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Attachment A

Review of the Mixed Hazardous Radioactive CERCLA Waste Cleanup Policy at the Radioactive Waste Management Complex Subsurface Disposal Area Department of Energy's Idaho National Laboratory, Rev. 4.0

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Sources for Appendix A

1. ICP-EXT-05-00784, Final Report for the Waste Area Group 7 Probing Project, May 2005.
2. Radioactive Waste Management Complex (RWMC) Subsurface Disposal Area (SDA) Plot Plan of Waste Area Group 7 Probing Project.
3. DOE/ID-11396 Revision 3 Phase 1 Interim Remedial Action Report for Operable Unit 7-13/14 Targeted Waste Retrievals, October 2014.

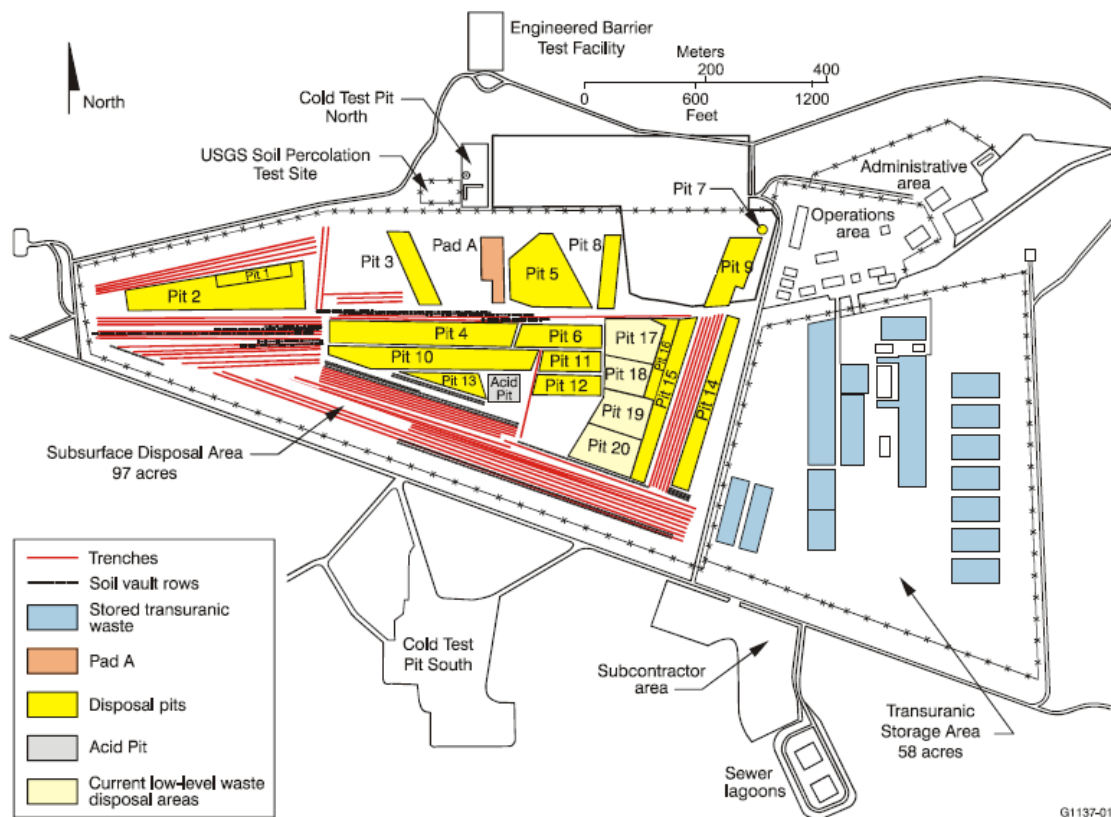
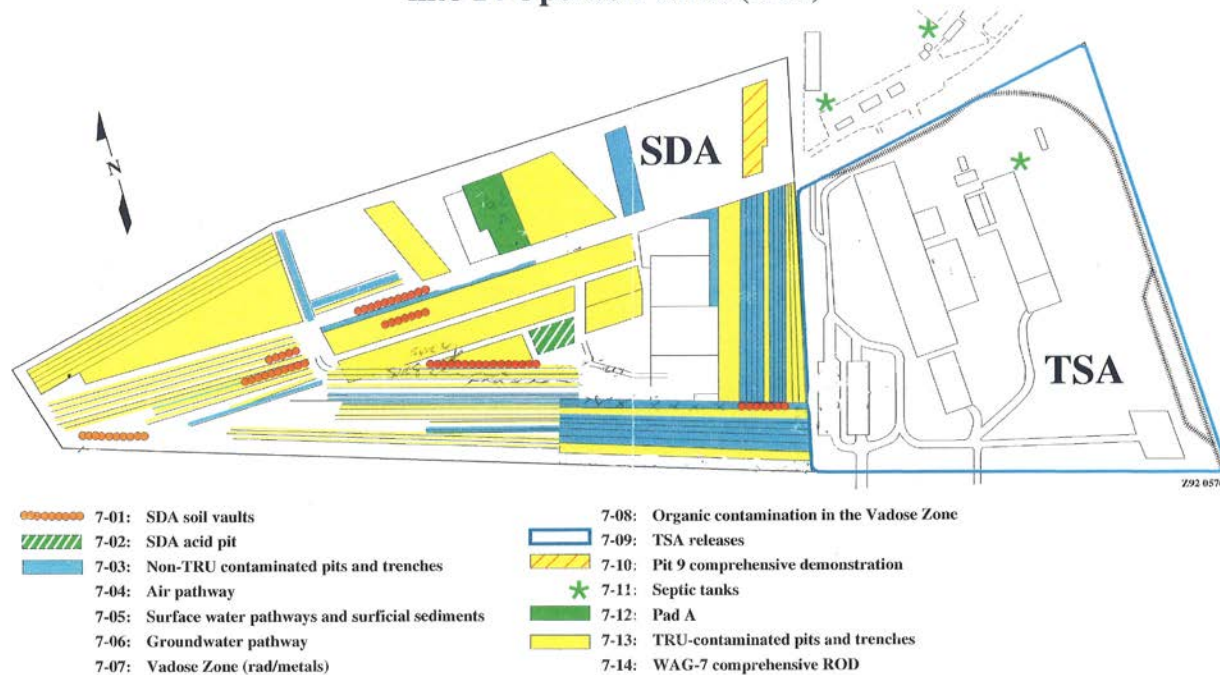


Figure 2. Map of the Radioactive Waste Management Complex showing the location of the Subsurface Disposal Area.

Figure 2 above shows the location pits (disposal pits), trenches, soil vaults, acid pit, Pad A, stored TRU area and current actively receiving Low Level waste disposal area and related operations in the RWMC Subsurface Disposal.

It's important to compare the current TRU waste inventory areas in Figure 2 above with the earlier Figure Document No. Z920576 below TRU waste areas and the Soil Vaults.

The RWMC (WAG-7) Has Been Divided into 14 Operable Units (OUs)



DOE/INL Document No. Z920576 above shows the 14 new Radioactive Waste Management Complex Subsurface Disposal Area and Transuranic Storage Areas for CERCLA Waste Area Group 7 cleanup Operable Units that separate the various remediation units 1 through 14. This document shows considerably more TRU in the SDA than the Figure 2 on page 2 above of this Attachment. DOE offers no explanation on this discrepancy but it gives credence to why all the waste in the SDA must be exhumed.

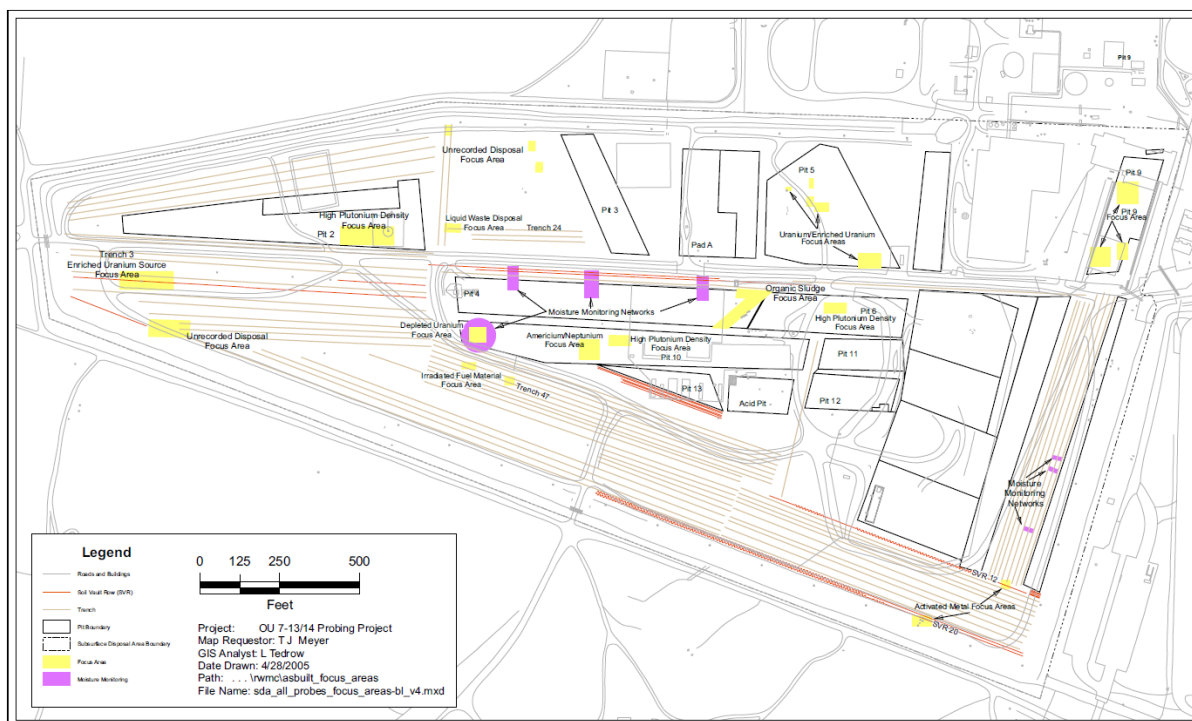


Figure B-1. Subsurface Disposal Area probe focus areas and moisture monitoring networks.

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Source: ICP-EXT-05-00784. Pg. 87

Figure B-1 above shows SDA probe focus areas and moisture monitoring areas. It should be noted how limited the probe areas are compared to Figure 2 above that shows the location pits (disposal pits), trenches, soil vaults, acid pit, Pad A. There simply was not enough probing done to accurately locate even the limited “target retrieval” areas. As discussed in the EDI’s Review attached Section V “difficulty in detecting TRU waste” locations when this material was dumped randomly throughout the SDA, thus what is needed is DOE’s commitment to remove all the waste stipulated in the 1995 Settlement Agreement.

DOE description of this ICP-EXT-05-00784 report: “From December 1999 through August 2004, 398 probes were installed in the Subsurface Disposal Area to collect characterization and monitoring data directly from the buried waste.” “This document summarizes the Waste Area Group 7 Probing Project, highlights the successes and limitations of the probes, and makes recommendations and observations to improve on the work completed.”

Much more data is available in this probing project than can be presented here. EDI is only showing a few examples to document how deliberately limited the “Targeted Retrieval Program” is and how much extremely hazardous waste is being left in an unlined dump in a flood zone that would not even meet current Subtitle D municipal landfill requirements. DOE is illegally using the Subsurface Disposal Area (SDA) as a Subtitle C hazardous/radioactive waste dump.

