

Signature of Site Project Manager

Joshua Houghton
Printed Name

3/14/2013
Date

CTS-007

CCP Solid VOCs Summary Data

Waste Stream Number	SR-BCLDP.003.001	Solids Summary Waste Stream Lot Number	1 through 1

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
None	N/A	N/A	N/A

Data Supports EPA Hazardous Waste Numbers Assigned by AK? Yes ☑ No ☐

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

SPM Signature _____ Date 3/14/2013

CIS-008

CCP Solid SVOCs Summary Data

Waste Stream Number: SR-BCLDP.003.001

Solids Summary Waste Stream Lot Number: 1 through 1

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
bis(2-Ethylhexyl)phthalate	22.49	1	20.00%

Note: N/A

Data Supports EPA Hazardous Waste Numbers Assigned by AK? Yes ☑ No ☐

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

SPM Signature _____ Date 3/14/2013

CIS-009

CCP RTR/VE Summary of Prohibited Items and AK Confirmation

Waste Stream Number: SR-BCLDP.003.001 Lot #: 1

Container Number	RTR Prohibited Items [a,b]	Visual Examination Prohibited Items [a,b]
See correlation of container ID numbers for list of remaining drum numbers in this Lot.	None of the containers in this lot had prohibited items identified during RTR.	VE was not used to certify any containers in this Lot.

a. See Batch Data Reports
b. If AK has assigned U134 to this waste stream, then any liquids in these containers are prohibited items (not acceptable by the TSDF).

Justification for the selection of RTR and/or VE: RTR was selected as the characterization method because waste was previously packaged and RTR meets all the Data Quality Objectives for NDE for the waste.

Site Project Manager Signature	Joshua Houghton Printed Name	3/14/2013 Date

CIS-010

CCP Reconciliation with Data Quality Objectives

WSPF# SR-BCLDP.003.001 Lot # 1

Sampling Completeness

RTR/VE

Number of Valid Samples: 2 Number of Total Samples Analyzed: 2
Percent Complete: 100 (QAO is 100%)

NDA

Number of Valid Samples: 2 Number of Total Samples Analyzed: 2
Percent Complete: 100 (QAO is 100%)

HSG

Number of Valid Samples: NA Number of Total Samples Collected: NA
Percent Complete: NA (QAO is ≥90%)
Number of Valid Samples: NA Number of Total Samples Analyzed: NA
Percent Complete: NA (QAO is ≥90%)

Total VOC

Number of Valid Samples: 5 Number of Total Samples Collected: 5
Percent Complete: 100 (QAO is ≥90%)
Number of Valid Samples: 5 Number of Total Samples Analyzed: 5
Percent Complete: 100 (QAO is ≥90%)

Total SVOC

Number of Valid Samples: 5 Number of Total Samples Collected: 5
Percent Complete: 100 (QAO is ≥90%)
Number of Valid Samples: 5 Number of Total Samples Analyzed: 5
Percent Complete: 100 (QAO is ≥90%)

Total Metals

Number of Valid Samples: 5 Number of Total Samples Collected: 5
Percent Complete: 100 (QAO is ≥90%)
Number of Valid Samples: 5 Number of Total Samples Analyzed: 5
Percent Complete: 100 (QAO is ≥90%)

CIS-011

CCP Reconciliation with Data Quality Objectives

WSPF# SR-BCLDP.003.001 Lot # 1

	Y/N/NA	Reconciliation Parameter
1	Y	Waste Matrix Code.
2	Y	Waste Material Parameter Weights.
3	Y	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	Y	The TRU activity reported in the BDRs for each container demonstrates with a 95% probability that the container of waste contains TRU radioactive waste.
5	NA	AK Sufficiency. Is there an approved AK sufficiency Determination for this waste stream?
6	NA	Mean concentrations, UCL_{90} values for the mean concentration, standard deviations, and the number of samples collected for each VOC in the HSG of each container were calculated and compared with the program required quantitation limits, as reported in CCP-TP-003 Attachment 3, and additional U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers were assigned as required. Samples were randomly collected (when appropriate).
7a	Y	Mean concentrations, UCL_{90} values for the mean concentration, standard deviations, and the number of samples collected for solids VOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003 Attachment 4, and additional EPA HWNs were assigned as required. Samples were randomly collected.
7b	Y	Mean concentrations, UCL_{90} values for the mean concentration, standard deviations, and the number of samples collected for solids SVOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003 Attachment 5, and additional EPA HWNs were assigned as required. Samples were randomly collected.
7c	Y	Mean concentrations, UCL_{90} values for the mean concentration, standard deviations, and the number of samples collected for total metals were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003 Attachment 6, and additional EPA HWNs were assigned as required. Samples were randomly collected.

CIS-012

CCP Reconciliation with Data Quality Objectives

WSPF# SR-BCLDP.003.001 Lot # 1

8	Y	The data demonstrates whether the waste stream exhibits a toxicity characteristic under Title 40 Code of Federal Regulations (CFR), Part 261, Identification and Listing of Hazardous Waste, Subpart C, Characteristics of Hazardous Waste.
9	Y	Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D, Lists of Hazardous Wastes.
10	Y	Waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level.
11	NA	Appropriate packaging configuration and Drum Age Criteria (DAC) is applied and documented in the headspace gas sampling documentation, and the drum age met prior to sampling.
12	Y	TICs were appropriately identified and reported in accordance with the requirements of Section C3-1 of the QAPjP.
13	NA	The PRQLs for headspace gas VOCs were met for all analyses as evidenced by the analytical batch data reports.
14		The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WAP Sections C3-2 through C3-9 prior to submittal of a waste stream profile form for a waste steam or waste stream lot.

