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Nevada
Environmental
Restoration
Project

Closure Report for Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada

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Closure Report For Corrective Action Unit 424: Area 3 Landfill Complex Tonopah Test Range, Nevada

Prepared for
U. S. Department of Energy
Nevada Operations Office
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June 1999

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Closure Report For Corrective Action Unit 424: Area 3 Landfill Complex Tonopah Test Range, Nevada

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ACRONYMS AND ABBREVIATIONS

CADD	Corrective Action Decision Document
CAIP	Corrective Action Investigation Plan
CAP	Corrective Action Plan
CAS	Corrective Action Site
CAU	Corrective Action Unit
cm/sec	centimeter per second
COC	Constituent of Concern
CR	Closure Report
DOE	U.S. Department of Energy
DOE/NV	U.S. Department of Energy, Nevada Operations Office
EPA	U.S. Environmental Protection Agency
FFACO	Federal Facilities Agreement and Consent Order
ft	foot
lb/ft^3	pound per cubic foot
gal	gallon
in	inch
kg/m^3	kilogram per cubic meter
km	kilometer
L	liter

ACRONYMS AND ABBREVIATIONS (continued)

m	meter
m^3	cubic meter
mi	mile
mg/kg	milligram per kilogram
NDEP	Nevada Division of Environmental Protection
NTS	Nevada Test Site
ppm	part per million
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation and Recovery Act
SVOC	semi-volatile organic compound
TCLP	Toxicity Characteristic Leachate Procedure
TPH	total petroleum hydrocarbons
TTR	Tonopah Test Range
µg/kg	microgram per kilogram
USAF	United States Air Force
VOC	volatile organic compound
yd^3	cubic yard

ABSTRACT

This Closure Report provides the documentation for closure of the Area 3 Landfill Complex Corrective Action Unit (CAU) 424. The site is located on the Tonopah Test Range, approximately 225 kilometers (140 miles) northwest of Las Vegas, Nevada.

CAU 424 consists of eight sites, designated as A3-1 through A3-8, where landfill waste cells were believed to have operated during different time intervals from before 1963 to approximately 1993. The locations and contents of the landfill waste cells were poorly documented due to the unregulated disposal practices commonly associated with early operation of the landfills. A corrective action investigation performed in 1997 was documented in the Corrective Action Decision Document (CADD) and reported that landfill wastes were found at all sites except A3-7. The CADD concluded that site A3-7, as well as a number of suspected individual waste cells and/or geophysical anomalies within five other sites, were not landfill cells (U.S. Department of Energy [DOE], 1998a). The CADD reported that petroleum-hydrocarbon impacted soils were found at Landfills A3-1 and A3-2, and that surface depressions existed at a number of the sites.

Three remedial alternatives were selected in the CADD (DOE, 1998a) for CAU 424: no action (Alternative 1) for site A3-7; removal of petroleum hydrocarbon wastes (Alternative 3) for Landfill A3-2; and administrative closure (Alternative 2) for the six other sites. The Nevada Division of Environmental Protection (NDEP)-approved Corrective Action Plan (CAP) proposed the closure methods (DOE, 1998b). The following closure activities were completed following the approved CAP: removal of A3-2 petroleum hydrocarbon waste; repair and maintenance of landfill soil covers (backfilling and compaction of surface depressions, including the A3-2 excavation); installation of landfill location markers and warning signs; and implementation of use restrictions.

Since closure activities for CAU 424 have been completed following the NDEP-approved CAP (DOE, 1998b) as documented in this Closure Report, the U.S. Department of Energy, Nevada Operations Office requests that:

- CAU 424 be moved from Appendix III to Appendix IV of the Federal Facility Agreement and Consent Order.
- NDEP provide a Notice of Completion to the U.S. Department of Energy, Nevada Operations Office.