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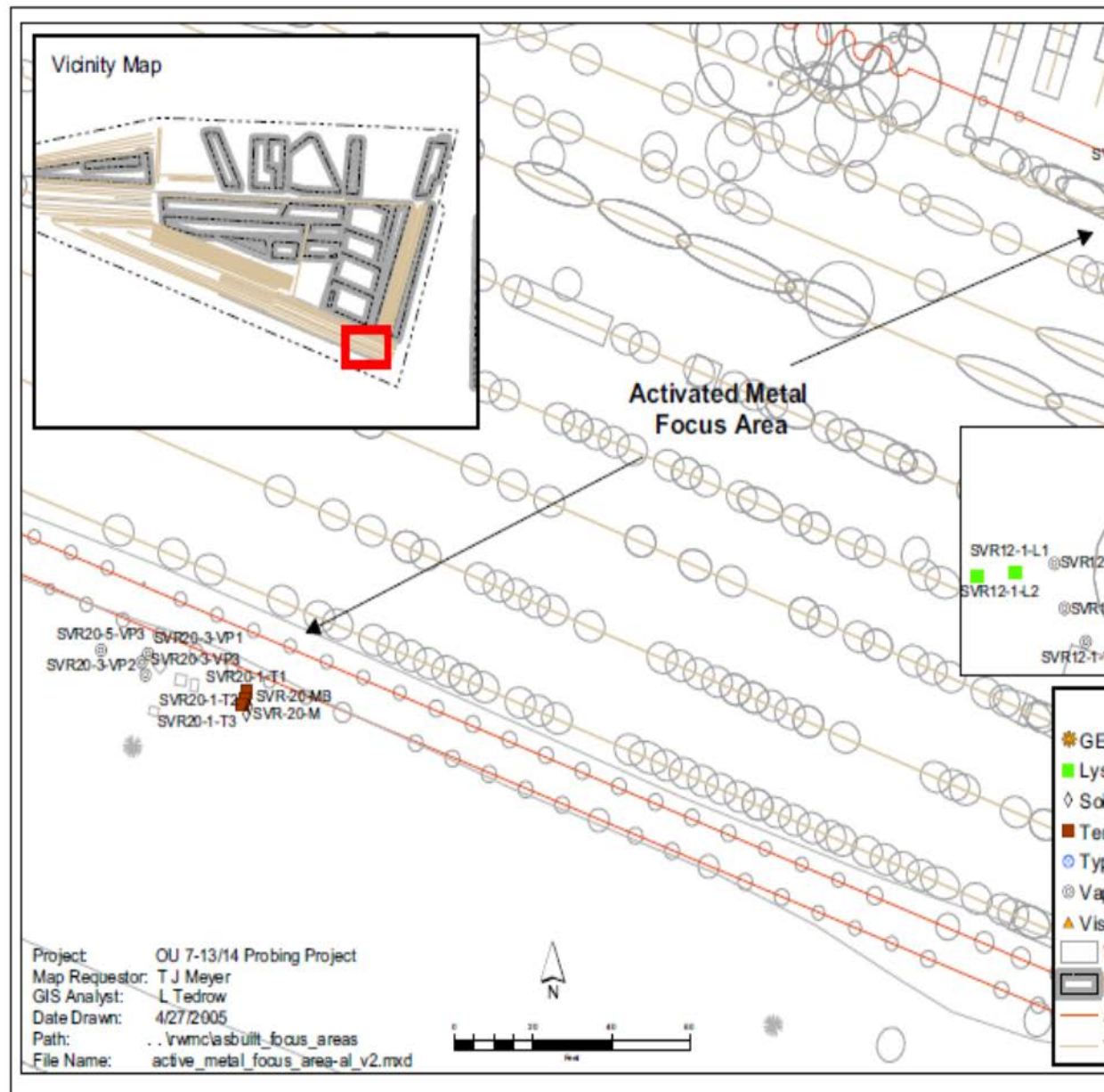


Figure B-7. Probes installed in the Activated Metals Focus Area in Soil Vault Rows 12 and 20.

ICP-EXT-05-00784, Pg. 94

Figure B-7 above probes shows a closer look at soil vault probes that Agencies erroneously decided not to include in the SDA cleanup. As discussed in the EDI's Review attached Section XI No Plans to Remove Soil Vault waste and the issue of "activated metals" and the issue of fires resulting from the waste in Section VIII. See below for data on the findings of those probes that should have convinced Agencies to expand the waste retrieval areas.

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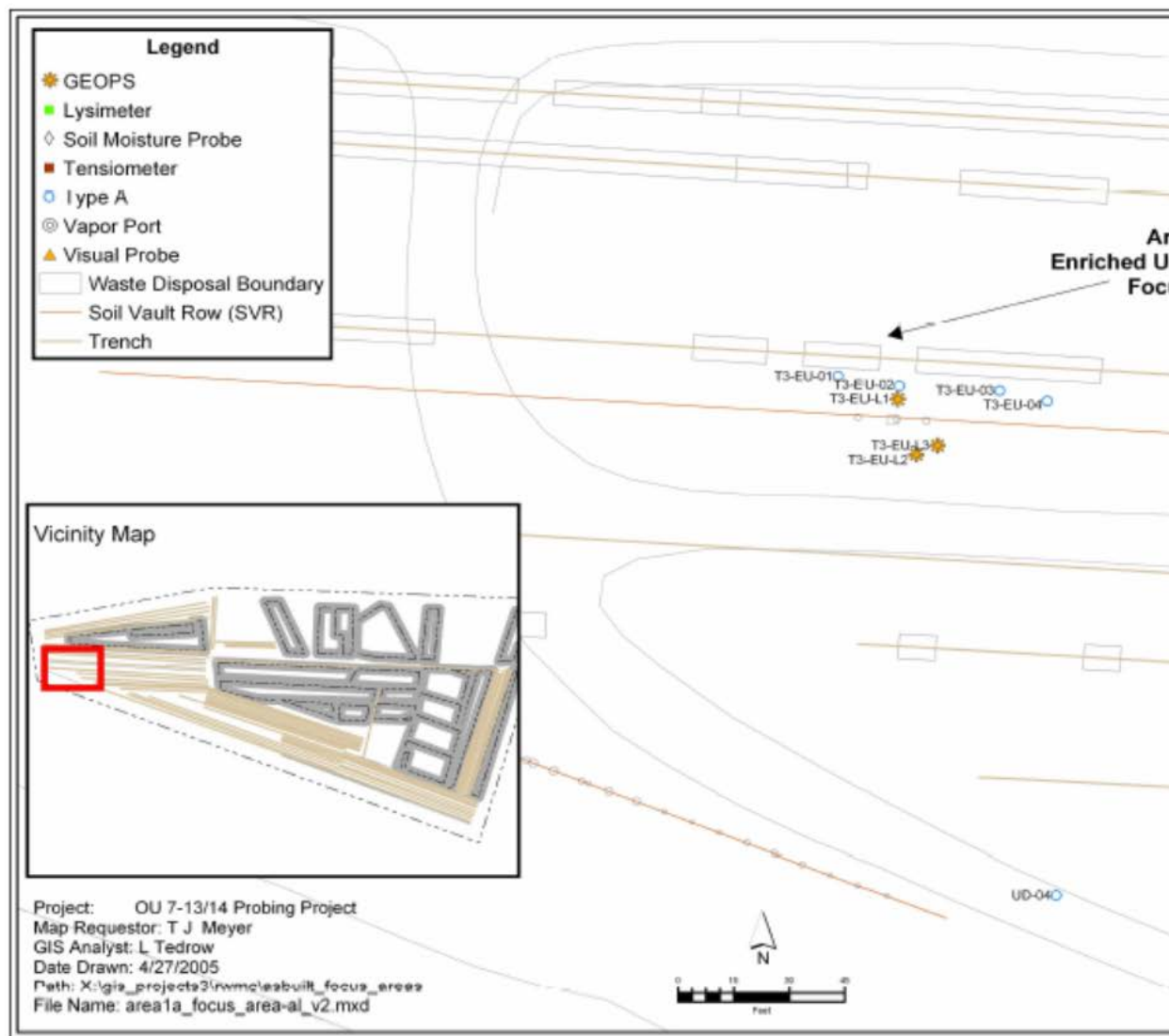


Figure B-8. Probes installed in the Enriched Uranium-Source Focus Area in the west end of Area 1A, 1

Source: ICP-EXT-05-00784, Pg. 95

Figure B-8 probes show enriched uranium area that also apparently was not included in the retrieval area (no ARPS over these areas) and as discussed in the EDI's Review attached Section XI "No Plans to Remove Soil Vault Waste." Enriched uranium is a high-level and/or a TRU waste stipulated in the 1995 Settlement Agreement and DOE's WMPEIS for removal to WIPP but excluded in the "Accelerated Retrieval Program" ARPs. DOE/INL has never admitted dumping high-level waste in the SDA; yet even their own SDA waste probes show it, if a person looks far enough into their documents.