	Completeness	Comparability	Representativeness
Radiography	Y	Y	Y
VE	NA	NA	NA
Headspace Gas Analysis	NA	NA	NA
Solids Sampling	Y	Y	Y
Solids VOCs	Y	Y	Y
Solids SVOCs	Y	Y	Y
Solids Metals	Y	Y	Y

Comments:

None

Signature of Site Project Manager	Joshua Houghton Printed Name	3/14/2013 Date

CTS-013

SUMMATION OF ASPECTS OF AK SUMMARY REPORT: SR-BCLDP.003.001

Overview

Waste stream SR-BCLDP.003.001 consists of contact-handled (CH) transuranic (TRU) immobilized hydraulic oil sludge and debris generated in the Building JN-1 Hot Cell Laboratory at the Battelle Memorial Institute (BMI) – West Jefferson North Site and stored at the Savannah River Site (SRS). The containers were generated between October 2002 and March 2003 and were transferred to SRS for characterization and storage in 2005. Since operations began in the Hot Cell Laboratory in 1955, a variety of studies relating to the radiation performance of materials were conducted in the remote-handling facilities in Building JN-1. Experiments in the Hot Cell Laboratory were largely dedicated to research supporting the U.S. Department of Energy (DOE) and other government agencies. The research consisted primarily of reactor fuel studies that evaluated materials such as uranium, thorium, and plutonium alloys and compounds in pellet, dispersion, and ceramic form. Control rod material studies included rare-earth absorbers such as europium titanate dispersions in stainless-steel. Structural and cladding material studies evaluated stainless-steels, zirconium, Zircaloy, nickel alloys, refractory metals, and pressure vessel steels.

The waste described in this report was generated in Building JN-1 during decontamination and decommissioning (D&D) operations conducted during the Battelle Columbus Laboratories Decommissioning Project (BCLDP) beginning in 1989. Specifically this waste was generated in the Building JN-1 Hydraulic Room. Large shielded doors were used to access hot cells in Building JN-1. The doors were controlled by a hydraulic system located in the Hydraulic Room beneath the hot cells. The BCLDP remediated hydraulic oil that leaked from this system and debris, water, and materials from operations above the room that fell through gaps in the floor into the Hydraulic Room.

The TRU waste streams generated by BCLDP D&D operations meet the definition of defense waste. The waste originated from, or was commingled with, materials from defense activities associated with naval reactor development and defense research and development. Therefore, this waste stream is defense related waste.

This Summation of the Acceptable Knowledge (AK) Summary Report includes information to support Waste Stream Profile Form (WSPF) number SR-BCLDP.003.001 for CH homogeneous solids stored at SRS. The primary source of information for this Summation is CCP-AK-SRS-530, *Central Characterization Program Acceptable Knowledge Summary Report For: Battelle Columbus Laboratories Decommissioning Project (BCLDP) Homogeneous Transuranic Waste From the Building JN-1 Hydraulic Room, Waste Stream: SR-BCLDP.003 – Hydraulic Sludge and Debris, SR-BCLDP.003.001 – CH Hydraulic Sludge and Debris*, Rev. 4, October 29, 2012.

Waste Stream Identification Summary

Waste Stream Name:	BCLDP CH Hydraulic Sludge and Debris
Waste Stream Number:	SR-BCLDP.003.001
Waste Stream Volume – Current:	2 55-gallon drums
Waste Stream Volume – Projected:	None

Dates of Waste Generation:	October 2002 and March 2003
Summary Category Group:	S3000 – Homogeneous Solids
Waste Matrix Code Group:	Solidified Organics
Waste Matrix Code:	S3212- Organic Absorbents
TRUPACT-II Content Code (TRUCON):	SR 127 and SR 227
Annual Transuranic Waste Inventory Report (ATWIR) Identification Number:	SR-BCLDP.003.001

Waste Stream Description and Physical Form

Waste stream SR-BCLDP.003.001 consists of two 55-gallon drums of the CH absorbed hydraulic sludge and debris generated by the BCLDP program during the D&D of the Building JN-1 Hydraulic Room. Waste stream SR-BCLDP.003.001 consists predominantly of organic and inorganic homogenous solids. In addition, waste stream SR-BCLDP.003.001 contains lesser amounts of debris waste materials not exceeding 50 percent by volume. Review of the AK documentation identified the following materials:

- **Organic matrix** waste consists of precautionary Radsorb absorbent added to the bottom of the liner. In addition, Radsorb and Nochar Petrobond were added to immobilize the hydraulic sludge during D&D.
- **Inorganic matrix** waste consists of concrete pieces and dust, and precautionary Floor Dry absorbent added to the bottom of the liner. In addition, Floor Dry was added to immobilize the hydraulic sludge during D&D.
- **Other inorganic material** waste consists of glass pieces.
- **Cellulosic** waste consists of rags, gloves, and muslin bags.
- **Plastic** waste consists of as low as reasonably achievable (ALARA) paint, epoxy paint, bags, ties, duct tape, and bottles.
- **Rubber** waste consists of rubber gloves.
- **Metal** items, including shavings, pieces, shims, and tools (C-clamp, wrenches, and a screw driver).

Waste stream SR-BCLDP.003.001 meets the definition of waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity. The waste was generated during D&D of the Hydraulic Room in Building JN-1 by the BCLDP program.

Point of Generation

Location

Waste stream SR-BCLDP.003.001 is stored at the Savannah River Site in Aiken, South Carolina. Waste stream SR-BCLDP.003.001 was generated in the Hydraulic Room at the BMI, West Jefferson North Site Building JN-1 Hot Cell Laboratory in West Jefferson, Ohio.

