

Part III: Complete all fields; indicate if not applicable or appropriate; please write legibly. Use *ER Record Index Form Attachment Sheet* if needed.

WBS NO(S) <small>LIST RELEVANT WBS NO(S).</small>	DOCUMENT TO <small>LIST MULTIPLE RECIPENTS.</small>	ORIGINATOR NAMES <small>LIST MULTIPLE ORIGINATORS.</small>
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CORRECTION (Y/N): _____ **CORRECTED #:** _____
(Is this a correction to a record previously processed?) (If answer is Yes, please give ER Record # for corrected record.)

CORRECTION DESCRIPTION (Optional): _____

SUPERCEDE: _____ **REPLACE:** _____ **DELETE:** _____ **ADD:** _____ **REVISE:** _____

ATTACHMENT LIST

- A.) Report; Subject: Los Alamos CEARP Phase I - FINAL Oct. 20, 1986. [with Notes]; TA-10 - Bayo Canyon Site. Dated: 10/20/86.
- B.) Report; Subject: Los Alamos CEARP Phase I - FINAL Oct. 16, 1986. [with Notes]; TA-10 - Bayo Canyon Site. Dated: 10/16/86.
- C.) Report; Subject: Los Alamos CEARP Phase I REVISION Oct. 14, 1986; TA-10 Bayo Canyon Site. Dated: 10/14/86.
- D.) Report; Subject: Los Alamos CEARP Phase I DRAFT-REVISION Anne July 17, 1986; Table --- Status of Sites "At TA-10, Bayo Canyon Site" Dated: 07/17/86.
- E.) Written Report; Subject: Los Alamos CEARP Phase I Report; TA-10 (Bayo Canyon Site). Dated: —

KEYWORDS: Circle relevant KEYWORDS from the list below for ER Record #: 36442

MISCELLANEOUS (List other indexing criteria as necessary; please write legibly):
Subject File: TA-10 CEARP

Abandon	Bunker	Construction	Environmental	Gas
Aboveground Tank	Buried	Container	EOD (Explosive Ordnance Disposal)	Generation
Absorption	Burn	Containment	EPA (Environmental Protection Agency)	Generic
Abstract	-----	Contaminant	Equipment	Geochemistry
Accelerator	Cadmium	Contract	ERDA (Energy Research and Development Administration)	Geology
Access	Caisson	Control	Erosion	Geophysics
Accident	Calibration	Controlled Distribution	ERPO (Environmental Restoration Program Office)	Glass Beaker
Acid	CAMU (Corrective Action Management Unit)	Copper	ES&H (Environment, Safety, and Health)	Glove Box
Active	Canyon	Core	Estimate	Graft
Activities	Capacitor	Corrective Action	Evacuation	Guidance
Administrative	CAUSTIC	Correspondence	Evaluation	Gun
ADS (Activity Data Sheet)	CEARP (Comprehensive Environmental Assessment and Response Program)	Criteria	Evaporator	-----
Adsorption	Cement	Cyanide	Evidence	Handling
AEC (Atomic Energy Commission)	CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)	Cyanogen	Excavation	Hazardous
Aerial	Change Control	-----	Exclusion	Headquarters
Agenda	Change Order	Data	Exhaust	Health
Agreement	Charge	Deadline	Experiment	HE (High Explosive)
AIP (Agreement in Principle)	Checklist	Debris	Explosive	History
Air	Chemical	Decision Analysis	Exposure	HMTA (Hazardous Material Transportation Act)
Alpha	Chromium	Decommission	Extension	Hole
Americium	Cleanup	Decontamination	Extraction	Home Owner
Analysis	Clearance	Deficiency	Facility	Hood
Analytical	Closure	Deliverable	Fallout	HSWA (Hazardous and Solid Waste Amendments)
AOC (Area of Concern)	Clothing	Demolition	Farm	Hydrology
Approval	CM/RA (Corrective Measures Implementation/Remedial Action)	Description	FAX	Hygiene
Aquifer	CMS/FS (Corrective Measures Study/Feeasibility Study)	Detection	Fence	-----
ARAR (Applicable, Relevant, or Appropriate Requirements)	Cobalt	Detonation	Field	Impact
Archaeology	Comment	Development	Figure	Implementation
Archival	Committee	Diesel	Filter	Implosion
Area	Community Relations	Discharge	FIMAD (Facility for Information Management, Analysis, and Display)	Impoundment
Arsenic	Company	Disposal	Finding	Inactive
Asbestos	Compliance	Documentation	Fire	Incident
Asphalt	Compressed Gas	DOE (Department of Energy)	Firing Site	Incinerator
Assessment	Computer Modeling	Dose	Fiscal	Industrial
Audit	Computer Output	DOO (Data Quality Objectives)	Fission	Infiltration
-----	Concern	Draft	Five-Year Plan	Injection Well
Backfill	Concrete	Drainage	Flow	Injury
Background	Concurrence	Drainline	Flow chart	Inorganic
Bacteria	Configuration	Drawing	Fluid	Inspection
Barium		Drilling	Form	Installation
Baseline		Drop Tower	Framework	Interim
BCP (Baseline Change Proposal)		Drum	Fuel	Interim Action
Beds		Dry Well	Fume	Internal
Bermed Area		Dump	-----	Interview
Beryllium		Ecology	Gamma	Inventory
Beta		Effluent		Investigation
Biology		EIS (Environmental Impact Statement)		IRM (Interim Remedial Measure)
Blivit		Electrical		Isotope
Boiler		Emission		IWP (Installation Work Plan)
Boneyard		Engineering		-----

Lab Job
Laboratory
Lagoon
Land
Landfill
Laundry
Leach
Lead
Leak
Legal
Letter
Limit
Lines
Liquid
List
Location
Log
Logbook

Magazine
Management
Manhole
Map
Material
MDA (Material Disposal Area)
Media
Meeting
Memo
Mercury
Metal
Microform
Minimization
Minutes
MIS (Management Information System)
Mixed Waste
MOA (Memo of Agreement)
Model
Modification
Money (Allocation, Appropriation, Budget, Cost, Funding, etc.)
Monitoring
Monthly Report
Mortar Impact Area
MOU (Memo of Understanding)
MSA (Major System Acquisition)

NEPA (National Environmental Policy Act)
NFA (No Further Action)
Nickel
Nitrate
NMED (New Mexico Environment Department)
NMEID (New Mexico Environmental Improvement Division)
NOD (Notice of Delinquency)

Nonexplosive
Nonradioactive
Notebook
Notification
NPDES (National Pollutant Discharge Elimination System)
NRC (Nuclear Regulatory Commission)
Nuclear

Observation
Off-gas
Oil
Open
Open Burning
Operation
Order
Organic
Organization
OSHA (Occupational Safety & Health Administration)
OSR (Operational Safety Requirements)
OU (Operable Unit)
Outfall
Outline

Pad
PA/RFA (Preliminary Assessment /RCRA Facility Assessment)
PCB (Polychlorinated Biphenyl)
Permit
Personal Notes
Personnel
Personnel Qualification
Photo
Pilot Study
Pipe
Pit
Plan
Plant
Plutonium
Point-of-Contact
Pollution
Polonium
Polaroid
Potential
Prevention
Priority
Procedure
Program
Programmatic
Project
Project Leader
Propellant
Property
Proposal
Protection

Protocol
PRS (Potential Release Site)
Public
Pump
Purchase Request

QA (Quality Assurance)
QP (Quality Procedure)
Quality
Quarterly Report

Radioactive
Radiochemistry
Radionuclide
Radium
Rationale
RCRA (Resource, Conservation, and Recovery Act)
Reactor
Receipt
Acknowledgment
Recommendation
Reconnaissance
Records
Recovery
Recycle
Reduction
Reference
Regulation
Release
Remediation
Removal
Report
Request
Requirements
Research
Resin Bed
Resolution
Resource
Respirator
Response
Restoration
Restriction
Results
Review
Revision
RFI/RI (RCRA Facility Investigation/Remedial Investigation)
Risk
RPF (Records Processing Facility)

Safety
Salamander
Salvage
Sample
Sampling Plan
Sanitary

Satellite
Schedule
Scope
Scrap
Scrap Detonation Site
Screening
Scrubber
Search
Security
Seep
Semivolatile
Septic
Sewer
Shaft
Sheet
Shell
Shot
Silver
Site
Sludge
Soil
Solid
Solvent
SOP (Standard Operating Procedure)
SOW (Statement of Scope of Work)
Specific
Spill
Stack
Standard
Statistics
Status
Steamline
Steel
Storage
Strontium
Structure
Study
Subcontractor
Subsurface
Summary
Sump
Support
Surface
Surveillance
Survey
Swipe
SWMU (Solid Waste Management Unit)
System

Table
Tank
Task
TCLP (Toxicity Characteristic Leaching Procedure)
TDD (Technical Document Description)
Technical

Technical Team
Technology
Telephone Record
Test Area
Testing
TLD (Thermoluminescent Dosimeter)
TOC (Table of Contents)
Townsite
Toxic
Tracking
Training
Transcription
Transfer
Transformer
Transmittal
Transport
Treatment
Trench
Trip Report
Tritium
TRU (Transuranic)
TSCA (Toxic Substances Control Act)
Tuballoy
Tuff

Underground
Update
Uranium
Urine
USGS (United States Geological Survey)
UST (Underground Storage Tank)
Utility

Validation
Variance
VE (Value Engineering)
Ventilation
Verification
Volatile
Volume

Warehouse
Waste
Water
WBS (Work Breakdown Structure)
Weapon
Well
Work
Working Group

Zinc

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TA-10 - BAYO CANYON SITE

TA10-1-CA-1-HW/RW (Firing Sites)

Background--In September 1944, Bayo Canyon began to be used for firing experiments. Two tanks served as mobile control rooms and personnel shelters. In the spring of 1945, more permanent structures were completed for chemistry work and firing (LASL 1947: 9).