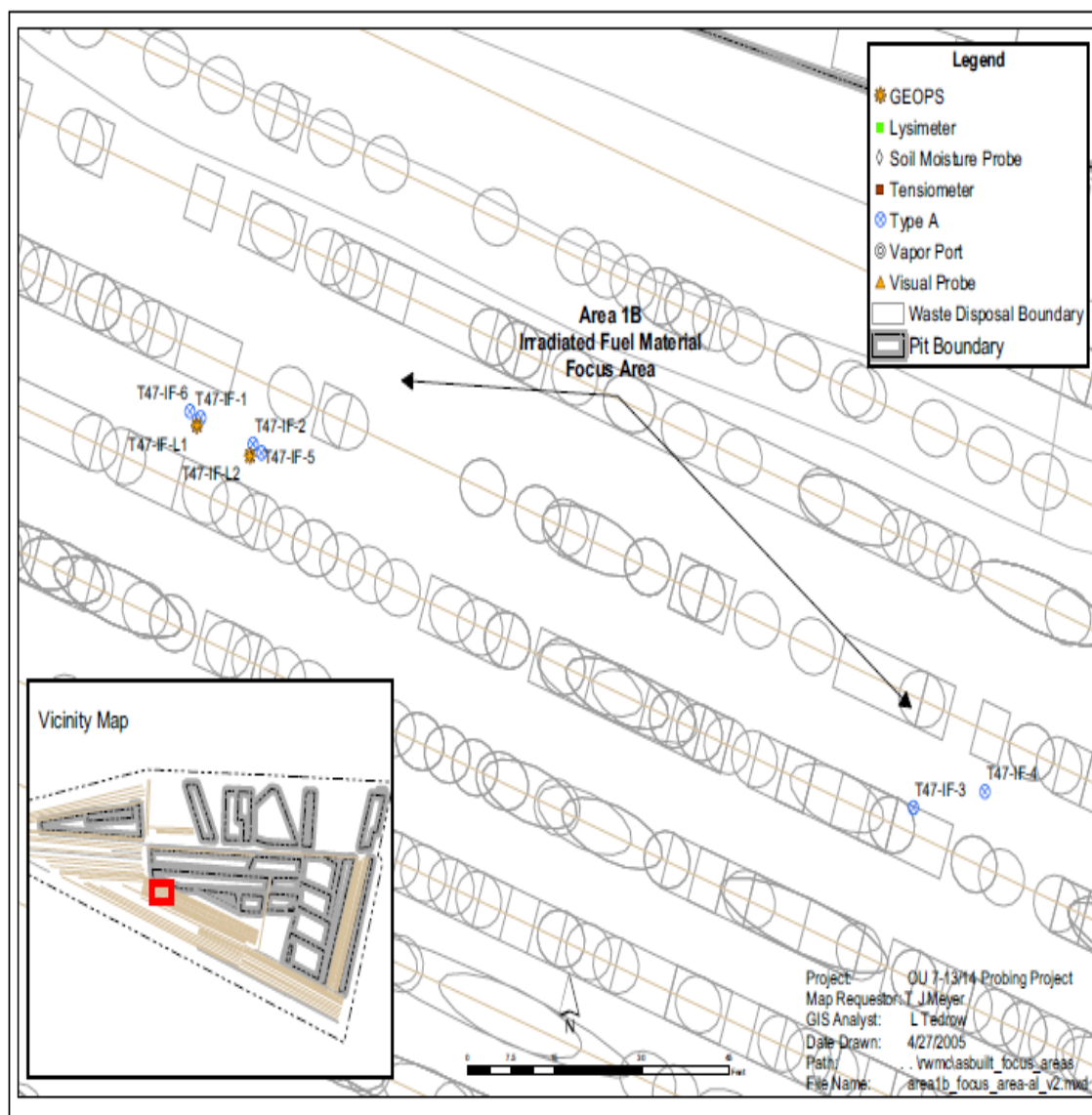


Figure B-9. Probes installed in the Irradiated Fuel Material Focus Area in the west end of Area 1B, Trench 47.

Source: ICP-EXT-05-00784

Figure B-9 above shows probes findings of irradiated fuel material area that also apparently was not included in the “targeted waste” Accelerated Retrieval Project (ARPs). Irradiated fuel is used spent reactor fuel that is classified as high-level radioactive waste that legally (according to NRC) must be disposed in a deep geologic repository because of its intrinsic biological hazard to human contact for thousands of years. As discussed in the EDI’s Review attached Section VI “No Plans to Remove Soil Vault Waste” on page 57.

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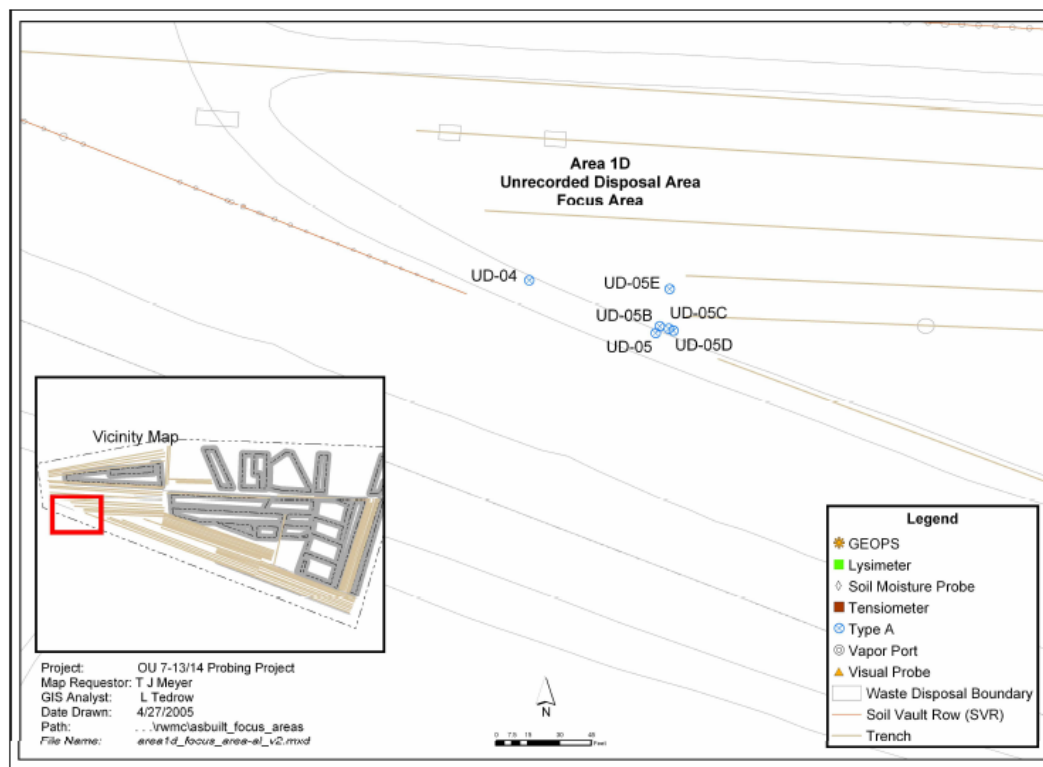


Figure B-10. Probes installed in the Unrecorded Disposal Focus Area in the west end of the Subsurface Disposal Area, Area 1D.

Source: ICP-EXT-05-00784, Pg. 97

Figure B-10 above shows probes findings of unrecorded (previously unknown) disposal area that also apparently was not included in the targeted waste ARPS. Agency dependency on historical records on what and where this extremely hazardous waste is buried is unjustified. These ICP-EXT-05-00784 excerpts are only a tiny examples of what is available in this report that show how wide spread this type of “unknown” waste is distributed in the SDA. INL RWMC/SDA practices between 1950 to 1970 was anything gets dumped into whatever pit/trench was open at the time with no limit on how radioactive it was. “Just dump it and cover it up.” This included whole reactors from the 52 built/operated over the history of the site – originally called National Reactor Testing Station. Also many off-site reactors were dumped in the SDA. See EDI’s Citizens Guide to INL for a historical account of the site’s operations.

<http://environmental-defense-institute.org/inlguide.html#Citizens%20Guide%20to%20INL>

Below Figure 14 shows Phase 1 Interim Remedial Action Report for Operable Unit 7-13/14 Targeted Waste Retrievals Revision 3, October 2014, DOE-ID-11396.

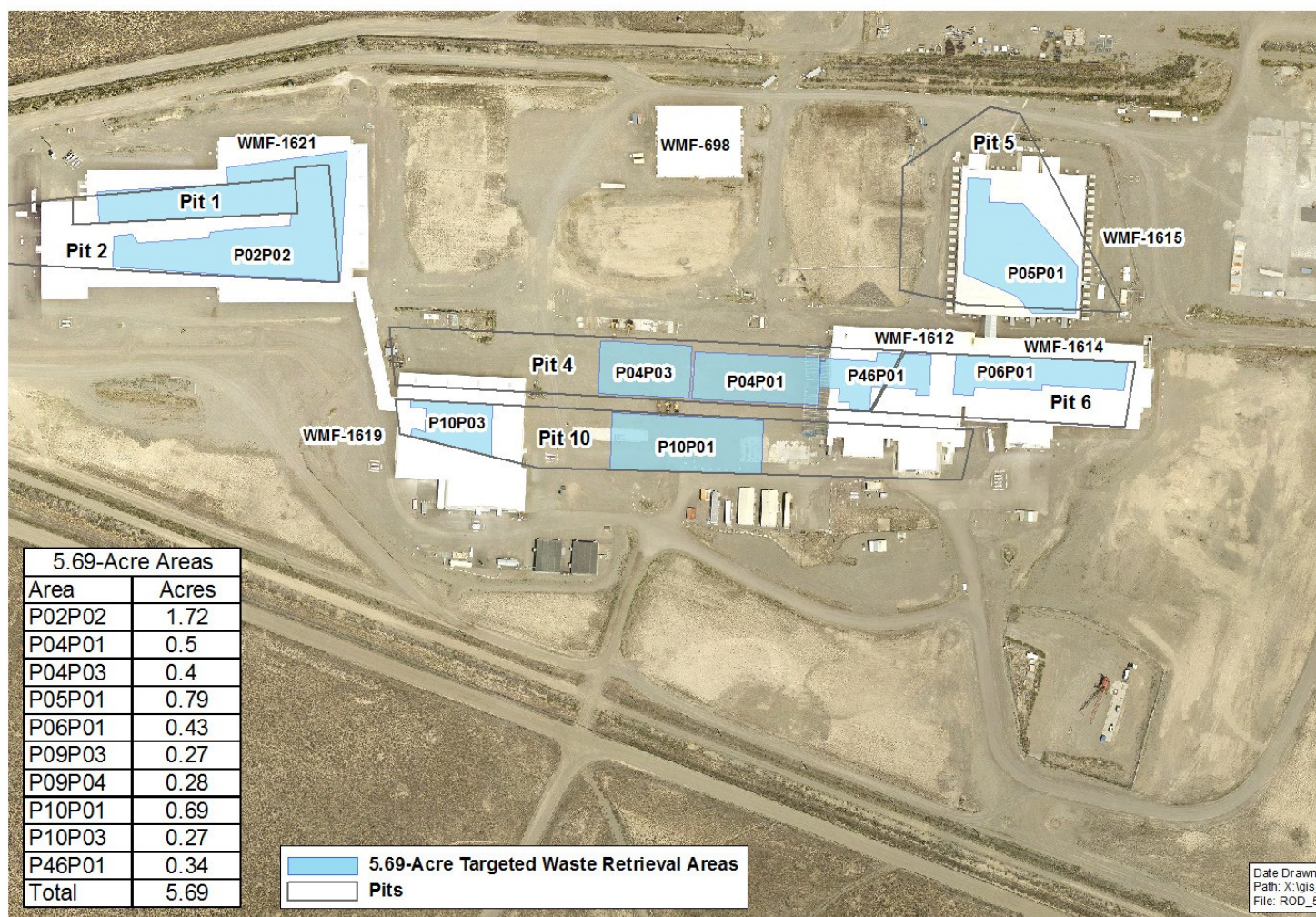


Figure 14. Primary targeted waste retrieval areas include portions of Pits 1, 2, 4, 5, 6, 9, 10 and the relative tiny acreage compared to the 39 ac. SDA disposal part of the RWMC.

Source: DOE-ID-11396. Also see Table 1. Accelerated Retrieval Project below to relate ARPS with P#s above.

This above layout shows the location of the various Accelerated Retrieval Program (ARPS). Compare these limited ARPS to the Figure 2 above showing where all the TRU pits/trenches are located. That comparison shows how limited and inadequate the “targeted waste retrieval areas” are. The 5.69 acre must be expanded to the whole 39 acre disposal area in the SDA. This means most of the TRU and alpha LL waste stipulated in the 1995 Settlement Agreement will remain in the SDA where it will continue to leach into the underlying aquifer discussed in detail EDI’s Review report Section IV.



Figure 3. Excavation operations at the “Glovebox Excavator Method Project.”