Area and/or Buildings of Generation

Waste Stream SR-BCLDP.003.001 was generated in the Building JN-1 Hydraulic Room at the BMI.

Generating Processes

Description of Waste Generating Processes

Due to the nature of the research being conducted by BMI in the early 1950s, it was necessary to construct a remote-handling facility to conduct experiments to support the development of nuclear fuels, control rods, reactor structural materials, and various other reactor components and instrumentation. The Building JN-1 Hot Cell Laboratory was constructed in 1955 in anticipation of the emerging commercial nuclear power industry. During the first five years of operation, the Hot Cell Laboratory primarily supported experiments on small-scale irradiation capsules and, over the years, developed the capacity to perform destructive and nondestructive examination on complete reactor fuel assemblies. The following table provides a summary of the JN-1 hot cell destructive and nondestructive examination capabilities and the areas in JN-1 where these operations were historically performed (References C004, C006, P014, P016, P026, P501, and U003).

Building JN-1 Hot Cell Capabilities

Capability	Area(s) of Operation
Nondestructive Examinations of Full-Size Fuel Rods	
Underwater TV viewing and videotape recording of full assemblies and fuel rods	Transfer and Storage Pool
In-cell visual examination	All Cells
Gamma scan, gross or specific isotope	High Energy and Low Level Cells
Profilometry	High Energy Cell
Rod length measurement	High Energy Cell and other cells
Eddy current, coil, and probe techniques	High Energy Cell
Destructive Examinations	
Fission gas sampling (qualitative and quantitative)	High Energy Cell High Level Cell (before 1972)
Rod internal void volume measurement	High Energy Cell High Level Cell (before 1972)
Rod marking and sectioning	High Energy Cell High Level Cell (before 1972)
Fuel bulk density measurements	Mechanical Test Cell Low Level Cell (before 1967)

Fuel burnup analysis	Mechanical Test Cell and Alpha-Gamma Cells
Neutron dosimetry	High Energy Cell
Retained or dissolved gas analysis	Mechanical Test Cell
Autoradiograph, alpha and beta/gamma	Alpha-Gamma and Low Level Cells
Mechanical Testing and Metallurgical Examinations	
Tensile and bend testing	Mechanical Test Cell and Mechanical Test Room
Burst testing	High Level and Mechanical Test Cells
Creep testing	Low Level Subcell and Mechanical Test Cell
Expanded mandrel testing	Mechanical Test Cell
Hardness and microhardness measurements	Alpha-Gamma Cells
Instrumented Charpy impact testing	Charpy Room and Mechanical Test Cell
Metallography	Alpha-Gamma Cells Low Level Cell (pre-1964)
Radiochemistry including spectrophotometry, pH, specific resistance, titrimetry, hydrogen by inert gas-fusion, activation analysis, and alpha, beta, and gamma spectrometry	Microprobe/Counting Room Mechanical Test Cell
Electron microprobe analysis	Microprobe/Counting Room
Scanning electron microscopy and energy-dispersive x-ray analysis	Microprobe/Counting Room

Waste stream SR-BCLDP.003.001 was generated exclusively from activities associated with the D&D of the Building JN-1 Hydraulic Room. This stream may contain chemicals and materials that were washed into or filtered down into the Hydraulic Room from the JN-1 hot cells above.

The primary task of the BCLDP program involved the segregation and packaging of debris and equipment already in the cells and the repackaging of waste packaged by historic operations. BCLDP waste sorting and packaging was performed primarily in the Mechanical Test Cell, High Energy Cell, and Low Level Cell in Building JN-1. The Mechanical Test Cell was used primarily for unloading and segregating the inventory of drums generated during the clean-up of other JN-1 hot cells. The High Energy Cell was used primarily to unload waste stored in larger containers (e.g., hoppers). A forklift and the overhead crane were used to place the hoppers in the High Energy Cell for unloading. The Low Level Cell was used primarily to repackage the waste stored in smaller cans including the waste from the clean-up of the High Level Cell and Alpha-Gamma Cells (References C019, C023, P011, P511, and P518).

The hydraulic sludge and debris in waste stream SR-BCLDP.003.001 were generated as a result of a hydraulic system leak clean-up in the Hydraulic Room below the Controlled Access Area and the shield doors for the High Level Cell and Low Level Cell. Due to ongoing leaks around the glands and seal gaskets of the hydraulic system rams, it was estimated that approximately 55-gallons of hydraulic oil leaked onto the floor of the Hydraulic Room annually. Historically, this oil was periodically pumped out, but the leaks in the rams were never successfully stopped. Prior to decontaminating the area, BCLDP estimated that the Hydraulic Room contained 5 inches of hydraulic fluid. BCLDP also estimated that the Hydraulic Room contained 1 to 3 inches of wash water that had drained from cleaning the Controlled Access Area above. Additionally, a sludge had formed composed of materials that had fallen into the area from the cells above (e.g., dust and fragments from fuels examinations) and sand and grit from sandblasting operations conducted in the room. Small debris items, such as tools, had also fallen into the area from the cells above (References P015, P037, and U510).

