

3003-0604250003



CH2MHILL

CH2M HILL
Mound, Inc.
1 Mound Road
P.O. Box 3030
Miamisburg, OH
45343-3030

ER/WM-160/04
November 29, 2004

Ms. Margaret L. Marks, Director
Miamisburg Closure Project
U. S. Department of Energy
1075 Mound Road
Miamisburg, OH 45342

ATTENTION: Paul Lucas

SUBJECT: Contract No. DE-AC24-03OH20152
Statement of Work Requirement 055 - Regulator Reports
VARIOUS DOCUMENTS

Dear Ms. Marks:

Paul Lucas of your office has authorized the release of the following documents for public review:

- PRS 106 PRS Package, Public Review Draft, November 2004
- ✓ • PRSs 211/212 PRS Package, Public Review Draft, November 2004
- PRS 271 / PRS 336 PRS Package, Public Review Draft, November 2004

Public comment will be accepted through December 29, 2004.

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact me at 937-865-4203.

Sincerely,

David A. Rakel
CERCLA Lead

DAR/ms

Enclosures

cc: Tim Fischer, USEPA, (1) w/attachments
Brian Nickel, OEPA, (4) w/attachments
Ruth Vandegriff, ODH, (1) w/attachments
Mary Wojciechowski, Tetra Tech, (1) w/attach
Sue Smiley, DOE/MCP, (1) w/attachments
Lisa Rawls, MCP, w/o attachments
Randy Tormey, DOE/OH, (1) w/attachments
Frank Bullock, MMCIC, (3) w/attachments

Jim Bonfiglio, MESH, (1) w/attachments
Public Reading Room, (4) w/attachments
Dave Rakel, CH2M Hill, (1) w/attachs
Val Darnell, CH2M Hill, (1) w/attachs
ER Records, CH2M Hill, (1) w/attachs
DCC (1) w/attachments
John Lehew, CH2M Hill, w/o attachments
file



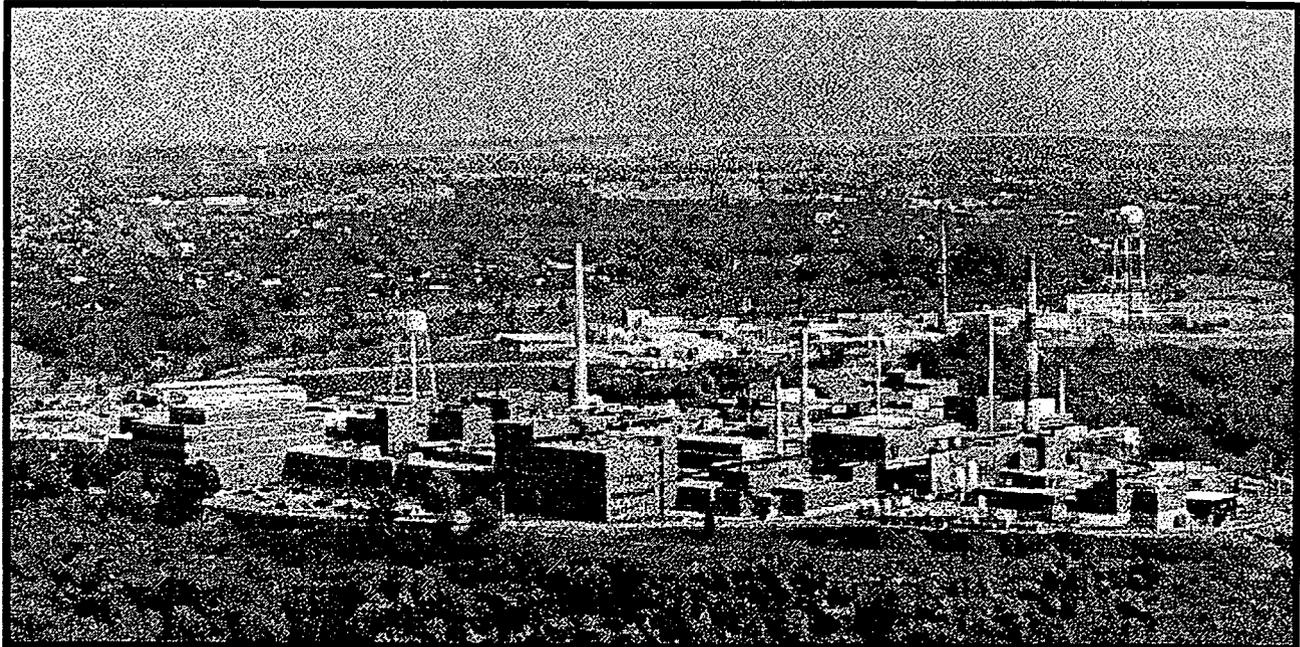
**Environmental
Restoration
Program**



Miamisburg Closure Project Potential Release Site Package

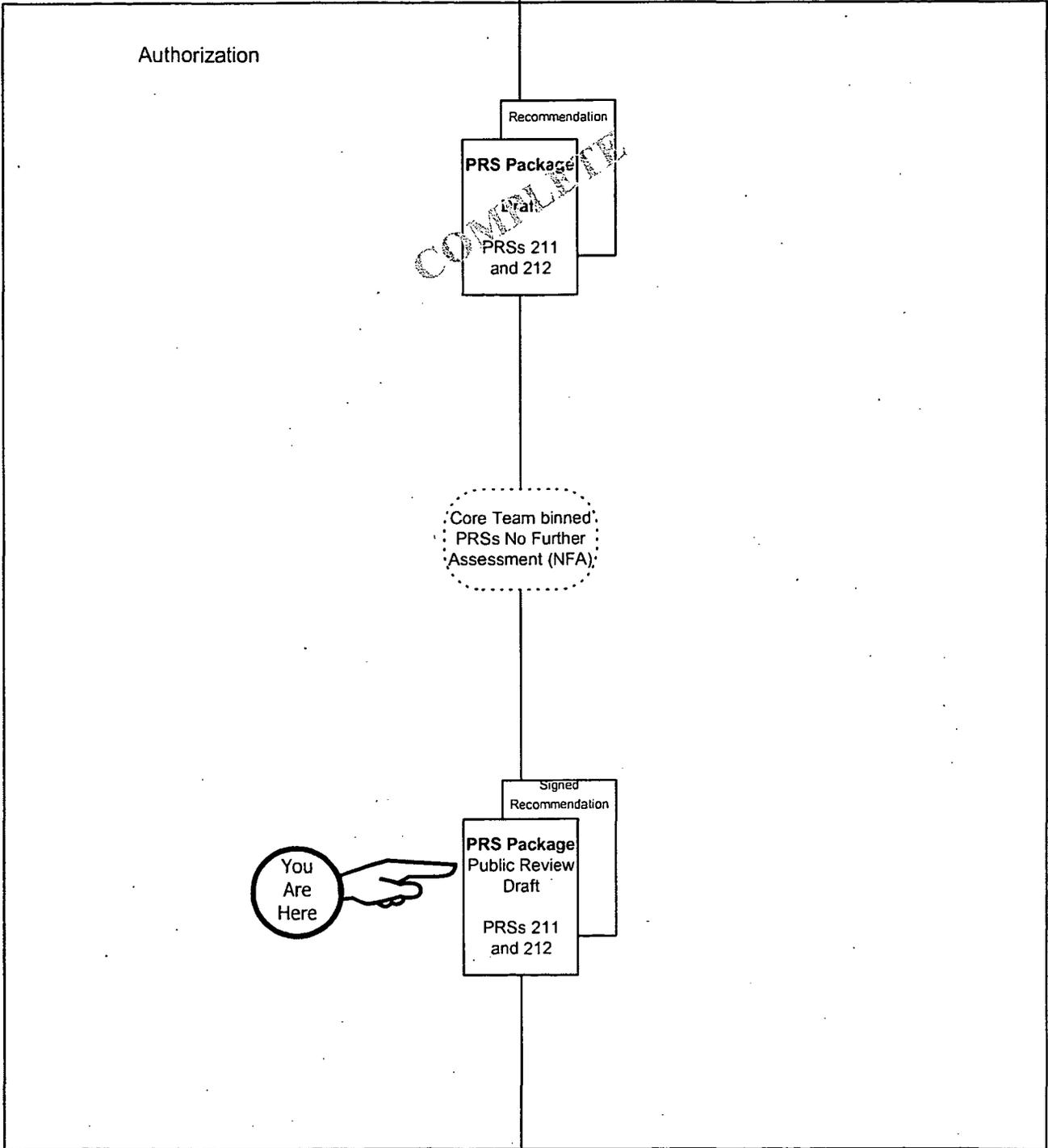
PRS 211/212

Public Review Draft
November 2004



PRs 211 and 212

PRs 211 and 212



*Core Team recommendation also included in the A Building Closeout Report

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MIAMISBURG CLOSURE PROJECT

POTENTIAL RELEASE SITE PACKAGES

The following three documents are available
(November 29, 2004) for public information in
the CERCLA Public Reading Room, 305 E.
Central Ave., Miamisburg, Ohio.

PRS 106 (soil below G Building)
PRSs 211/212 (A Building Tanks)
PRS 271 / PRS 336 (Building 37 Tanks)

Questions can be referred to Paul Lucas at
(937) 847-8350 ext. 314

U.S. Department of Energy
U.S. Environmental Protection Agency
Ohio Environmental Protection Agency

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PRS HISTORY:

PRSs 211 and 212 are assigned to two underground tanks associated with A Building: "Tank 28" (PRS 211), and "Tank 29" (PRS 212). The tanks were located in a covered 5.5' wide x 11' long x 7.5' deep pit situated 5 feet east of A Building, just south of the OSE Building (see Figures 1 and 2). Both tanks were installed in 1968 with the construction of the radiological decontamination facility in the medical wing at the southeast corner of A building. The tanks collected wastewater from the showers, sinks, basin, and table in the decontamination facility (see Figure 3). Tank numbers 28 and 29 were assigned during a series of underground storage tank evaluations [1]. Radiological contamination within the tanks was considered likely when the PRS numbers were originally assigned, though releases were not suspected [2].

Each tank was steel with an internal polyvinyl chloride (PVC) liner and had a 400-gallon capacity. The tank pit was concrete-walled with a steel panel cover. Tanks rested on gravel that had been placed directly over soil [3]. Additional gravel surrounded the tanks. When in operation, water drained by gravity from the medical facility through an influent line (Figure 3, line "I") into the tanks. When waste water reached a certain level in the tanks, it triggered an alarm. In response to the alarm, the water was transferred by sump-pumps through a sampling pipeline (Figure 3, line "S") into A building, room 51, where it was sampled and analyzed to determine disposition. If the water met radiological release criteria, it was discharged by the sump pumps through a discharge pipeline (Figure 3, line "D") to a nearby sanitary sewer waste line (Figure 3, line "SAN"). If the water did not meet release criteria, it was pumped through pipeline S to containers inside A Building and then transported to the alpha-wastewater influent tanks at the Waste Disposal (WD) Building. In a 1994 underground storage tank evaluation document, the tanks were considered to be in compliance with regulations (Reference 4 and Attachment 1). In another 1995 evaluation of subsurface utilities, the tanks were rated as having acceptable integrity (Reference 5 and Attachment 2).

As part of the Safe Shutdown of A Building, the underground Tanks 28 and 29 and associated piping were removed from their pit in March 2004 (see Figures 4 and 5). They were segregated for disposal as Low Level Radioactive Waste, removed from the area, and disposed per Waste Management direction. The A Building was subsequently demolished. Drain and sampling lines that serviced the tanks within the footprint of A building were removed and plugged in August 2004. Only the SAN line and the portions of lines I, S, D that lie outside the pit and outside the footprint of the former A building now remain (Figure 3). These 4 line-sections will be abandoned in place. Prior to building demolition, the sanitary line was plugged at its inlet to a nearby manhole southeast of A building, to prevent infiltration of debris into the sanitary system. Lines I, S, and D will be plugged at the pit wall, prior to pit disposition, to prevent migration of subsurface materials.

CONTAMINATION:*Historic Radiological Information*

The decontamination facilities were available to treat injured personnel from the time of their installation in 1968 through the early 1990s. Only a few instances occurred that required minor decontamination of workers' hands or arms in the Medical Facility; typically, initial decontamination had already occurred elsewhere at the job site [6]. According to personnel interviews and records review, it is believed that the analytical results of the wastewater always met radiological release criteria. Given the minor decontamination required at the Medical Facility and the integrity of the tanks, little contamination was expected either in or below the tanks when recent sampling was undertaken.

Recent Sampling

Prior to removal of the tanks during Safe Shutdown, the water in each of the tanks and from the pit outside the tanks was sampled and analyzed, as was residual solid material taken from the influent pipeline I (Radiological Survey Data Sheet [RSDS] #04-TF-0069, Attachment 3). Water, both inside and outside tanks, was shown to contain 1.2 ± 0.1 nCi/L tritium and <0.3 pCi/mL gross alpha (Attachment 3, page 6). Permission was received to discharge tank water to the sanitary sewer system. Detected radionuclides in pipeline I solids (Pu-238, Pu-239/240) were below the 10^{-6} risk-based Soil Screening Level, and results from swipes of pipeline I interior were below DOE Order 5400.5 criteria.