Source: DOE-ID-11396

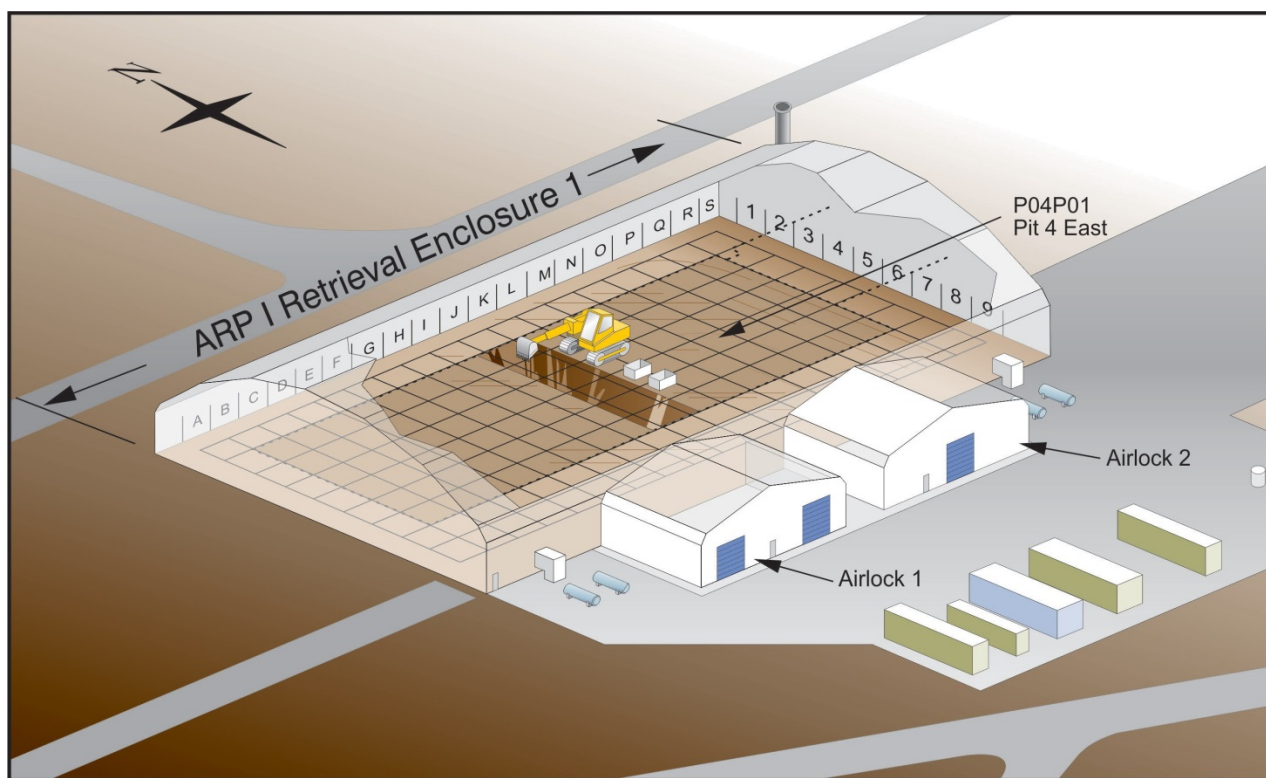
Figure 3 above shows what a typical excavation looks like. Note how much soil is mixed in with the waste and appreciate how difficult it is to accurately identify what is TRU retrievable waste and what is not as discussed in Section XI of EDI’s Review report. Also appreciate the difficulty of trying to use a radiation probe to determine an alpha emitting transuranic waste that is stipulated for removal in the original 1995 Settlement Agreement and how intermixed the contaminated soil is within the pits/trenches. Waste leachate from decades of flooding and precipitation combines in the soil making it necessary to remove under EPA Land Disposal Regulations discussed in EDI’s Review Section IX. No effort is being made to remove this contaminated soil nor all the TRU/alpha waste.

Table 1. Accelerated Retrieval Project structures and associated retrieval areas. Source: DOE-ID-11396

	Retrieval Enclosure No.			Retrieval Area Designation
ARP I	RE-1	AL-1, AL-2	Pit 4 East	P04P01
ARP II	RE-2	AL-3	Pits 4 and 6	P46P01
ARP III	RE-3	AL-4	Pit 6	P06P01
ARP IV	RE-4	None	Pit 5	P05P01
ARP V	RE-5	AL-5	Pit 9 North	P09P04
ARP V	RE-5	AL-5	Pit 9 South	P09P03
ARP VI	RE-6	None	Pit 4 West	P04P03
ARP VII	RE-7	AL-6	Pit 10 West	P10P03
ARP VIII	RE-8	AL-8	Pits 1 and 2	P02P02
ARP IXc	RE-9	None	Pit 10 East	P10P01
<p>a. The number 7 was not assigned to an airlock.</p> <p>b. Multiple retrieval areas within the same pit are referred to by relative position, for example, Pit 10 East and Pit 10 West for locations P10P01 and P10P03, respectively.</p> <p>c. ARP IX will be constructed in the future.</p> <p>ARP = Accelerated Retrieval Project (retrieval enclosure)</p>				

Table 2. Rocky Flats Plant targeted waste.

Waste Stream	Summary Characteristics
Series 741 first-stage sludge	Salt precipitate containing plutonium and americium oxides, depleted uranium, metal oxides, and trace quantities of organic constituents
Series 742 second-stage sludge	Salt precipitate containing plutonium and americium oxides, metal oxides, and trace quantities of organic constituents
Series 743 sludge organic setups	Volatile organic compounds solidified using calcium silicate, typically pastelike or greaselike texture
Graphite	Broken graphite mold pieces after excess plutonium removed and graphite fines (e.g., scarfings) packaged in small bottles
Filters	Discarded pre-filters and HEPA filters contaminated with various radionuclides including plutonium, americium, and uranium
Uranium roaster oxide waste	Incinerated depleted uranium, primarily uranium oxide with some metal possible, alternatively called uranium oxide or roaster oxide
Other	Other waste streams mutually agreed to by the Agencies, as the result of operational experience or process knowledge, to routinely be recognizable as transuranic waste HEPA high-efficiency particulate air (filter)



Accelerated Retrieval Project (ARP) structures and associated retrieval areas. Source: DOE-ID-11396

These ARPS are very useful for extracting waste in a contained structure. The problem is these targeted areas are too small and limited to only extracting a tiny area with “hot spots.” An appropriate removal would be to use these effective ARPs to extract all the mixed hazardous radioactive waste in each pit, trench and soil vault discussed in Section IX in EDI’s Review Report.

Prior to 1970 waste of all classifications (hazardous acids/chemicals, high-level and mixed LLW) wastes were randomly dumped throughout the SDA.

“In 1970, burial of waste containing transuranic isotopes at concentrations greater than 10 nCi/g was prohibited and disposal at the SDA was no longer permitted. In 1982, transuranic waste was defined as waste material containing an alpha-emitting radionuclide with an atomic number greater than 92, a half-life longer than 20 years, and a concentration greater than 100 nCi/g at the time of assay (Holdren et al. 2006).”

“In 1984, disposal practices were modified to eliminate disposal of waste containing both radioactive and hazardous contaminants (i.e., mixed waste). Since 1984, only low-level radioactive waste has been disposed of in the SDA. Except for remote-handled low-level waste in concrete vaults in Pit 20, disposal of non-CERCLA waste was discontinued as of September 30, 2008. The U.S. Department of Energy implemented interim closure requirements for low-level waste Pits 17, 18, 19, and most of Pit 20. Interim closure included backfilling and contouring to promote drainage. Disposal of remote-handled low-level waste will likely continue until September 30, 2020 (Parsons et al. 2014).” [DOE-ID-11396, Pg. 4]

It is important to realize from the above statement that DOE intends to continue to dump in the SDA until 2020 despite the fact that it violates the EPA and NRC Land Disposal Requirements

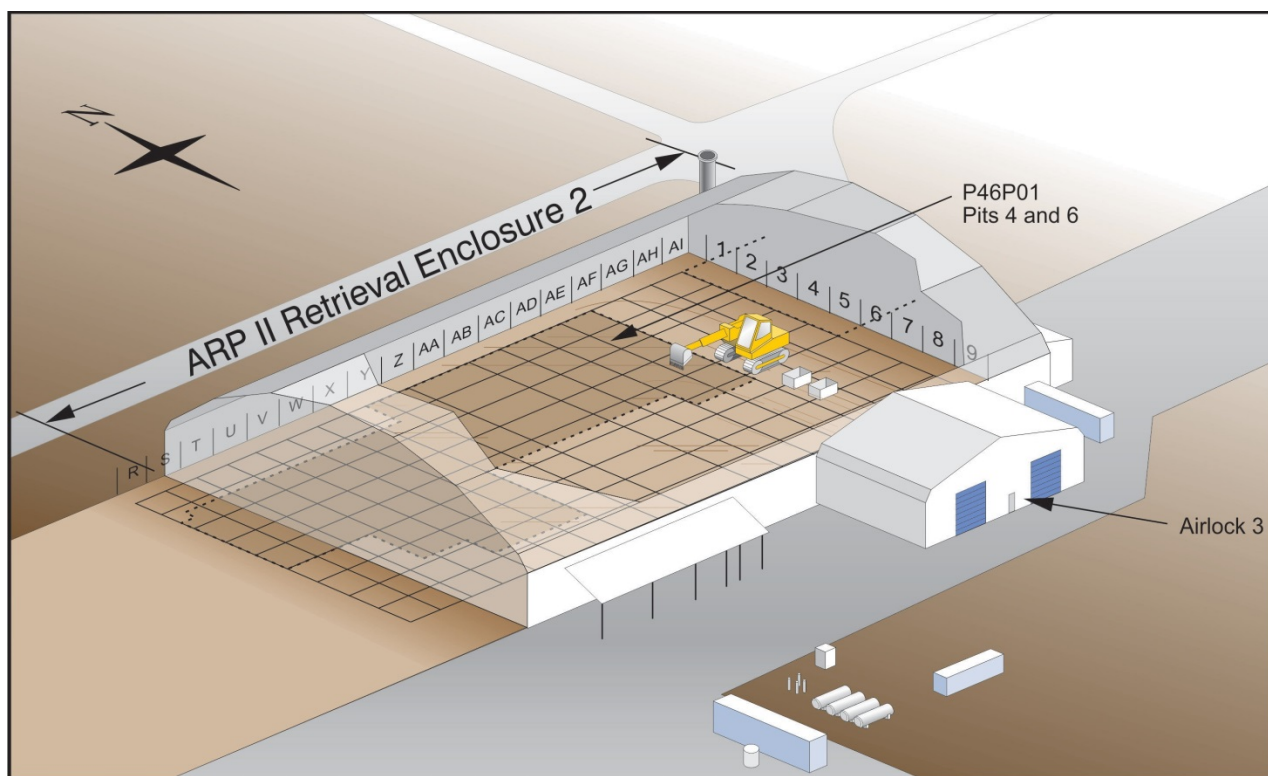
discussed in EDI's report Section IX "What is Required for Appropriate Remediation of the SDA" because it is an unlined dump without leachate collection system.

The below 1969 DOE photo is representative of how waste barrels and boxes were dumped between 1950 and 1970. Many of these waste containers broke open releasing contents into direct contact with the underlying soil. This means there was no attempt during those ~20 years to segregate different waste types. Shipments were simply dumped randomly into whatever pit/trench was open at the time. This is confirmed by the soil probes discussed below that show irradiated fuel, enriched uranium etc. mixed throughout the SDA. The INL Naval Reactors Facility (NRF) that handles all the nuclear navy used spent reactor fuel has been the largest curie contributor to the SDA. See EDI's Citizens Guide to INL for an accounting of NRF waste dumping practices www.environmental-defense-institute.org

Attached RWMC Review in Section IV shows the contaminate migration into the underlying Snake River Aquifer. Three SDA flooding events described plus ongoing precipitation onto surrounding area flow into the dump because it lies in a localized 40 foot depression from the Big Lost River a short distance north.