The firing areas were in the canyon at two locations with two firing points at each location, according to ENG-R125. The southeast location included x-unit chamber TA-10-22 and electronics chamber TA-10-23 for firing point 1 and x-unit chamber TA-10-24 and electronics chamber TA-10-25 for firing point 2; associated control building TA-10-13 and battery building TA-10-14 served both 1 and 2. The northwest location included x-unit chamber TA-10-26 and electronics chamber TA-10-27 for firing point 3 and x-unit chamber TA-10-28 and electronics chamber TA-10-29 for firing point 4; associated control building TA-10-15 and battery building TA-10-16 was used for 3 and 4.

The shots fired included natural and depleted uranium surrounded by high explosive, with radioactive lanthanum acting as a source. What other materials may have been in the shots was not found in open literature. Associated with the radioactive lanthanum was 90-strontium, a contaminant. The amount of depleted and natural uranium expended in the shots is not well known. Using the best data available, estimates are that from 1944 until 1961, when firing ceased, approximately 2,000 kg of natural uranium and 3,380 kg of depleted uranium were released. The maximum 90-strontium released has been estimated to have been 39.6 Ci (DOE 1979: 98-99). Some of the material was dispersed as a cloud, whereas fairly large pieces fell near the original point of firing. The CEARP files indicate that the cloud usually dispersed over several miles and in at least one case, nearly 10 miles (H-Div 1949a: 1).

During clean-up in 1963, 90 truck loads of material picked up from the area around the firing site were removed. Thus, much of the material that fell near the pads is no longer at the site (LASL 1963a). In years after 1963, surface clean-up was undertaken at periodic intervals (LASL 1976).

In addition to removing surface debris, the asphalt from the firing pads was removed, which revealed further contaminated soil. More contaminated soil then had to be removed and transported to the dump (LASL 1963).

Other materials besides high explosive that might have been in the shots, but for which no documentation was found, include lead, aluminum, steel, and possibly beryllium.

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In 1976, as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP), TA-10 was resurveyed for radioactivity, and the results indicated low-level surface (<1m) contamination from 90-strontium and uranium (DOE 1979). More information can be obtained in the reference cited. Because 140-lanthanum has a half-life of 40.1 hr, for all practical purposes it has decayed and only its daughter will be present in Bayo Canyon.

During the field survey in the fall of 1986, a large number of pieces of cable, numerous small pieces of shrapnel, probably consisting of aluminum and steel with a small amount of lead, pieces of wood and probably asphalt and other shot residues were found at the firing sites.

A photo in the archives at Los Alamos National Laboratory dated June 8, 1944, has some indications that Bayo Canyon may have been the area in which sand pile detonation experiments occurred. Little information is available on any possible residues.

CERCLA Finding--

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-2-S/ST/CA/O-1-RW/HW (Tanks, Drains, Leach Fields, Outfalls)

Background--To provide the x-ray (gamma) source, radioactive lanthanum was placed in most of the shots fired. This material was obtained in a form that required purification by 1) separating 140-lanthanum from the parent 140-barium and daughter 140-caesium and impurities including 90-strontium, 2) precipitating the material, and 3) encapsulating it into a source. This process was undertaken from 1944-1950. Beginning in 1950, separations were performed at TA-35.

Radioactive wastes from the radiochemistry building, TA-10-1, were collected in lines and routed to holding tanks, pits, and a leaching field to the north. Liquids placed or flowing into the pits drained through an outlet pipe into the earth. Liquid wastes from the storage tanks were periodically discharged directly into the stream channel. At most, 117 Ci of 90-strontium has been estimated to have been in the liquid discharged.

Sanitary sewage lines, septic tanks, the outfall line from TA-10-1, and the TA-10-21 disposal pit may have received some contaminated liquid waste (DOE 1979: 12-13, 99). Documentation on other chemicals in the waste besides radionuclides is currently lacking. "Organic and inorganic contamination" was noted to be present in the incoming radioactive lanthanum source material (H-Div 1949b: 1).

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According to ENG-R125, the major liquid disposal area, called the 'tank farm,' included contaminated material pits TA-10-41, -42, and -43, manholes for the acid sewer, TA-10-50 and -51, acid septic tank TA-10-39, and sanitary septic tank TA-10-38. A leaching field appears to have been near TA-41 (DOE 1979: 15).

The decision was made in 1963 to destroy the remaining structures in Bayo Canyon. When excavations of the tank farm began, pipes were found between pits 42 and 43. Another pit 12 inches in diameter was found 2 ft south of pit 42 and read 10 mR/h. A second unknown pit that was 2 ft square was located 40 ft north of 41 and a third was found 6 ft south of pit 50, the manhole for the acid sewer. The latter read 20 mR/h at 1 ft. At a depth of 10 ft, pits 41, 42, and 43 were found to have a common drain filled with clay drain pipe. The maximum reading in this area was 20 mR/h. Pits 38 and 39 were removed and dirt was then removed between pits 39 and 50. A stainless steel pipe and three stainless steel acid tanks were found and taken to the contaminated dump with their contents. Acid pits 50 and 51 and connecting lines were removed. Noncontaminated septic tank 38 was also removed. Continued excavation at the Tank Farm revealed another leach bed under pit 43. After excavating to 20 ft, digging was stopped. The activity level at this point was 1.5 mR/h. From a description in 1963, it is not clear what the activity levels were at other areas in the Tank Farm when excavation ceased. The area west of structures 24 and 25, where sources had been washed and the liquid discharged, was checked to a depth of 4 ft and found to be free of contamination. A pipe from pit 50 was found to be running north to a leach field in the creek bed. Wood in the area gave a reading of 1.5 mR/h. It is not clear whether any of the leach field was removed (LASL 1963).

In 1973, a hole was drilled a few meters east of the location of the acid waste leaching field. A maximum of 20 pCi/g of 90-strontium was detected within 1.5 m of the surface. A hole drilled between the location of former pits TA-10-41 and -42 indicated 90-strontium levels up to 3.3 pCi/g within 1.5 m of the surface. In 1974, the area around the old sanitary outfall to the creek was sampled and levels of gross beta 3 to 20 times background were detected. The subsurface region north of TA-10-41 and -42 also showed elevated levels with a maximum of 24,000 pCi/g at a depth of 430-440 cm (DOE 1979: 14).

Apparently, no sampling has been done for any nonradioactive chemicals that may have been discharged in the effluent from the chemistry operations. No information on the TA-10-21 disposal pit and field has been obtained to date.

CERCLA Finding--

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA-10-3-I-1-RW/HW (Landfills-Decommissioned and Still in Place)

Background--At TA-10, two areas where solid waste was dumped existed during the years the site operated, and ENG-R125 shows them designated TA-10-44 and -48. In 1963, the decision was made to remove these dumps. At that time, TA-10-48 was a pit divided into two sections 5 ft square and 10 ft deep, each lined with boards, in which gloves, bottles, and laboratory equipment had been disposed of. This material was removed from TA-10-48 and taken to Area G; the pit was then excavated to a depth of 26 ft. As the pit became deeper, external radiation levels continued to be above background. Samples taken to a depth of 4 ft at the 26-ft level indicated between 0 to 600 d/m/dry granulated soil for 90-strontium with gross alpha levels approaching background. The decision was then made to refill this pit with clean dirt (LASL 1963). Later measurements around TA-10-48 indicated no lateral migration of 90-strontium (DOE 1979: 14).

Pit TA-10-44 had been used to bury gloves, rags, acid bottles and the like, all of which was moved to the contaminated dump. The pit was dug to a depth of 15 ft, where readings were 1.5 mR/h. The pit was refilled and leveled (LASL 1963).

The removal of buildings TA-10-13 and -15, both of which were bunkers, from TA-10 resulted in concrete debris that was not contaminated. It was dumped in the hole created by excavating the Tank Farm until the hole was full. The remaining uncontaminated concrete was hauled to the base of the city dump.

A wall from building 1 was reported to be uncontaminated and to be "buried in Bayo Canyon." The location of this burial site was not indicated (LASL 1963).

During the field survey, six survey monuments and associated guard posts were found surrounding an area that roughly encompasses the old Tank Farm, radiochemistry laboratory, TA-10-1, and the area of waste disposal pit TA-10-48. The monuments are marked "buried radioactive material no excavation prior to 2142 AD see county records." The area lies both within Los Alamos County and Santa Fe County. It is not clear whether material disposal pit TA-10-44 is included or not; it appears that it probably is not.

Further investigation indicated that in 1982, Bechtel installed the monuments in conjunction with professional land surveying. Apparently draft deed restrictions were also submitted to Los Alamos County (LANL 1983).

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TA10-4-CA-1 (Burning)

Background--In 1955, irradiated 238-uranium solutions deposited on plywood drums were reported to have been burned on two occasions in Bayo Canyon. A level of 20 mR/h of gamma at contact was reported for the ashes. The final fate of the ash is not known (H-Div 1955: 3).

In 1956, a work order was issued to make a burning pit, burn combustibles, and to take the ashes and unburned residues to the radioactive disposal pit. The work order indicates the burning pit was to be filled after the burning occurred and the ash was removed. Noncombustibles were also to be taken to radioactive disposal (LASL 1956).

Storage buildings TA-10-4 and -6 and cell building TA-10-31 were vacated in 1959 and were noted to have at least suspect 90-strontium contamination and high-explosive contamination (LASL 1959). Storage buildings TA-10-3, -5, and -19, and welding shop TA-10-32 were suspected in 1960 to have small amounts of radioactive contamination in inaccessible places because of their history (LASL 1960a). That same year, buildings 19 and 32 were put in the stream bed and burned. Buildings 6 and 31 were burned in place. Buildings 3, 4, and 5 were moved to a clearing and burned. Ashes from building 6 indicated 1 to 12 mR/h, whereas those for 4 read 8 mR/h (LASL 1960b).