The tanks (and associated hardware) were then removed from the pit. Following removal, sludge from inside the bottom of each tank was sampled and analyzed (RSDS #04-TF-0079, Attachment 4). Sediments from the base of the pit below each tank were likewise sampled (see Figure 6). The radiological survey also included 20 swipe surveys and a 100% direct alpha/beta scan of the interior surface of the pit itself.

Radionuclide concentrations in Tank 29 sludge residuals were below the 10^{-5} risk-based Cleanup Objective for all detected radionuclides, although results for Pu-238 were 49 pCi/g, approaching the Cleanup Objective of 55 pCi/g. For Tank 28, results exceeded the Cleanup Objective for only one detected radionuclide (Pu-238, 151 pCi/g). Because the tanks were of acceptable integrity and have now been removed, these results are not representative of contamination in surrounding soils, but are the expected worst case for the area.

The results from sediment below the tanks did not exceed Soil Screening Level or Cleanup Objective for any detected radionuclide. All swipe and scan results from the pit were below DOE Order 5400.5 release criteria.

All the portions of the drain and sampling (or "recirc") piping system that originally lay under the decontamination facility of A building were surveyed when removed. Results were reported on RSDS #04-TF-0245 (Attachment 5). All removable contamination results from both the outside and the inside of the pipelines were below DOE Order 5400.5 release criteria. The ends of each line were scanned for direct alpha activity, with no detected results. Four soil samples in the vicinity of these lines were also collected and analyzed for radionuclides. All detected soil results were below 10^{-6} risk-based Soil Screening Levels.

Surveys were taken of the remaining stubs of the discharge (D) and sampling (S) lines, where they exit the pit (see Figure 7 and RSDS 04-TF-0292, Attachment 6). Results from swipe and direct surveys were well below DOE 5400.5 criteria. No residual solids were observed in pipelines D or S during the survey.

DISCUSSION:

Because tank sludge radionuclide content was near or above Cleanup Objective, both tanks and associated hardware were segregated as Low Level Radioactive Waste, removed from the area, and disposed per Waste Management direction.

Because the remaining pit and sediments at the bottom of the pit have no detected residual activity above DOE 5400.5 or Soil Screening Level criteria, the pit will be abandoned consistent with the A Building Demolition Work Package, i.e., removal of the pit structure only to grade level, then backfill with construction debris and gravel.

Three portions of the pipelines that serviced the tanks are difficult to remove completely, as they are situated below a sidewalk to the west and southwest of the pit or near a stanchion foundation to the south [3] of the pit (see Figures 2-4). These are: a section of the 3" diameter influent line I below sidewalk to the west; a section of 1.5" sampling line S that runs from the west wall of the pit below sidewalk toward the southeast corner of the former A Building (location of room 51); and a section of 1.5" discharge line D that runs from the south wall of the pit to the sanitary drain line. In addition the 4" sanitary drain line SAN still remains; this line runs from below the former A building decontamination facility, under the sidewalk, to a manhole southeast of the building.

- The contents of the 3" influent pipeline I were analyzed (Attachment 3) and are below DOE Order 5400.5 and Soil Screening Level criteria.
- The interior and exterior of the 1.5" sampling (S) and discharge (D) pipeline stubs were surveyed (Attachment 6) and are below DOE Order 5400.5 release criteria.
- The discharge line D was the only line that operationally carried effluent from the decontamination facility to the sanitary system (SAN) line. Therefore, any contamination within the sanitary line SAN should be equal to or less than that of

the discharge line D, which was shown to be well below DOE Order 5400.5 release criteria.

- Surveys of the interior and exterior of the sampling and drain lines that were removed from below the decontamination facility within the footprint of the former A building were all well below DOE Order 5400.5 release criteria.
- Soils in the vicinity of the drain lines, sampling line, and influent line that were removed from within the footprint of the former A building, show no indication of contamination above 10^{-6} risk-based Soil Screening Levels. The integrity of these pipelines and of the remaining pipelines is thus considered good.

Contamination levels observed in the pipelines and soils associated with PRS 211/212 are below surface release and soil cleanup criteria. No further action is warranted for the four remaining portions of associated pipelines or their soils. These portions have previously been plugged at the sanitary manhole and under the A building footprint, and they will be further plugged at the pit wall prior to pit demolition. This will prevent infiltration of debris into the sanitary system and will prevent migration of subsurface materials. The pipelines will be abandoned in place.

REFERENCES:

- [1] Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review (Final), US DOE, Albuquerque Operations Office, Albuquerque, NM, November 1992, and references cited therein.
- [2] Operable Unit 9 Site Scoping Report: Volume 12 – Site Summary Report, Mound Plant, Miamisburg, Ohio, December 1994, page A.1-24.
- [3] Drawing M-1, Rev. 1, Job 6064, 350009, Drawer 15, "Decontamination Facility Administration Building Plumbing Plan & Details"; and Drawing G-08, Issue A, Building Code 3543 00 G, Drawer 81, "Operational Support – East Building – Segment A, Utility Plan"; Miamisburg Cleanup Project Drawing Control Department.
- [4] Dames & Moore, Active Underground Storage Tank Plan, prepared for EG&G Mound Applied Technologies, DOE Mound Facility, Miamisburg, Ohio, May 16, 1994.
- [5] Subsurface Utility Evaluation, Operable Unit 2, Main Hill, OU-2 Phase I Technical Memorandum, Mound Plant, Environmental Restoration Program, July 1995.
- [6] Personal communication, Dr. E. Reagan and J. Rigano, August 1, 1995.

ATTACHMENTS:

- 1.) Active Underground Storage Tank Plan (pages relevant to PRS 211/212)
- 2.) Subsurface Utility Evaluation (pages relevant to PRS 211/212)
- 3.) Radiological Survey Data Sheet #04-TF-0069
- 4.) Radiological Survey Data Sheet #04-TF-0079
- 5.) Radiological Survey Data Sheet #04-TF-0245
- 6.) Radiological Survey Data Sheet #04-TF-0292

PREPARED BY:

John Gill, CH2MHill, ER Technical Staff

**MIAMISBURG CLOSURE PROJECT
PRS 211/212**

RECOMMENDATION:

PRSs 211/212 are two underground tanks, situated in a concrete pit, that received waste water from the A Building Decontamination Medical Facility. An historic review found evidence to suspect only modest radiological contamination inside the tanks. Sampling of residual tank sludge provided reason to remove the tanks and associated hardware as Low Level Radioactive Waste. Additional sampling or surveys were performed of: sediment below the tanks; tank pit surfaces; tank influent, discharge, and sampling pipelines; and soils below the majority of the pipelines. Results indicate that residual contamination of these materials and sediments from the area of the tanks are below Cleanup Objectives and surface release criteria.

Therefore, sections of the tank pit that lie below grade will be abandoned in place. Associated portions of influent, sampling, and discharge pipelines that are situated below a sidewalk and close to a nearby stanchion foundation will be plugged in the pit and abandoned in place. The associated sanitary sewer pipeline, which was previously plugged at its manhole, will also be abandoned in place. Plugged lines will prevent migration of subsurface materials and infiltration of debris into the sanitary system.

The Core Team recommends No Further Assessment for PRSs 211/212.

A PRS Package with an NFA recommendation signed by the Core Team will be placed in the Public Reading Room for a 30-day review period. Upon closure of the public review comments, if any, the PRS Package will be issued as a final document and made available in the Public Reading Room.

The final Core Team recommendation sheet from this evaluation will be included in the A Building Closeout Report.

CONCURRENCE:

DOE/MCP:	<i>Paul Lucas</i>	11/17/04
	Paul Lucas, Remedial Project Manager	(date)
USEPA:	<i>Timothy J. Fischer</i>	11/17/04
	Timothy J. Fischer, Remedial Project Manager	(date)
OEPA:	<i>Brian K. Nickel</i>	11/17/04
	Brian K. Nickel, Project Manager	(date)

FIGURE 1: Location of PRSs 211/212

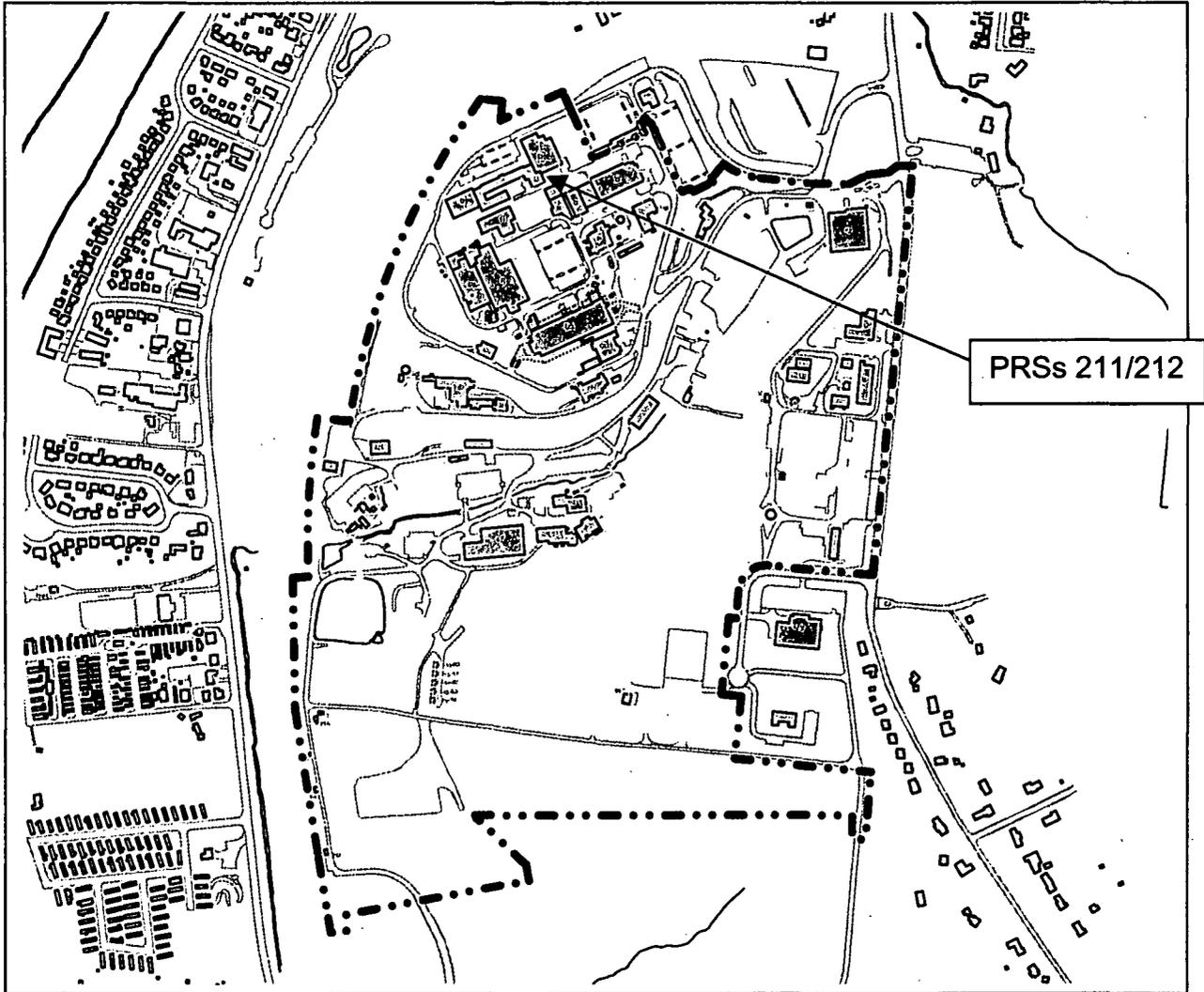
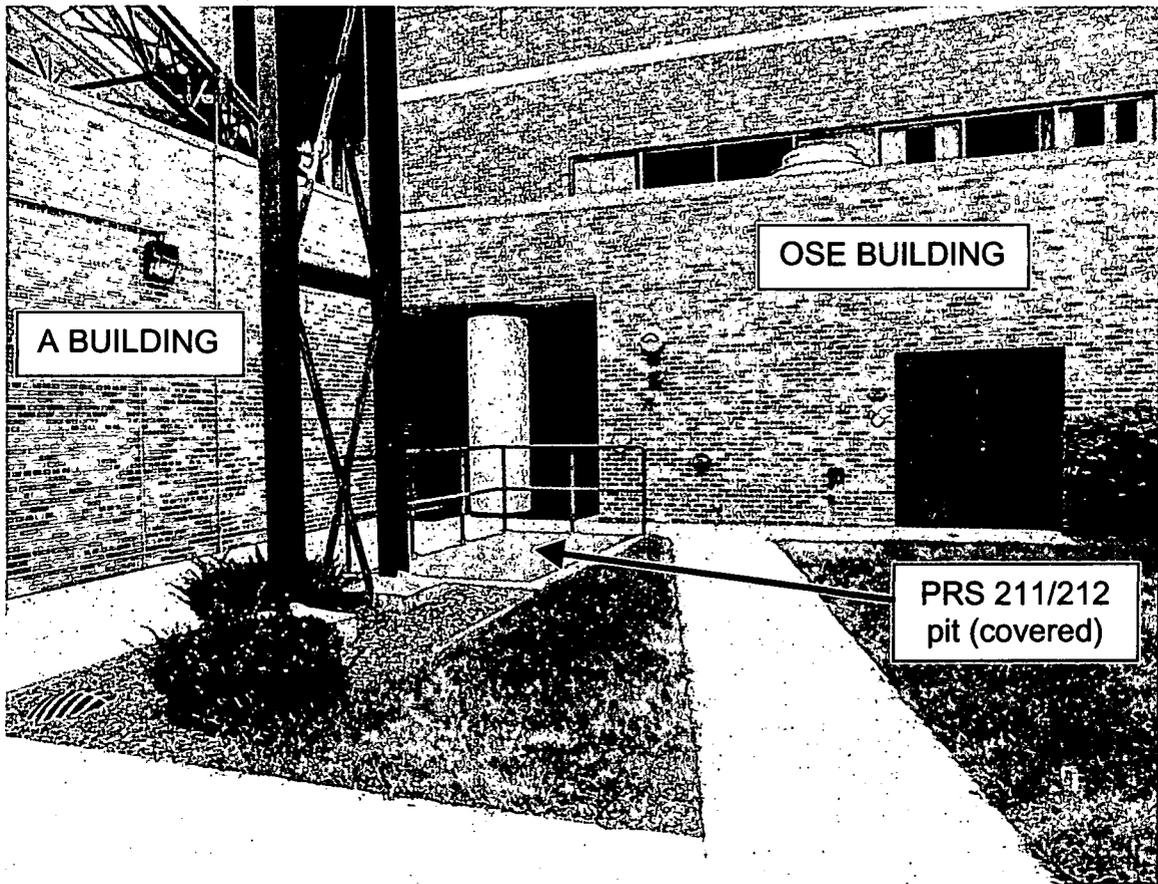