Unloading barrels of waste from a fire at Rocky Flats into Pit 10. The DOE now considers Rocky Flats a triumph of the cleanup program. But much of the waste generated at the Rocky Flats site isn't cleaned up— it's here in Idaho. (09-6138)



G09-2393-03

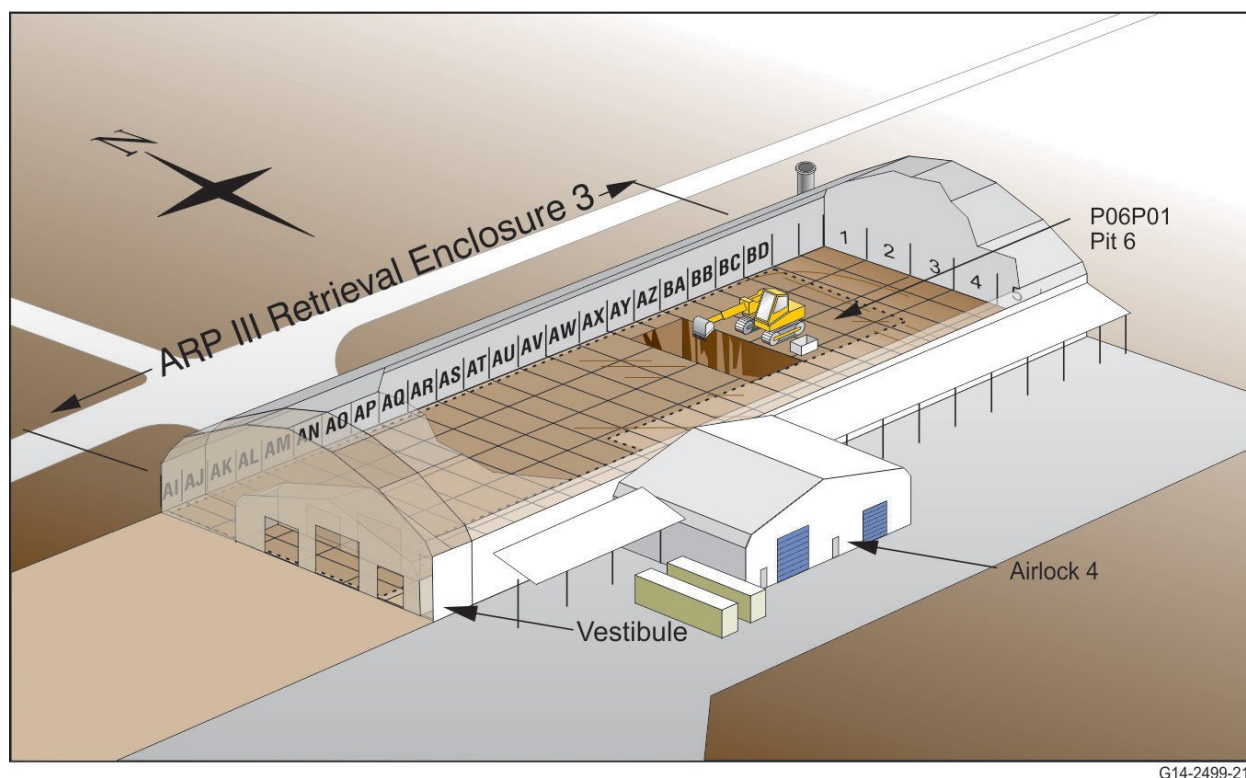
Above two Figures 4 and 5 show Accelerated Retrieval Project I ARPs I and II with Airlocks 1 and 2, and Figure 5 Accelerated Retrieval Project II with Airlock 3.

Source: DOE-ID-11396

“Excavations for ARPs commenced in predetermined grids to maximize exhumation of targeted waste (DOE-ID 2013a). The sequence of excavation varied depending on type of waste encountered, space requirements for nontargeted waste reburial, and logistics.

“A modified trackhoe-type excavator and a telescopic forklift were used in the retrieval enclosures during excavation. Cabs for manned equipment were modified to minimize internal contamination, though cabs were not designed to be contaminant-free; therefore, equipment operators wore protective clothing and respirators to protect them from radioactive contamination and chemical exposure. Cabs were decontaminated as necessary to keep radiological contamination as low as reasonably achievable.”

“Equipment operators removed and staged overburden soil and excavated down to the underburden for each targeted grid to be excavated. Equipment operators and retrieval specialists uncovered waste and determined that it was either targeted or nontargeted based on visual observation. Cameras are mounted on the excavators and at various locations within the retrieval enclosures to afford a clear view. Retrieval of waste is monitored and directed by retrieval specialists, who are in radio contact with operators and who observe waste excavation and sorting by closed-circuit television. Retrieval specialists are trained to visually identify targeted waste forms using protocols and criteria established in TPR-7420, “ARP—Waste Retrieval,” and GDE-318, “SDA Targeted and Non-Targeted Waste Identification Operator Guide.” GDE-318 allows identification of Rocky Flats Plant and INL Site waste streams based on appearance, packaging, content, and any available packaging or labeling information that may remain. [Pg. 47, DOE-ID-11396] [emphasis added]



G14-2499-21B

Figure 6. Accelerated Retrieval Project III with Airlock 4 and a vestibule. Source: DOE-ID-11396

“Operators segregated targeted from nontargeted waste based on direction from retrieval specialists. In general, nontargeted waste and associated interstitial soil were either placed in a previously excavated grid or staged on the deck for subsequent return to the pit. Soil sacks were routinely used for consolidation of combustible debris and crushed drum carcasses.” [Pg. 48 DOE-ID-11396] [emphasis added]

It’s tragic that all the cost and effort going into erecting these ARPs and only extract a small amount of targeted waste and then take them down without using the opportunity to retrieve the other hazardous/radioactive TRU and alpha waste. DOE simply is not willing to commit the funding to do the job right and legally. EPA and IDEQ are mostly complicit. EDI’s Review of RWMC CERCLA Section III show how much TRU and alpha waste has been interned in the SDA and appreciate the missed opportunity lost by not conducting the remediation required. But of course it costs more and preserving Idaho’s future water is not a DOE priority. Saving money on waste cleanup is! This assessment is based on DOE’s FY-2018 Budget Report.



Figure 38. Drum fire at Accelerated Retrieval Project I.

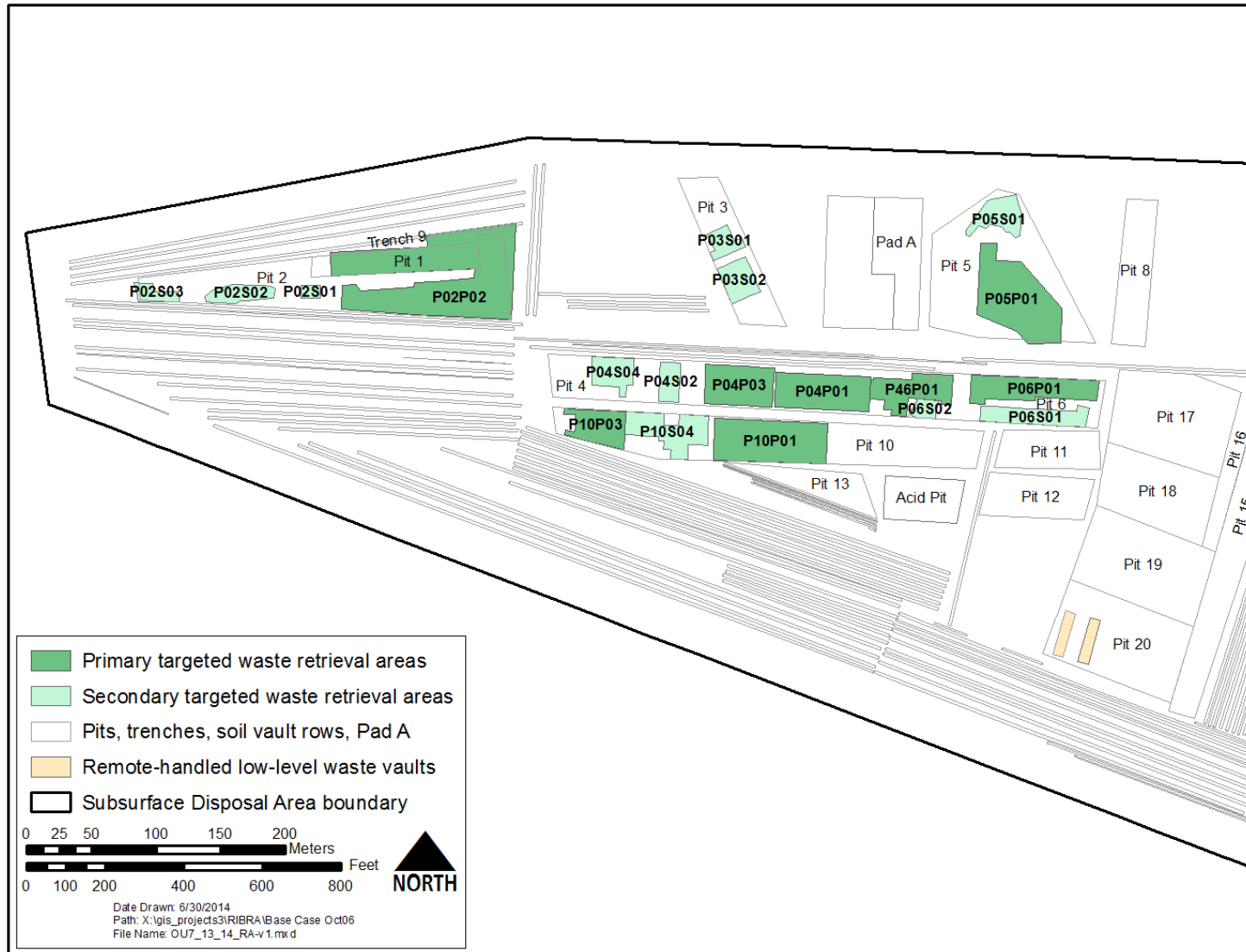
Source: DOE-ID-11396

“Drum Fire. On November 21, 2005, during exhumation of waste in ARP I, an apparent deflagration occurred during retrieval of a drum from Grid I-2 (Figure 38). The equipment operator sprayed water on the smoldering material and smothered it with soil in accordance with procedures (ICP 2006). The facility was placed on standby status and an investigation ensued to confirm the nature of the drum fire and to augment procedures to address future occurrences.”

“Following removal of the drum in question, materials in the drum were segregated and sampled. The drum contained depleted uranium, consistent with acceptable knowledge for Rocky Flats Plant uranium roaster oxide. The remaining material was raked in an unlined tray until waste reactivity (sparking) was no longer observed and then packaged for off-INL-Site treatment and disposal as mixed low-level waste.” [pg. 48 DOE-ID-11396]

Limits of up to 400 grams of U-235, or 267 grams of Pu-239 that could be disposed in the same container were exceeded.¹ [PR-W-79-038 @30] Two fires in Trench 42 occurred on September 8 and 9, 1966, and were caused by alkali metals being mixed with low-level waste. This was coupled with a 34% increase in "hot" waste in the trench. [Ibid] A third fire occurred on June 1, 1970 when sunlight on an exposed drum of uranium turnings ignited. The fire spread to other drums and "attempts failed to extinguish the fire in the waste stack." [Ibid @44] The fire was finally contained by a bulldozer operator who covered the stack with ground.