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1.0 INTRODUCTION

The U.S. Department of Energy, Nevada Operations Office (DOE/NV) operates the Nevada Test Site (NTS) and entered into a trilateral agreement with the state of Nevada and the U.S. Defense Threat Reduction Agency. The trilateral agreement, the Federal Facilities Agreement and Consent Order (FFACO), provides a framework for identifying, characterizing, remediating, and closing DOE/NV environmental sites in Nevada (FFACO, 1996). Corrective Action Units (CAUs) have been identified in the FFACO at the Tonopah Test Range (TTR) which is currently operated by the U.S. Department of Energy, Albuquerque Operations Office, and U.S. Air Force (USAF).

This Closure Report (CR) provides documentation for the closure of the Area 3 Landfill Complex CAU 424, as proposed in the Corrective Action Plan (CAP) (DOE, 1998b). The site is located on the TTR, approximately 225 kilometers (km) (140 miles [mi]) northwest of Las Vegas, Nevada (Figure 1).

CAU 424 consists of eight landfill sites (Figure 2), each designated as a separate Corrective Action Site (CAS). In general, each landfill site is comprised of one or more buried waste cells which received wastes from daily operations at the Area 3 Compound during different time intervals from before 1963 to approximately 1993. Waste cell locations and contents were poorly documented due to the unregulated disposal practices commonly associated with early landfill operations. Available process knowledge does not indicate the disposal of hazardous wastes. The Corrective Action Investigation Plan (CAIP) (DOE, 1997) described how potential waste cell locations were identified and proposed a field investigation to verify and characterize the suspected waste cells. The field investigation was performed in 1997 and was reported in the Corrective Action Decision Document (CADD) (DOE, 1998a). The findings in each landfill site are summarized in Table 1.

Landfill A3-1 consists of four buried waste cells and one large open waste cell that was partially filled with construction debris (Figure 3). Landfill debris was found in 11 of 13 soil borings. Total petroleum hydrocarbon (TPH) was identified as the only constituent of concern (COC) and was found in one boring (BH1-13) between the depths of 2.1 and 10.4 meters (m) (7 and 34 feet [ft]) as gasoline (in concentrations up to 200 milligrams per kilogram (mg/kg) and diesel (in concentrations up to 790 mg/kg), exceeding the Regulatory Action Level for TPH of 100 mg/kg. A surface depression designated as cell A3-1a was no longer suspected to be a waste cell after no landfill debris or COCs were found in two other borings, but backfilling of the surface depression was recommended to minimize ponding, infiltration, and erosion.

Landfill A3-2 consists of one buried waste cell (Figure 3). Landfill debris was found in four of the six borings. Petroleum hydrocarbon sludge was found in soil boring BH2-3 at a depth of 3 m (10 ft) and identified as waste oil at a concentration of 48,000 mg/kg, exceeding the Regulatory Action Level for TPH of 100 mg/kg. A subsidence sinkhole revealed the presence of a buried

