Los Alamos
NATIONAL LABORATORY

INFORMATION SHEET: MATERIAL DISPOSAL AREA G

EP2006-

MDA G aerial photo

1940s The Laboratory was founded in 1943 as part of the Manhattan Project. Processes used to carry out the Laboratory's past and present missions involve the use of hazardous and radioactive materials.

1950s During and after World War II, materials were disposed of on the Laboratory site or otherwise released into the environment.

1960s Congress enacted basic legislation to protect the environment. The Department of Energy's predecessor, the Atomic Energy Commission, and the Laboratory began to conduct surveys and to clean up areas where spills and disposal had occurred.

1970s Congress enacted the Resource Conservation and Recovery Act (RCRA) that governs the day-to-day operations of hazardous waste generation, treatment, storage, and disposal facilities (sites).

1980s Congress amended RCRA by passing the Hazardous and Solid Waste Amendments (HSWA). HSWA prescribes a corrective action process that focuses primarily on the investigation and cleanup, if required, of inactive sites.

1989 Environmental restoration began at the Laboratory to clean up sites that were formerly involved in weapons research and production.

1990s Present The ER Project investigates and cleans up sites that have the potential to affect human health or the environment.

2005 NMED, LANL and DOE sign a Consent Order relating to investigation, cleanup and other requirements for the Laboratory.(Add this to the H and L writeups)

LOS ALAMOS NATIONAL LABORATORY

Los Alamos National Laboratory (the Laboratory) is a multidisciplinary research facility owned by the Department of Energy (DOE) and managed by the University of California. The Laboratory is located in north-central New Mexico approximately 35 miles northwest of Santa Fe. The Laboratory covers 43 square miles of the Pajarito Plateau; the Plateau consists of a series of finger-like mesas that are separated by deep canyons containing perennial and intermittent streams running from west to east.

RISK REDUCTION AND ENVIRONMENTAL STEWARDSHIP ENVIRONMENTAL RESTORATION PROJECT

The Laboratory's Environmental Restoration (ER) Project (implemented by the Risk Reduction and Environmental Stewardship [RRES] Division) is a part of a DOE nationwide program. DOE's environmental restoration efforts began in 1989. The ER Project investigates whether hazardous chemicals and/or radioactive wastes are present as a result of past Laboratory operations and cleans up and restores such sites as needed.

MATERIAL DISPOSAL AREAS AT THE LABORATORY

The 26 material disposal areas (MDAs) at the Laboratory generally include sites where waste material has been disposed of on or below ground surface in excavated pits, trenches, or shafts.

MATERIAL DISPOSAL AREA G DESCRIPTION

MDA G is located at Technical Area (TA) 54 on Mesita del Buey between Pajarito Canyon and Cañada del Buey. MDA G (SWMU 54-013(b)-99) consists of nine former subsurface SWMUs, all covered with crushed tuff and asphalt. Portions of MDA G began operation in 1957. DOE initially authorized MDA G for the disposal of low-level radioactive waste, certain radioactive contaminated infectious waste, asbestos-contaminated material, PCBs, and temporary placement of transuranic (TRU) waste. Current disposal activities at MDA G include only DOE-authorized disposal of low-level waste (LLW). RCRA interim-status mixed-waste and DOE-authorized, RCRA interim status mixed TRU are stored in surface structures erected over many of the subsurface SWMUs.

THE NINE FORMER SOLID WASTE MANAGEMENT UNITS

Former SWMU 54-013(b) was a vehicle monitoring/decontamination area located in the center of MDA G on the surface of Pit 19. The area was used to decontaminate trucks and TRU waste drums.

Former SWMU 54-014(b), Pit 9, is 30 feet wide x 400 feet long by 20 feet deep. Pit 9 received retrievable TRU and mixed TRU waste from 1974 to 1978. Once filled, the pit was covered with 3.3 feet of consolidated crushed tuff, 4 inches of topsoil, and reseeded with native grasses.

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Photo

What is a corrective action?

The RCRA corrective action process develops and implements measures to protect human health and the environment when required. The process is flexible and structured to achieve corrective action based on site-specific conditions.

Why is corrective action required?