¹ PR-W-79-038; A History of the Radioactive Waste Management Complex, at INEL, September 1979, EG&G Idaho, Pg. 30



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Figure 7. Above Primary and secondary targeted waste retrieval areas. Source: DOE-ID-11396, Pg. 10

Note that the above Figure 7 “Remote-handled soil vaults” are clearly misrepresented as only two in Pit 20 when there are actually 21 rows (~1,200 holes) of soil vaults shown in previous Figure B-1 above.

“ARP IV retrieval took place in a retrieval enclosure constructed immediately north of ARP III over retrieval area P05P01 in Pit 5. The ARP IV facility consists of Retrieval Enclosure 4 and a passageway between ARP IV and ARP III (see Figure 8). Waste retrieved from P05P01 was conveyed through the passageway to Retrieval Enclosure 3, then through the vestibule to Retrieval Enclosure 2 for packaging in Airlock 3. Removal of ARP IV targeted waste was initiated in January 2010 and completed in 1/ 2011.

“The ARP V retrieval enclosure was constructed in the northeast corner of the SDA over Pit 9 retrieval areas P09P03 and P09P04. The ARP V facility consists of Retrieval Enclosure 5 and attached Airlock 5 (see Figure 9). Airlock 5 contains equipment and facilities for servicing equipment and packaging retrieved waste. Removal of ARP V targeted waste was initiated in December 2010 and completed in

August 2011. Subsequently, the Agencies removed the ARP V retrieval enclosure from CERCLA status (Cooper 2012; Koch 2012; Faulk 2012) to facilitate its reuse. The ARP V retrieval enclosure was modified for the Sludge Repackage Project, which operates under a Resource Conservation and Recovery Act (RCRA) permit (DEQ 2014) to examine and package retrieved waste for the Advanced Mixed Waste Treatment Project. The initial Sludge Repackage Project campaign was completed in June 2014 and ARP V is in warm standby mode pending additional work. Eventually, ARP V will be closed under RCRA and returned to CERCLA status for final disposition (DEQ 2014).

“The ARP VI retrieval enclosure was an extension on the west end of the ARP I retrieval enclosure (see Figure 10) over retrieval area P04P03. Waste retrieved from P04P03 was conveyed through Retrieval Enclosure 1 to Retrieval Enclosure 2 for packaging in Airlock 3. Removal of ARP VI targeted waste was initiated in April 2011 and completed in October 2011. The ARP VI retrieval enclosure was decommissioned and demolished in 2012 (see Section 2.9).

“The ARP VII retrieval enclosure (Figure 11) was constructed southwest of ARP VI over retrieval area P10P03. A passageway was constructed between ARP VI and ARP VII to facilitate transfer of equipment (e.g., excavators) for use in ARP VII. The passageway was removed when the ARP VI retrieval enclosure was demolished in 2012. Retrieval of ARP VII targeted waste was initiated in February 2012, suspended in August 2012, resumed in February 2014, and completed in June 2014.

“ARP VIII facilities are the westernmost retrieval facilities in the SDA. Structures include a two-part retrieval enclosure covering the largest retrieval area (i.e., the 1.72-acre area comprising P02P02), Airlock 8, and a passageway to ARP VII (Figure 12). The passageway facilitates transfer of equipment between enclosures and also conveys waste from ARP VIII to Airlock 6 in ARP VII for processing. Targeted waste retrieval in ARP VIII began in November 2013 and is ongoing.”

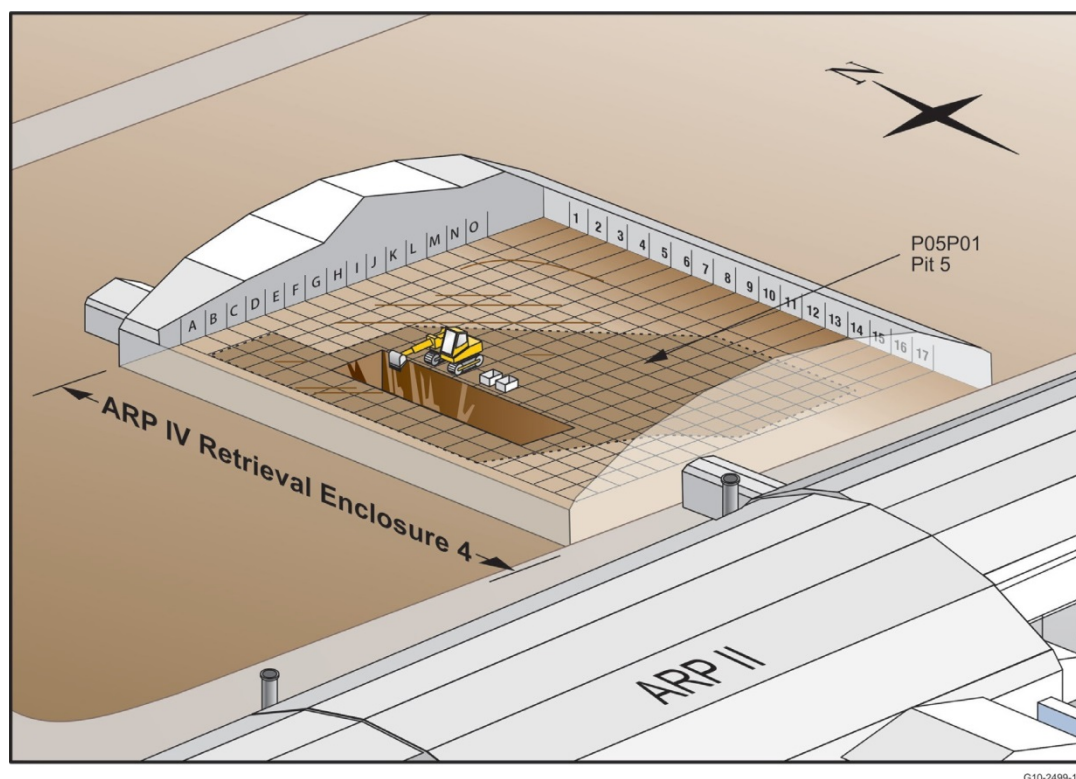


Figure 8. Above, Accelerated Retrieval Project IV with no airlocks and a passageway to Accelerated Retrieval Project III. Source: DOE-ID-11396,

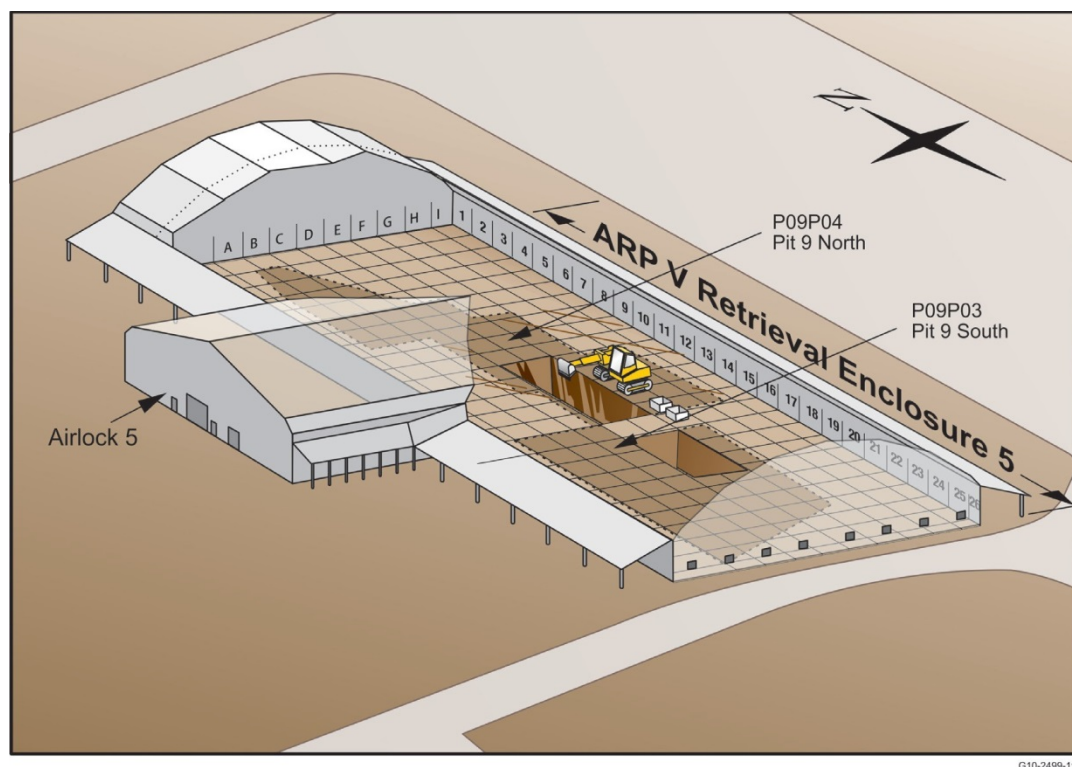


Figure 9. Accelerated Retrieval Project V with Airlock 5. Source: DOE-ID-11396, Pg. 13

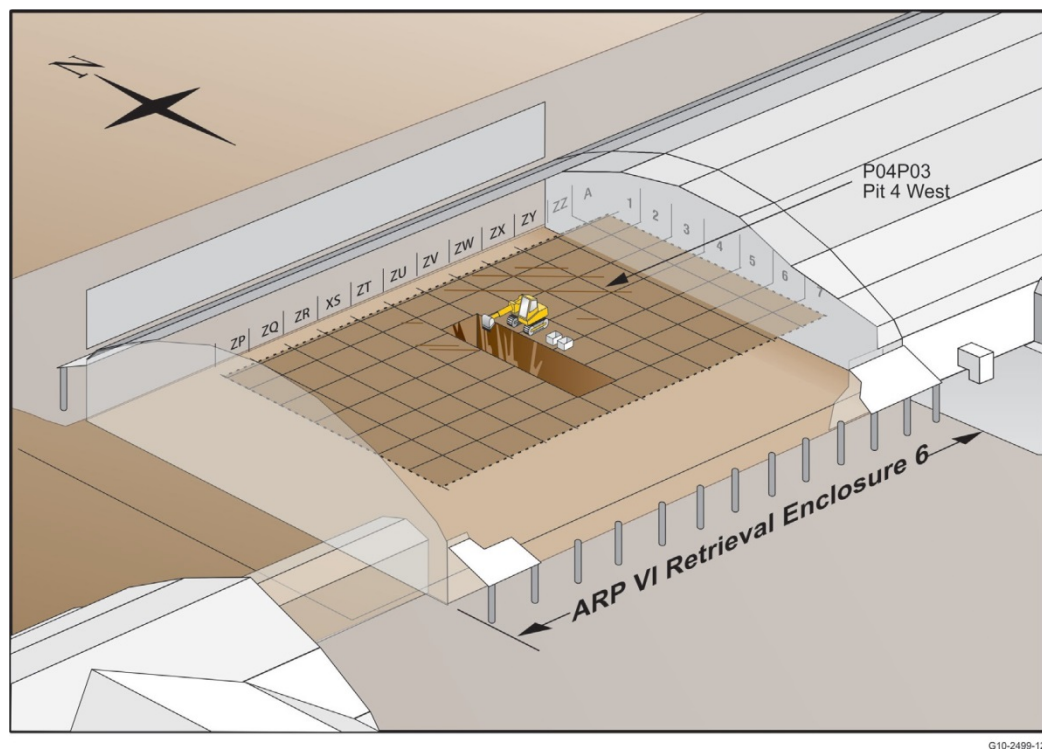


Figure 10. Historical Accelerated Retrieval Project VI and passageway to Accelerated Retrieval Project VII. Source: DOE-ID-11396,

