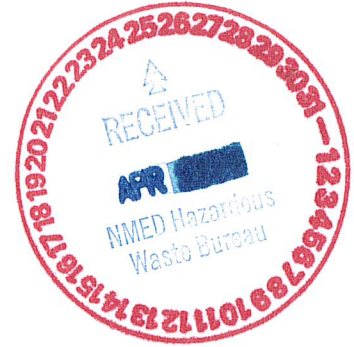




Department of Energy  
Carlsbad Field Office  
P. O. Box 3090  
Carlsbad, New Mexico 88221

APR 23 2003

ENTERED



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

Subject: Transmittal of Approved Waste Stream Profile Form for Los Alamos National Laboratories, Waste Stream Profile Form Number LA-OS-00-01 – WIPP Eligible OSR Sealed Sources

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Los Alamos National Laboratories (LANL), Waste Stream Profile Form LA-OS-00-01. 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  
J. Bennett, WTS  
P. Roush, WTS  
L. Greene, WRES  
S. Calvert, CTAC  
CBFO M&RC



WIPP WASTE STREAM PROFILE FORM	
Waste Stream Profile Number:	LA-OS-00-01
Generator site name:	LANL
Generator site EPA ID:	NM0890010515
Date of audit report approval by NMED:	2/25/2003
Technical Contact:	Mavis Lin
Technical contact phone number:	(505) 667-7376
Title, version number, and date of documents used for WAP certification: Transuranic Waste Quality Assurance Project Plan (QAPJP) (TWCP-PLAN-0.2.3-001,R.8), 02/24/03; and Transuranic Waste Certification Plan (TWCP-PLAN-0.2.4-001,R.6), 05/22/02	
Did your facility generate this waste? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
If no, provide the name and EPA ID of the original generator: _____	
WIPP ID: NA for newly generated waste	Summary Category Group: S5000
Waste Matrix Code Group: S5100	Waste Stream Name: WIPP eligible OSR sealed sources
Description from the WTWBIR: NA <sup>a</sup>	
Defense Waste: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Check one <input checked="" type="checkbox"/> CH <input type="checkbox"/> RH
Number of SWBs: 0	Number of Drums: 149 <sup>b</sup>
	Number of Canisters: 0
Batch Data Report numbers supporting this waste stream characterization See Table "Correlation of Container Identification Number to BDRs"	
List applicable EPA Hazardous Waste Codes (2) None <sup>c</sup>	
Applicable TRUCON Content Codes: LA120A/LA220A	
<b>Acceptable Knowledge Information</b> (1)	
[For the following, enter supporting documentation used (i.e., references and dates)]	
<b>Required Program Information</b>	
• Map of site:	OSR-MISC-003, R.3, 11/25/02, Attachment 2
• Facility mission description:	OSR-MISC-003, R.3, 11/25/02, Section 3.1
• Description of operations that generate waste:	OSR-MISC-003, R.3, 11/25/02, Section 3.5 and attachment 5
• Waste identification/categorization schemes:	OSR-MISC-003, R.3, 11/25/02, Section 3.0
• Types and quantities of waste generated:	OSR-MISC-003, R.3, 11/25/02, Section 3.4
• Correlation of waste streams generated from the same building and process, as appropriate:	OSR-MISC-003, R.3, 11/25/02, Section 3.0 and 5.0
• Waste certification procedures:	See attached list of TWCP plans and procedures and OSR procedure for newly generated waste.
<b>Required Waste Stream Information</b>	
• Area(s) and building(s) from which the waste stream was generated:	See attached AK Summary for Waste Stream OS-00-01
• Waste stream volume and time period of generation:	See attached AK Summary for Waste Stream OS-00-01
• Waste generating process description for each building:	See attached AK Summary for Waste Stream OS-00-01
• Process flow diagrams:	See attached AK Summary for Waste Stream OS-00-01
• Material inputs of other information identifying chemical/radionuclide content and physical waste form:	OSR-MISC-003, R.3, 11/25/02, Section 3.6
Which Defense Activity generated the waste: (check one)	
<input type="checkbox"/> Weapons activities including defense inertial confinement fusion	
<input checked="" type="checkbox"/> Naval reactors development	
<input type="checkbox"/> Verification and control technology	
<input type="checkbox"/> Defense research and development	
<input type="checkbox"/> Defense nuclear waste and material by-products management	
<input type="checkbox"/> Defense nuclear materials production	
<input type="checkbox"/> Defense nuclear waste and materials security and safeguards and security investigations	