Through the corrective action process, the Environmental Protection Agency requires RCRA-regulated facilities to investigate and manage releases of hazardous waste or constituents to the environment. Corrective action is included as a requirement in the Laboratory's facility permit through statutory authorities. Facilities may also voluntarily choose corrective action.

What is the process?

Site Investigation

Determines if a release has occurred, identifies the nature and extent of contamination, its source, and the environmental pathways along which contaminants could affect human and environmental receptors

Corrective Measures Evaluation

Identifies and evaluates different corrective action alternatives to manage risks from a site, and results in the selection of a single corrective action option

Corrective Measures Implementation

Includes detailed design, construction, operation, maintenance, and monitoring of the selected corrective action option

What is a site conceptual model?

The site conceptual model of MDA G integrates site characterization data and scientific understanding to describe how contaminants may affect future risk to receptors in the future. The model describes the features, events, and processes that may contribute to a release of hazardous wastes or radionuclides buried at MDA G. It also evaluates the potential exposure to humans and the environment resulting from such a release and the probability and consequences of such an exposure.

Former SWMU 54-014(c) contains TRU waste disposal shafts 200 through 233 and is located in northeastern part of MDA G. The shafts each measure 1 feet in diameter, 18 feet deep; they are lined with concrete and contain TRU waste. Some of the shafts began receiving TRU waste in 1978 and were closed between 1979 and 1987. Shafts were used for wastes that required special packaging (primarily tritium), special handling (e.g., highly active metals), or segregation. Once filled, disposal shafts typically were filled with waste to within 3 feet of the ground surface, backfilled with crushed tuff, and covered with a concrete dome.

Former SWMU 54-014(d), contains TRU disposal trenches A, B, C, and D, is located in the south-central portion of MDA G. These trenches began receiving TRU and mixed LLW in 1974. Trenches A, B, and C vary in size from 219 feet to 262.5 feet long by 13 feet wide by 6 feet to 8 feet deep. Trench D is 60 feet long x 13 feet wide x 6 feet deep. TRU waste placed in trenches was packaged in 30-gallon containers inside concrete casks. Once filled, the trenches were backfilled with 3.3 feet of crushed tuff and 4 inches of topsoil. The surface was reseeded with native grasses.

Former SWMU 54-015(k) contains a layer of retrievable TRU waste. The waste is in cement-filled sections of corrugated pipe located inside a mound of fill material within the top of Pit 29 in the northeast portion of MDA G.

Former SWMU 54-017 consists of inactive disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. Former SWMU 54-018 consists of disposal pits 25 through 33 and 35 through 37. Only pit 29 (although no longer in use) is considered an active pit until RCRA closure is certified and approved by NMED. Pits 11, 14, 23, and 24 were never excavated. Pits 1 through 24 were operational between 1959 and 1980 and received radioactive, mixed, and TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, lab waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 24 are located toward the east of MDA G with volumes ranging from 1371 to 56,759 cubic yards. Pits 25 through 28 and 30 through 36 were operational between 1979 and 1980 and received radioactive, mixed, and TRU waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, gloveboxes, asbestos, and lab waste and range in volume from 20,957 to 59,930 cubic yards. Pit 29 operated until 1986. Pit 37 operated from 1990 to 1997 and received circuit boards and contaminated soil. Once filled, the pits were covered with 3.3 feet of consolidated crushed tuff and 4 inches of topsoil, and reseeded with native grasses.

Former SWMU 54-019 consists of 105 disposal shafts 1 through 20, 24 through 34, 38 through 92, 96, 109 through 112, and 150. The 91 shafts operated between 1966 and 1980 and received LLW and hazardous and mixed waste. The shafts range from 1 feet to 6 feet in diameter and 25 feet to 60 feet deep and are located to the northeast of MDA G. Disposal shafts typically were filled with waste to within 3 feet of the ground surface, backfilled with crushed tuff,

and covered with a concrete dome.

Former SWMU 54-020 consists of 79 disposal shafts: C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through 140, 151 through 160, 189 through 192, and 196. The 90 shafts were operational between 1970 and the early 1990s. Only shaft 124 (although no longer in use) is considered active until RCRA closure is certified and approved by NMED. The shafts contain one or a combination of the following waste types: PCB residues, LLW, hazardous and mixed waste. The shafts range in size from 1 foot to 8 feet in diameter and 25 to 65 feet deep, and are located throughout the eastern portion of MDA G. Disposal shafts were typically filled with waste to within 3 feet of the ground surface, backfilled with crushed tuff, and covered with a concrete dome.