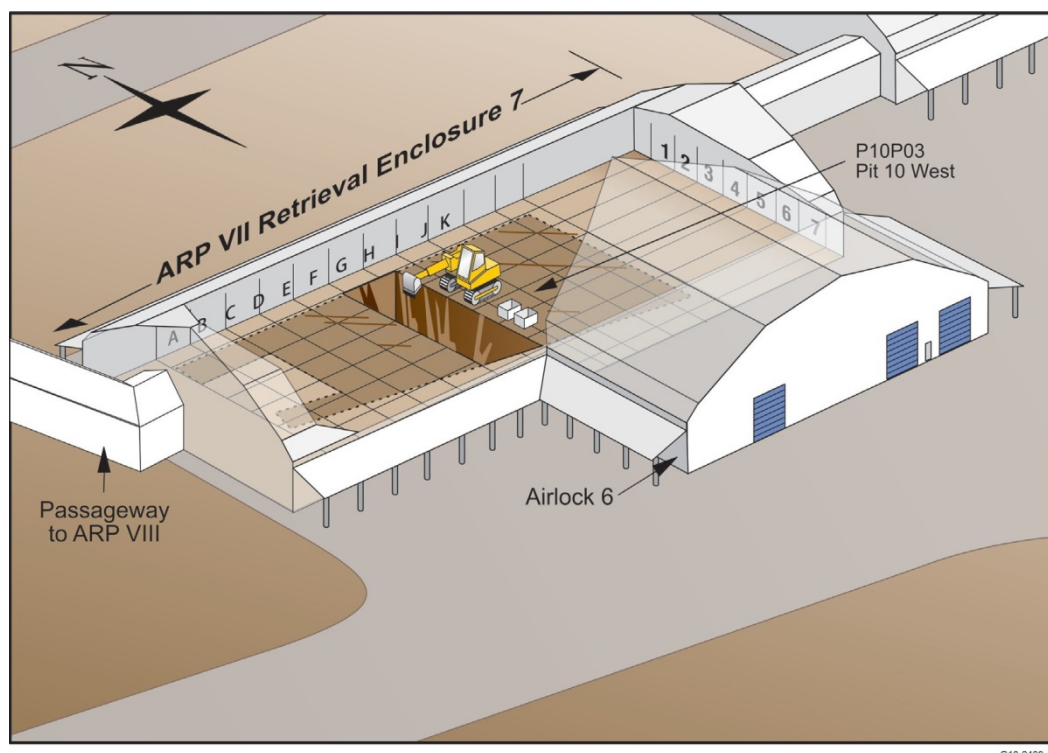


Figure 11. Accelerated Retrieval Project VII with Airlock 6 and a passageway to Accelerated Retrieval Project VIII. Source: DOE-ID-11396,

“Accelerated Retrieval Project retrieval enclosures, airlocks, and ancillary structures before and after Accelerated Retrieval Project I and VI retrieval enclosures and airlocks were demolished.”

The travesty as stated above is all the work and expense to build these great confinement structures over targeted waste areas only to retrieve only a very small amount of “hot spots” then “the retrieval enclosures and airlocks were demolished.”

DOE could have easily done the right thing and dig up all the mixed hazardous/radioactive and TRU waste under the structures while everything was in place to do it properly. This is especially true when DOE thought they could use the treatment facilities in the Advanced Mixed Waste Treatment Project (AMWTP) to process waste from other DOE sites (non-INL) like Hanford laid out in the Environmental Supplement Record of decision discussed in Section I of EDI’s Review attached Report. It’s simply short sighted illegal and patently absurd.

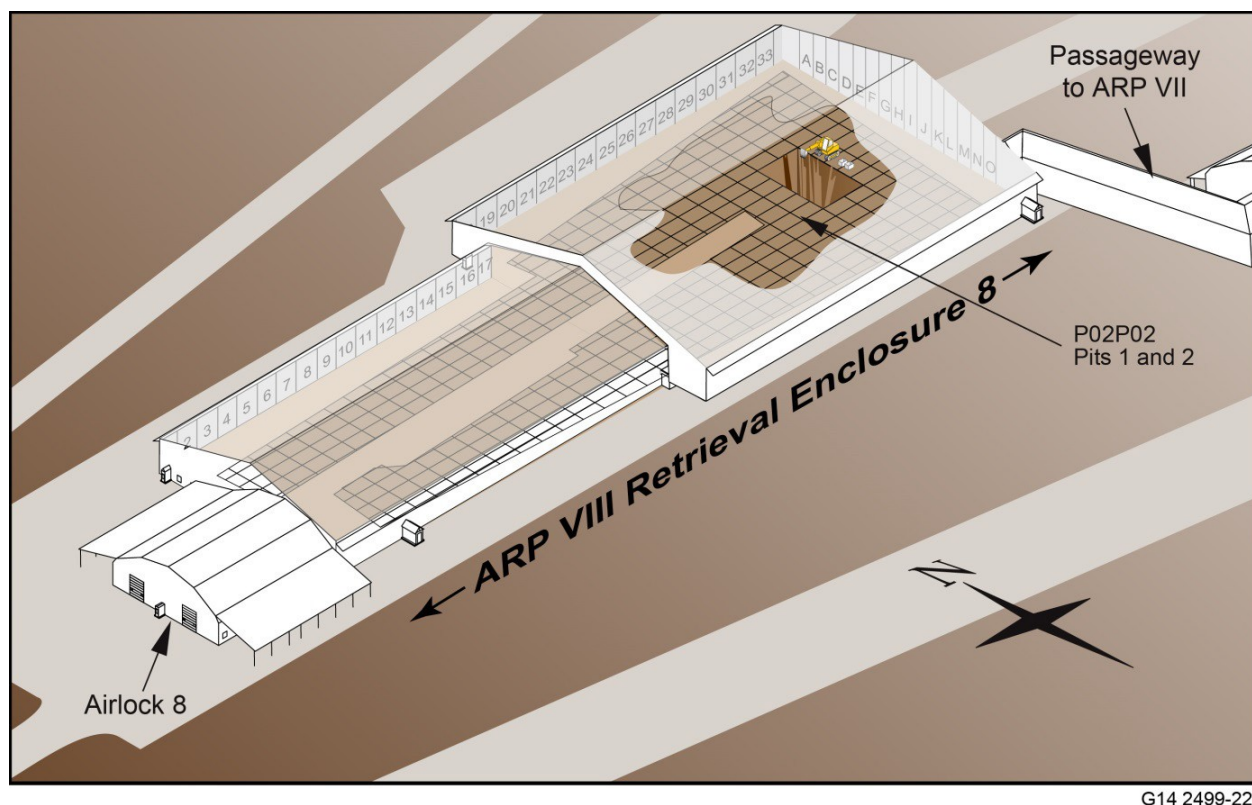


Figure 12. Accelerated Retrieval Project VIII with Airlock 8 and a passageway to Accelerated Retrieval Project VII. Source: DOE-ID-11396,

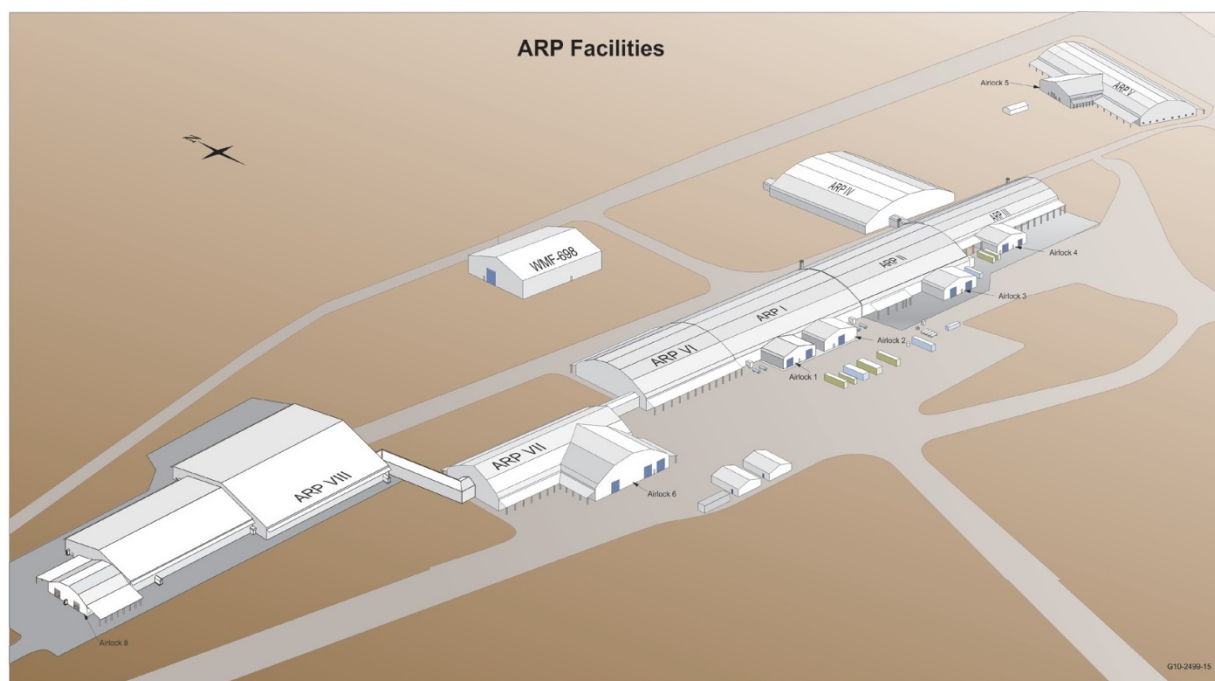


Figure 27, above source DOE-ID-11396: Accelerated Retrieval Project retrieval enclosures, airlocks, and ancillary structures before and after Accelerated Retrieval Project I and VI retrieval enclosures and airlocks were demolished.

Phase 1 Interim Remedial Action Report for Operable Unit 7-13/14 Targeted Waste Retrievals Section 3.2.8 Nontargeted Waste describes waste is returned to the excavation. This is mixed hazardous waste illegally returned to pits when it should have been sent a Subtitle C hazardous waste facility for disposal. The below list of “non-targeted waste” are listed RCRA hazardous/radioactive prohibited for disposal in ordinary unlined dumps like the SDA.

“In general, nontargeted waste is returned to the excavation. Retrieval specialists are trained to visually discriminate targeted from nontargeted waste using protocols established in TPR-7420 and GDE-318. Based on historical shipment data, the following nontargeted waste streams are present in ARP retrieval areas:

“**Series 744 sludge:** This sludge, also referred to as special setups, contains inorganic and organic liquids stabilized with Portland cement since they were incompatible with Rocky Flats Plant wastewater or organic waste treatment processes.