The BCLDP program began remediation by collecting as much of the freestanding oil as possible. This liquid was pumped into 375-gallon capacity double-wall IP-2/7A intermediate bulk containers and sent to Perma-Fix-Diversified Scientific Services Inc. in Kingston, Tennessee, to be profiled and disposed. The hydraulic oil/sludge remaining after the initial oil removal was absorbed using greater than 50 percent non-hazardous Nochar Petrobond and Radsorb absorbents. Then the hydraulic sludge and debris was packaged in plastic bags with additional Nochar, Radsorb, and Floor Dry. Approximately 50 small bags of hydraulic sludge and debris waste was collected and packaged, ranging from 20 millirem per hour (mrem/hr) to 2 rem per hour at contact, with weights ranging from 4 to 100 pounds. Prior to repackaging of the sludge into the 55-gallon steel drum liners, an additional 10-pounds of absorbent (50:50 Floor-Dry and Radsorb) was added to the steel liner to absorb any water from condensation or dewatering. The bags were then opened and the sludge emptied into the liners with the debris and the plastic bags (References P025, U510, U514 and U520).

Waste Stream Material and Chemical Inputs

The following table identifies the Resource Conservation and Recovery Act (RCRA) toxicity characteristic and listed constituents identified in this waste stream.

Toxicity Characteristic and Listed Constituents in Waste Stream SR-BCLDP.003.001

Chemical/Material	Use/Description/Location	AK Source	EPA HWNs
Arsenic	Detected in samples taken of the Transfer/Storage pool filters and resins. Assumed to be a constituent of metal materials entering the hot cells for destructive examination.	C518, DR006, DR010, DR011, DR015, P075, P076, P511	D004
Barium	Present in leaded glass. Detected in samples taken of the Transfer/Storage pool filters and resins. Assumed to be present in the dissolved fuel materials solidified with cement – slugs. Ingredient in paint or paint-related products. Barium sulfate used in various processes in JN-1.	C011, C013, C045, C049, C056, C518, DR006, DR009, DR010, DR011, DR015, P075, P076, P501, P511, P512, U514	D005
Cadmium	Dosimeter capsules. Shielding. Detected in samples taken of the Transfer/Storage pool filters and resins. Present in the fuel examined in JN-1. Assumed to be present in the dissolved fuel materials solidified with cement – slugs. Ingredient in paint or paint-related products.	C001, C045, C049, C056, C518, DR006, DR009, DR010, DR015, P030, P075, P076, P501, P511, U514	D006
Chromium	Detected in samples taken of the Transfer/Storage pool filters and resins. Assumed to be present in the dissolved fuel materials solidified with cement – slugs. Ingredient in paint or paint-related products. Chromic acid in glass cleaner. Chromic acid and potassium dichromate used in various processes in JN-1.	C001, C011, C045, C049, C056, C518, DR006, DR009, DR010, DR011, DR015, P075, P076, P501, P511, P512, U514	D007

Chemical/Material	Use/Description/Location	AK Source	EPA HWNs
Lead	Present in leaded gloves, leaded windows, fluorescent light bulbs, and lead wool packed around windows of the cells. Present in shielding used throughout JN-1. Detected in samples taken of the Transfer/Storage pool filters and resins. Used during the Shipping Cask Sabotage Source Term experiments. Lead bricks associated with the Creep Machines in the Low Level Cell Subcell Room. Ingredient in paint or paint-related products. Used for shielding and heat transfer.	C013, C019, C045, C049, C051, C056, C518, DR005, DR006, DR009, DR010, DR011, DR015, P001, P003, P006, P009, P012, P016, P017, P019, P024, P071, P072, P075, P076, P079, P080, P501, P512, U021, U514	D008
Mercury	Immersion density testing in the Mechanical Test Cell; beads found on the floor and other flat surfaces; stored in the Controlled Access Area. In inventory for the Low Level, High Level, and High Energy Cells and Controlled Access Area. Used in the Fission Gas Measuring System in the High Energy Cell. Detected in samples taken of the Transfer/Storage pool filters and resins; and mercury vapor light bulbs.	C001, C011, C019, C051, C518, DR006, DR009, DR010, DR011, DR015, P003, P006, P012, P014, P075, P076, P501, P511, P512,	D009
Silver	Controlled Access Area. Detected in samples taken of the Transfer/Storage pool filters and resins. Assumed to be present in the dissolved fuel materials solidified with cement – slugs. Silver nitrate used in ultrasonic cleaning and various processes in JN-1.	C001, C011, C518, DR006, DR010, DR015, P075, P076, P501, P511, P512	D011
Carbon tetrachloride	Immersion density testing, Mechanical Test Cell. Used in laboratory operations for cleaning and degreasing. Low Level, High Level, Alpha-Gamma Cells. Cell and equipment decontamination. Typically used as a solvent and present on visibly contaminated inorganic and organic debris.	C001, C004, C006, C011, C518, DR015, P024, P032, P501, P511, P512	D019
Methylene chloride	Ingredient in paint or paint-related products.	C045, C049, C056, C518, DR009, DR015, U514	F002
1,1,1-trichloroethane (chlorothene)	Cleaning and degreasing. Low Level, High Level, Alpha-Gamma, Mechanical Test, High Energy Cells, and Controlled Access Area. Used to clean the interior of the Mechanical Test Cell and the Charpy Room.	C001, C011, C518, DR015, P014, P019, P501, P511, P512	F002
Trichloroethylene	Cleaning and degreasing. Low Level, High Level, Alpha-Gamma, Mechanical Test, High Energy Cells, and Controlled Access Area. Typically used as a solvent. Used in laboratory operations for cleaning and degreasing.	C001, C011, C518, DR015, P501, P511, P512	F002
Benzene	Used in laboratory operations for cleaning and degreasing. Controlled Access Area. Typically used as a solvent. Ingredient in paint or paint-related products.	C004, C006, C011, C042, C045, C049, C056, C518, DR009, DR015, P501, P511, P512, U514	F005