FIGURE 2: Historical (1995) view of covered pit, containing Medical Decontamination Facility effluent collection tanks: location of PRSs 211/212



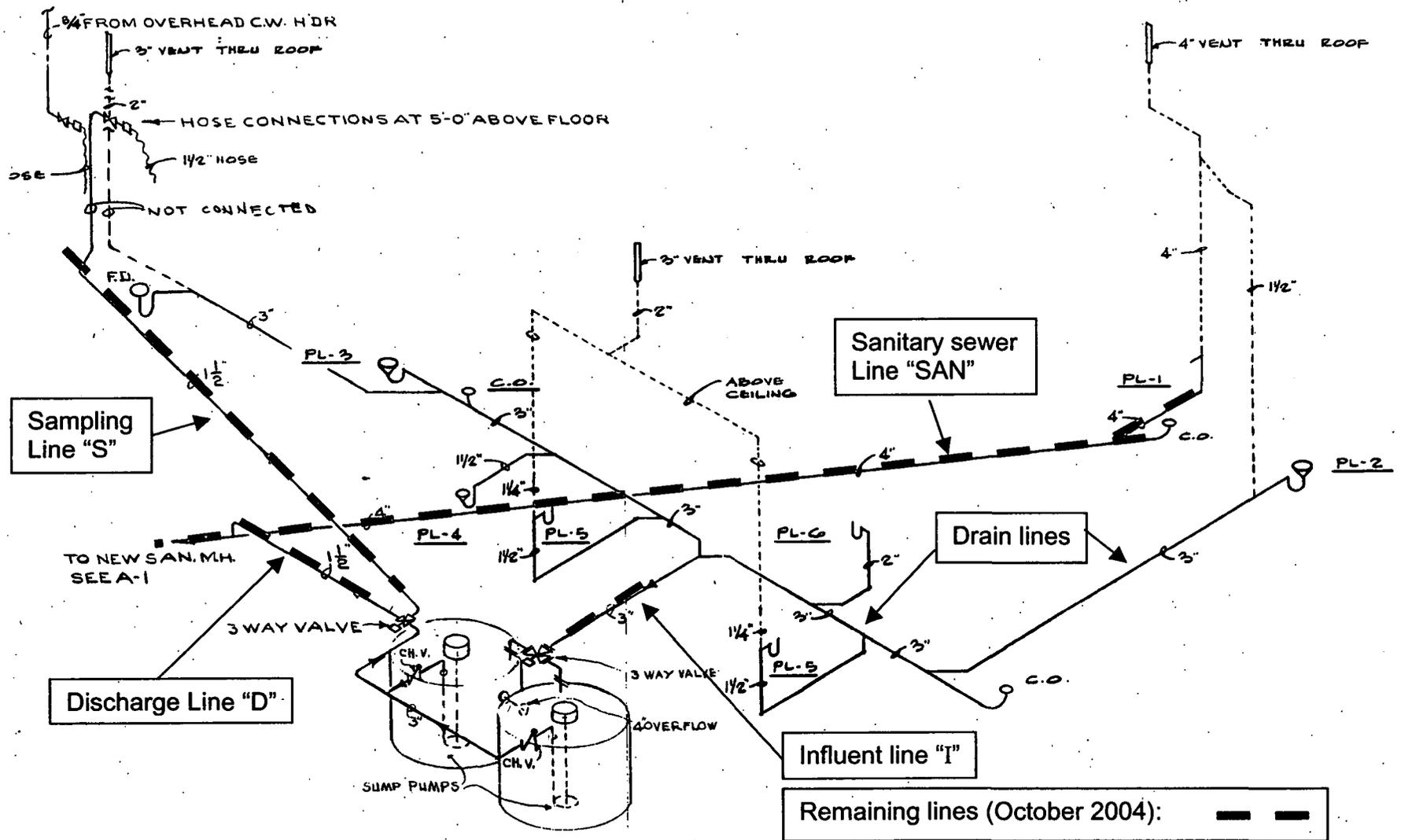
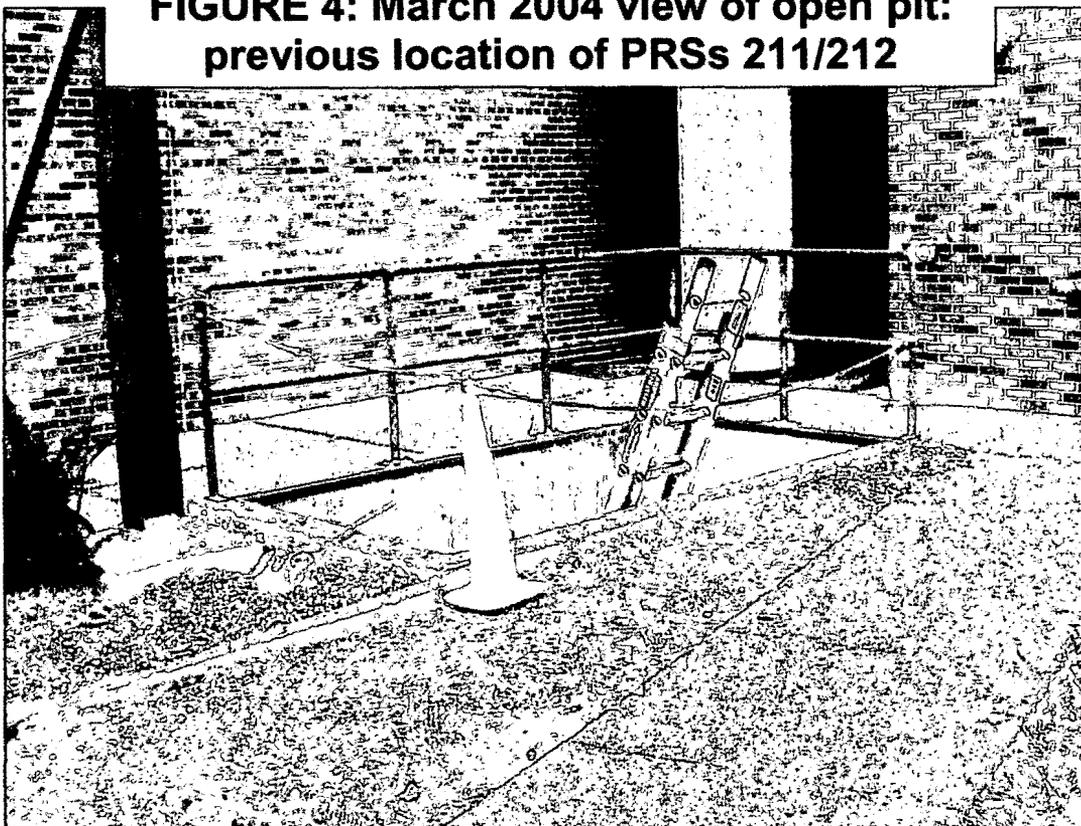


FIGURE 3: Portion of Drawing M-1, Rev. 1, Job 6064, Drawer 15 (1969 as-built), showing isometric view of PRS 211/212 tanks and associated piping (looking southwest)

**FIGURE 4: March 2004 view of open pit:
previous location of PRSs 211/212**



**FIGURE 5: Tanks 28 and 29 (PRSs 211/212),
as removed from original pit in March 2004**



FIGURE 6: March 2004 view looking down into open pit, previous location of PRS 211/212 tanks

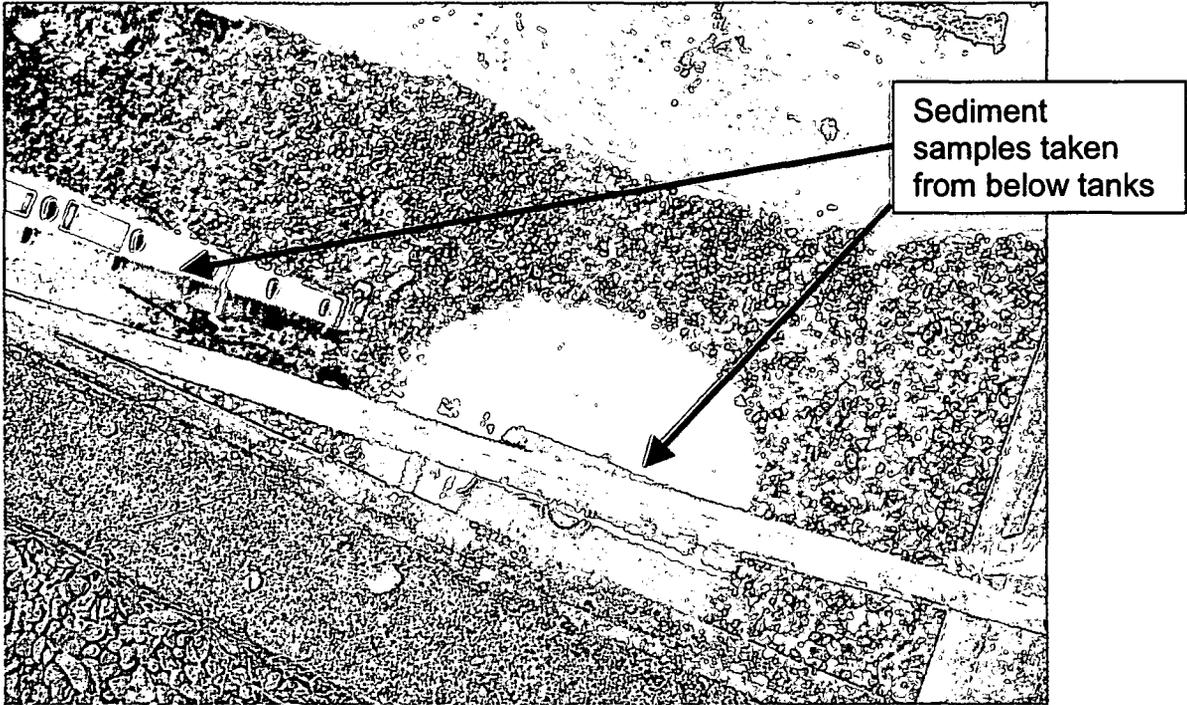
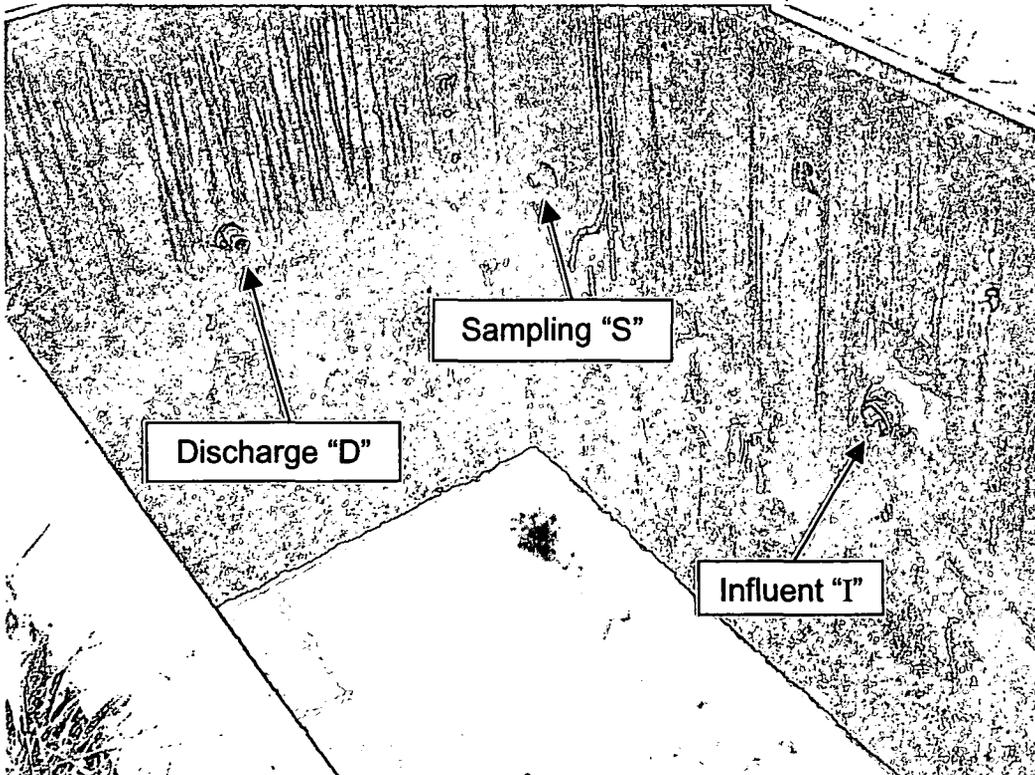