Buildings TA-10-10 and -11, both magazines, were noted to be contaminated with high explosive in 1963 (LASL 1963b). Buildings 2, storage, 8, inspection, 14, battery, 18, storage, and 21, personnel, and then 10, 11, 12, laboratory, and 34, static test, were burned, apparently in place. The combustible sections of laboratory building 1 were placed in an open area and burned and any radioactive residues were taken for disposal (LASL 1963).

CERCLA Finding--

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-5-CA-HW/RW (Contaminated Building)

Background--Because of the activities associated with firing and with source preparation, discussed in sections 1 and 2 above, many of the buildings at TA-10 were contaminated with high explosive, 90-strontium, or uranium. The decision was made in 1963 to remove the buildings from the site. Building TA-10-2, a small shed, had been used to contain a large source shield and all shielding was taken to the contaminated dump. Ashes from burned buildings 2, 8,

14, 18, and 21 were also taken to the dump with some contaminated soil. Pit 40, the septic tank for building 21, was taken to the dump.

The x-unit pits were also removed to the dump. Cell building TA-10-31 was blasted and the rubble taken to the dump. The west end of building, contaminated to a level of 18 mR/h, is believed to have been disposed of in the contaminated dump. Warehouse building 20 was relocated to TA-3. The other structures were either burned or blasted and the debris burned onsite (LASL 1963).

During the initial field survey, the asphalt road and a concrete pad from warehouse TA-10-20 were found as visible remains of TA-10. The area is closed to the general public except for walking. The land was transferred to Los Alamos County on July 1, 1967 (DOE 1979: 1).

REFERENCES

- DOE 1979: *Formerly Utilized MED/AEC Sites Remedial Action Program - Radiological Survey of the Bayo Canyon, Los Alamos, New Mexico*, Department of Energy report DOE/EV-0005/15, June 1979.
- H-Div 1949a: Los Alamos Scientific Laboratory, *H Division Progress Report*, Oct. 20-Nov. 20, 1949.
- H-Div 1949b: Los Alamos Scientific Laboratory, *H Division Progress Report*, Feb. 20-March 20, 1949.
- H-Div 1955: Los Alamos Scientific Laboratory, *H Division Progress Report*, Nov. 20-Dec. 20, 1955.
- LANL 1983: "Report on Remedial Action at the Bayo Canyon Site, Los May 1983," performed under contract DOE-AC05-81OR20722, 20 pp. National Laboratory document.
- LASL 1947: *A Technical Maintenance Group Report on General Building Damage to the Los Alamos Scientific Laboratory Required for Planning Purposes*, Scientific Laboratory report LAB-A-5, September 11, 1947.
- LASL 1956: Los Alamos Scientific Laboratory, Work Order 64554 dated July 20, 1956, in the CEARP files at LANL.
- LASL 1959: "Vacated Los Alamos Scientific Laboratory Structures Health Condition," Oct. 1, 1959, Los Alamos Scientific Laboratory document.
- LASL 1960a: Charles D. Blackwell, "Radiation Survey of Structures Within TA-10," Los Alamos Scientific Laboratory memorandum to S.E. Russo, Feb. 8, 1960.
- LASL 1960b: Charles D. Blackwell, "Burning of Abandoned Structures at TA-10," Los Alamos Scientific Laboratory memorandum to Dean D. Meyer, March 14, 1960.

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or the
Contractor?
LANL 1983

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LASL 1963a: Charles D. Blackwell and Frank Bableh, "Removal of All Structures in Bayo Canyon," Los Alamos Scientific Laboratory memorandum to Denn D. Meyer, August 1963.

LASL 1963b: H-3 Safety Office, "Procedures for Burning Buildings at TA-10," Los Alamos Scientific Laboratory memorandum to ENG-4, May 17, 1963.

LASL 1976: R.W. Drake, C.D. Blackwell, W.C. Courtright, "Survey of Old TA-10, Bayo Canyon," Los Alamos Scientific Laboratory memorandum to Roy Reider, March 29, 1976.

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TA-10 - DAYO CANYON SITE

TA10-1-CA-1-HW/RW (Firing Sites)

Background--In September 1944, Dayo Canyon began to be used for firing experiments. Two tanks served as mobile control rooms and personnel shelters. In the spring of 1945, more permanent structures were completed for chemistry work and firing (LASL 1947: 9).

The firing areas were in the canyon at two locations with two firing points at each location, according to ENC-R125. The southeast location included x-unit chamber TA-10-22 and electronics chamber TA-10-23 for firing point 1 and x-unit chamber TA-10-24 and electronics chamber TA-10-25 for firing point 2; associated control building TA-10-13 and battery building TA-10-14 served both 1 and 2. The northwest location included x-unit chamber TA-10-26 and electronics chamber TA-10-27 for firing point 3 and x-unit chamber TA-10-28 and electronics chamber TA-10-29 for firing point 4; associated control building TA-10-15 and battery building TA-10-16 was used for 3 and 4.

The shots fired included natural and depleted uranium surrounded by high explosive, with radioactive lanthanum acting as a source *(most shots)*. What other materials may have been in the shots was not found in open literature. Associated with the radioactive lanthanum was 90-strontium, a contaminant. The amount of depleted and natural uranium expended in the shots is *not well-known*. Using the best data available, estimates are that from 1944 until 1961, when firing ceased, approximately 2,000 kg of natural uranium and 3,380 kg of depleted uranium were released. The maximum 90-strontium released has been estimated to have been 39.6 Ci (DOE 1979: 98-99). Some of the material was dispersed as a cloud, whereas fairly large pieces fell near the original point of firing. The CEARP files indicate that the cloud usually dispersed over several miles and in at least one case, nearly 10 miles (H-Div 1949a: 1).

In the late 1940's pads were covered with water swept after each shot. Waste water ran into the natural surface drainage. (USGS 1963 15)

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During clean-up in 1963, 90 truck loads of material picked up from the area around the firing site were removed. Thus, much of the material that fell near the pads is no longer at the site (LASL 1963a). In years after 1963, surface clean-up was undertaken at periodic intervals (LASL 1976).

In addition to removing surface debris, the asphalt from the firing pads was removed, which revealed further contaminated soil. More contaminated soil then had to be removed and transported to the dump (LASL 1963).

Other materials besides high explosive that might have been in the shots, but for which no documentation was found, include lead, aluminum, steel, and possibly beryllium.

*an average of 3.4 pCi/g
in about 1.5 feet of soil concentrations for*

*an average of about 1 pCi/g (about 5 times
the concentration in soil)*

In 1976, as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP), TA-10 was resurveyed for radioactivity, and the results indicated low-level surface (<1m) contamination from 90-strontium and uranium (DOE 1979). More information can be obtained in the reference cited. Because 140-lanthanum has a half-life of 40.1 hr, for all practical purposes it has decayed and only its daughter will be present in Bayo Canyon. *stable*

During the field survey in the fall of 1986, a large number of pieces of cable, numerous small pieces of shrapnel, probably consisting of aluminum and steel with a small amount of lead, pieces of wood and probably asphalt and other shot residues were found at the firing sites. *These are apparently weathering debris from the underlying rocks.*

A photo in the archives at Los Alamos National Laboratory dated June 8, 1944, has some indications that Bayo Canyon may have been the area in which sand pile detonation experiments occurred. Little information is available on any possible residues.

CERCLA Finding--

*Table to further investigate as to what was in pits
at TA-10-21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100*

IF

Planned Future Action-- A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances. *out has approximately 100 lbs of debris in pits*

TA10-2-S/ST/CA/O-1-RW/HW (Tanks, Drains, Leach Fields, Outfalls)

Background-- To provide the x-ray (gamma) source, radioactive lanthanum was placed in most of the shots fired. This material was obtained in a form that required purification by 1) separating 140-lanthanum from the parent 140-barium and daughter 140-cesium and impurities including 90-strontium, 2) precipitating the material, and 3) encapsulating it into a source. This process was undertaken from 1944-1950. Beginning in 1950, separations were performed at TA-35.

Sanitary sewage lines, septic tanks, the outfall line from TA-10-1, and the TA-10-21 disposal pit may have received some contaminated liquid waste (DOE 1979: 12-13, 99).

Industrial

Radioactive wastes from the radiochemistry building, TA-10-1, were collected in lines and routed to holding tanks, pits, and a leaching field to the north. Liquids placed or flowing into the pits drained through an outlet pipe into the earth. Liquid wastes from the storage tanks were periodically discharged directly into the stream channel.

Laboratory wastes were occasionally

*dropped or spilled on the ground in patches
near the laboratory buildings DOE p 9*

According to ENG-R125, the major liquid disposal area, called the 'tank farm,' included contaminated material pits TA-10-41, -42, and -43, manholes for the acid sewer, TA-10-50 and -51, acid septic tank TA-10-39, and sanitary septic tank TA-10-38. A leaching field appears to have been near TA-41 (DOE 1979: 15).
TA-10-21

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078-36442-12
A chemist who worked at the Bayside site remembers decontamination runs by the stream bed leach field. Nitric acid + some HCl was poured into these. Chemicals which would have been in spent liquids discharged to the drain on bldg 1 included nitric, HCl as the major acids with small amounts of HF + sulfuric. Small amounts of La, Ba, Ca, + platinum went to the drain. Occasionally kerosene + carbon tetrachloride were used. The chemist indicated.

"Organic and inorganic contamination" ^{would} was noted to be present in the incoming radioactive lanthanum source material (H-Div 1949b: 1).

Hence these would ~~also~~ ^{may} probably have been in the liquid effluent also.