**LIST OF DOCUMENT DATES FOR DOCUMENTS REFERENCED IN THE WSPF**  
 (CURRENT AS OF 3/25/03)

Document ID	Effective Date	Title
OSR-MISC-003, R.3	11/25/02	Acceptable Knowledge Summary Report For WIPP-Eligible Off-Site Source Recovery Sealed Sources
OSR-OP-120, R.7/IC2	3/5/03	Visual Examination and Packaging of OSR Sealed Sources
OSR-MISC-002, R.2	11/9/01	Off-site Source Recovery Transuranic Waste Interface Document (LAUR-01-6193)
TWCP-DTP-1.2-006, R.7/IC2	2/28/2003	Calculation of UCL (90) Values
TWCP-DTP-1.2-025, R.4/IC1*	12/20/2000	Headspace Gas Analysis Batch Data Report Preparation
TWCP-DTP-1.2-029, R.8/IC1	6/28/2002	Determining Isotopic Ratios in Waste Containers Using the RANT PC/FRAM Assay System
TWCP-DTP-1.2-041, R.4/IC4*	8/30/2001	Headspace Gas Sampling and Analysis Using an Automated Manifold
TWCP-DTP-1.2-059, R.2/IC1	10/4/2002	Operating the High Efficiency Neutron Counter Using INCC
TWCP-DTP-1.2-060, R.1	5/17/2002	Calibrating the High Efficiency Neutron Counter Using INCC
TWCP-DTP-1.2-064, R.5/IC1	10/8/02	Waste Characterization Data Reconciliation with Acceptable Knowledge And Acceptable Knowledge Accuracy Reporting
TWCP-DTP-1.2-066, R.1/IC1	9/3/2002	Verification and Validation of NDA Data Using a Manual Review Method
TWCP-DTP-1.2-067, R.2	5/17/2002	Verification and Validation of Non-Destructive Assay Data Using an Automated Review Method
TWCP-PLAN-0.2.3-001, R.8	2/24/2003	Los Alamos National Laboratory Transuranic Waste Characterization Quality Assurance Project Plan
TWCP-PLAN-0.2.4-001, R.6	5/22/2002	Los Alamos National Laboratory Transuranic Waste Certification Plan
TWCP-PLAN-0.2.6-001, R.4	8/16/2000	Los Alamos National Laboratory Transuranic Waste Quality Assurance Management Plan
TWCP-AK-2.1-019, R.0	3/3/03	Acceptable Knowledge Information Summary for LANL Transuranic Waste Streams
TWCP-QP-1.1-010, R.12/IC5	2/28/2003	Project Level Data Validation and Verification
TWCP-QP-1.1-021, R.6/IC2	9/26/2002	Acceptable Knowledge Documentation
TWCP-QP-1.1-024, R.7/IC2	2/20/2003	Reporting Waste Stream Summaries to CBFO
TWCP-QP-1.1-028, R.8/IC2	1/28/2003	Reconciliation of Visual Examination and Radiography Information
TWCP-QP-1.1-034, R.10/IC8	3/5/2003	WIPP Waste Information System (WWIS) Data Entry
TWCP-QP-1.1-040, R.1/IC4	10/24/2002	Tracking and Reporting of Tentatively Identified Compounds

\* Procedures TWCP-DTP-1.2-025 and TWCP-DTP-1.2-041 had been deactivated because LANL automated manifold unit is no longer in use. The Hgas data for the UCL90 calculations shown in Table 1 of the CIS were collected under these two procedures.

**Characterization Information Summary Cover Page**

**Waste Stream Profile Form Number:** LA-OS-00-01

**AK Summary Report Record Number:** OSR-MISC-003.R.3

Site Project Manager Sandy Wander Sandy Wander Date: 4-14-03  
Printed Name Signature

Site Project QA Officer PETER LINDAHL Peter Lindahl Date: 4/14/2003  
Printed Name Signature

SPQAO signature indicates that the information presented in this package is consistent with analytical batch reports.