Chemical/Material	Use/Description/Location	AK Source	EPA HWNs
Methyl ethyl ketone	Low Level, High Level, and Alpha-Gamma Cells. Typically used as a solvent. Used in laboratory operations for cleaning and degreasing. Ingredient in paint or paint-related products.	C011, C042, C045, C049, C056, C518, DR009, DR015, P501, P511, P512, U514	F005
Toluene	Ingredient in paint or paint-related products.	C045, C049, C056, C518, DR009, DR015, U514	F005

RCRA Determinations - Hazardous Waste Determinations

To assign U.S. Environmental Protection Agency (EPA) hazardous waste numbers (HWNs), AK sources, including procedures, personnel interviews, previous AK reports, waste stream profiles, container packaging and shipping documentation, and material safety data sheet (MSDS) information for commercial products noted in the AK record, were reviewed. This review was performed to determine potential waste material inputs and possible chemical contaminants associated with the BCLDP D&D program and historic hot cell operations. HWNs were assigned to all the containers for compounds used in the hot cells, due to the lack of adequate analytical evidence quantifying the concentration of RCRA toxic contaminants in the waste matrix. The same EPA HWNs have been assigned to the hydraulic sludge and debris waste, because these contaminants may have been washed into or introduced from the operations in the cells above the Hydraulic Room (References C518, DR011, and U510).

Historical Waste Management

Since the BCLDP waste was received at SRS in 2005, SRS has managed the waste as RCRA-hazardous waste in accordance with site requirements and in compliance with the South Carolina Department of Health and Environmental Control. SRS has managed this waste assigning EPA HWNs that are consistent with those assigned previously utilizing the AK sources used to ship BCLDP waste to the site from Battelle (Reference C518).

Ignitability, Corrosivity, Reactivity

Potentially ignitable, corrosive, and reactive chemicals were prohibited during the BCLDP packaging of the TRU waste in JN-1. Based on a review of the historic BMI waste management practices, BCLDP waste segregation and packaging practices, and documentation for each container, no ignitable, corrosive, or reactive materials were disposed in waste stream SR-BCLDP.003.001. The containers in the waste stream were evaluated in accordance with the WIPP-WAP using radiography prior to shipment to ensure the waste does not contain ignitable, reactive, or corrosive waste; therefore, EPA HWNs D001, D002, and D003 are not assigned to this waste stream.

The materials in waste stream SR-BCLDP.003.001 do not meet the definition of ignitability as defined in 40 CFR 261.21. The materials are not liquid and visual examination (VE) was performed during packaging to ensure prohibited liquids were not added to the liners during packaging. This material will not cause fire through friction, absorption of moisture, or spontaneous chemical changes. This material is not a compressed gas or an oxidizer. The materials in this waste stream are, therefore, not ignitable wastes (References C516, U510, U514, and U520).

The materials in waste stream SR-BCLDP.003.001 do not meet the definition of corrosivity as defined in 40 CFR 261.22. The materials are not liquid and VE was performed to ensure prohibited liquids were not present in the waste or added to containers during packaging. Excess absorbents were used during the immobilization of the sludge. To further assure that prohibited liquids would not form in the containers after repackaging due to condensation or dewatering, additional absorbents were placed in the bottom of the drum liners. The materials in this waste stream are, therefore, not corrosive wastes (References C516, U510, U514, U517, and U520).

The materials in waste stream SR-BCLDP.003.001 do not meet the definition of reactivity as defined in 40 CFR 261.23. The materials are stable and will not undergo violent chemical change. The materials will not react violently with water, form potentially explosive mixtures with water, or generate toxic gases, vapors, or fumes when mixed with water. The materials will not readily detonate or undergo explosive decomposition. Although sodium-potassium bonded fuel capsules were disassembled in the hot cells, the sodium and sodium-potassium were reacted with butyl alcohol. No sources for cyanides or sulfides were identified; therefore, this waste is not capable of detonation or explosive reaction. Picric acid was identified as a reagent that was possibly used historically in the hot cells; however, no specific source or use for the acid was identified. Additionally, the Sabotage Program used small-shaped explosive charges during these experiments. These charges were consumed during the experiments and would not have been disposed of as waste in JN-1. However, as a precaution, picric acid and explosives were included on the list of prohibited items for the waste packaging personnel to be aware of and identify, if encountered during D&D operations waste packaging. These materials were not encountered during the packaging of the BCLDP waste during D&D. The materials are not liquid and VE was performed to ensure reactive materials were not added to containers during packaging. The materials in this waste stream are, therefore, not reactive wastes (References C001, C011, C014, C516, DR015, P072, P505, P510, and U514).

Toxicity Characteristic

Debris waste from the hot cell operations contains or is contaminated with toxicity characteristic metal compounds listed in 40 CFR 261.24. The same EPA HWNs have been assigned to the hydraulic sludge and debris, assuming that these contaminants may have been introduced from the operations conducted in the cells above the Hydraulic Room. Therefore, EPA HWNs D004, D005, D006, D007, D008, D009, and D011 are assigned to waste stream SR-BCLDP.003.001 (References C518 and DR015).

The AK sources identified the use of organic toxicity characteristic compounds, including benzene (HWN D018), carbon tetrachloride (HWN D019), methyl ethyl ketone (HWN D035), and trichloroethylene (HWN D040). EPA HWNs F005 and F002 are assigned to the waste stream for F-listed solvents benzene and methyl ethyl ketone (HWN F005), and trichloroethylene (HWN F002). Because the more specific F-listed EPA HWNs have been assigned for these compounds, assignment of the corresponding toxicity characteristic HWNs D018, D035, and D040 is not necessary. Therefore, only HWN D019 for carbon tetrachloride is assigned to waste stream SR-BCLDP.003.001 (References C518 and DR015).