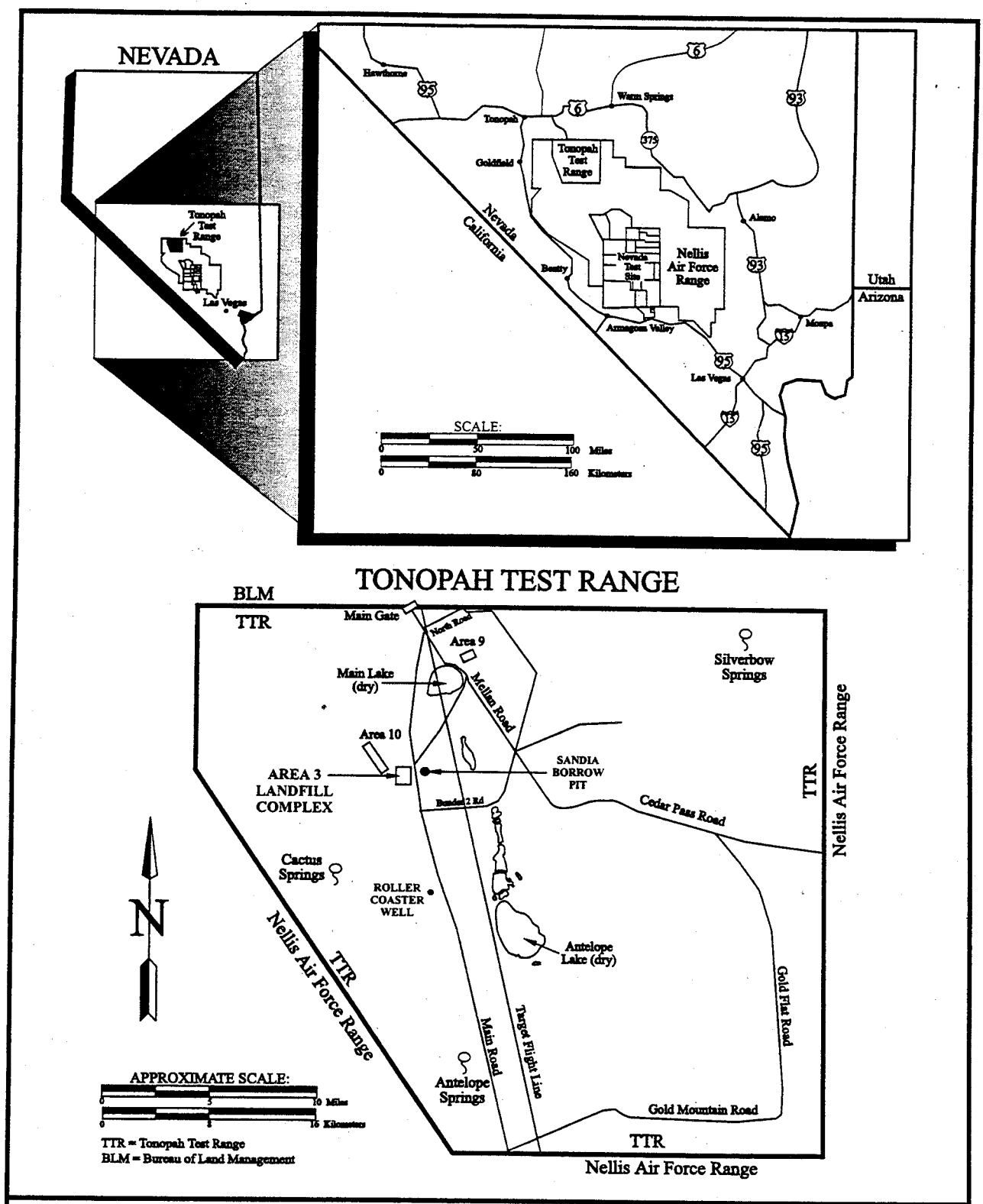

FIGURE 1
LOCATION OF THE AREA 3 LANDFILL COMPLEX
AT THE TONOPAH TEST RANGE

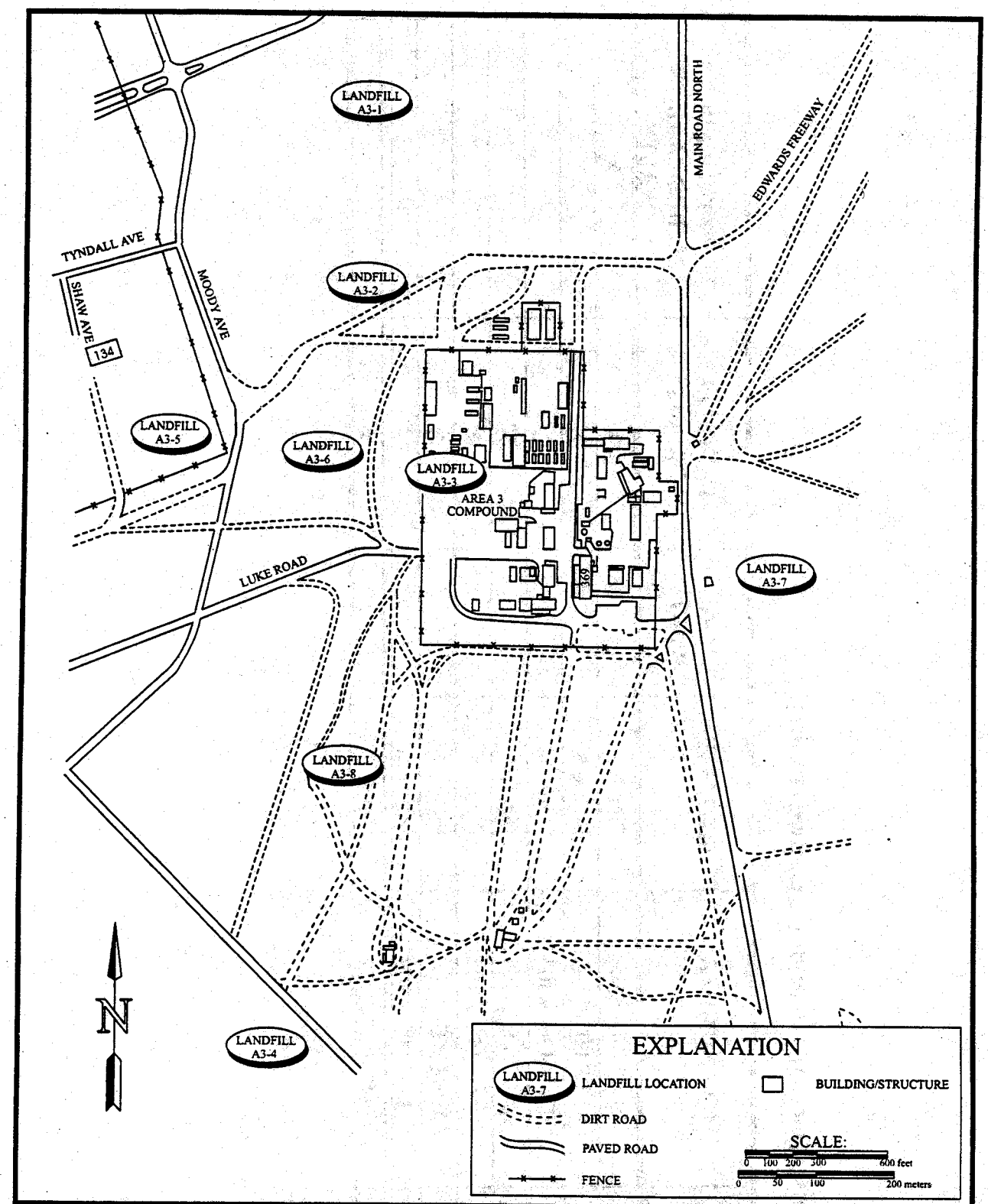

FIGURE 2
LOCATIONS OF THE EIGHT AREA 3 LANDFILL SITES

TABLE 1 - SUMMARY OF LANDFILL CHARACTERISTICS

LANDFILL	CAS NUMBER	SITE MAP	NO WASTE	LANDFILL DEBRIS	PETROLEUM HYDROCARBON WASTE
A3-1	03-08-001-A301	Figure 3		X	X
A3-2	03-08-002-A302	Figure 3		X	X
A3-3	03-08-002-A303	Figure 4		X	
A3-4	03-08-002-A304	Figure 5		X	
A3-5	03-08-002-A305	Figure 6		X	
A3-6	03-08-002-A306	Figure 7		X	
A3-7	03-08-002-A307	Not shown	X		
A3-8	03-08-002-A308	Figure 8		X	