CORRECTIVE ACTION PROCESS

The corrective action process refers to the cleanup process or program under the Consent Order and all activities related to the investigation, characterization, and cleanup of a release of hazardous waste or hazardous waste constituents from a SWMU at a permitted or interim status facility to any environmental medium. The degree of investigation and subsequent corrective action necessary to protect human health and the environment varies significantly across facilities.

The implementation of the corrective action process began at MDA G in 1992 with the preparation of the RCRA facility investigation (RFI) work plan. Phase I of the RFI was implemented between1994 and 2002. The analysis of the Phase I RFI data was presented in a Historical Investigation Report. An Investigation Work Plan (IWP) was prepared in 2003/2004 to define data requirements necessary to complete characterization of MDA G. The results of the Phase I RFI and site characterization data collected under the Consent Order were analyzed in an Investigation Report delivered to NMED in September 2005. The Corrective Measure Evaluation Report is required to be delivered to NMED in August 2007 and the site is scheduled to be closed by 2015.

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STATIS

Evaluation of site characterization data indicates that the know sources of environmental contamination at MDA L are tritium and VOC releases from the subsurface units. The results of soil and rock samples analyses detected a number of organic and inorganic chemicals at trace levels beneath the former disposal units. A number of naturally occurring and anthropogenic radionuclides were detected above background values in soil and rock samples from beneath MDA G. Anthropogenic radionuclides detected, including americium-241, plutonium-238, plutonium-239 and strontium were generally sporadic across the site. Naturally occurring radionuclides, including thorium isotopes, uranium-234, uranium-235 and uranium-238 were detected at concentrations withinthe natural variability of these chemicals in the subsurface. Pore-gas data indicate the presence of two VOC plumes at MDA G. The primary constituent of both is TCA. The largest plume appears to be concentrated around the oldest subsurface SWMUs at the eastern end of MDA G. The second, smaller plume is located toward the center of MDA G near the southern fence line. Subsurface samples collected to evaluate moisture properties did not identify any perched groundwater zones to a depth of 700 ft beneath MDA L.

Site characterization activities were completed in 2005 and an Investigation Report submitted to NMED in September 2005. The results of the human health and ecological assessments indicated that MDA G poses no unacceptable present-day risk to human health and the environment. In August 2006, NMED issued a Notice of Disapproval for the Investigation Report requiring LANL to extend the depth of 4 existing boreholes and collect pore-gas samples to determine the vertical extent of VOC contamination..

Definitions: COPC, mrem/yr, hazard quotient, site conceptual model, TWISP,

A Corrective Measures Evaluation (CME) Plan was submitted to NMED in April 2006. The CME report is required to be submitted to NMED in August 2007. The CME report will include a recommendation for the final remedy for MDA G. NMED will make the determination of the final remedy.

Periodic sampling of the vapor phase plumes at MDA G is ongoing; sampling results are reported in periodic monitoring reports to NMED.