SPM signature indicates concurrence with all information presented in this report.

**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 # LA-TA-55-30- Mixed Noncombustible and Combustible Debris**

Item	Check Box <sup>a</sup>	Reconciliation Parameter
1	✓	Waste Matrix Code.
2	✓	Waste Material Parameter Weights for individual containers.
3	✓	The waste matrix code/group 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.
5	✓	Each waste container of waste contains TRU radioactive waste.
6	✓	Mean concentrations, UCL <sub>90</sub> for the mean concentrations, standard deviations, and number of samples collected for each VOC in the headspace gas of waste containers in the waste stream/waste stream lot.
7	N/A	Mean concentrations, UCL <sub>90</sub> 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	N/A	Mean concentrations, UCL <sub>90</sub> for the mean concentrations, standard deviations, and number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
9	N/A	Mean concentrations, UCL <sub>90</sub> 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	✓ <sup>b</sup>	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 <sub>90</sub> for the miscertification rate is less than 14 percent.
15	✓	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 WAP Section B3-1 prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
17	✓	The overall completeness, accuracy, comparability, and representativeness QAOs were met for each of the analytical testing procedures as specified in the 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	✓	The waste stream can be classified as hazardous/ <u>non-hazardous</u> (underline one) at the 90 percent confidence level.
20	✓	An appropriate packaging configuration and Drum Age Criteria (DAC) were applied and the drum age was met prior to sampling.

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.

b. Off-site Source Recovery Waste is newly generated waste. Every container is visually examined.

Sandy Wander  
Signature of Site Project Manager

Sandy Wander  
Printed Name

4-14-03  
Date

**Data Summary Report -Table 1: Headspace Gas Summary Data****Waste Stream #: OS-00-01, WIPP Eligible OSR Sealed Source****1B: Tracking Summary for Tentatively Identified Compound**

Waste Stream Number		OS-00-01	
Analytical Procedure Used to Acquire the Data		TWCP-QP-1.2-040	
Running total of Number of Samples Analyzed for this Waste Stream Lot		2	
Analytical Batch Data Report Identifier	Date Entered	Samples Analyzed in Batch Data Report	Chemical Identity of TIC
LA01-HGAS-024	10/17/2002	2	None
Running Total of Number of Detections			N/A
Calculated % of TIC Detection			N/A

## Data Summary Report – Table 3: Metals Summary Data

WSPF Number: LA-OS-00-01 – WIPP eligible OSR sealed sources <sup>a</sup>

Sampling and Analysis Method/Units (check one):

- Totals (units are in mg/kg)  
 TCLP (units are in mg/L)

Analyte	# Samples	Mean	SD	UCL <sub>90</sub>	RTL	EPA Code
Antimony	N/A <sup>b</sup>	N/A	N/A	N/A	N/A	N/A
Arsenic	N/A	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A	N/A
Beryllium	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium	N/A	N/A	N/A	N/A	N/A	N/A
Chromium	N/A	N/A	N/A	N/A	N/A	N/A
Lead	N/A	N/A	N/A	N/A	N/A	N/A
Mercury	N/A	N/A	N/A	N/A	N/A	N/A
Nickel	N/A	N/A	N/A	N/A	N/A	N/A
Selenium	N/A	N/A	N/A	N/A	N/A	N/A
Silver	N/A	N/A	N/A	N/A	N/A	N/A
Thallium	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	N/A	N/A	N/A	N/A	N/A	N/A
Zinc	N/A	N/A	N/A	N/A	N/A	N/A

Did the data verify the acceptable knowledge?  Yes  No  N/A *re 4/11/03*

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

Notes:

<sup>a</sup> OS-00-01 wastes are Noncombustible Inorganic Debris Wastes (see AK Summary). "N/As" are assigned for all analytes.