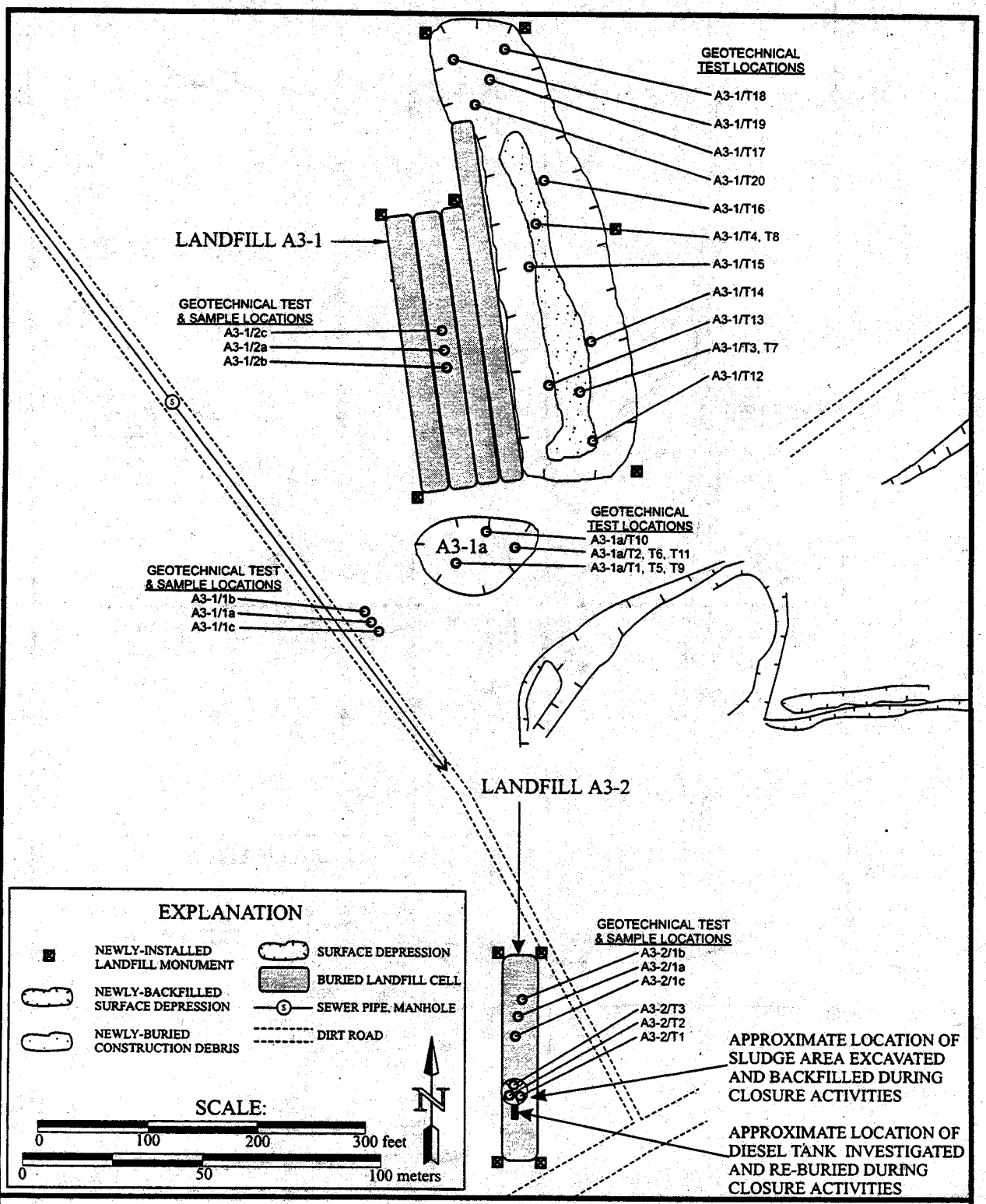

FIGURE 3
SITE PLANS FOR LANDFILLS A3-1 AND A3-2