FIGURE 7: September 2004 view of open pit (looking southwest), showing discharge, sampling, and influent line stubs



ATTACHMENT 1

ACTIVE UNDERGROUND STORAGE TANK PLAN

(pages relevant to PRS 211/212)



Revised Draft

*Active Underground Storage
Tank Plan*

May 16, 1994

Prepared for:

**Project Management and Planning
EG&G Mound Applied Technologies
One Mound Road
Miamisburg, Ohio**

Tank No.		27	
Proposed Program AUSTP	Bldg 38	Location 6 East, 10K	Owner U.S.DOE
Status in service	Installation Date 1965	Estimated Capacity (gallons) 300	
Purpose of Tank alpha wastewater sump			
Tank Material Steel Lined Concrete		Tank Cathodic Protection None	
Inlet of Tank From drains & showers from Bldg 38		Outlet of Tank To 10,000gal aboveground storage tank, Bldg 38	
Evidence of Release No		Spill/Overfill Prevention On/Off Level Float Switch; High Level Alarm	
Substance Current/Last Stored Radioactive Wastewater		Tank Site Description Indoor	
Calibration/Maintenance None		Tank Release Detection None	
Piping Release Detection None		Closure Date Last Used N/A	
OU9 Reference No 298		FFA OU N/A	
Primary Regulatory Jurisdiction CWA		Spill Jurisdiction AEA	
Regulatory Status In compliance			
Documents Provided DOE, 1992a; DOE, 1993; UST Inspection Sheet; Dwg No 303812-02013; Dwg No A-17009 Rev 0;			
Comments Steel-lined concrete sump to collect potentially radioactive wastewater from drains and showers.			

Tank No.		28	
Proposed Program AUSTP	Bldg A	Location	Owner U.S.DOE
Status in service	Installation Date 1968	Estimated Capacity (gallons) 400	
Purpose of Tank Medical decon shower collection tank			
Tank Material Bare Steel		Tank Cathodic Protection Internal PVC Lining	
Inlet of Tank From medical decon showers		Outlet of Tank Tested - if non-rad to Bldg 57, if rad to WD Bldg	
Evidence of Release No		Spill/Overfill Prevention High Level Alarm	
Substance Current/Last Stored Sanitary Wastewater/Radioactive Wastewater		Tank Site Description Outdoor; Asphalt/Concrete	
Calibration/Maintenance None		Tank Release Detection None	
Piping Release Detection None		Closure Date Last Used N/A	
OU9 Reference No 211		FFA OU N/A	
Primary Regulatory Jurisdiction AEA		Spill Jurisdiction AEA	
Regulatory Status In compliance			
Documents Provided DOE, 1992a; DOE, 1993; UST Inspection Sheet; Drawing No. M-1, Rev 1			
Comments None			

Tank No.		29	
Proposed Program AUSTP	Bldg A	Location	Owner U.S.DOE
Status in service	Installation Date 1968	Estimated Capacity (gallons) 400	
Purpose of Tank Medical decon shower collection tank			
Tank Material Bare Steel		Tank Cathodic Protection Internal PVC Lining	
Inlet of Tank From medical decon showers		Outlet of Tank Tested - if non-rad to Bldg 57, if rad to WD Bldg	
Evidence of Release No		Spill/Overfill Prevention High Level Alarm	
Substance Current/Last Stored Sanitary Wastewater/Radioactive Wastewater		Tank Site Description Outdoor; Asphalt/Concrete	
Calibration/Maintenance None		Tank Release Detection None	
Piping Release Detection None		Closure Date Last Used N/A	
OU9 Reference No 212		FFA OU N/A	
Primary Regulatory Jurisdiction AEA		Spill Jurisdiction AEA	
Regulatory Status In compliance			
Documents Provided DOE, 1992a; DOE, 1993; UST Inspection Sheet; Drawing No. M-1, Rev 1			
Comments None			

Tank No.		100	
Proposed Program AUSTP	Bldg 37	Location	Owner U.S.DOE
Status in service	Installation Date 1968	Estimated Capacity (gallons) 500	
Purpose of Tank sanitary waste tank			
Tank Material Bare Steel		Tank Cathodic Protection None	
Inlet of Tank Sanitary Wastes from Bldg 37 & 88		Outlet of Tank Bldg 57, New Sewage Disposal Area	
Evidence of Release No		Spill/Overfill Prevention On/Off Level Float Switch; High Level Alarm	
Substance Current/Last Stored Sanitary Wastewater		Tank Site Description Outdoor	
Calibration/Maintenance None		Tank Release Detection None	
Piping Release Detection None		Closure Date Last Used N/A	
OU9 Reference No 271		FFA OU N/A	
Primary Regulatory Jurisdiction CWA		Spill Jurisdiction AEA	
Regulatory Status In compliance			
Documents Provided DOE, 1992a; DOE, 1993; NUS, 1989; UST Insp; Dwg No 66-M-7; Dwg No 66-M-8			
Comments Tank is unlined steel in a concrete pit.			

DAMES & MOORE - INSPECTION & DOCUMENT REVIEW NOTES

CLIENT EG&G Mound Applied Technologies		JOB NUMBER 10805-794	DATE 4/15/94
JOB TITLE Active Underground Storage Tank Program		D&M TEAM Grantelli & Dispirito	
TANK NO. 28	BLDG/LOCATION A	EG&G SPONSOR Operations	OWNER U.S. DOE
TANK STATUS inservice	TANK CAPACITY (gallons) 400	INSTALLATION DATE 1968	INTERVIEWED WITH Sue Cloud
INTERVIEW DATE 2/21/94			

TANK DESCRIPTION, Purpose of Tank *Medical Decon Shower collection tank. PVC-lined steel tanks that collect waste water from medical decon showers. Tanks sampled - non-rad -> pumped to Sanitary Waste Treat -> Bldg 57 rad -> transferred to 30,000 gal α-influent -> WD Bldg*

Tank Material <input checked="" type="checkbox"/> Bare Steel (unprotected) <input type="checkbox"/> Composite (steel & FRP) <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> Stainless Steel Lined Concrete <input type="checkbox"/> Steel Lined Concrete <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Other - Specify <input type="checkbox"/> Unknown <i>PVC lined-Steel</i>	Tank Cathodic Protection <input type="checkbox"/> Internal Lining - Specify <input type="checkbox"/> Sacrificial Anodes <input type="checkbox"/> Impressed Current <input type="checkbox"/> Composite (Steel & FRP) <input type="checkbox"/> Other - Specify <input type="checkbox"/> Unknown <input checked="" type="checkbox"/> None	Inlet of Tank <i>waste water from Medical decon showers</i> Outlet of Tank <i>if non-rad pumped to sanitary waste treat - Bldg 57 if rad pumped to 30,000 gal α-influent WD Bldg</i>	History of Spills No Spill/Overfill Prevention <input type="checkbox"/> Float Vent Valve <input checked="" type="checkbox"/> High Level Alarm <input type="checkbox"/> Auto Shutoff <input type="checkbox"/> Other - Specify <input type="checkbox"/> None
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Piping Material <input type="checkbox"/> Cathodically Protected Steel <input checked="" type="checkbox"/> Bare Steel (unprotected) <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> Double Walled or Jacketed <input type="checkbox"/> Other - Specify <input type="checkbox"/> Unknown	Substance Currently/Last Stored <input type="checkbox"/> Gasoline <input type="checkbox"/> Diesel <input type="checkbox"/> Kerosene <input type="checkbox"/> Used Oil <input type="checkbox"/> Hazardous Substances - Specify <input checked="" type="checkbox"/> Other - Specify <input type="checkbox"/> Unknown <i>* Decon Water</i>	Tank Site Description <input type="checkbox"/> Indoor <input checked="" type="checkbox"/> Outdoor <input type="checkbox"/> Soil <input checked="" type="checkbox"/> Asphalt/Concrete <input type="checkbox"/> Storm Drains, Potential Surface water runoff <input type="checkbox"/> Soil Staining	DOE / AEC / PM No: <i>none found</i> Calibration Records Maintenance Records
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Tank Release Detection Method <input type="checkbox"/> Inventory Control <input type="checkbox"/> Manual Tank Gauging <input type="checkbox"/> Tank Tightness Testing <input type="checkbox"/> Automatic In-Tank Monitor & Inventory Control <input type="checkbox"/> Vapor Monitoring <input type="checkbox"/> Groundwater Monitoring <input type="checkbox"/> Secondary Containment with Interstitial Monitoring <input type="checkbox"/> Other - Specify <input checked="" type="checkbox"/> None	Piping Release Detection Method <input type="checkbox"/> Pressure Piping Automatic Line Flow Restrictor <input type="checkbox"/> Pressure Piping Automatic Line Shutoff Device <input type="checkbox"/> Line Tightness Test (Pressure Annual, Suction Every 3 yrs) <input type="checkbox"/> Vapor Monitoring <input type="checkbox"/> Groundwater Monitoring <input type="checkbox"/> Approved Suction Piping <input type="checkbox"/> Other - Specify <input checked="" type="checkbox"/> None	Closure Date of Last use <i>no</i> Intended Replacement Closure Plan Part of Operable Unit	Primary Regulatory Jurisdiction <i>AEA</i> Spill Jurisdiction <i>AEA</i> Regulated Units
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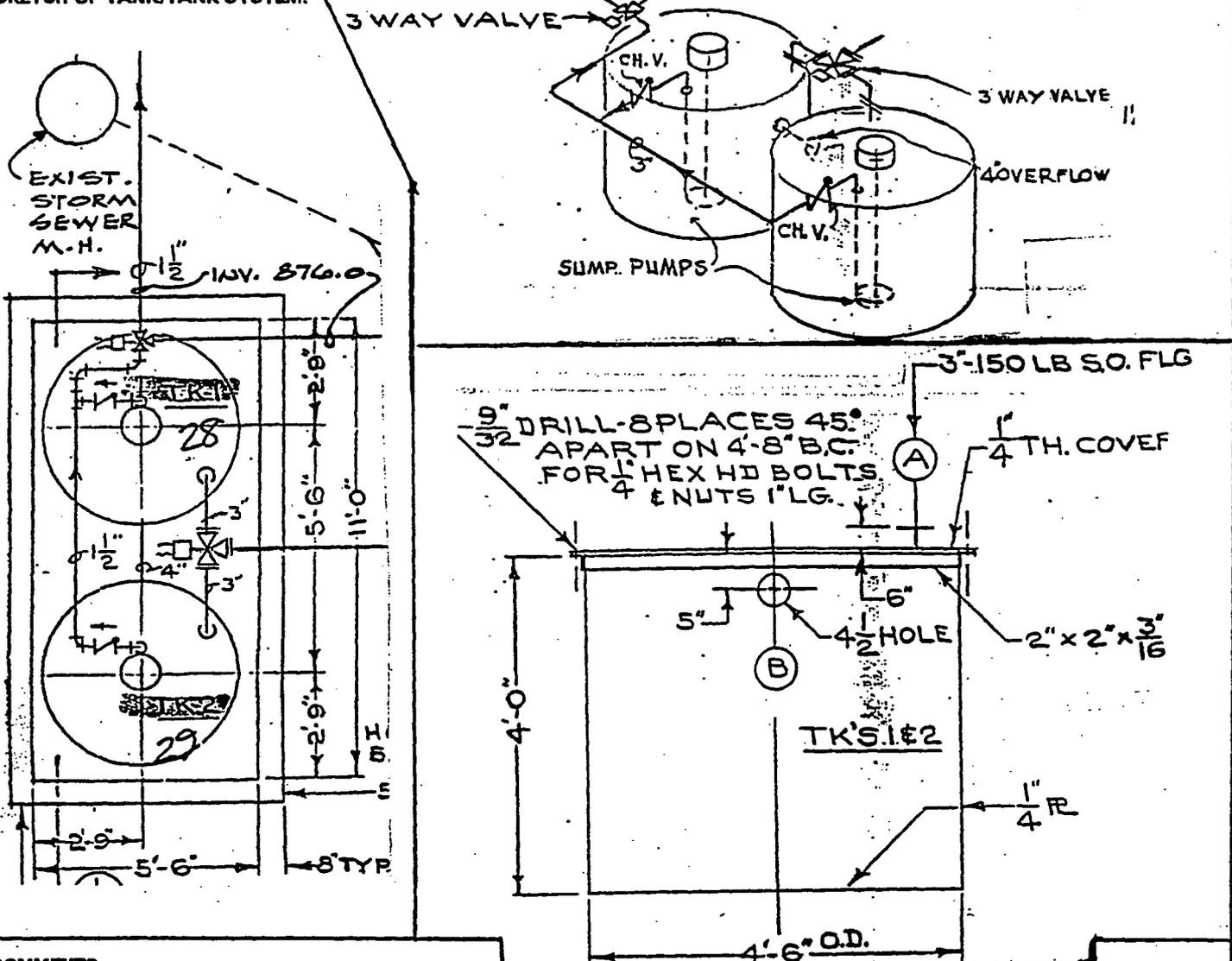
DOCUMENTS, REFERENCES USED: *DOE, 1992a; DOE, 1993; UST Inspection Sheet*