The decision was made in 1963 to destroy the remaining structures in Bayo Canyon. When excavations of the tank farm began, pipes were found between pits 42 and 43. Another pit 12 inches in diameter was found 2 ft south of pit 42 and read 10 mR/h. A second unknown pit that was 2 ft square was located 40 ft north of 41 and a third was found 6 ft south of pit 50, the manhole for the acid sewer. The latter read 20 mR/h at 1 ft. At a depth of 10 ft, pits 41, 42, and 43 were found to have a common drain filled with clay drain pipe. The maximum reading in this area was 20 mR/h. Pits 38 and 39 were removed and dirt was then removed between pits 39 and 50. A stainless steel pipe and three stainless steel acid tanks were found and taken to the contaminated dump with their contents. Acid pits 50 and 51 and connecting lines were removed. Noncontaminated septic tank 38 was also removed. Continued excavation at the Tank Farm revealed another leach bed under pit 43. After excavating to 20 ft, digging was stopped. The activity level at this point was 1.5 mR/h. From a description in 1963, it is not clear what the activity levels were at other areas in the Tank Farm when excavation ceased. The area west of structures 24 and 25, where sources had been washed and the liquid discharged, was checked to a depth of 4 ft and found to be free of contamination. A pipe from pit 50 was found to be running north to a leach field in the creek bed. Wood in the area gave a reading of 1.5 mR/h. It is not clear whether any of the leach field was removed (LASL 1963).

In 1973, a hole was drilled a few meters east of the location of the acid waste leaching field. A maximum of 20 pCi/g of 90-strontium was detected within 1.5 m of the surface. A hole drilled between the location of former pits TA-10-41 and -42 indicated 90-strontium levels up to 3.3 pCi/g within 1.5 m of the surface. In 1974, the area around the old sanitary outfall to the creek was sampled and levels of gross beta 3 to 20 times background were detected. The subsurface region north of TA-10-41 and -42 also showed elevated levels with a maximum of 24,000 pCi/g at a depth of 430-440 cm (DOE 1979: 14).

Apparently, no sampling has been done for any nonradioactive chemicals that may have been discharged in the effluent from the chemistry operations. No information on the TA-10-21 disposal pit and field has been obtained to date.

CERCLA Finding--

Handwritten notes:
 The remaining fragments, but an off-precise location.
 Most samples were as from 10 ft deep. Non-top available
 in the laboratory & would appear from sampling that
 much of the radioactivity was removed in the 1963 clean up (P.E.E. 1979 p. 8)

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Investigate all dumpsites in wells for Sr-90 migration

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-3-L-1-RW/HW (Landfills-Decommissioned and Still in Place)

Background--At TA-10, ~~two~~ areas where solid waste was dumped existed during the years the site operated, and ENG-R125 shows them ~~designated~~ ^{designated} TA-10-44 and -48. In 1963, the decision was made to remove these dumps. At that time, TA-10-48 was a pit divided into two sections 5 ft square and 10 ft deep, each lined with boards, in which gloves, bottles, and laboratory equipment had been disposed of. This material was removed from TA-10-48 and taken to Area G; the pit was then excavated to a depth of 26 ft. As the pit became deeper, external radiation levels continued to be above background. Samples taken to a depth of 4 ft at the 26-ft level indicated between 0 to 600 d/m/dry granulated soil for 90-strontium with gross alpha levels approaching background. The decision was then made to refill this pit with clean dirt (LASL 1963). Later measurements around TA-10-48 indicated no lateral migration of 90-strontium (DOE 1979: 14).

A chemist who had worked at Bango remembers glassware, metal ware, platinum, a general trash bin placed on the TA-10-48. A few months later the person can remember the spent "seep" which was melted for the 140-ha also went to this dump. Hence it would appear that most of the 90-Sr ^{contaminant} ~~contaminant~~ in the "seep" went to ^{TA-10-48} this dump. This total 90-Sr which was discharged either to dumps or pits due to the chemical processing has been estimated at 11.7 Ci (DOE 79: 99)

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Pit TA-10-44 had been used to bury gloves, rags, acid bottles and the like, all of which was moved to the contaminated dump. The pit was dug to a depth of 15 ft, where readings were 1.5 mR/h. The pit was refilled and leveled (LASL 1963).

The removal of buildings TA-10-13 and -15, both of which were bunkers, from TA-10 resulted in concrete debris that was not contaminated. It was dumped in the hole created by excavating the Tank Farm until the hole was full. The remaining uncontaminated concrete was hauled to the base of the city dump.

A wall from building 1 was reported to be uncontaminated and to be "buried in Bayo Canyon." The location of this burial site was not indicated (LASL 1963).

During the field survey, six survey monuments and associated guard posts were found surrounding an area that roughly encompasses the old Tank Farm, radiochemistry laboratory, TA-10-1, and the area of waste disposal pit TA-10-48. The monuments are marked "buried radioactive material no excavation prior to 2142 AD see county records." The area lies both within Los Alamos County and Santa Fe County. It is not clear whether material disposal pit TA-10-44 is included or not; it appears that it probably is not.

Further investigation indicated that in 1982, Bechtel installed the monuments in conjunction with professional ^{land} surveying. Apparently draft deed restrictions were also submitted to Los Alamos County (LANL 1983).

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Answer

~~At that~~ dump has been identified as being located somewhat up canyon from the firing site on the south side of the road. On the late 1940's the firing packs were swept after each shot & the material was dumped into this ~~dump~~ dump. It is reported that the wastes on the dump were burned during 1957 ^{and the ash taken to area C} ~~and the ash taken to area C~~ ~~was dumped into the dump & the~~ ~~was dumped into the dump & the~~. It is believed that no further dumping into this pit occurred after 1957 (USGS 1963:15)

~~A sample of soil~~

In 1961 radioactivity at the dump site ranged from background to about 6 mR/hr (USGS 1963:15)

~~The site does not appear to have undergone any decommissioning.~~ The field survey found the area covered with a dense growth of weeds, but several wires, pieces of metal, etc were in the area indicated as being near the disposal pit. Whether these were weathering out from the pit is not known

CECHA Funding

Planned future action Find ^{up stream from firing site} dump & characterize. Remove other dumps were previously cleaned up as well as possible

Let's also ask Muller (redundant) about the pit as the Lab seems to have "lost" it & the only one in the USGS Gordon didn't know anything about it but said he wouldn't as it would have "belonged" to the physicists

TA10-4-CA-1 (Burning)

Background--In 1955, irradiated 238-uranium solutions deposited on plywood drums were reported to have been burned on two occasions in Bayo Canyon. A level of 20 mR/h of gamma at contact was reported for the ashes. The final fate of the ash is not known (H-Div 1955: 3).

In 1956, a work order was issued to make a burning pit, burn combustibles, and to take the ashes and unburned residues to the radioactive disposal pit. The work order indicates the burning pit was to be filled after the burning occurred and the ash was removed. Noncombustibles were also to be taken to radioactive disposal (LASL 1956).

Storage buildings TA-10-4 and -6 and cell building TA-10-31 were vacated in 1959 and were noted to have at least suspect 90-strontium contamination and high-explosive contamination (LASL 1959). Storage buildings TA-10-3, -5, and -19, and welding shop TA-10-32 were suspected in 1960 to have small amounts of radioactive contamination in inaccessible places because of their history (LASL 1960a). That same year, buildings 19 and 32 were put in the stream bed and burned. Buildings 6 and 31 were burned in place. Buildings 3, 4, and 5 were moved to a clearing and burned. Ashes from building 6 indicated 1 to 12 mR/h, whereas those for 4 read 8 mR/h (LASL 1960b).

Buildings TA-10-10 and -11, both magazines, were noted to be contaminated with high explosive in 1963 (LASL 1963b). Buildings 2, storage, 8, inspection, 14, battery, 18, storage, and 21, personnel, and then 10, 11, 12, laboratory, and 34, static test, were burned, apparently in place. The combustible sections of laboratory building 1 were placed in an open area and burned and any radioactive residues were taken for disposal (LASL 1963).

CERCLA Finding-- *negative*

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-5-CA-HW/RW (Contaminated Building)

Background--Because of the activities associated with firing and with source preparation, discussed in sections 1 and 2 above, many of the buildings at TA-10 were contaminated with high explosive, 90-strontium, or uranium. The decision was made in 1963 to remove the buildings from the site. Building TA-10-2, a small shed, had been used to contain a large source shield and all shielding was taken to the contaminated dump. Ashes from burned buildings 2, 8,

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14, 18, and 21 were also taken to the dump with some contaminated soil. Pit 40, the septic tank for building 21, was taken to the dump.

The x-unit pits were also removed to the dump. Cell building TA-10-31 was blasted and the rubble taken to the dump. The west end of building, contaminated to a level of 18 mR/h, is believed to have been disposed of in the contaminated dump. Warehouse building 20 was relocated to TA-3. The other structures were either burned or blasted and the debris burned onsite (LASL 1963).

During the initial field survey, the asphalt road and a concrete pad from warehouse TA-10-20 were found as visible remains of TA-10. The area is closed to the general public except for walking. The land was transferred to Los Alamos County on July 1, 1967 (DOE 1979: 1).

Negative?

REFERENCES

DOE 1979: *Formerly Utilized MED/AEC Sites Remedial Action Program - Radiological Survey of the Bayo Canyon, Los Alamos, New Mexico*, Department of Energy report DOE/EV-0005/15, June 1979.

H-Div 1949a: Los Alamos Scientific Laboratory, *H Division Progress Report*, Oct. 20-Nov. 20, 1949.

H-Div 1949b: Los Alamos Scientific Laboratory, *H Division Progress Report*, Feb. 20-March 20, 1949.

H-Div 1955: Los Alamos Scientific Laboratory, *H Division Progress Report*, Nov. 20-Dec. 20, 1955.

LANL 1983: "Report on Remedial Action at the Bayo Canyon Site, Los May 1983," performed under contract DOE-AC05-81OR20722, 20 pp National Laboratory document.

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LANL 1983

LASL 1947: *A Technical Maintenance Group Report on General Building Damage to the Los Alamos Scientific Laboratory Required for Planning Purposes*, Scientific Laboratory report LAB-A-5, September 11, 1947.