Listed Waste

F-Listed Waste

Based on review of AK relative to chemicals historically used or present in the JN-1 hot cells, waste stream SR-BCLDP.003.001 contains or is mixed with F-listed hazardous wastes from non-specific sources listed in 40 CFR Part 261.31. As shown in the table above, F002 and F005 listed solvents were used in the JN-1 hot cells. F003 constituents used in the hot cells, including acetone, butyl alcohol, ethyl benzene, methanol, and xylene, are listed solely because these solvents are ignitable in the liquid form. The waste stream will not exhibit the characteristic of ignitability because it is not liquid; therefore, F003 is not assigned. Although F001-listed solvents were identified in the AK record (i.e., 1,1,1-trichloroethane, carbon tetrachloride, methylene chloride, and trichloroethylene), the EPA has provided a regulatory clarification that the F001 listing is only appropriate when the listed solvents are used in a "large-scale" degreasing operation, such as cold cleaning or vapor degreasing on an industrial scale. Large-scale degreasing operations were not conducted in JN-1; therefore, EPA HWN F001 is not assigned to this waste stream. Waste stream SR-BCLDP.003.001 is assigned F-listed EPA HWN F002 for 1,1,1-trichloroethane, methylene chloride, and trichloroethylene, and HWN F005 for benzene, methyl ethyl ketone, and toluene (References C518, DR011, and DR015).

It should be noted that HWNs F002 and F005 were assigned for constituents identified in paint and paint related products listed in the table above. These HWNs were assigned for these compounds assuming that strippers and thinners associated with painting operations were used for their solvent properties and would contain these commonly used solvents (References C045, C049, C056, C518, DR009, and U514).

K-Listed Waste

The materials in waste stream SR-BCLDP.003.001 are not hazardous waste from any of the sources specified in 40 CFR 261.32. Therefore, waste stream SR-BCLDP.003.001 is not assigned a K-listed HWN.

P and U-Listed Wastes

Review of the AK record did not identify any specific source or incident where the D&D CH waste was mixed with or contaminated with a discarded commercial chemical product, an off-specification commercial chemical product, or a container residue or spill residue thereof, as defined in 40 CFR 261.33. No listed chemicals were identified in the container-specific documentation completed in accordance with the BCLDP waste management program. No specific source for beryllium was identified for this waste stream in the AK record. Beryllium is not present in the powder form and is not present as a commercial chemical product, container residue, or spill thereof, and therefore, HWN P015 is not assigned to the waste stream. Hydrofluoric acid was used during sample dissolution; however, there is no indication that unused acid or materials from spills of the acid would have been introduced into the Hydraulic Room. Additionally, as described above, liquids were absorbed prior to disposal and not present in the packaged waste containers. Therefore, Waste Stream SR-BCLDP.003.001 is not assigned a P- or U-listed HWN (References C012, C515, P072, P501, P505, P510, P511, U514 and U520).

Polychlorinated Biphenyls (PCBs)

Based on a review of the container documentation, materials potentially containing PCBs were not specifically identified. BCLDP waste management practices required identification, segregation, and special management of suspect PCB containing materials (e.g., ballast, capacitors, and transformers). It was determined that hydraulic oil that leaked from the system used for the High Level and Low Level Cell doors was a light hydraulic oil; and the MSDS for UNOCAL UNAX RX 32 Industrial Oil was obtained to verify that this oil does not contain PCBs. The only potential source identified for PCBs was in an inventory of what was described as "lightly contaminated" hazardous materials originally stored in the Microprobe room. BCLDP waste management practices would have resulted in the segregation and special management of these materials. No other potential sources for PCBs were identified in the AK record that would have been introduced into the waste stream. In addition, no PCBs were detected in composite samples taken of the liquid phases sent to Permafix-DSSI. Therefore, waste stream SR-BCLDP.003.001 is not regulated as a Toxic Substances Control Act waste under 40 CFR Part 761 (References C001, C006, C007, C506, P009, P025, P078, P079, P080, P505, P510, P511, P512, U510, U511, and U514).

Prohibited Items

Based on the review of the procedures for handling and packaging TRU waste, as well as container packaging records, no prohibited items were included in the SR-BCLDP.003.001 waste stream during packaging. BCLDP waste management practices required the generator to determine and use twice the amount of absorbent required to absorb the volume of any waste liquids. To further assure that residual liquids would not form in the containers after packaging due to condensation or dewatering, additional absorbents were placed in the bottom of each drum liner. BCLDP waste management practices required the loading personnel to restrict the presence of liquids in containers to the extent that was reasonably achievable by pouring, pumping, or aspirating. Additionally, review of the BCLDP historical VE documentation record determined that no prohibited liquids or intact internal containers (bottles, cans, or bags) were introduced into waste stream SR-BCLDP.003.001 (References P505, U514, and U517)

Radiography was performed on this waste stream to ensure the absence of prohibited items in the containers prior to shipment to WIPP.

Method for Determining Waste Material Parameter (WMP) Weights per Unit of Waste

The WMPs for the homogeneous hydraulic sludge waste (SR-BCLDP.003.001) were estimated based on the description of the waste items in the containers from the BCLDP container documentation. This waste stream is greater than 50 percent by volume material that meets the criteria for homogeneous solids. The waste stream contains lesser amounts of heterogeneous debris consisting primarily of bags, rags, and tools. These calculations conclude that the relative waste weight percentages for organic waste materials and inorganic waste materials for waste stream SR-BCLDP.003.001 is 64.7 percent and 35.3 percent, respectively (References C516, U514, U517 and U520).