COMMENTS:

SIGNATURE *Adelaide Grantelli*

CLIENT EG&G Mound Applied Technologies		JOB NUMBER 10805-794	DATE 4/15/94	
JOB TITLE Active Underground Storage Tank Program		D&M TEAM Dispirito & Giantelli		
TANK NO. 28	BLDG./LOCATION A	EG&G SPONSOR Operations	OWNER U.S. DOE	
TANK STATUS in Service	TANK CAPACITY (gallons) 400	INSTALLATION DATE 1968	INTERVIEWED WITH Sue Cloud	INTERVIEW DATE 2/21/94

SKETCH OF TANK/TANK SYSTEM:



COMMENTS:

350009
 Sketch Taken from: Drawing No: -M-1 Rev 1 Job 6064 Dwr 11
 Project Title: Decontamination Facility, Admin Bldg Addn 9
 Drawing Title: Plumbing Plan & Details
 Tanks are located near OSE back entrance

SIGNATURE

Adelaide Giantelli

ATTACHMENT 2

SUBSURFACE UTILITY EVALUATION

(pages relevant to PRS 211/212)

Environmental Restoration Program

**SUBSURFACE UTILITY EVALUATION
OPERABLE UNIT 2, MAIN HILL
OU-2 PHASE I TECHNICAL MEMORANDUM**

**MOUND PLANT
MIAMISBURG, OHIO**

July 1995

Final

(Revision 0)



**Department of Energy
Ohio Field Office**

Environmental Restoration Program
EG&G Mound Applied Technologies

- P Building - A new tank was discovered adjacent to the P Building during visual inspection. This tank collects and then directs boiler blow down water to the sanitary sewer system. This tank was assigned the ID 280. A drawing showing the location of this sump in P Building is presented on Figure G.1 in Appendix G.
- A Building - Previous investigations identified Tanks 28 and 29 being located inside A Building. These tanks are located outside the south entrance to OSE. Also, three additional sumps were located in the basement of A Building. They have been assigned the IDs 281, 282, and 283. These sumps were visually inspected during field activities. A drawing showing the location of these sumps in A building is presented on Figure G.2 in Appendix G.
- WD Building - A new sump was located at the WD Building in room 12 during the visual inspection. This new sump was assigned the ID 284. No drawing is available showing the location of this sump.

During drawing review, additional sumps and tanks were identified. These sumps and tanks were not identified in previous investigations. A discussion on these sumps and tanks follows:

- P Building - Five sumps were identified inside the P Building. These sumps were not assigned an ID because they were not visually inspected. A drawing showing the location of the six additional sumps is presented in Figure G.1 in Appendix G.
- A Building - One sump was identified during drawing review. An ID was not assigned because the sump was not visually inspected. A drawing showing the locations of this sump is presented on Figure G.2 in Appendix G.
- R Building - During drawing review, two concrete pipes set into the bedrock in R Building were identified. These concrete pipes are 21 and 20 inches in diameter and extend below the floor approximately ten feet. The purpose of these pipes is unknown, but they may have acted as sumps. IDs were not assigned because the pipes were not visually inspected and they could not be determined to be sumps. A drawing showing the locations of these concrete pipes is presented on Figure G.3 in Appendix G.
- C Building - A sump was identified in C Building during drawing review. An ID was not assigned because this sump was not visually inspected. A drawing showing the location of this sumps is presented on Figure G.4 in Appendix G.
- SW Building - Six sumps were identified in SW Building during drawing review. These six sumps do not correspond to the five sumps already identified in the tank database (Appendix F) because the locations and room numbers do not match. These six sumps were all part of the original structure. These sumps were not visually inspected and therefore were not assigned IDs. A drawing showing the location of the six sumps is presented on Figure G.5 in Appendix G.

→ 5.3.2.3. Sump and Tank Evaluation

To evaluate which, if any, active sumps and tanks warrant additional investigation, a ranking system was developed. Tanks that received tank tightness testing under BUSTR were eliminated from the ranking system as well as the sumps and tanks in T Building, and any new sump or tank that was discovered

during the OU-2 field investigation. T Building tanks were not ranked because they have been eliminated as potential release sources. Tanks and sumps that were discovered during the OU-2 field investigation were eliminated because the information on these sumps and tanks was incomplete. In all, 29 active sumps and tanks were included in the ranking system. The categorical choices can be seen in Table V.2, along with the score each sump or tank received in each category.

Each category was then given a weighting factor based on its estimated importance to the integrity of the sump or tank. The estimate importance of each category was determined based on available sump and tank information. These weighting factors were:

Tank material	5 (most important)
Tank release detection system	4
Piping release detection system	3
Cathodic protection system	2
Spill/Overflow protection system	1

Each sump and tank was scored in these five categories. If the sump/tank met EPA criteria, it was assigned a category score of 2. If no, it was assigned a score of 1. This score was then multiplied by the weighting factor to calculate an overall score for each category. Table V.3 lists a summary of sump and tank scores.

For each tank, the category scores were summed to determine the total points each sump or tank received. The total possible score was 30 (sum of the highest category rank times the appropriate category weighting factor). If a tank met all of the EPA requirements for new underground storage tanks, the total possible score was 30 points. If a tank scored at least 20 points (66 %), the integrity of the tank was considered acceptable. If the tank scored 20 points, the tank had to be either constructed of EPA required material for new tanks or had a tank release detection system. These two categories weighted the highest out of the five categories. Of the 29 sumps and tanks ranked, 9 were rated as having acceptable integrity. These tanks are 3, 4, 5, 6, 20, 21, 22, 28, and 29.

ATTACHMENT 3

RADIOLOGICAL SURVEY DATA SHEET

#04-TF-0069

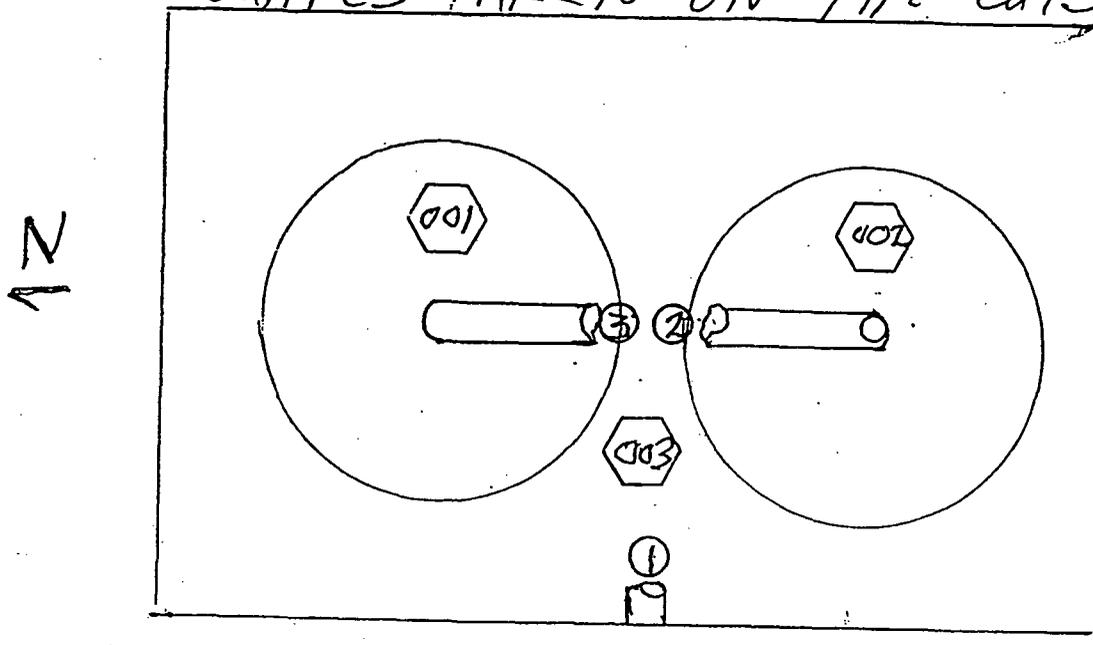
RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	A-DECON TANK PIT	SURVEY NO	04-TF-0069
PURPOSE:	MARSSIM SURVEY PLAN A-02 CHARACTERIZATION OF DECON. COLLECTION TANKS AND PIT	RWP NO.	NA
		DATE:	3-1-04
		TIME	0800

MAP / DRAWING

COPY

SEE ATTACHED RESULTS
SWIPES TAKEN ON PIPE CUTS



= WATER SAMPLES

SLUDGE SAMPLE TAKEN FROM
PIPE CUTS. SEE ATTACHED RESULTS.

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact
K = factor of 1000
- - - - = radiological boundary

Δ # = mrem/hr neutron # = swipe number
= air sample number #/a = or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5836/5848	2-5-05
	N/A	

HP#	5760	Date:	3-10-04
Counted by: (Signature)	[Signature]		HP#
Counted by: (Print Name)	[Name]		Date:
Reviewed/Approved by:	[Signature]		HP#
Reviewed/Approved by: (Print Name)	[Name]		Date:

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR004
Batch Ended: 3/1/04 7:15

Crosstalk correction performed.

Recalibration Date: 03/18/05
Serial Number: 26966-1

Batch ID: REYNOLDS 04-TF-0069 [31] TC

Detector ID	Sample ID
A1	1
A2	2
A3	3

Alpha Activity		
DFM	σ	flags
1.64	2.01	
0.00	2.11	
0.00	1.95	

JR

Beta Activity		
DFM	σ	flags
0.16	1.76	
3.52	2.68	
0.00	1.20	

JR

PG 3 OF 6
8
JR 3-10-04
3-9-04

J. Collins

01 Mar 2004 09:22

TRI-CARB - 1.09

Handwritten: 3-9-0
Page #1

Protocol #: 4

PW H3 #407906

User : 2138

Time: 2.00

Data Mode: DPM

Nuclide: SMGLS02

Quench Set: SMGLS02

Background Subtract: 1st Vial

	LL	UL	LCR	25%	BKG
Region A:	0.5 - 18.6		0	0.0	9.28
Region B:	2.0 - 18.6		0	0.0	7.50
Region C:	40.0 - 2000		0	0.0	10.70

Quench Indicator: tSIE/AEC

Ext Std Terminator: Count

04-TF-0069 REYNOLDS (3) AG

Luminescence Correction On

Coincidence Time(ns): 18

Delay Before Burst(ns): Normal

Protocol Data Filename: C:\DATA\PROT4.dat

Count Data Filename: C:\DATA\SDATA4.DAT

Spectrum Data Drive & Path: C:\DATA

S#	TIME	CPMA	CPMB	LUM FLAG	tSIE	DPM1	2SIGMA	CPMC
-1	10.00	9.28	7.50	3 B	596.00		0.000	10.70
0	2.00	957.62	864.89	0	648.71	1734.73	120.397	0.00
1	2.00	0.00	0.00	0	557.22	0.00	0.000	0.00
2	2.00	0.00	0.00	0	447.69	0.00	0.000	0.00
3	2.00	5.53	3.66	0	597.79	10.40	10.879	0.00

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Handwritten: pg 4 of 16 11 8
3-10-04
Albert Gibson

Sample Data Collection Sheet
Attachment 1

04-TF-0069

Sample Number	Sample Date	Sample Time	Sample Volume / Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
A-02-001	3-1-04	0830	250 ml	NORTH TANK	JHR	3/1/4	0850	JHR	MJA
A-02-002	3-1-04	0830	250 ml	SOUTH 250 TANK	JHR	↓	↓	↓	↓
A-02-003	3-1-04	0830	250 ml	PIT	JHR	↓	↓	↓	↓
A-02-004	3-1-04	0830	~100 ml	SLUDGE	JHR	↓	↓	↓	↓
A-02-									
A-02-									
A-02-				N/A					
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									



BWXT of Ohio, Inc.