<sup>b</sup> N/A: Not Applicable

## Data Summary Report – Table 5: Total SVOC Summary Data

WSPF Number: LA-OS-00-01 – WIPP eligible OSR sealed sources <sup>a</sup>

## 5A

Analyte	# Samples	Mean (mg/Kg)	SD (mg/Kg)	UCL <sub>90</sub> (mg/Kg)	RTL (mg/Kg)	EPA Code
1,2-Dichlorobenzene	N/A <sup>b</sup>	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrophenol	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1016	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1221	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1232	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1242	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1248	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1254	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1260	N/A	N/A	N/A	N/A	N/A	N/A
Cresols	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobenzene	N/A	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	N/A	N/A	N/A	N/A	N/A	N/A
Pyridine	N/A	N/A	N/A	N/A	N/A	N/A

## 5B

Tentatively Identified Compounds	Maximum Observed Estimated (ppmv)	# Samples Containing TIC
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Did the data verify the acceptable knowledge?  Yes  No  N/A <sup>ml</sup>  
4/11/103

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

## Notes:

<sup>a</sup> OS-00-01 wastes are Noncombustible Inorganic Debris Wastes (see AK Summary). "N/As" are assigned for all analytes.

<sup>b</sup> N/A: Not Applicable



## Acceptable Knowledge Summary Data

Waste Stream Number	OS-00-01
Waste Stream Name	WIPP-eligible OSR sealed sources
Waste Matrix Code	S5100
Point of Generation	Los Alamos National Laboratory, TA-3, Chemistry, Materials, and Research (CMR) Facility
Waste Stream Volume	214 sources; 149 drums
Generation Dates	2001-2006
TRUCON Codes	LA120A and LA220A
TWBIR No.	N/A (The OSR TWBIR is not included in the current TBIR)
IDC Code	N/A for newly generated waste
Generating Processes	Sealed sources are identified by OSR Project personnel for potential collection. Documentation is obtained, their recovery from the field is arranged, and the disposition of the sealed sources is determined. The sources are packaged for disposal and brought to LANL for storage and/or transfer to WIPP by TWCP.
AK Report Number	OSR-MISC-003
RCRA Determinations	None
Radionuclide Information	The primary radionuclides of these sources are Pu-238, Pu-239, and Am-241. Potential radionuclide contaminants include Np-237, Pu-240, Pu-241, Pu-242, Pu-244, Cs-137, and Sr-90.
Layers of Confinement	Sources accepted for disposal are fully encapsulated or contained in metallic cladding and are placed into metal and/or plastic cans which are then placed into pipe components. The pipe component is lined and/or surrounded by fiberboard dunnage or polyethylene shielding. Cans are vented and bags may have carbon filters. When bags are used all closures are by the twist, tie, and tape method. Bagged items are placed in an unlined pipe overpack <sup>in</sup> or a 55-gallon drum lined with a maximum of two 5-mil or greater PVC (polyvinyl chloride) bags. Liner bags are folded over, without closures.