Waste Stream SR-BCLDP.003.001 Waste Material Parameter Estimates

Waste Material Parameter	Avg. Weight Percent	Weight Percent Range
Iron-based Metals/Alloys	0.6 %	0.0 – 2.3 %
Aluminum-based Metals/Alloys	0.0 %	0.0 – 0.0 %
Other Metals	0.0 %	0.0 – 0.0 %
Other Inorganic Materials	<0.1 %	0.0 – 0.3 %
Cellulosics	0.7 %	0.0 – 2.2 %
Rubber	0.0 % *	0.0 – 0.0 %
Plastic (waste materials)	2.3 %	0.0 – 4.2 %
Organic Matrix	61.7 %	52.4 – 69.1 %
Inorganic Matrix	34.7 %	23.3 – 44.0 %
Soils/Gravel	0.0 %	0.0 – 0.0 %
Total Organic Waste Avg.	**64.7 %**	
Total Inorganic Waste Avg.	**35.3 %**	

* Small amounts of rubber not identified in BCLDP documentation in green rubber gloves (< 1%).

List of AK Sufficiency Determinations

There are no AK sufficiency determination requests for this waste stream.

Transportation

This waste stream and its chemical constituents have been reviewed for consistency with listed TRUCON codes and they are consistent.

Beryllium

Even though no specific source for beryllium was identified for the waste stream in the AK record, a historic TRUCON document identified beryllium as a possible contaminant. Therefore, if present, beryllium is a minor contaminant, well below one weight percent in any given waste container (References DR009 and P511).

Radionuclide Information

The expected radiological distribution for waste stream SR-BCLDP.003.001 was estimated utilizing the relative isotopic scaling factors developed by the BCLDP for the corresponding debris waste generated in Building JN-1. The two prevalent radionuclides by mass are U-235 and U-238. The two prevalent radionuclides by activity are Pu-241 and Cs-137 (References C510, C511, P503, and U516).

Radiological Distribution for Waste Stream SR-BCLDP.003.001

Radionuclide	Specific Activity (curies/gram)[1]	Activity Fraction	Mass Fraction
WIPP Required Radionuclides			
Pu-238	1.73E+01	1.63E-02	1.88E-04
Pu-239	6.29E-02	2.09E-03	6.66E-03
Pu-240	2.30E-01	3.41E-03	2.97E-03
Pu-242	3.97E-03	1.02E-05	5.14E-04
Am-241	3.47E+00	1.69E-02	9.75E-04
U-233	9.76E-03	1.81E-10	3.72E-09
U-234	6.32E-03	5.82E-06	1.85E-04
U-238	3.40E-07	1.65E-06	**9.73E-01**
Cs-137	8.80E+01	**3.37E-01**	7.67E-04
Sr-90	1.38E+02	2.21E-01	3.21E-04
Additional Radionuclides			
Pu-241	1.04E+02	**2.74E-01**	5.28E-04
Co-60	1.14E+03	1.04E-01	1.83E-05
Cm-244	8.18E+01	1.36E-02	3.33E-05
Eu-154	2.67E+02	5.20E-03	3.90E-06
Sm-151	2.66E+01	1.60E-03	1.20E-05
Sb-125	1.04E+03	1.55E-03	2.97E-07
Cs-134	1.31E+03	1.39E-03	2.12E-07
Ni-63	5.98E+01	3.05E-04	1.02E-06
Cd-113m	2.17E+02	1.37E-04	1.27E-07
Am-243	2.02E-01	1.26E-04	1.25E-04
U-235	2.19E-06	8.51E-08	**7.78E-03**
U-236	6.54E-05	1.13E-06	3.45E-03
Tc-99	1.70E-02	6.35E-05	7.48E-04
Zr-93	2.51E-03	9.35E-06	7.46E-04
Np-237	7.13E-04	1.52E-06	4.28E-04
Pd-107	5.14E-04	6.24E-07	2.43E-04
Sm-147	2.30E-08	2.21E-11	1.92E-04
I-129	1.79E-04	1.60E-07	1.79E-04
Sn-126	2.84E-02	4.07E-06	2.87E-05
All Other Identified Radionuclides[2]	N/A	1.54E-04	1.65E-05
Total	N/A	**1.00E+00**	**1.00E+00**

[1] Source: RH-TRAMPAC, Rev. 0, Table 5.1-1
[2] Only radionuclides with relative activity or mass > 1×10^{-5} are shown

Payload management will not be utilized for this waste stream.