ANALYTICAL SERVICES REQUEST FOR ANALYSIS

DATE SUBMITTED: 3-1-04	SAMPLE TYPE: WATER	COLLECTED BY: H. REYNOLDS	NUMBER OF SAMPLES: 3
PROJECT/FUNCTION: BOSS	PRIMARY CONTACT/PHONE NO.: 4492		MAIL STOP: DS 108 A
CHARGE NUMBER:	DATE(S) COLLECTED: 3-1-04	RSDS# (if applicable): 04-TF-0069	ATTACHMENTS (list):

ANALYSES REQUESTED (check):

- ³H Characterize/Approve for Sanitary or Storm Discharge: Estimate of Total Volume for Release ~ 800 GAL Approved [Signature]
- Gross Alpha Air Filter - Isotopic Analysis Characterization per MD-80036, Operation #10015
- Isotopic Analysis: Pu ___ U ___ Th ___ Am ___ Other ___ Other _____

ADDITIONAL INFORMATION:

FROM MEDICAL DECON

NOTE: Attach additional information (e.g. RSDS, screening results, collection data, and gamma spec. results) if applicable

LAB IDENTIFICATION	SAMPLE LOCATION	SAMPLE NUMBER	³ H RESULTS	GROSS α
0407229	A TANK-001	1	1.14mCi/L	< 0.6 DPM/mL
1230	A TANK-002	2	1.32mCi/L	< 0.6 DPM/mL
1231	A TANK-003	3	GROUND WATER 1.25mCi/L	< 0.6 DPM/mL

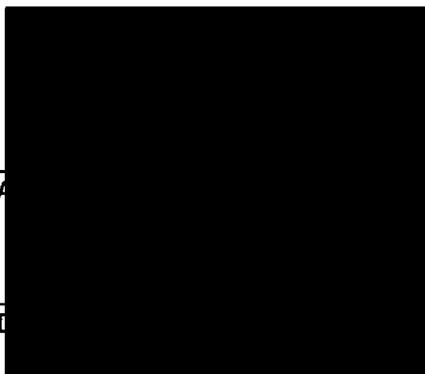
COMMENTS:

04-TF-0069

ANALYZED BY: [Signature]	DATE: 03/01/04
-----------------------------	-------------------

Laboratory ID#: 0401232
 Project/function: BOSS
 Submitted: Mar 1, 2004
 Submitted by: H. Reynolds
 Point of Contact: H. Reynolds x4492
 RSDS#: 04-TF-0069
 Date: Mar 10, 2004

Lab ID	0401232		
Sample Location	A-Tank #1	pc/g	pc/g
Isotope	dpm/g	Uncertainty +/-	LDL
Pu-238	15.14 6.82	2.28	0.99 0.45
Pu-239/240	2.05 0.92	0.70	0.99 0.45
Th-232	<LDL	<LDL	0.97 0.44
Th-230	<LDL	<LDL	0.97 0.44
Th-228	<LDL	<LDL	2.01 0.91
Th-227	<LDL	<LDL	1.70 0.77
U-238	<LDL	<LDL	2.41 1.09
U-235	<LDL	<LDL	4.24 1.91
U-233/234	<LDL	<LDL	2.41 1.09



1585

3-10-04

HP #

Date

7783

3-10-04

HP #

Date

04-TF-0069

PG 8 OF 8

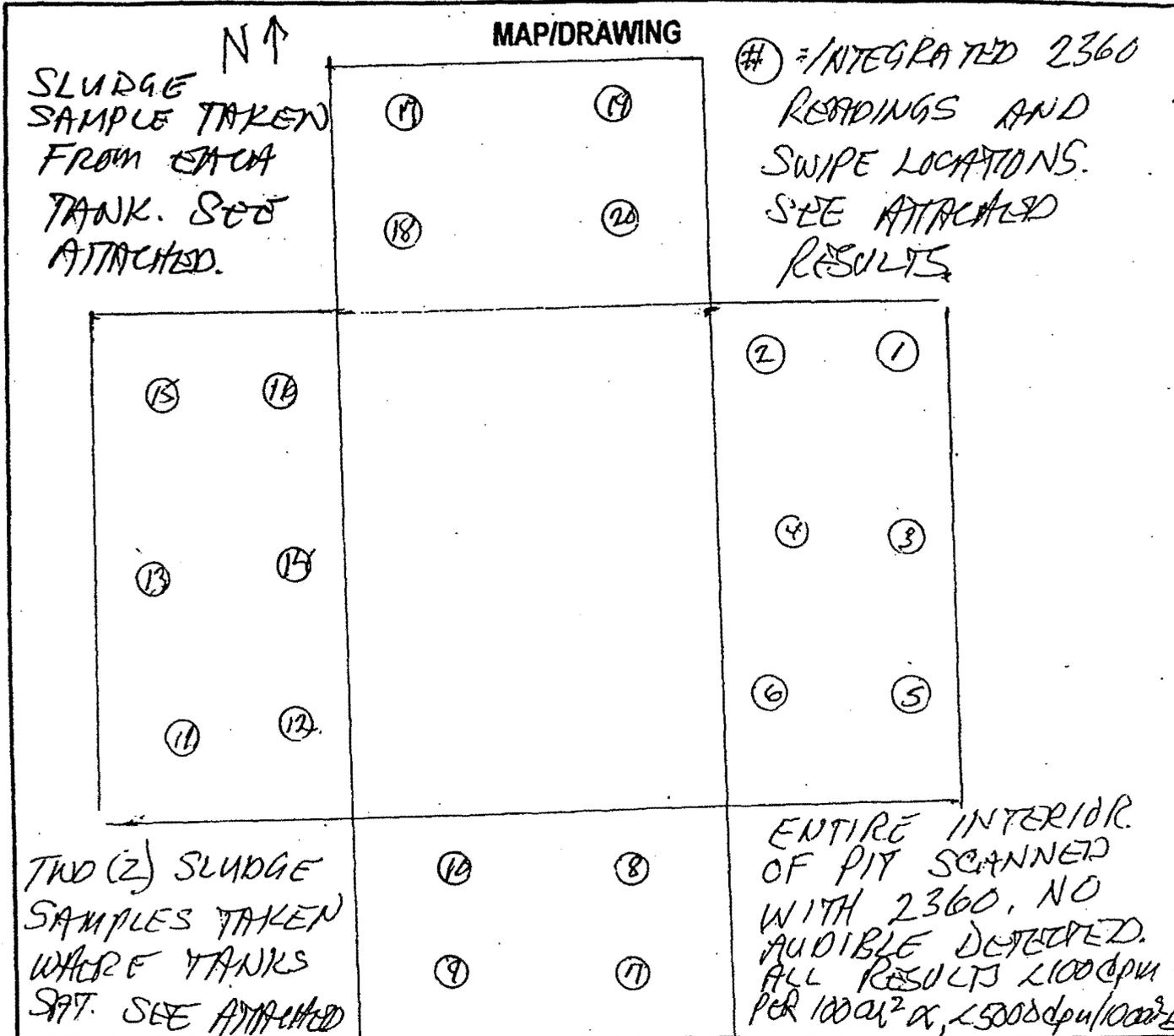
ATTACHMENT 4

RADIOLOGICAL SURVEY DATA SHEET

#04-TF-0079

RADIOLOGICAL SURVEY DATA SHEET **COPY** 1 OF 11

LOCATION: (BLDG/AREA/ROOM) A BLDG. DECON TANK PIT	SURVEY NO. 04-TF-0079
PURPOSE: MAXIMUM SURVEY PLAN A-02	RWP NO. N/A
DECON TANK PIT CHARACTERIZATION	DATE: 3-8-04
	TIME: 0800



LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact

△ = mrem/hr neutron
 □ = air sample number

⊙ = swipe number
 ⊙/α = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5833/5847	3-2-05
	N/A	

Date: **3-18-04**

Counted by (Signature): **JCB** HP # _____ Date: _____

Counted by: _____ HP # _____ Date: _____

Reviewed by: _____ HP # **7492** Date: **3-24-04**

Reviewed/Approved by: (Print Name) _____ R. Case

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	B _f	Alpha	Tritium	
1-6	SEE ATTACHED			EAST WALL
7-10	↓	↓	↓	SOUTH WALL
11-16	↓	↓	↓	WEST WALL
17-20	↓	↓	↓	NORTH WALL
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	B _f	Alpha	Tritium	
N/A				

COMMENTS: SWIPES SCREENED WITH 2360 BEFORE SENDING TO COUNT ROOM.

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for B_f, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If needed, mark N/A.

A BLDG DECON TANK PIT
 RSDS#04-TF-0079 RCT: RCT: N/A

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	BETA			ALPHA		
						Gross Count	CT TIME	dpm/100cm2	Gross Count	CT TIME	dpm/100cm2
1 E. Wall	5833	5760	5847	1	3/8/04	187	60	455	7	60	68
2 E. Wall	5833	5760	5847	2	3/8/04	178	60	410	4	60	38
3 E. Wall	5833	5760	5847	3	3/8/04	191	60	475	6	60	58
4 E. Wall	5833	5760	5847	4	3/8/04	196	60	500	5	60	48
5 E. Wall	5833	5760	5847	5	3/8/04	181	60	425	2	60	18
6 E. Wall	5833	5760	5847	6	3/8/04	203	60	535	9	60	88
7 S. Wall	5833	5760	5847	7	3/8/04	175	60	395	5	60	48
8 S. Wall	5833	5760	5847	8	3/8/04	178	60	410	6	60	58
9 S. Wall	5833	5760	5847	9	3/8/04	182	60	430	2	60	18
10 S.Wall	5833	5760	5847	10	3/8/04	146	60	250	3	60	28
11 W. Wall	5833	5760	5847	11	3/8/04	182	60	430	5	60	48
12 W. Wall	5833	5760	5847	12	3/8/04	161	60	325	5	60	48
13 W. Wall	5833	5760	5847	13	3/8/04	148	60	260	5	60	48
14 W. Wall	5833	5760	5847	14	3/8/04	180	60	420	3	60	28
15 W. Wall	5833	5760	5847	15	3/8/04	172	60	380	2	60	18
16 W. Wall	5833	5760	5847	16	3/8/04	180	60	420	3	60	28
17 N. Wall	5833	5760	5847	17	3/8/04	137	60	205	3	60	28
18 N. Wall	5833	5760	5847	18	3/8/04	134	60	190	5	60	48
19 N. Wall	5833	5760	5847	19	3/8/04	196	60	500	6	60	58
20 N. Wall	5833	5760	5847	20	3/8/04	162	60	330	2	60	18
BETA BACKGROUND FOR 3-8-2004 WAS----->								96			
ALPHA BACKGROUND FOR 3-8-2004 WAS----->								0.2			

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Aqua
 Data file name: SMEAR007
 Batch Ended: 3/8/04 9:10

Crosstalk correction performed.