LASL 1956: Los Alamos Scientific Laboratory, Work Order 64554 dated July 20, 1956. In the CEARP files at LANL.

LASL 1959: "Vacated Los Alamos Scientific Laboratory Structures Health Condition," Oct. 1, 1959, Los Alamos Scientific Laboratory document.

LASL 1960a: Charles D. Blackwell, "Radiation Survey of Structures Within TA-10," Los Alamos Scientific Laboratory memorandum to S.E. Russo, Feb. 8, 1960.

LASL 1960b: Charles D. Blackwell, "Burning of Abandoned Structures at TA-10," Los Alamos Scientific Laboratory memorandum to Dean D. Meyer, March 14, 1960.

TA-10 - BAYO CANYON SITE

TA10-1-CA-1-HW/RW (Firing Sites)

Background--In September 1944, Bayo Canyon began to be used for firing experiments. Two tanks served as mobile control rooms and personnel shelters. In the spring of 1945, more permanent structures were completed for chemistry work and firing (LASL 1947: 9).

The firing areas were in the canyon at two locations with two firing points at each location, according to ENG-R125. The southeast location included x-unit chamber TA-10-22 and electronics chamber TA-10-23 for firing point 1 and x-unit chamber TA-10-24 and electronics chamber TA-10-25 for firing point 2; associated control building TA-10-13 and battery building TA-10-14 served both 1 and 2. The northwest location included x-unit chamber TA-10-26 and electronics chamber TA-10-27 for firing point 3 and x-unit chamber TA-10-28 and electronics chamber TA-10-29 for firing point 4; associated control building TA-10-15 and battery building TA-10-16 was used for 3 and 4.

The shots fired included natural and depleted uranium surrounded by high explosive, with radioactive lanthanum acting as a source. What other materials may have been in the shots was not found in open literature. Associated with the radioactive lanthanum was 90-strontium, a contaminant. The amount of depleted and natural uranium expended in the shots is not well known. Using the best data available, estimates are that from 1944 until 1961, when firing ceased, approximately 2,000 kg of natural uranium and 3,380 kg of depleted uranium were released. The maximum 90-strontium released has been estimated to have been 39.6 Ci (DOE 1979: 98-99). Some of the material was dispersed as a cloud, whereas fairly large pieces fell near the original point of firing. The CEARP files indicate that the cloud usually dispersed over several miles and in at least one case, nearly 10 miles (H-Div 1949a: 1).

During clean-up in 1963, 90 truck loads of material picked up from the area around the firing site were removed. Thus, much of the material that fell near the pads is no longer at the site (LASL 1963a). In years after 1963, surface clean-up was undertaken at periodic intervals (LASL 1976).

In addition to removing surface debris, the asphalt from the firing pads was removed, which revealed further contaminated soil. More contaminated soil then had to be removed and transported to the dump (LASL 1963).

Other materials besides high explosive that might have been in the shots, but for which no documentation was found, include lead, aluminum, steel, and possibly beryllium.

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(fall 1986)

The field survey found a large number of pieces of
cable, ^{numerous} small pieces of shrapnel consisting probably of #14
steel with a small amount of lead, pieces of wood & probably
rephalt & other shot residues at the firing sites.

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In 1976, as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP), TA-10 was resurveyed for radioactivity, and the results indicated low-level surface (<1m) contamination from 90-strontium and uranium (DOE 1979). More information can be obtained in the reference cited. Because 140-lanthanum has a half-life of 40.1 hr, for all practical purposes it has decayed and only its daughter will be present in Bayo Canyon.

A photo in the archives at Los Alamos National Laboratory dated June 8, 1944, has some indications that Bayo Canyon may have been the area in which sand pile detonation experiments occurred. Little information is available on any possible residues.

CERCLA Finding--

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-2-S/ST/CA/O-I-RW/HW (Tanks, Drains, Leach Fields, Outfalls)

Background--To provide the x-ray (gamma) source, radioactive lanthanum was placed in most of the shots fired. This material was obtained in a form that required purification by 1) separating 140-lanthanum from the parent 140-barium and daughter 140-cesium and impurities including 90-strontium, 2) precipitating the material, and 3) encapsulating it into a source. This process was undertaken from 1944-1950. Beginning in 1950, separations were performed at TA-35.

Radioactive wastes from the radiochemistry building, TA-10-1, were collected in lines and routed to holding tanks, pits, and a leaching field to the north. Liquids placed or flowing into the pits drained through an outlet pipe into the earth. Liquid wastes from the storage tanks were periodically discharged directly into the stream channel. At most, 117 Ci of 90-strontium has been estimated to have been in the liquid discharged.

Sanitary sewage lines, septic tanks, the outfall line from TA-10-1, and the TA-10-21 disposal pit may have received some contaminated liquid waste (DOE 1979: 12-13, 99). Documentation on other chemicals in the waste besides radionuclides is currently lacking. "Organic and inorganic contamination" was noted to be present in the incoming radioactive lanthanum source material (H-Div 1949b: 1).

According to ENG-R125, the major liquid disposal area, called the 'tank farm,' included contaminated material pits TA-10-41, -42, and -43, manholes for the acid sewer, TA-10-50 and -51, acid septic tank TA-10-39, and sanitary septic tank TA-10-38. A leaching field appears to have been near TA-41 (DOE 1979: 15).

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The field survey found six survey monuments, ^{4 associated} guard posts, ^{TA-10-1} surrounding an area which roughly encompassed the old tank farm, radiochemistry laboratory, ^{TA-10-1} & area of waste disposal pit TA-10-48. The monuments are marked "buried radioactive material no excavation prior to 2142 AD see county records." The area lies both within Los Alamos County & Santa Fe County. It is not clear whether material disposal pit TA-10-48 is included or not; it appears that it probably was not.

Further investigation indicated that in ~~1982~~ ¹⁹⁸² Bechtel had installed the monuments in conjunction with Professional Land Surveying. Apparently draft deed restrictions were also submitted to Los Alamos County ("Report on Remedial Action at the Bujo Canyon site Los Alamos NM May 1983" performed under contract DE-AC05-81OR20722 (copy))

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Background--At TA-10, two areas where solid waste was dumped existed during the years the site operated, and ENG-R125 shows them designated TA-10-44 and -48. In 1963, the decision was made to remove these dumps. At that time, TA-10-48 was a pit divided into two sections 5 ft square and 10 ft deep, each lined with boards, in which gloves, bottles, and laboratory equipment had been disposed of. This material was removed from TA-10-48 and taken to Area G; the pit was then excavated to a depth of 26 ft. As the pit became deeper, external radiation levels continued to be above background. Samples taken to a depth of 4 ft at the 26-ft level indicated between 0 to 600 d/m/dry granulated soil for 90-strontium with gross alpha levels approaching background. The decision was then made to refill this pit with clean dirt (LASL 1963). Later measurements around TA-10-48 indicated no lateral migration of 90-strontium (DOE 1979: 14).

Pit TA-10-44 had been used to bury gloves, rags, acid bottles and the like, all of which was moved to the contaminated dump. The pit was dug to a depth of 15 ft, where readings were 1.5 mR/h. The pit was refilled and leveled (LASL 1963).

The removal of buildings TA-10-13 and -15, both of which were bunkers, from TA-10 resulted in concrete debris that was not contaminated. It was dumped in the hole created by excavating the Tank Farm until the hole was full. The remaining uncontaminated concrete was hauled to the base of the city dump.

A wall from building 1 was reported to be uncontaminated and to be "buried in Dayo Canyon." The location of this burial site was not indicated (LASL 1963).

*
TA-10-4-CA-1 (Burning)

Background--In 1955, irradiated 238-uranium solutions deposited on plywood drums were reported to have been burned on two occasions in Dayo Canyon. A level of 20 mR/h of gamma at contact was reported for the ashes. The final fate of the ash is not known (H-Div 1955: 3).

In 1956, a work order was issued to make a burning pit, burn combustibles, and to take the ashes and unburned residues to the radioactive disposal pit. The work order indicates the burning pit was to be filled after the burning occurred and the ash was removed. Noncombustibles were also to be taken to radioactive disposal (LASL 1956).

Storage buildings TA-10-4 and -6 and cell building TA-10-3 were vacated in 1959 and were noted to have at least suspect 90-strontium contamination and high-explosive contamination (LASL 1959). Storage buildings TA-10-3, -5, and -19, and welding shop TA-10-32 were suspected in 1960 to have small amounts of

radioactive contamination in inaccessible places because of their history (LASL 1960a). That same year, buildings 19 and 32 were put in the stream bed and burned. Buildings 6 and 31 were burned in place. Buildings 3, 4, and 5 were moved to a clearing and burned. Ashes from building 6 indicated 1 to 12 mR/h, whereas those for 4 read 8 mR/h (LASL 1960b).

Buildings TA-10-10 and -11, both magazines, were noted to be contaminated with high explosive in 1963 (LASL 1963b). Buildings 2, storage, 8, inspection, 14, battery, 18, storage, and 21, personnel, and then 10, 11, 12, laboratory, and 34, static test, were burned, apparently in place. The combustible sections of laboratory building 1 were placed in an open area and burned and any radioactive residues were taken for disposal (LASL 1963).

CERCLA Finding--

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA-10-5-CA-HW/RW (Contaminated Building)

Background--Because of the activities associated with firing and with source preparation, discussed in sections 1 and 2 above, many of the buildings at TA-10 were contaminated with high explosive, 90-strontium, or uranium. The decision was made in 1963 to remove the buildings from the site. Building TA-10-2, a small shed, had been used to contain a large source shield and all shielding was taken to the contaminated dump. Ashes from burned buildings 2, 8, 14, 18, and 21 were also taken to the dump with some contaminated soil. Pit 40, the septic tank for building 21, was taken to the dump.