Source Documents

Source Document Number	Title
C001	Interview Record: Eugene Sands, Master Research Technician; Larry Stickel, Master Technician; Harley Toy, Manager of Regulatory Compliance and Tech. Services; Max Berchtold, JN-1 Lab Technician; George Kirsch, Health Physicist
C004	Interview Record: Harley Toy, Manager of Regulatory Compliance and Tech. Services; George Kirsch, Health Physicist, Historical Operations in JN-1.
C006	Interview Record: Max Berchtold, JN-1 Lab Technician, Historical Operations in JN-1 and Hydraulic Oil Composition (including MSDS)
C007	Interview Record: Scott Kitts, Manager Special Waste Projects, Separation of Hot Cell Waste from Wastes from Supporting Areas
C011	D&D Fax to Kevin Peters, re: JN-1 Chemical Use Lists
C012	Interview record of George Kirsch, re: Acid used to dissolve burn-out fuel and when was alpha/gamma Cell 10 added
C013	Interoffice Correspondence to A. A. Church, re: Status of TCLP Analysis on Leaded Gloves and Lead Glovebox Windows
C014	Interview record of George Kirsch and Eugene Sands, re: Use of Potassium Cyanide, pool water evaporation, and nerve agent research
C019	Interview Record of Scott Kitts, re: TRU Waste Inventory and Drum Repackaging Operations
C023	Interview Record of Scott Kitts, re: TRU Waste Inventory Repackaging Operations
C042	Letter to AK Record, re: Assessment of Flammable Organic Compounds (VOCs)
C045	Interview Record of Peter Erickson, re: Description of Pressure Wash Operations and Repackaging of Pressure Wash Filters
C049	Miscellaneous Correspondence to Dave Garber
C051	Letter to AK Record, re: TCLP Analysis of Incandescent, Fluorescent, and Mercury Vapor Light Bulbs
C056	Letter to AK Record, re: RCRA Hazardous Constituents in Paint and Paint Related Products
C506	Interview with Dave Garber; BCLDP Waste Management; Waste Compaction (with 9/10/2008 follow-up), PCB Ballasts, Sealed Bags, and Sources.
C510	Evaluation of the Representativeness of Swipe Samples for Waste Stream SR-RL-BCLDP.001
C511	Justification for Parameter Ranges Used for SRS/BCLDP RH TRU Radiological Characterization
C515	Waste Material Parameter Weight Evaluation for Transfer and Storage Pool Waste Streams
C516	Waste Material Parameter Weight Evaluation for Hydraulic Sludge Waste Stream SR-BCLDP.003
C518	Attachment 6 of CBFO's response to NMED's NOD, Regarding the AK Sufficiency Request for Waste Stream SR-RL-BCLDP.001
DR005	Letter to AK Record, re: Discrepancy Report Relating to Lead Detected in Sample of Pool Water
DR006	Letter to AK Record, re: Discrepancy Report Relating to RCRA Metals Detected in Samples Pool Resins and Filters
DR009	Letter to AK Record, re: Discrepancy Report Regarding Generation of Four Debris Waste Streams, 5190-01, 5190-02, 5390-01, and 5390-02
DR010	Letter to AK Record, re: Discrepancy Report Relating to RCRA Metals Detected in Pool Resins and Filters Samples, and TRU Resin Volume Estimation
DR011	RCRA Hazardous Waste Number Assignment Discrepancy Report
DR015	RCRA Hazardous Waste Number Assignment Discrepancy Report (SR-BCLDP.001)
P001	Alpha Gamma Cells JN-1A
P003	High Energy Cell, Mezzanine, and Top of HEC JN-1B. Decontamination and Decommissioning Operations
P006	Contents of the West Jefferson North Hot Cells and Storage Areas
P009	Chemistry Laboratory, Counting Room and Microprobe Room
P011	Controlled Access Area Storage Rooms JN-1A
P012	Controlled Access Area JN-1A
P014	Mechanical Test Cell JN-1A
P015	High Level Cell and Low Level Cell Hydraulic Doors and Hydraulic Door Room JN-1A
P016	Subcells of the High Level and Low Level Cells in JN-1A
P017	Low Level Cell JN-1A
P019	Charpy Room JN-1A
P024	Procedures Manual for Battelle's Radioisotope, Gamma, and Hot-Cell Laboratories

Source Document Number	Title
P025	Miscellaneous Material Safety Data Sheets (MSDS)
P026	The U.S. Government and Battelle: Partners in Nuclear Research, 1943 - Present
P030	Hot-Laboratory Facility and Summary of Capabilities
P032	Procedures Manual for Battelle's Radioisotope, Gamma, and hot-Cell Laboratories
P037	Decontamination Work Plan for Building JN-1
P071	Interim Report on Shipping Cask Sabotage Source Term Investigation to U.S. Nuclear Regulatory Commission
P072	Final Report on Shipping Cask Sabotage Source Term Investigation to U. S. Nuclear Regulatory Commission
P075	Acceptable Knowledge Summary, Pool Water Prefilter and Debris
P076	Acceptable Knowledge Summary, Pool Water Prefilter and Debris
P078	Work Instruction: Operation of CAA Pressure Wash System
P079	Work Instruction: Material Removal from the High level Cell (HCL)
P080	Work Instruction: Low Level Cell Gross Decontamination and Support Functions
P501	Building JN-1 Hot Cell Laboratory, Acceptable Knowledge Document
P503	Waste Characterization Classification, and Shipping Support Technical Basis Document for BCLDP West Jefferson North Facility
P505	Segregation and Packaging of TRU Waste
P510	Acceptable Knowledge Process Description - Repackaging of JN-1 Transfer/Storage Pool Filter Change-Out Waste
P511	Technical Basis Document, Acceptable Knowledge Process Description, Repackaging of Building JN-1 Clean-Up Waste Containers
P512	Technical Basis Document, Acceptable Knowledge Process Description, TRU Waste Laundry Decontamination
P518	Lessons Learned Report for the BCLDP Transuranic Waste Shipments to Hanford and the Savannah River Site for Interim Storage and the Final Characterization
U003	Battelle-Columbus Hot Cell Laboratory - Capability Summary
U021	TCLP metals data for leaded glass
U510	Waste Profile Sheets (6)
U511	Waste Profile Sheets
U514	BCLDP RH Waste Container Documentation
U516	Abstract: Adequacy of a Small Quantity Site RH-TRU Waste Program in Meeting Proposed WIPP Characterization Objectives
U517	BCLDP Container Packaging Video Loading Recordings
U520	Waste Stream SR-BCLDP.003.001 Container Documentation