Recalibration Date: 03/18/05
 Serial Number: 26966-1

Batch ID: 04-TF-0079 REYNOLDS A/E (20) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.01		0.30	1.76	
A2	2	0.00	2.08		1.12	2.08	
A3	3	0.00	1.95		0.00	1.20	
A4	4	0.00	1.98		0.14	1.67	
B1	5	0.00	2.00		0.00	2.02	
B2	6	0.00	2.05		3.81	2.63	
B3	7	0.00	1.81		0.00	1.21	
B4	8	1.39	1.89		0.15	1.96	
C1	9	0.00	2.06		0.00	1.75	
C2	10	0.00	2.06		0.55	2.14	
C3	11	1.45	1.95		0.00	1.69	
C4	12	0.00	1.93		2.67	2.61	
D1	13	0.00	2.11		0.00	1.23	
D2	14	1.85	2.39		0.00	1.20	
D3	15	0.00	1.91		0.00	1.18	
D4	16	0.00	2.08		2.21	2.24	
A1	17	1.64	2.01		0.16	1.76	
A2	18	0.00	2.15		8.31	3.61	
A3	19	0.00	1.99		3.75	2.69	
A4	20	0.00	1.97		0.00	1.18	

JHR

JHR

PG 4 OF 11

... + Hebra

08 Mar 2004 11:34
Protocol #: 3

ALPHA/BETA - 1.09
Pw H3 405828

RR 3804
Page #1
User : 2324

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2SI	BKG
Region A:	0.5 - 18.6		0	0.0	6.62
Region B:	2.0 - 18.6		0	0.0	6.46
Region C:	40.0 - 2000		0	0.0	11.83

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
REYNOLDS 04-TF-0079 1-20 JC
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: c:\data\PROT3.DAT
Count Data Filename: c:\data\SDATA3.DAT
Spectrum Data Drive & Path: c:\data

S#	TIME	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	2Sigma	FLAG
-1	10.00	6.62	6.46	11.83	6	596.69		0.00	B
0	2.00	897.44	830.88	0.00	0	654.45	1722.25	154.28	
1	2.00	0.00	0.00	0.67	23	428.35	0.00	0.00	
2	2.00	0.00	0.00	0.00	13	542.24	0.00	0.00	
3	2.00	0.88	1.04	0.00	0	419.79	2.15	10.22	
4	2.00	0.00	0.00	0.17	22	451.76	0.00	0.00	
5	2.00	0.04	0.00	0.00	7	469.53	0.09	9.04	
6	2.00	1.38	0.00	0.00	13	504.43	3.01	9.41	
7	2.00	0.00	0.00	0.00	10	459.67	0.00	0.00	
8	2.00	0.00	0.00	0.00	0	470.04	0.00	0.00	
9	2.00	35.40	30.88	2.76	1	529.83	75.41	20.64	
10	2.00	0.84	1.00	0.00	7	429.25	2.01	10.05	
11	2.00	0.00	0.00	0.00	0	454.86	0.00	0.00	
12	2.00	1.38	0.33	0.00	0	546.30	2.90	9.07	
13	2.00	0.00	0.00	0.00	0	502.94	0.00	0.00	
14	2.00	3.88	3.13	0.00	0	563.90	8.03	10.07	
15	2.00	0.00	0.00	0.00	10	532.34	0.00	0.00	
16	2.00	1.21	1.15	0.00	0	508.84	2.62	9.29	
17	2.00	1.59	1.04	0.00	6	536.16	3.37	9.25	
18	2.00	2.24	2.30	0.00	5	500.14	4.89	9.88	
19	2.00	10.49	7.35	1.51	0	521.63	22.51	13.14	
20	2.00	0.38	0.38	0.00	0	540.38	0.81	8.61	

[Handwritten signature]

PG 5 OF 11

J. [Handwritten signature]

Sample Data Collection Sheet
Attachment 1

04-TF-0079

Sample Number	Sample Date	Sample Time	Sample Volume / Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
A-02- 05	3-1-04	1300		A-MEDICAL NORTH TANK	FLARVEY	3-1-04	1315	DGA	MJA
A-02- 06	3-1-04	1300		A-MEDICAL SOUTH TANK	FLARVEY	3-1-04	1315	DGA	MJA
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									

N A

Sample Data Collection Sheet
Attachment 1

04-TF-0079

Sample Number	Sample Date	Sample Time	Sample Volume / Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
A-02-07	3-8-04	0850	250ml	SEDIMENT, WATER	HR	3-8-04	0900	SR	MJA
A-02-08	3-8-04	0850	250ml	SEDIMENT, WATER	HR	3-8-04	0900	SR	MJA
A-02-									
A-02-			N/A						
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									
A-02-									

1 mCi = 2228 dpm

Laboratory ID#: 0401292 - 0401293
 Project/function: BOSS
 Submitted: Mar 1, 2004
 Submitted by: D. Harvey
 Point of Contact: D. Harvey x3320
 RSDS#: 04-TF-0069 04-TF-0079
 Date: 3-15-04 Mar 10, 2004

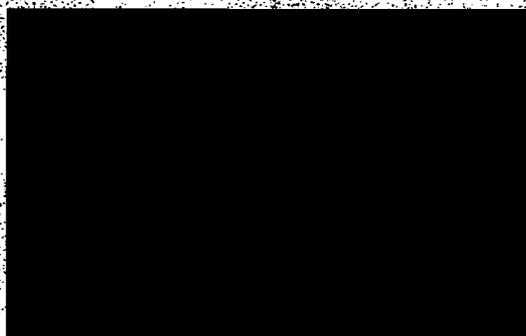
Lab ID *mc/g* 0401292
 Sample Location *pc/g* A-Med Tank #1

Isotope	dpm/g	Uncertainty +/-	LDL
Pu-238	<i>0.099</i> 108.56	<i>48.90</i> 10.68	0.87
Pu-239/240	<i>0.009</i> 9.18	<i>4.13</i> 1.54	0.87
Th-232	<i>0.008</i> 1.83	<i>0.82</i> 0.68	0.62
Th-230	<i>0.007</i> 1.53	<i>0.68</i> 0.63	1.09
Th-228	<i>0.004</i> 0.92	<i>0.41</i> 0.47	0.62
Th-227	<i>0.011</i> 2.45	<i>1.10</i> 0.81	1.09
U-238	<i>0.007</i> 1.57	<i>0.71</i> 0.81	1.06
U-235	<i>0.014</i> 3.15	<i>1.42</i> 1.19	1.06
U-233/234	<i>0.009</i> 1.97	<i>0.89</i> 0.92	1.06

55
62
2.6
2.82
2.6
20.9
118
3021
7.82

Lab ID *mc/g* 0401293
 Sample Location *pc/g* A-Med Tank #2

Isotope	dpm/g	Uncertainty +/-	LDL
Pu-238	<i>0.15</i> 334.61	<i>150.72</i> 31.13	0.51
Pu-239/240	<i>0.0045</i> 10.05	<i>4.53</i> 1.65	0.51
Th-232	<LDL	<LDL	1.00
Th-230	<LDL	<LDL	1.18
Th-228	<i>0.0006</i> 1.40	<i>0.63</i> 0.58	1.00
Th-227	<LDL	<LDL	1.32
U-238	<LDL	<LDL	1.05
U-235	<LDL	<LDL	2.18
U-233/234	<LDL	<LDL	1.05



1585 *3-10-04*

HP # Date

7763 *3-10-4*

Data Verification

HP # Date

Laboratory ID#: 0401383 - 0401384
Project/function: BOSS
Submitted: Mar 8, 2004
Submitted by: H. Reynolds
Point of Contact: R. Case 865-3714
RSDS#: 04-TF-0079
Date: Mar 17, 2004

Lab ID 0401383
 Sample Location A Sump Pit #7

Isotope	dpm/g	Uncertainty +/-	LDL
Pu-238	0.56 <i>0.25</i>	0.23	0.25
Pu-239/240	<LDL	<LDL	0.25
Am-241	<LDL	<LDL	0.43
Th-232	1.15 <i>0.52</i>	0.25	0.14
Th-230	1.10 <i>0.50</i>	0.26	0.37
Th-228	1.30 <i>0.59</i>	0.31	0.60
Th-227	0.40 <i>0.18</i>	0.14	0.14
U-238	1.74 <i>0.78</i>	0.35	0.17
U-235	<LDL	<LDL	0.17
U-233/234	1.49 <i>0.67</i>	0.32	0.17

Liquid Matrix *pci/l*

³ H (dpm/L)	245	0.60
Gross Alpha (dpm/mL)	<LDL	0.60

Solid Matrix

³ H (dpm/g)	<LDL	0.60
Gross Alpha (dpm/g)	<LDL	0.60

Lab ID 0401384
 Sample Location A Sump Pit #8

Isotope	dpm/g	Uncertainty +/-	LDL
Pu-238	<LDL	<LDL	0.52
Pu-239/240	<LDL	<LDL	0.19
Am-241	<LDL	<LDL	0.57
Th-232	0.73 <i>0.33</i>	0.21	0.15
Th-230	1.57 <i>0.71</i>	0.32	0.15
Th-228	1.01 <i>0.46</i>	0.25	0.15
Th-227	<LDL	<LDL	0.41
U-238	0.62 <i>0.28</i>	0.21	0.42
U-235	<LDL	<LDL	0.53
U-233/234	0.40 <i>0.18</i>	0.15	0.15

Liquid Matrix *10% pci/l*

³ H (dpm/L)	241	0.50
Gross Alpha (dpm/mL)	<LDL	0.50

Solid Matrix

³ H (dpm/g)	<LDL	0.50
Gross Alpha (dpm/g)	<LDL	0.50

Data Verification

1585 HP # 3-17-04 Date
 7783 HP # 3/17/04 Date

33000

DC 11 11 11

ATTACHMENT 5

RADIOLOGICAL SURVEY DATA SHEET

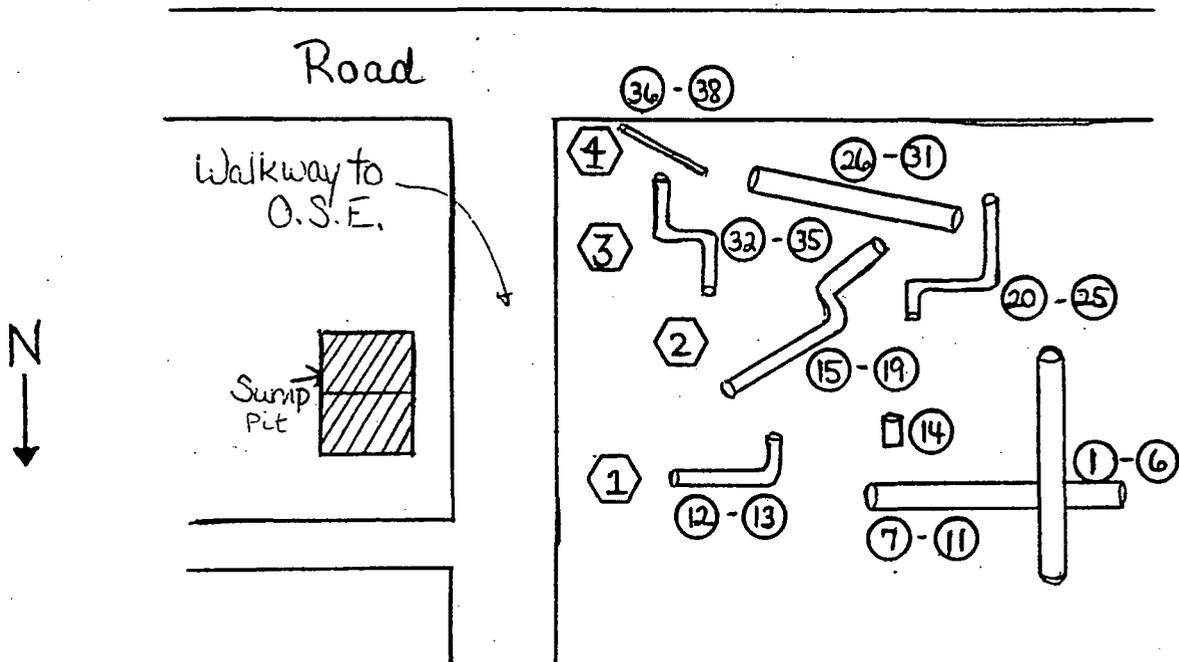
#04-TF-0245

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 7 8/31/04

LOCATION: (BLDG./AREA/ROOM) <i>A-medical</i>	SURVEY NO. <i>04-TF-0245</i>
PURPOSE: <i>Job coverage for pipe excavation</i>	RWP NO. <i>N/A</i>
	DATE: <i>8/10/04</i>
	TIME: <i>1430</i>

MAP / DRAWING



*Direct scan and pause survey conducted
No clicks in required time
Integrated not required*

**Initial analysis by gammaspec
Additional analysis performed by alpha spec to verify Thorium levels.
See attached results*

*☐ = Outside soil containers
39-42*

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact
- K = factor of 1000
- = radiological boundary
- ☐# - Soil sample*
- △# - mrem/hr neutron
- ☐# - air sample number
- # - swipe number
- #/ α or β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<i>2360-89</i>	<i>5775/5720</i>	<i>9-23-04</i>
<i>3030</i>	<i>5826</i>	<i>10-20-04</i>
<i>N A</i>		

HP# <i>7244</i>	Date: <i>8/16/04</i>	<i>8/31/04</i>
HP# <i>7244</i>	Date: <i>8/10/04</i>	
HP# <i>7707</i>	Date: <i>9-1-04</i>	
Reviewed/Approved by: (Print Name) _____		

RADIOLOGICAL SURVEY DATA SHEET

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	βγ	Alpha	Tritium	Comments
1	0	0	N/A	drain line
2	27	0		
3	0	0		
4	0	0		
5	0	0		I/s
6	0	0		↓
7	8	0		
8	0	0		
9	2	2		
10	0	0		I/s
11	43	0		↓
12	0	0		
13	0	0		I/s
14	0	0		
15	5	2		
16	0	0		
17	0	0		I/s
18	0	0		
19	0	0		I/s
20	2	0		
21	16	0		
22	2	0		I/s
23	0	0		
24	0	0		
25	19	0		
26	32	0		
27	2	2		
28	0	0		I/s
29	0	0		
30	0	2		
31	0	2		I/s
32	0	0		
33	0	0		
34	19	0		
35	24	0	↓	↓ I/s

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	βγ	Alpha	Tritium	Comments
36	13	0	N/A	see attached
37	21	2		I/s
38	0	0		↓
39	0	0		soil sample
40	0	0		
41	0	2		↓
42	0	2		↓
NFE				

COMMENTS: I/s = inside NFE = No Further Entries

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for βγ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If needed, mark N/A.