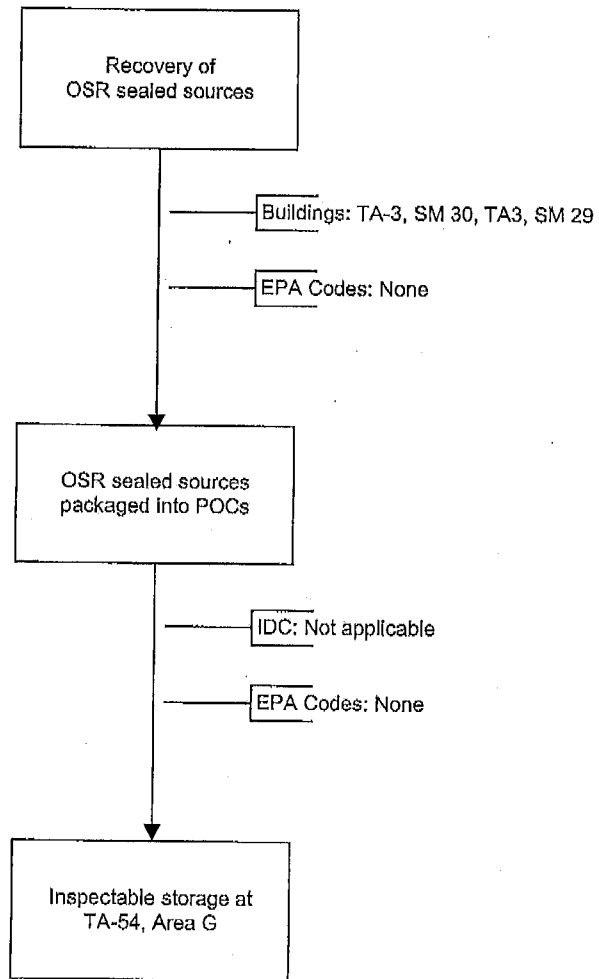
*Sandy Wander*

Site Project Manager Signature

4-14-03

Date

DLS  
4-16-03



**Figure 1. Waste Generation Summary Diagram.**

### **Toxicity Characteristics**

OSR sealed sources do not contain any constituents that qualify as toxicity characteristic hazardous waste.

### **Listed Waste**

No Listed EPA Hazardous Waste Numbers are applicable to this waste stream.

### **Polychlorinated Biphenyls (PCBs)**

OSR review of the manufacturing data verifies the absence of PCBs in OSR sealed sources. VE performed during packaging of the OSR sealed sources into drums verifies the absence of any indicators of PCBs.

### **Radionuclide Content of the Waste Stream**

The primary radionuclides contributing to the Curie content of these sources are Pu-238, Pu-239, and Am-241. Initial radiological data are typically well documented by the manufacturers for these sources. The isotopic compositions have been calculated by LANL (TWCP-09576) and are determined by NDA direct analysis. TWCP personnel determine the total radioactive material and isotopic composition of TRU nuclides for items in each OSR TRU waste payload container using appropriate TWCP radioassay procedures. TWCP personnel use radioassay equipment qualified under the corresponding Performance Demonstration Program (PDP) requirements and certified by the DOE Carlsbad Area Field Office.

#### **Pu-238 and Pu-239 Sources**

The OS-00-01 waste stream consists of manufactured sealed solid isotopic sources. The designated material type is used to describe the isotopic composition of common blends of radioactive material. The primary plutonium material types used in sealed sources are MT-83 for the Pu-238 sources and MT-50 for the Pu-239 sources. The plutonium isotopes Pu-240, Pu-241, Pu-242, and Pu-244 are present in significantly lesser amounts for material types 83 and 50. Other potential radionuclide contaminants present due to decay or transmutation are Am-241, Cs-137, Np-237, Sr-90, U-233, U-234, U-235, and U-238.

Pu-242 cannot be measured by gamma spectroscopy, so its abundance is calculated based on empirical isotopic correlations for other waste containers with small fractions of Pu-242. In some cases, Pu-242 is estimated using an iterative procedure based on active and passive neutron data from a single waste container if the plutonium isotopic ratios are known for the other plutonium isotopes.

In Pu-238 sources, U-234 is expected to be present as a decay product. U-234 content must be estimated because this isotope cannot be reliably measured using NDA techniques. The Pu-238 content provides the basis for estimating an upper bound for U-234 based on the rate of decay of the precursor, Pu-238, the assumption that there is no