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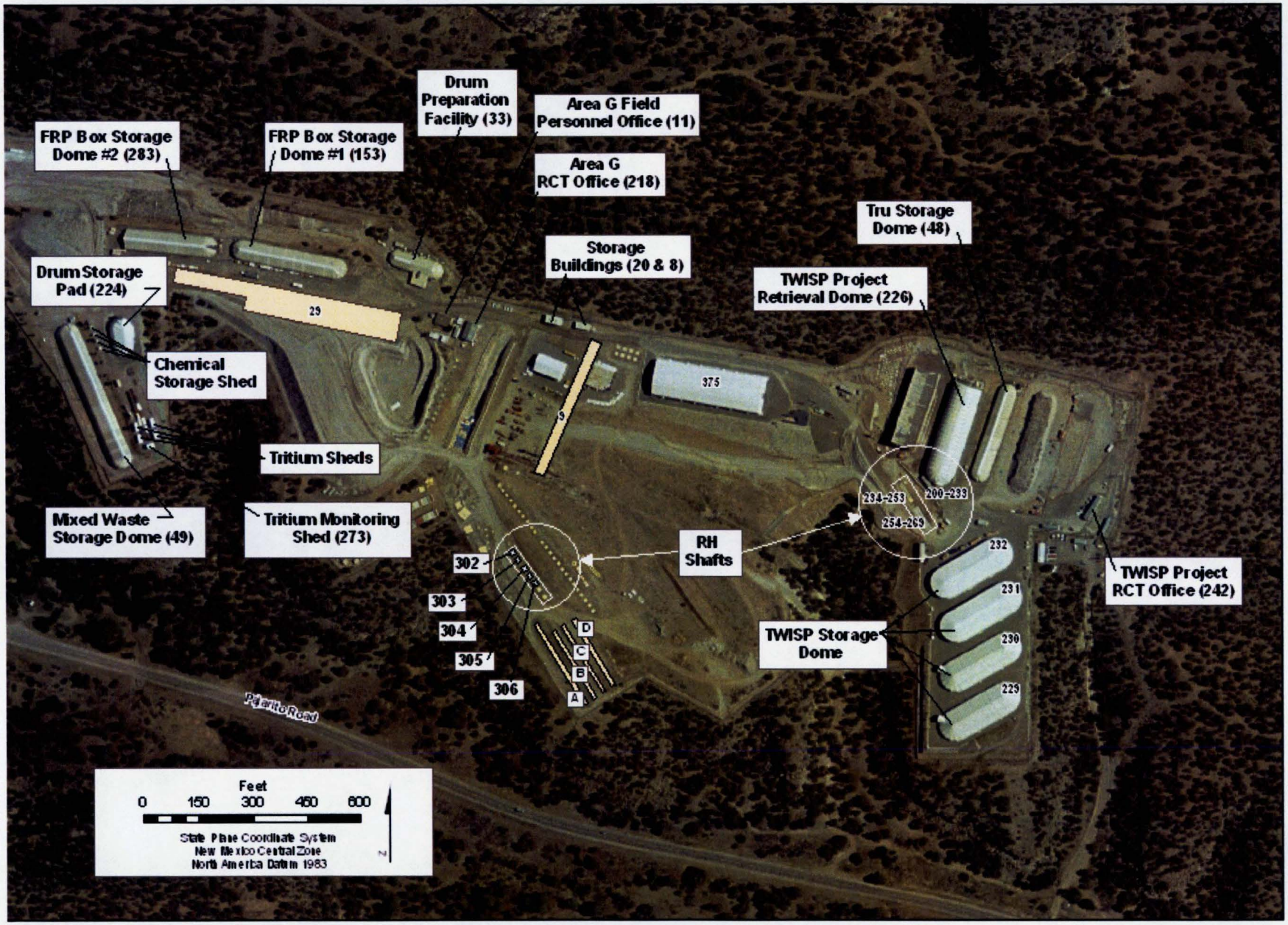
Quarterly pore-gas sampling of the vapor phase VOC plume at MDA G is ongoing. Sampling results are reported in the ER Project quarterly reports. At the request of NMED, the RFI report for MDA G is being rewritten to be consistent to incorporate additional recent information on the nature and extent of contamination and clearly identify remaining data gaps. The MDA G RFI report is expected to be reissued in the second or third quarter of FY03.

NEXT STEPS:

OPPORTUNITIES FOR INVOLVEMENT

Contact James Rickman
Phone: (505)665-9203
Fax: (505) 665-1812
Email Address: elvis@lanl.gov
Web site: http://remediation.lanl.gov


Drum Preparation Facility (33)
Area G Field Personnel Office (11)
FRP Box Storage Dome #2 (283)
FRP Box Storage Dome #1 (153)
Area G RCT Office (218)
Tru Storage Dome (48)
Storage Buildings (20 & 8)
Drum Storage Pad (224)
TWISP Project Retrieval Dome (226)
29
Chemical Storage Shed
375
9
Tritium Sheds
Mixed Waste Storage Dome (49)
Tritium Monitoring Shed (273)
234-253
200-233
254-269
RH Shafts
302
232
303
231
304
TWISP Storage Dome
230
305
D
C
B
A
306
229
TWISP Project RCT Office (242)
Pajarito Road
Feet
0
150
300
450
600
State Plane Coordinate System
New Mexico Central Zone
North American Datum 1983
N