The x-unit pits were also removed to the dump. Cell building TA-10-31 was blasted and the rubble taken to the dump. The west end of building, contaminated to a level of 18 mR/h, is believed to have been disposed of in the contaminated dump. Warehouse building 20 was relocated to TA-3. The other structures were either burned or blasted and the debris burned onsite (LASL 1963).

During the initial field survey, only the ^{concrete} pond and ^{concrete} pad were found as visible remains of TA-10. Some ~~areas of sparse growth denote the old firing sites.~~ The area is closed to the general public except for walking. The land was transferred to Los Alamos County on July 1, 1967 (DOE 1979: 1).

from warehouse TA-10 20

REFERENCES

DOE 1979: *Formerly Utilized MED/AEC Sites Remedial Action Program - Radiological Survey of the Bayo Canyon, Los Alamos, New Mexico*, Department of Energy report DOE/EV-0005/15, June 1979.

- H-Div 1949a: Los Alamos Scientific Laboratory, *H Division Progress Report*, Oct. 20-
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- H-Div 1949b: Los Alamos Scientific Laboratory, *H Division Progress Report*, Feb. 20-
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- H-Div 1955: Los Alamos Scientific Laboratory, *H Division Progress Report*, Nov. 20-
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- LASL 1947: *A Technical Maintenance Group Report on General Building Data Concerning
the Los Alamos Scientific Laboratory Required for Planning Purposes*, Los Alamos
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- LASL 1956: Los Alamos Scientific Laboratory, Work Order 64554 dated July 26, 1956,
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- LASL 1959: "Vacated Los Alamos Scientific Laboratory Structures Health Condition,"
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- LASL 1960a: Charles D. Blackwell, "Radiation Survey of Structures Within TA-10,"
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Alamos Scientific Laboratory memorandum to ENG-4, May 17, 1963.
- LASL 1976: R.W. Drake, C.D. Blackwell, W.C. Courtright, "Survey of Old TA-10, Bayo
Canyon," Los Alamos Scientific Laboratory memorandum to Roy Reider, March
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TA-10 - BAYO CANYON SITE

TA10-1-CA-1-HW/RW (Firing Sites)

Background--In September 1944, Bayo Canyon began to be used for firing experiments. Two tanks served as mobile control rooms and personnel shelters. In the spring of 1945, more permanent structures were completed for chemistry work and firing (LASL 1947: 9).

The firing areas were in the canyon at two locations with two firing points at each location, according to ENG-R125. The southeast location included x-unit chamber TA-10-22 and electronics chamber TA-10-23 for firing point 1 and x-unit chamber TA-10-24 and electronics chamber TA-10-25 for firing point 2; associated control building TA-10-13 and battery building TA-10-14 served both 1 and 2. The northwest location included x-unit chamber TA-10-26 and electronics chamber TA-10-27 for firing point 3 and x-unit chamber TA-10-28 and electronics chamber TA-10-29 for firing point 4; associated control building TA-10-15 and battery building TA-10-16 was used for 3 and 4.

The shots fired included natural and depleted uranium surrounded by high explosive, with radioactive lanthanum acting as a source. What other materials may have been in the shots was not found in open literature. Associated with the radioactive lanthanum was 90-strontium, a contaminant. The amount of depleted and natural uranium expended in the shots is not well known. Using the best data available, estimates are that from 1944 until 1961, when firing ceased, approximately 2,000 kg of natural uranium and 3,380 kg of depleted uranium were released. The maximum 90-strontium released has been estimated to have been 39.6 Ci (DOE 1979: 98-99). Some of the material was dispersed as a cloud, whereas fairly large pieces fell near the original point of firing. The CEARP files indicate that the cloud usually dispersed over several miles and in at least one case, nearly 10 miles (H-Div 1949a: 1).

During clean-up in 1963, 90 truck loads of material picked up from the area around the firing site were removed. Thus, much of the material that fell near the pads is ~~not~~ longer at the site (LASL 1963a). In years after 1963, surface clean-up was undertaken at periodic intervals (LASL 1976).

In addition to removing surface debris, the asphalt from the firing pads was removed, which revealed further contaminated soil. More contaminated soil then had to be removed and transported to the dump (LASL 1963).

Other materials besides high explosive that might have been in the shots, but for which no documentation was found, include lead, aluminum, steel, and possibly beryllium.

In 1976, as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP), TA-10 was resurveyed for radioactivity, and the results indicated low-level surface (<1m) contamination from 90-strontium and uranium (DOE 1979). More information can be obtained in the reference cited. Because 140-lanthanum has a half-life of 40.1 hr, for all practical purposes it has decayed and only its daughter will be present in Bayo Canyon.

A photo in the archives at Los Alamos National Laboratory dated June 8, 1944, has some indications that Bayo Canyon may have been the area in which sand pile detonation experiments occurred. Little information is available on any possible residues.

CERCLA Finding--

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-2-S/ST/CA/O-1-RW/HW (Tanks, Drains, Leach Fields, Outfalls)

Background--To provide the x-ray (gamma) source, radioactive lanthanum was placed in most of the shots fired. This material was obtained in a form that required purification by 1) separating 140-lanthanum from the parent 140-barium and daughter 140-cesium and impurities including 90-strontium, 2) precipitating the material, and 3) encapsulating it into a source. This process was undertaken from 1944-1950. Beginning in 1950, separations were performed at TA-35.

Radioactive wastes from the radiochemistry building, TA-10-1, were collected in lines and routed to holding tanks, pits, and a leaching field to the north. Liquids placed or flowing into the pits drained through an outlet pipe into the earth. Liquid wastes from the storage tanks were periodically discharged directly into the stream channel. At most, 117 Ci of 90-strontium has been estimated to have been in the liquid discharged.

Sanitary sewage lines, septic tanks, the outfall line from TA-10-1, and the TA-10-21 disposal pit may have received some contaminated liquid waste (DOE 1979: 12-13, 99). Documentation on other chemicals in the waste besides radionuclides is currently lacking. "Organic and inorganic contamination" was noted to be present in the incoming radioactive lanthanum source material (H-Div 1949b: 1).

According to ENG-R125, the major liquid disposal area, called the 'tank farm,' included contaminated material pits TA-10-41, -42, and -43, manholes for the acid sewer, TA-10-50 and -51, acid septic tank TA-10-39, and sanitary septic tank TA-10-38. A leaching field appears to have been near TA-41 (DOE 1979: 15).

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The decision was made in 1963 to destroy the remaining structures in Bayo Canyon. When excavations of the tank farm began, pipes were found between pits 42 and 43. Another pit 12 inches in diameter was found 2 ft south of pit 42 and read 10 mR/h. A second unknown pit that was 2 ft square was located 40 ft north of 41 and a third was found 6 ft south of pit 50, the manhole for the acid sewer. The latter read 20 mR/h at 1 ft. At a depth of 10 ft, pits 41, 42, and 43 were found to have a common drain filled with clay drain pipe. The maximum reading in this area was 20 mR/h. Pits 38 and 39 were then removed and dirt was put between pits 39 and 50. A stainless steel pipe and three stainless steel acid tanks were found and taken to the contaminated dump with their contents. Acid pits 50 and 51 and connecting lines were removed. Noncontaminated septic tank 38 was also removed. Continued excavation at the Tank Farm revealed another leach bed under pit 43. After excavating to 20 ft, digging was stopped. The activity level at this point was 1.5 mR/h. From a description in 1963, it is not clear what the activity levels were at other areas in the Tank Farm when excavation ceased. The area west of structures 24 and 25, where sources had been washed and the liquid discharged, was checked to a depth of 4 ft and found to be free of contamination. A pipe from pit 50 was found to be running north to a leach field in the creek bed. Wood in the area gave a reading of 1.5 mR/h. It is not clear whether any of the leach field was removed (LASL 1963).

In 1973, a hole was drilled a few meters east of the location of the acid waste leaching field. A maximum of 20 pCi/g of 90-strontium was detected within 1.5 m of the surface. A hole drilled between the location of former pits TA-10-41 and -42 indicated 90-strontium levels up to 3.3 pCi/g within 1.5 m of the surface. In 1974, the area around the old sanitary outfall to the creek was sampled and levels of gross beta 3 to 20 times background were detected. The subsurface region north of TA-10-41 and -42 also showed elevated levels with a maximum of 24,000 pCi/g at a depth of 430-440 cm (DOE 1979: 14).

Apparently, no sampling has been done for any nonradioactive chemicals that may have been discharged in the effluent from the chemistry operations. No information on the TA-10-21 disposal pit and field has been obtained to date.

CERCLA Finding--

Planned Future Action--A CEARP Phase I supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-3-L-1-RW/HW (Landfills-Decommissioned and Still in Place)

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Background--At TA-10, two areas where solid waste was dumped existed during the years the site operated, and ENG-R125 shows them designated TA-10-44 and -48. In 1963, the decision was made to remove these dumps. At that time, TA-10-48 was a pit divided into two sections 5 ft square and 10 ft deep, each lined with boards, in which gloves, bottles, and laboratory equipment had been disposed of. This material was removed from TA-10-48 and taken to Area G; the pit was then excavated to a depth of 26 ft. As the pit became deeper, external radiation levels continued to be above background. Samples taken to a depth of 4 ft and the 26-ft level indicated between 0 to 600 d/m/dry granulated soil for 90-strontium with gross alpha levels approaching background. The decision was then made to refill this pit with clean dirt (LASL 1963). Later measurements around TA-10-48 indicated no lateral migration of 90-strontium (DOE 1979: 14).

Pit TA-10-44 had been used to bury gloves, rags, acid bottles and the like, all of which was moved to the contaminated dump. The pit was dug to a depth of 15 ft, where readings were 1.5 mR/h. The pit was refilled and leveled (LASL 1963).

The removal of buildings TA-10-13 and -15, both of which were bunkers, from TA-10 resulted in concrete debris that was not contaminated. It was dumped in the hole created by excavating the Tank Farm until the hole was full. The remaining uncontaminated concrete was hauled to the base of the city dump.