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL02130
File ID: 1SC00250.S0
Priority: Yes

Description/Location

A-Medical Drain Line

Long

Collector: 7244

Date Received: 8/10/04

Date Collected: 8/10/04

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0	0.09
Cs-137	*	0	0.08
Pb-210	*	0.41	0.83
Ra-226		1.24	0.82
Ac-227 (D)	*	0.03	0.31
Th-230	*	3.14	8.18
Th-232 (D)		0.43	0.16
Pu-238	*	6.94	14.05
Am-241	*	0.03	0.09

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Σ
DOT 0.03 nCi/g

Instrument type: High Purity Germanium

Σ DOT 2nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.

Sample is Assumed to be in secular equilibrium.

• Indicates activity < MDA. MDA used in limits calculation

Comments: Sample is inhomogenous

Date: 8/11/04

Counted By: 5288

Analyzed By: 5288

Initials

04-TF-0245

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL02127
File ID: 1SC00249.S0
Priority: Yes

Description\Location

A-Medical Drain Line #2
Long

Collector: 7244

Date Received: 8/10/04

Date Collected: 8/10/04

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60		0.07	0
Cs-137	*	0.02	0.05
Pb-210	*	0.45	0.7
Ra-226	*	0.79	0.81
Ac-227 (D)	*	0	0.32
Th-230	*	0.99	7.31
Th-232 (D)		0.25	0.18
Pu-238	*	0	14.73
Am-241	*	0.02	0.08

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Σ
DOT 0.02 nCi/g

Instrument type: High Purity Germanium

Σ DOT 2nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is Assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 8/11/04 Counted By: 5288 Analyzed By: 5288 Initials: ██████

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL02131
File ID: 1SC00251.S0
Priority: Yes

Description\Location

A-Medical Drain Line #3
Long

Collector: 7244
Date Received: 08/10/04
Date Collected: 08/10/04

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0.03	0.06
Cs-137	*	0.03	0.05
Pb-210	*	0.32	0.84
Ra-226	*	0.42	1.06
Ac-227 (D)	*	0	0.33
Th-230	*	3.58	8.09
Th-232 (D)		0.31	0.3
Pu-238	*	0	15.23
Am-241	*	0.03	0.08

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>

Σ_{DOT} 0.03 nCi/g

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is Assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 08/11/04 Counted By: 5288 Analyzed By: 5288 Initials: ██████████

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL02132
File ID: 1SC00252.S0
Priority: Yes

Description\Location

A-Medical Drain Line #4
Long

Collector: 7244

Date Received: 08/10/04

Date Collected: 08/10/04

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60		0.05	0.01
Cs-137	*	0	0.05
Pb-210	*	0	0.72
Ra-226		0.96	0.78
Ac-227 (D)	*	0	0.28
Th-230	*	3.49	6.32
Th-232 (D)		0.24	0.21
Pu-238	*	1.76	13.33
Am-241	*	0	0.08

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>

Σ_{DOT} 0.02 nCi/g

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is Assumed to be in secular equilibrium.

• Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 08/11/04 Counted By: 5288 Analyzed By: 5288 Initials: XXXXXXXXXX

04-TF-0245

Laboratory ID#: 0404756-0404758
 Project/function: BOSS
 Submitted: Aug 17, 2004
 Submitted by: J. Collins
 Point of Contact: B. Coblenz 608-8206
 RSDS#: 04-TF-0245
 Date: Aug 25, 2004

Lab ID 0404756
 Sample Location A bldg - Shower Drain #1

Isotope	pCi/g	Uncertainty +/-	LDL
Th-227	0.18	0.04	0.05
Th-228	0.72	0.08	0.01
Th-230	0.90	0.10	0.04
Th-232	0.53	0.07	0.01

Lab ID 0404757
 Sample Location A bldg - Shower Drain #3

Isotope	pCi/g	Uncertainty +/-	LDL
Th-227	0.23	0.04	0.02
Th-228	0.72	0.09	0.04
Th-230	1.38	0.14	0.04
Th-232	0.69	0.08	0.02

Lab ID 0404758
 Sample Location A bldg - Shower Drain #4

Isotope	pCi/g	Uncertainty +/-	LDL
Th-227	0.15	0.04	0.07
Th-228	0.56	0.07	0.02
Th-230	1.24	0.13	0.08
Th-232	0.59	0.07	0.02



1585

8-25-04

HP #

Date

1585

8-25-04

HP #

Date

Data verification

ATTACHMENT 6

RADIOLOGICAL SURVEY DATA SHEET

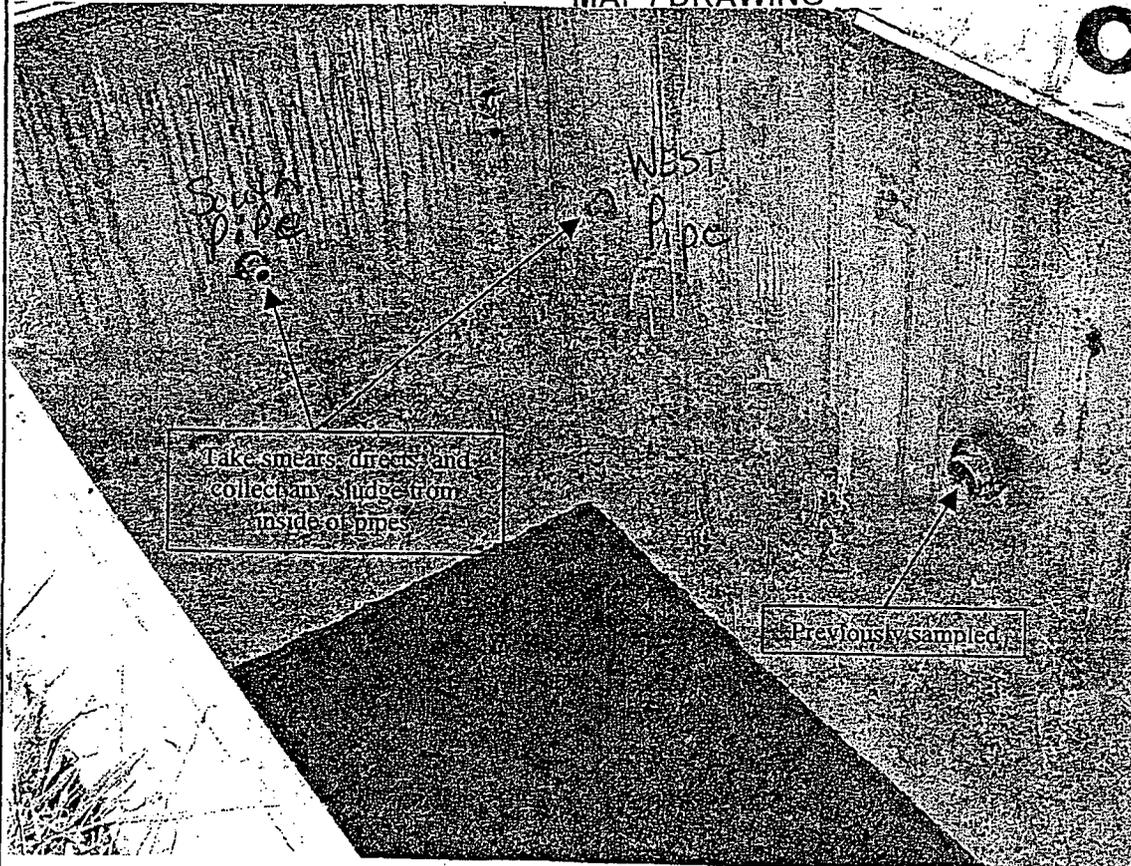
#04-TF-0292

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	<i>A-building Shower Collection Pit</i>	SURVEY NO.	<i>04-TF-0292</i>
PURPOSE:	<i>Characterization Survey Internal and External, Piping.</i>	RWP NO.	<i>N/A</i>
		DATE:	<i>9-22-04</i>
		TIME:	<i>11:00</i>

MAP / DRAWING

COPY



*8 swipes taken see attached for location/identification
2 Q-tips used see attached*

*Direct Scan and Pause Survey
No Clicks in Required Time
Integrated Not Required
Background $4 \times 189 B^{-}$
D.L. $2.6 \times 20 B^{-}$*

*Pipes Internals CLEAN
NO SLUDGE*

*$< 100 K$
 $< 5 K B^{-}$*

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr ($\beta + \gamma$) extremity on contact
- K = factor of 1000
- = radiological boundary
- Δ # = mrem/hr neutron
- # = air sample number
- # = swipe number
- #/α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<i>2360-89</i>	<i>5749-5799</i>	<i>10-8-04</i>
<i>NFE</i>		

Completed by: (Signature)	<i>[Redacted]</i>	Date:	<i>9-22-04</i>
Completed by: (Print Name)	<i>[Redacted]</i>		
Counted by: (Signature)	<i>See Attached</i>	HP#	
Counted by: (Print Name)			<i>7</i>
Reviewed/Approved by: (Print Name)	<i>[Redacted]</i>	HP#	<i>7107</i>
		Date:	<i>9/27/04</i>

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See ATTACH	See ATTACH		W pipe in
2				↓
3				W pipe out
4				↓
5				S pipe in
6				↓
7				S pipe out
8				↓
9				Q tip W in
10	✓	✓	✓	Q tip S in
NFE				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
N/A				

COMMENTS: 2360 used to Field Check Smears
W - WEST S - South IN - INSIDE out - OUTSIDE

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR007
Batch Ended: 9/22/04 14:04

Crosstalk correction performed.

Recalibration Date: 03/18/05
Serial Number: 26966-1

Batch ID: 04-TF-0292 RENFRO A/B (8) AG

Detector ID	Sample ID
A1	1
A2	2
A3	3
A4	4
B1	5
B2	6
B3	7
B4	8

Alpha Activity		
DFM	σ	flags
0.00	2.16	
0.00	2.23	
1.60	2.19	
3.39	2.90	
0.00	1.94	
0.00	2.05	
0.00	1.92	
0.00	1.93	

SR

Beta Activity		
DFM	σ	flags
0.00	1.33	
1.79	2.20	
0.28	1.76	
4.50	3.03	
0.00	1.98	
0.00	1.72	
0.00	1.32	
2.69	2.56	

SR

3075
Page 1 of 1 9.23.04SR

AP

4075

22 Sep 2004 15:02

ALPHA/BETA - 1.09

Page #1 9.23.04

Protocol #: 4

PW H3 #410462

User : 2138

Time: 2.00

Data Mode: DPM

Nuclide: SMGLS02

Quench Set: SMGLS02

Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5 - 18.6		0	0.0	6.69
Region B:	2.0 - 18.6		0	0.0	6.26
Region C:	40.0 - 2000		0	0.0	9.06

Quench Indicator: tSIE/AEC

Ext Std Terminator: Count

04-TF-0292 RENFRO (10) AG

Luminescence Correction On

Coincidence Time(ns): 18

Delay Before Burst(ns): Normal

Protocol Data Filename: C:\DATA\PROT4.DAT

Count Data Filename: C:\DATA\SDATA4.DAT

Spectrum Data Drive & Path: C:\DATA

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	6.69	6.26	3	B	575.22		0.00	9.06
0	2.00	827.51	761.06	0		640.04	1535.86	112.40	1.44
1	2.00	0.00	0.00	0		484.91	0.00	0.00	0.94
2	2.00	0.00	0.00	0		498.34	0.00	0.00	0.94
3	2.00	0.00	0.00	0		503.87	0.00	0.00	1.94
4	2.00	0.55	1.43	18		474.18	1.19	9.98	2.44
5	2.00	0.00	0.00	0		414.43	0.00	0.00	0.94
6	2.00	0.00	0.00	0		433.87	0.00	0.00	0.00
7	2.00	0.00	0.00	8		481.22	0.00	0.00	0.94
8	2.00	0.00	0.00	14		439.54	0.00	0.00	0.00
9	2.00	0.31	0.74	0		509.30	0.65	8.53	0.00
10	2.00	3.31	3.34	0		523.25	6.83	9.82	0.00

SR

#9 & #10 - Swab samples

#10