“**Series 745 sludge:** This sludge is comprised of nitrate evaporator salts resulting from Rocky Flats Plant plutonium recovery processes.

“**Miscellaneous Rocky Flats Plant sludge:** This miscellaneous sludge was shipped from Rocky Flats Plant Building 444 and is either VOC [volatile organic compounds] waste residue from a distilling process or sludge resulting from uranium oxides and residual heat-treating salts.

“**Non-Rocky Flats Plant sludge:** This is sludge shipped from TAN-607, CFA-654, and NRF-618. The Test Area North and Central Facilities Area sludge is sewage sludge and the Naval Reactors Facility sludge is described as evaporator sludge bottoms.

“**Beryllium waste:** This waste is identified from the Rocky Flats Plant and categorized as beryllium waste, but it is unclear whether this was beryllium metal or other materials contaminated with beryllium.

“**Line-generated waste:** This is waste that contains various materials removed from the plutonium-processing glove boxes, including items such as glove box gloves and combustible waste.

“**Combustible debris:** This is waste comprised of paper, plastic, wood, and other combustible materials.

“**Noncombustible metal debris:** This is waste that is predominantly metallic (e.g., pipe, equipment, conduit, and empty drums).” [pg. 60]

Above source: DOE-ID-11396 Revision 3, Phase 1 Interim Remedial Action Report for Operable Unit 7-13/14 Targeted Waste Retrievals, Pg. 60 & 69, October 2014

Table A-1 below probe samples show high-level waste i.e., spent nuclear fuel locations that are NOT included in the Accelerated Retrieval Project (i.e., not under any of the listed ARPS) listed in Figure 27 and Table 1 above, ICP-EXT-05-00784. Table A-1, Pg. 63&64 below is a very small (two page) sampling of 27 pages that show equally troubling results of irradiated fuel, enriched uranium, americium, neptunium, TRU, etc., waste areas that should have been exhumed.

Table A-1. (continued).

Probe Type	Probing Project Focus Area	Probe Name	Installation Date	Probe Depth (from surface) (ft)	Sensor/Port Depth (from surface) (ft)
Tensiometer	Moisture monitoring	MM1-3-T3	10/09/01	12.5	11.72
Tensiometer	Moisture monitoring	MM1-3-T1	10/10/01	5.9	5.14
Tensiometer	Americium/Nepunium	741-08-T2	10/11/01	11.4	10.55
Tensiometer	Americium/Nepunium	741-08-T3	10/11/01	20.7	19.91
Tensiometer	Activated metal	SVR12-1-T1	10/11/01	4.4	3.60
Tensiometer	Activated metal	SVR12-1-T2	10/11/01	9.2	8.43
Tensiometer	Activated metal	SVR12-1-T3	10/11/01	11.6	10.83
Tensiometer	Americium/Nepunium	741-08-T1	10/16/01	4.4	3.60
Visual probe	Pit 9	P9-09-V	10/23/01	6.7	NA
Visual probe	Pit 9	P9-20-V	10/25/01	12.6	NA
Visual probe	Pit 9	P9-09-VB	11/01/01	10.9	NA
Type A	Uranium/enriched uranium	P5-UEU-7	06/05/03	13.1	NA
Type A	Uranium/enriched uranium	P5-UEU-8	06/05/03	16.1	NA
Type A	Uranium/enriched uranium	P5-UEU-1	06/09/03	18.9	NA
Type A	Uranium/enriched uranium	P5-UEU-2	06/09/03	19.1	NA
Type A	Uranium/enriched uranium	P5-UEU-3	06/09/03	16.3	NA
Type A	Uranium/enriched uranium	P5-UEU-4	06/09/03	17.8	NA
Type A	Uranium/enriched uranium	P5-UEU-5	06/09/03	16.3	NA
Type A	Uranium/enriched uranium	P5-UEU-6	06/09/03	16.1	NA
Type A	Irradiated fuel material	T47-IF-1	06/10/03	11.6	NA
Type A	Irradiated fuel material	T47-IF-2	06/10/03	10.8	NA
Type A	Irradiated fuel material	T47-IF-3	06/10/03	11.6	NA
Type A	Irradiated fuel material	T47-IF-4	06/10/03	9.8	NA
Type A	Enriched uranium source	T3-EU-01	06/11/03	18.4	NA
Type A	Enriched uranium source	T3-EU-02	06/11/03	21.8	NA

Table A-1. (continued).

Probe Type	Probing Project Focus Area	Probe Name	Installation Date	Probe Depth (from surface) (ft)	Sensor/Port Depth (from surface) (ft)
Type A	Enriched uranium source	T3-EU-03	06/11/03	11.9	NA
Type A	Enriched uranium source	T3-EU-04	06/12/03	13.5	NA
Type A	Liquid waste disposal	HAL1	06/16/03	20	NA
Type A	Liquid waste disposal	HAL2	06/16/03	22.4	NA
Type A	Liquid waste disposal	HAL3	06/16/03	8.7	NA
Type A	Liquid waste disposal	HAL4	06/16/03	12.9	NA
Type A	Pit 6 high plutonium density	P6-PU-3	06/19/03	8.3	NA
Type A	Pit 6 high plutonium density	P6-PU-1	06/23/03	20.3	NA
Type A	Pit 6 high plutonium density	P6-PU-2	06/23/03	20.3	NA
Type A	Pit 10 high plutonium density	P10-PU-1	06/25/03	5.9	NA
Type A	Pit 10 high plutonium density	P10-PU-2	06/25/03	10.4	NA
Type A	Pit 10 high plutonium density	P10-PU-3	06/25/03	20.7	NA
Type A	Americium/Nepunium	741-10	06/30/03	20.2	NA
Type A	Americium/Nepunium	741-11	06/30/03	20.1	NA
Type A	Unrecorded disposal	UD-04	07/01/03	14.4	NA
Type A	Unrecorded disposal	UD-05	07/01/03	4.7	NA
Type A	Unrecorded disposal	UD-05B	07/02/03	5.2	NA
Type A	Unrecorded disposal	UD-05C	07/02/03	5.5	NA
Type A	Unrecorded disposal	UD-05D	07/02/03	5.6	NA
Type A	Unrecorded disposal	UD-05E	07/07/03	10.8	NA
Type A	Unrecorded disposal	UD-03	07/09/03	4.6	NA
Type A	Unrecorded disposal	UD-03B	07/09/03	14.9	NA
Type A	Unrecorded disposal	UD-01	07/10/03	10.7	NA
Type A	Americium/Nepunium	741-08-C	11/12/03	22.2	NA
Type A	Americium/Nepunium	741-08-D	11/12/03	19.3	NA
Soil-moisture probe	Depleted uranium	DU-10-ME	11/20/03	6.3	5.5
Soil-moisture probe	Depleted uranium	DU-14-M2	11/20/03	12	12

Source for above Table A-1, ICP-EXT-05-00784, Pg. 63 64

Phase 1 Interim Remedial Action Report for Operable Unit 7-13/14 Targeted Waste Retrievals
Section 4. CHRONOLOGY AND DISPOSAL ACCOUNTING states:

“This section summarizes the ARP chronology, including start and completion dates for excavations, retrieval areas exhumed, total waste packaged, and total waste shipped. Table 7 summarizes events leading up to retrieval operations and culminating in completion of targeted waste retrievals at ARPs I through VII. ARP VIII construction and start of operations also are listed. Tables 8 through 16 summarize cumulative accounting and accounting for individual ARPs. Table 8 summarizes treatment and disposal locations and the cumulative final waste packages sent out of Idaho. Table 9 lists the cumulative yield of final waste packages for ARPs I through VII as of June 30, 2014.” [Pg. 74-75] DOE/ID-11396

Table 8. Treatment and disposal locations and cumulative final waste packages sent out of Idaho as of June 30, 2014.

Treatment or Disposal Facility	Facility Location	No. of Final Waste Packages ^a	Packaged Volume (m ³) ^b
Energy Solutions	Clive, UT	113	23.5
Materials & Energy Corporation	Oak Ridge, TN	464	96.5
Nevada National Security Site	Las Vegas, NV	99	20.6
Perma-Fix Northwest	Richland, WA	205	42.6
Waste Isolation Pilot Plant	Carlsbad, NM	26,864	5587.7
Total		27,745	5,770.9
<p>a. A final waste package is one 55-gal drum, equivalent to 0.208 m³. Numbers include targeted and nontargeted drums from ARPs and 63 drums from the Glovebox Excavator Method Project and included in accounting for ARP V.</p> <p>b. Waste in 171 final waste packages (35.6 m³) is not credited toward the minimum performance goal for volume (i.e., 6,238 m³ as disposed of, 7,485 m³ as packaged for shipment out of Idaho): 166 packages from ARP I Adjacent, 1 package retrieved by ARP I Adjacent to ARP VI in Grid A-8, and 2 packages each from ARP I and the Glovebox Excavator Method (processed with ARP V) that contain overages from reworked drums.</p> <p>ARP Accelerated Retrieval Project</p>			

DOE/INL is legally required to send this above listed waste to permitted Subtitle C hazardous/radioactive waste facilities not only for partial compliance with the 1995 Settlement Agreement but also to partially comply with EPA Land Disposal Restrictions. The RWMC/SDA is an unlined dump that would not meet Subtitle D municipal dump requirements that must have an impermeable liner and leachate collection system to collect any precipitation that gets into the waste. DOE has a vested interest in minimizing the amount of waste extracted due to the cost of disposal in the above waste facilities. EPA/IDEQ as regulators refuse to exercise their obligation like former Governor Andrus and Batt did in 1995 discussed in Section II of attached EDI's Review.

Table 9. Below Cumulative summary of number and status of final waste packages produced by Accelerated Retrieval Projects as of June 30, 2014.

Status Type	ARP I	ARP II	ARP	ARP IV	ARP V(c	ARP	ARP	Cumulative	Cumulative Volume (m3)
Waste									
Targeted final waste packages	4,414	10,034	3,130	4,557	3,520	1,455	2,114	29,224	6,078.6
Nontargeted final waste packages	77	12	14	1	0	0	0	104	21.6
Total	4,491	10,046	3,144	4,558	3,520	1,455	2,114	29,328	6,100.2
Disposition									
Interim onsite storage	0	0	537	3	1	4	1,012	1,557	323.9
Onsite nontargeted disposal	26	0	0	0	0	0	0	26	5.4
Shipped out of Idaho									
Total	4,491	10,046	3,144	4,558	3,520	1,455	2,114	29,328	6,100.2

Compare above waste numbers to Section III “Summary of Stored and Buried Transuranic Waste” at RWMC inventories on page 19 of attached EDI Review of RWMC and below.

Summary of Stored and Buried Transuranic Waste Status at RWMC Comparing Inventories

TRU Solid Waste	IDH&W 1991 Inventory *	DOE 1991 Inventory * Included LL-Alpha	Idaho Cleanup Inventory * June 2017	Shipped to WIPP June 2017 *
Stored (Surface) Contact Handled Remote Handled	64,750 77	85,000	65,000	260 shipments volume not stated
Totals	64,827	85,000	65,000	53,000
Buried	56,630		8,200	
Totals Stored/buried	121,457	85,000	73,200	53,000
Contaminated Soil			690,000	0
Pad A (Surface Left in Place)	10,200	10,200		0

* Inventory numbers above in cubic meters (cm)