A wall from building 1 was reported to be uncontaminated and to be "buried in Bayo Canyon." The location of this burial site was not indicated (LASL 1963).

TA10-4-CA-1 (Burning)

Background--In 1955, irradiated 238-uranium solutions deposited on plywood drums were reported to have been burned on two occasions in Bayo Canyon. A level of 20 mR/h of gamma at contact was reported for the ashes. The final fate of the ash is not known (H-Div 1955: 3).

In 1956, a work order was issued to make a burning pit, burn combustibles, and to take the ashes and unburned residues to the radioactive disposal pit. The work order indicates the burning pit was to be filled after the burning occurred and the ash was removed. Noncombustibles were also to be taken to radioactive disposal (LASL 1956).

Storage buildings TA-10-4 and -6 and cell building TA-10-31 were vacated in 1959 and were noted to have at least suspect 90-strontium contamination and high-explosive contamination (LASL 1959). Storage buildings TA-10-3, -5, and -19, and welding shop TA-10-32 were suspected in 1960 to have small amounts of

radioactive contamination in inaccessible places because of their history (LASL 1960a). That same year, buildings 19 and 32 were put in the stream bed and burned. Buildings 6 and 31 were burned in place. Buildings 3, 4, and 5 were moved to a clearing and burned. Ashes from building 6 indicated 1 to 12 mR/h, whereas those for 4 read 8 mR/h (LASL 1960b).

Buildings TA-10-10 and -11, both magazines, were noted to be contaminated with high explosive in 1963 (LASL 1963b). Buildings 2, storage, 8, inspection, 14, battery, 18, storage, and 21, personnel, and then 10, 11, 12, laboratory, and 34, static test, were burned, apparently in place. The combustible sections of laboratory building 1 were placed in an open area and burned and any radioactive residues were taken for disposal (LASL 1963).

CERCLA Finding--

Planned Future Action--A CEARP Phase 1 supplemental study will be conducted to determine the presence or absence of hazardous substances.

TA10-S-CA-HW/RW (Contaminated Building)

Background--Because of the activities associated with firing and with source preparation, discussed in sections 1 and 2 above, many of the buildings at TA-10 were contaminated with high explosive, 90-strontium, or uranium. The decision was made in 1963 to remove the buildings from the site. Building TA-10-2, a small shed, had been used to contain a large source shield and all shielding was taken to the contaminated dump. Ashes from burned buildings 2, 8, 14, 18, and 21 were also taken to the dump with some contaminated soil. Pit 40, the septic tank for building 21, was taken to the dump.

The x-unit pits were also removed to the dump. Cell building TA-10-31 was blasted and the rubble taken to the dump. The west end of building 1 contaminated to a level of 18 mR/h, is believed to have been disposed of in the contaminated dump. Warehouse building 20 was relocated to TA-3. The other structures were either burned or blasted and the debris burned onsite (LASL 1963).

During the initial field survey, only the road and a pad were found as visible remains of TA-10. Some areas of sparse growth denote the old firing sites. The area is closed to the general public except for walking. The land was transferred to Los Alamos County on July 1, 1967 (DOE 1979: 1).

REFERENCES

DOE 1979: *Formerly Utilized MED/AEC Sites Remedial Action Program - Radiological Survey of the Bayo Canyon, Los Alamos, New Mexico*, Department of Energy report DOE/EY-0005/15, June 1979.

TABLE-----STATUS OF SITES AT TA-10, HAYO CANYON SITE

TA10-1-CA-1-RW/HW (SUBSURFACE CONTAMINATION)

Background--TA-10 was composed of four firing points and associated support buildings to study implosions. The methods used included large quantities of radioactive lanthanum, RaLa (half-life 40.2 hr), for blast diagnostics. RaLa sources were also prepared at the site and a drain field served the radiochemistry building. Several small solid waste disposal pits were also located onsite. Potential radioactive site contaminants were uranium and a trace contaminate of the RaLa process, 90-strontium, which has a half-life of 28 years. An additional hazard might be residual high explosives that did not detonate completely during tests. (A reported 254 explosive tests were made at the site.

A thorough decommissioning and decontamination of the site was done in 1963. In addition to removing structures, a small solid waste disposal pit and a sump for liquid wastes were excavated to a depth of 15 ft. Some deep, subsurface residuals remain. Contaminates probably include 90-strontium, organics and inorganic contamination.) A surface sweep was made to remove debris left from the tests (CDB 1963, WCC 1963). Periodic surveys of the area for contaminated debris and residual high explosives that might be exposed by weathering were made until it was determined that there was no further hazard from these materials.

CERCLA Finding--In 1976, the Energy Research and Development Administration (ERDA) identified the Bayo Canyon Site as one of the locations to be reevaluated as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP). A detailed survey was completed (DLM 1979) and a comprehensive environmental analysis of the site was made (FDB 1981, RWF 1982). The recommendations adopted were to set aside a 1.5 acre site encompassing the old radiochemistry laboratory and solid and liquid waste disposal sites as a restricted area to be retained under county ownership.

Planned Future Action--Because of the extensive work done under FUSRAP and the negotiations between DOE and the county, no further actions are planned.

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TA 10 (Bayo Canyon site)

TA-10-1-CA-I-HW/RW (firing site)

In Apr 1944 Bayo Canyon began to be used for firing experiments. Two tanks were used as mobile control rooms + personnel shelters. In the spring of 1945 more permanent structures were completed for chemistry work + firing. (A Technical Maintenance Group Sept 1945 General Slog

Data concerning the Los Alamos Sci Lab Request for Planning Purposes - LAB-A-5 Sept 11 1947 p9 LASL 1947

The firing areas according to ENG-R125 were in the canyon at two locations with two firing points at each location. The Southeast location included X-unit chamber TA-10-22 + electronics chamber TA-10-23 for firing pt 1 Area X-unit chamber TA-10-24 + electronics chamber TA-10-25 for firing pt 2 with associated control bldg TA-10-13 + battery bldg TA-10-14 ^{for both 1 & 2.} The northwest location included X-unit chamber TA-10-26 + electronics chamber TA-10-27 for firing pt 3 X-unit chamber TA-10-28 + electronics chamber TA-10-29 for firing pt 4 with associated control bldg TA-10-15 + battery bldg TA-10-16 again for both 3 & 4.

The shots fired included natural + depleted uranium surrounded by high explosive with a ~~quantity~~ ^{quantity} of Rata with ~~cluster~~ ^{cluster} to act as a ~~service~~ ^{service}. What other materials there may have been in the shots was not found in the open literature. Associated with the Rata was 90-Sr which was a contaminant. The amount of depleted + natural uranium expended in the shots is not well

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TA 10 (Bayo Canyon site)

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TA-10 - LA-2 - HW/TW (Yering sites)

In June 1944 Bayo Canyon began to be used for firing operations. Two tanks were used in mobile control rooms & personnel selections. In the spring of 1945 more permanent structures were built for chemistry work & firing. LA Technical Maintenance Group (LA-2) on General Stg.

Data concerning the Los Alamos Sci Lab Required for Planning Purposes - LA-5-A-5 Sept 11 1947 p9) LASL 1947

Two firing areas according to ENG-2125 were in the canyon at

two locations with two firing points at each location. The southeast

locations included X-unit

chamber TA-10-22 & electronics chamber TA-10-23 for firing pt 1

and X-unit chamber TA-10-24 & electronics chamber TA-10-25 for

firing pt 2 with associated control bldg TA-10-13 & battery bldg

TA-10-14 ^{for both 1 & 2.} The northwest location included X-unit

chamber TA-10-26 & electronics chamber TA-10-27 for firing pt 3

X-unit chamber TA-10-28 & electronics chamber TA-10-29 for

firing pt 4 with associated control bldg TA-10-15 & battery

bldg TA-10-16 again for both 3 & 4.

The shots fired included natural & depleted uranium surrounded by high explosive with a quantity of Rado in the center to act as a "trigger" device. What other materials there may have been on the shots was not found in the open literature associated with the Rado and 90-5r which was a contaminant. The amount of depleted uranium present on the shots is not well

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CORRECTION

END

known. It has been estimated, using the best data available, that
from 1944 until 1961 when fuming ceased, about approximately
2000 kg of natural uranium & 3380 kg of depleted uranium was
released. The maximum 90-Sr released has been estimated at
39.6 Ci. (Formerly Utilized, MED/AEC Site Remedial Action
Program - Radiological Survey of the Bargo Canyon, Los Alamos
New Mexico, June 1979, DOE/EV-0005/15, pp. 98-99.) DOE 1979

Some of this material dispersed as a cloud whereas

fairly large pieces fell near the original point of fuming.
The CEARP files indicate that the cloud usually dispersed
several miles ^{at least} & in one case nearly ten miles.

(Abstract - H Div Prog Rept - Oct 20 1949 - Nov 20 1949 p 1) H-Div 1949A

During cleanup in 1963, 90 truck loads of material picked
up from around the fuming site area was removed. Hence,
much of the material which fell near the pads was no longer at the
site. (to Dean D Meyer from Charles D Blackwell & Frank Aul 1963)
Babich "Removal of all Structures in Bargo Canyon" Aug 1963)
In years since 1963, surface cleanup was undertaken at
periodic intervals (to Ray Kelder from K.W. Drake, C.D. Blackwell,
W.C. Courtwright "Survey of all 71 in Bargo Canyon"
March 29, 1976). LASL 1976

In addition to removal of surface debris the debris
from the fuming pads was removed. This included further
contaminated soil, which required further removal & transport

to the dump. (to Dean D Meyer from Charles D Blackwell &
Frank Babich "Removal of all Structures in Bargo Canyon"

Aug 19, 1963

LASL 1963 (same as above)

Other materials besides HE which might have been
in the shot, but for which no documentation was found,
include lead, Al, steel, & possibly Be.