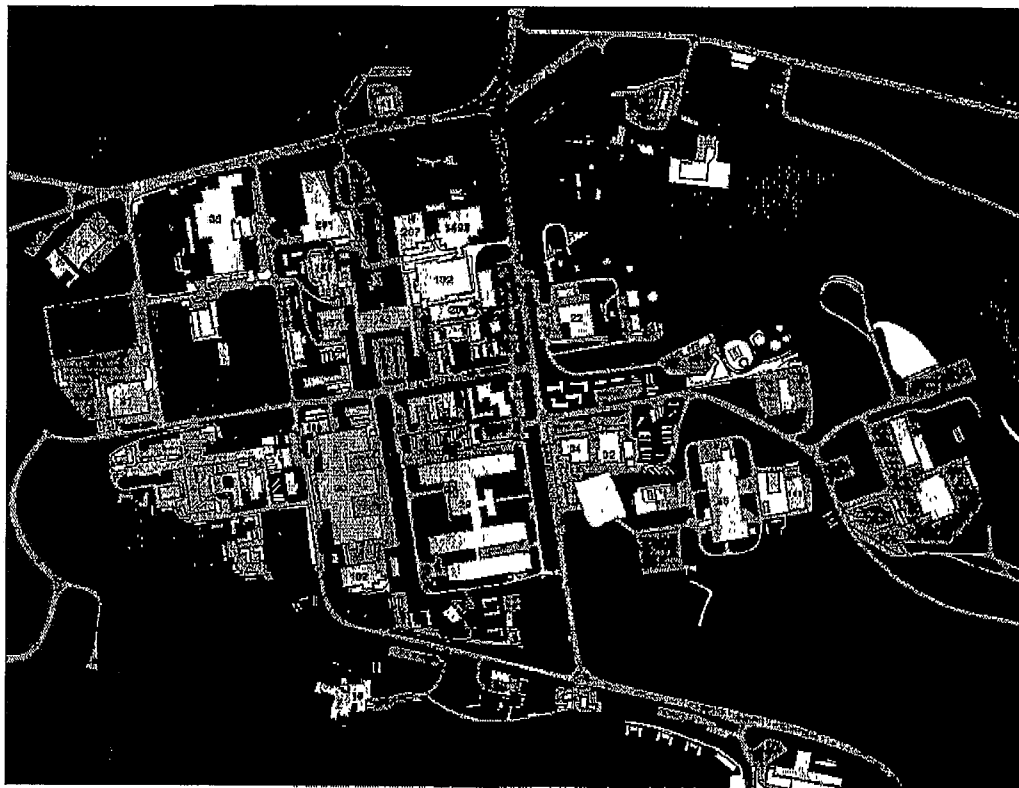
**Table 1. Nondestructive Assay Measurement of Radionuclides Present in Pu-239 Sources in the Waste Stream**

Radionuclide	Average <sup>a</sup>	Standard Deviation	Minimum	Maximum
Total Pu (g)	4.495E+01	2.475E+00	4.320E+01	4.670E+01
Pu-238 (g)	4.465E-02	4.596E-03	4.140E-02	4.790E-02
Pu-239 (g)	3.535E+01	4.950E-01	3.500E+01	3.570E+01
Pu-240 (g)	9.510E+00	1.966E+00	8.120E+00	1.090E+01
Pu-241 (g)	3.060E-02	5.091E-03	2.700E-02	3.420E-02
Pu-242 (g)	1.058E-02	4.130E-03	7.660E-03	1.350E-02
U-233 (g)	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>
U-234 (g)	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>
U-235 (g)	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>
U-238 (g)	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>	<LLD <sup>b</sup>
Am-241 (g)	3.450E-01	4.101E-02	3.160E-01	3.740E-01
Cs-137 (g)	1.515E-06	3.536E-08	1.490E-06	1.540E-06
Sr-90 (g) <sup>c</sup>	9.67E-07	2.56E-08	9.49E-07	9.86E-07
Np-237 (g)	7.455E-03	7.071E-06	7.450E-03	7.460E-03
Thermal Power (W) (Decay Heat)	1.176E-01	1.392E-01	1.920E-02	2.160E-01
Total Activity (Ci)	9.609E+00	1.085E+00	8.842E+00	1.038E+01
Total Alpha Activity (Ci)	6.380E+00	5.374E-01	6.000E+00	6.760E+00
TRU Concentration (nCi/g)	3.190E+07	2.687E+06	3.000E+07	3.380E+07
Pu Curie Equivalent (Ci)	6.375E+00	5.586E-01	5.980E+00	6.770E+00
Fissile Gram Equivalent (g)	3.570E+01	5.657E-01	3.530E+01	3.610E+01

<sup>a</sup> Average, standard deviation, minimum and maximum values are based on NDA-measured detected values for 2 containers.

<sup>b</sup> <LLD = less than the lower limit of detection.

<sup>c</sup> Sr-90 (g) values are calculated from those for Cs-137 assuming that the activity ratio is 1:1.



**Detailed map of LANL Technical Area (TA) 3, showing facilities in this area in which OSR Project activities occur**

- TA-3, SM-30, initial receipt of OSR sealed sources at LANL
- TA-3, SM-29 (CMR facility), interim storage and visual examination of OSR sealed sources