In 1976 as part of the FUSRAP program T-10 ^{same}
was reexamined ^{for radioactivity} & the results indicated low-level surface DOE
(< 1 -m) contamination with 90 Sr & uranium (DOE/EV-000
1979)
More information can be obtained in the reference cited.

Because ^{140}La has a half-life of 40.1 hr it has all
(for practical purposes) decayed out & only its daughter will be
present in Bayo

There are some indications that Bayo may have
been the area in which sand pile detonation experiments
occurred (photo 4/8/74) (Los Alamos Nat. Laboratory Archives)
Little information is available on any possible residues

TA-10-2-S/ST/CA/O - I- RW/HW (tanks, drums, leach fields, outfall)

To provide the X-ray (gamma) source radioactive La was placed in most of the chets fuel. This material was obtained in a form which required purification by separation of ^{140}La from the parent ^{140}Ba & daughter, ^{140}Ce and impurities including ^{90}Sr , precipitation, & encapsulation into a source.

All three steps were undertaken from 1944-1950. Beginning in 1950 separations were done at Td-35.

Radioactive wastes from the radiochemistry bldg (TA-10-1) were collected in lines & routed to holding tanks, pits, & a leaching field to the north. Liquids flowed or flowing into the pits drained through an outlet pipe into the earth. Liquid wastes from the storage tanks were periodically discharged directly into the stream channel. A total of ^{maximum of} 117 Ci of ^{90}Sr has been estimated to have been in the liquid discharges.

Sanitary sewage lines, septic tanks, the TA-10-1 outfall line, & the TA-10-21 disposal pit may have received some contaminated liquid waste. (DOE/EV-0005/15 pp-12-13)

Documentation of other chemicals, besides radionuclides is currently lacking. There is a note of "organic and inorganic contamination" being present in the incoming La source.

Manual (H Div Prog Rpt - Feb 20 - March 20, 1949 p 1) H-Div 1949

According to ENG-R125

The major liquid disposal area called the "hot farm" included condemned materials tanks TA-10-41, 42, & 43, manholes for the acid sumps TA-10-50, 51, acid septic tank TA-10-39, 5
sanitary septic tank - 38. There appears to have been a leaching field near TA-41 (DOE/EV-0005/15 p 15) some

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In 1963 it was decided to destroy the remaining structures in Bayo.
When excavations of the Tank Farm area began pipes were found between
pits 42 & 43. Another pit 1.2" in diameter was found.

2 ft south of pit 42 which reads 10 m²/h, ^{1 second unknown} pit 31 square was
located 40' N of 41. There was found 6 ft south of pit 50 (old sewer manhole)
which read 20 m²/h at 1 y/cost. At a depth of 10 feet it

was found that pits 41, 42, & 43 had a common drain filled
with clay drain pipe. The maximum reading in this area was
20 m²/h. Pits 38 & 39 were then removed followed by
drain between pit 39 & pit 50. A stainless steel pipe &

3 stainless steel acid tanks were found. These were taken to the
contaminated dump with their contents. Read pits 50 & 51 &

connecting lines were removed. Non contaminated sump tank 38
was removed. Continued excavation at the Tank Farm found another
leach bed under pit 43. After excavating to 20 feet the
excavation was stopped. The activity level at this point was

1.5 m²/h. From the 1963 description it is not clear what
the activity levels were at other areas in the Tank Farm where
excavation ceased. (To Dean D Meyer from Charles Blackwell &

Frank Koblek Removal of all Structures in Bayo Canyon Aug. 19 1963 ^{Dump}

The area west of structures 2 & 4 & 25 where sources had been washed the
leach discharged was checked, ^{for activity &} found free of contamination

A pipe from pit 50 was found running in route to a
leach field on the creek bed. Work on this area gave a reading of
1.5 m²/h. It is not clear whether any of the leach field was
removed or not.

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In 1973 a hole was drilled a few meters east of the location of the acid waste leaching fields. A maximum of 20 pCi/g 90-Sr was detected within 1.5 m of the surface. A hole drilled between the location of former site TA-10-41 + 42 indicated 90-Sr levels up to 3.3 pCi/g within 1.5 m of the surface. In 1979 the area around the old sanitary landfill to the creek was sampled & levels of gross P_{3-20} turned background were detected. The subsurface region north of TA-10-41 & 42 also showed elevated levels with a maximum of 24000 pCi/g at 30-90 cm depth. (DOE/EV-0005/15p ^{name} 12)

Apparently, there has been no sampling for any non-radioactive chemicals which may have been discharged in the effluent from the chemistry operations.

No information on ^{the} TA-10-21 ^{disposed pit + field} has been obtained so far.

TA-10-3-L-I-RW/HW (Landfills - Decommissioned + Steel in Place)

At TA-10 there were two areas in which solid waste were dumped during the years of operation. These were designated according to ENG-R25 as TA-10-44 and TA-10-48.

In 1963 it was decided to remove these dumps.

At that time TA-10-48 was a pit divided into two sections of 5' x 5' x 10' deep, each lined with boards, which had been used for disposal of gloves, bottles, & lab equipment. This material was removed from TA-10-48 & taken to Area G and the pit excavated to a depth of 26'. As the pit became deeper external radiation levels continued above background. Samples taken to a depth of 4' at the 26' level indicated between 0-600 d/m/dmg gram soil for 90-Sr within gross α levels approaching background.

It was therefore decided to refill this hole with clean dirt. (to Dean D Meyer from Charles D Blockwell + Frank Babich, NAME "Removal" Aug 19 1963)

Later measurements around TA-10-48 indicated no lateral migration of 90-Sr. (DOE/EV-0005/15p 14) NAME

Pit TA-10-44 had been used for burial of gloves, caps, acid bottles, etc. These were removed to the contaminated dumps. The pit was dug to a depth of 15' where readings were 1.5 mR/h. The pit was refilled & leveled. (to Dean D Meyer from Charles D Blockwell) NAME

The removal of bldgs. ¹³⁺¹⁵ ^{both} which were bunkers
concrete debris which was not contaminated. This was dumped in
The road created by excavation by the Tent farm until full.
The remaining un-contaminated concrete was hauled to the
base of the city dump.

A wall from Bldg. 1 was reported to be un-contaminated
and "buried in Gage canyon". Location of this burial site
is not indicated (In Deam D Meyer from Charles

Name '63)

TA-10-4-CA-I - (burning)

In 1955 it was reported that on two occasions irradiated Z3F-U solutions deposited on plywood drums were burned in Bays Canyon. A level of 20 mR/h of gamma at contact was reported for the drums. Final fate of the actv. is not known (H-Div Prog Rpt Nov 20 - Dec 20 1955 p 3) H-Div 1955

In 1956 there is a work order to ~~exp. track~~ ~~fill in~~ ~~burn~~ burning pit, burn combustibles, take action & unburned residue to ^{the} radioactive disposal pit.

The work order indicates the burning pit to be filled after the burning & actv. removal. Non-combustibles were also to be taken to radioactive disposal. (Work Order 64559, 7/26/56) LASL 1956

In 1959 storage bldg TA-10-4, + 6 + cell bldg TA-10-31 were vacated & noted to have at least except 90-Sr contamination & HE contamination (Vacated LASL Structures & Health Conditions, LASL 10/1/59). In 1960 storage bldgs TA-10-3, 5, & 19 & welding shop TA-10-32 were found that they might, because of ^{the} structure, have small amounts of radioactive contamination in inaccessible places. (to S. E. Russo from Charles D. Blackwell "Radiation Survey of Structures within TA-10 Feb 8 1960" LASL 1960) In 1960 Bldg 19 & 32 were put in the stream bed & burned. Bldg 6 & 31 were burned in place. Bldg 3, 4, & 5 were moved to a clearing & burned. Actv. from bldg 6 indicated

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1-12 m²/h whereas those for 4 need 8 m²/h (to Dean D Meyer from Charles D Blackwell. "Burning of abandoned Structures at TA-10" March 14 1960. LASL 1960 10

For 1963 ^{magnifying} bldg TA-10-10 & TA-10-11 were noted to be HE contaminated (to ENG-4 from H. B. Satch, Officer

Procedure for Burning Bldgs at TA-10 May 17 1963) LASL 1963 10

~~Buildings 2, 8, 14, 18, 21, 22, 10, 11, 12, 34~~ were burned, apparently in place. The combustible sections of laboratory bldg 1 were placed in an open area & burned, (to Dean D Meyer from Charles D Blackwell. ^{same '63} (Any Radioactive residues were taken for disposal)

Buildings 2 (storage), 8 (inspection), 14 (batteries), 18 (storage) & 21 (generator) and then 10, 11, 12 (laboratory) & 34 (static test)

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TA 10 - 5 - CA - HW/TW (Contaminated Bldg)

Because of firing activities + source preparations (see section 112) many of the bldgs at TA-10 were contaminated with HE, 90-Sr, or Uranium.

In 1963 it was decided to remove the bldgs from the site. Bldg TA-10-2, a small shed, had ^{been} found to contain a large source shield & all shielding was taken to the contaminated dump. Ashes from burned bldg 2, 8, 14, 18, & 21 were also taken to the dump along with some contaminated steel. Pd #0, the sinter tank for bldg 21 was taken to the dump.

The X-ray pits were also removed to the dump. Cell bldg TA-10-31 was blasted & the rubble taken to the dump.

The west end of bldg 1 contaminated to a level of 18 mR/h is believed to have been disposed of in the contaminated dump.

Warehouse Building 20 was relocated to TA-3.

The other structures were either burned or blasted. The debris found on site (to Dean D Meyer from Charles Blackwell, ^{May 1963}).

The ^{initial} field survey found only the road & a pad as mobile survivors of TA-10. Some areas of sparse grass denote the old firing pits. The area is closed to the general public except for walking.

The land was transferred to King Aicomes County on July 1, 1967 (DOE/E.Y. - 0005/15 p1)