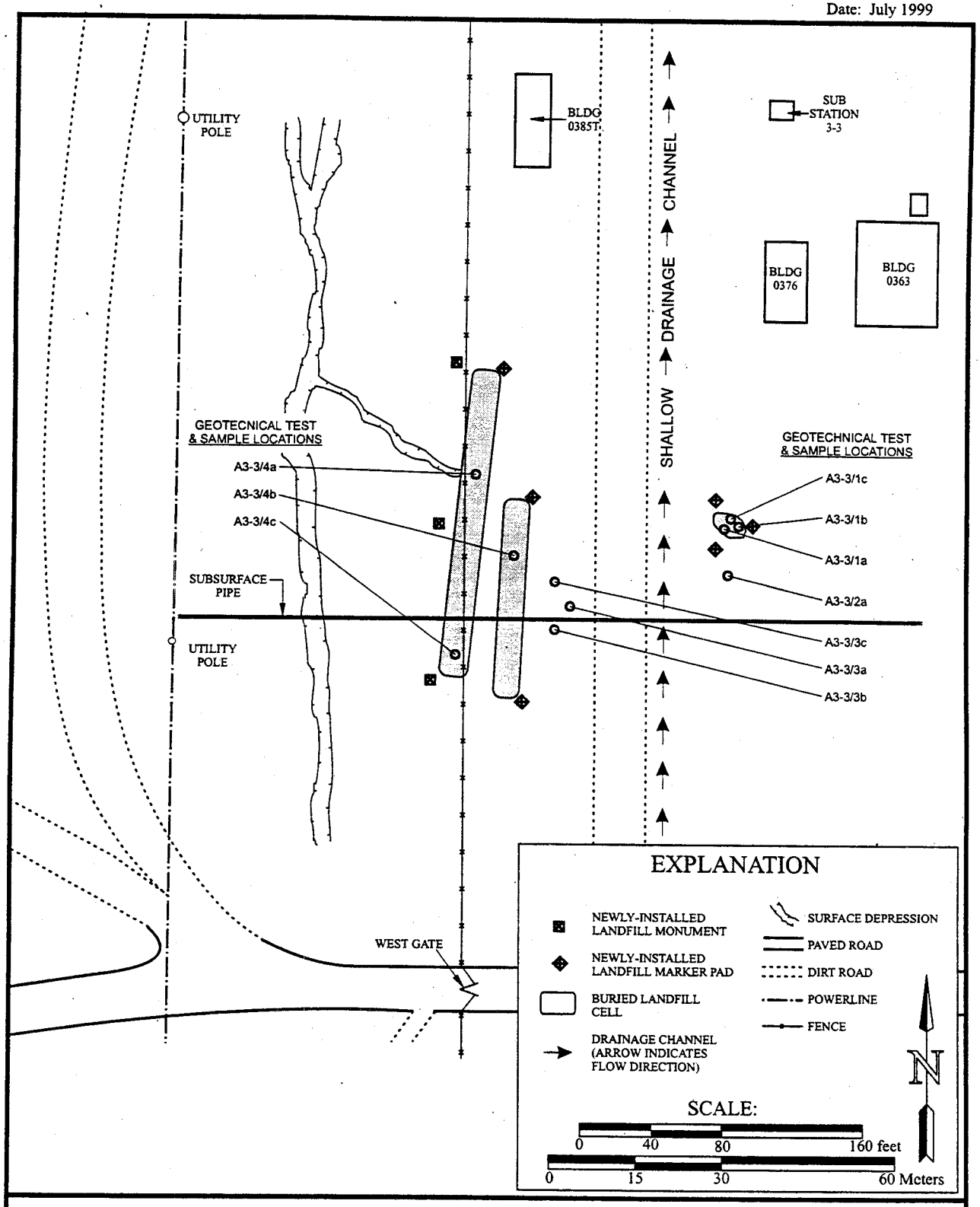

FIGURE 4
SITE PLAN FOR LANDFILL A3-3

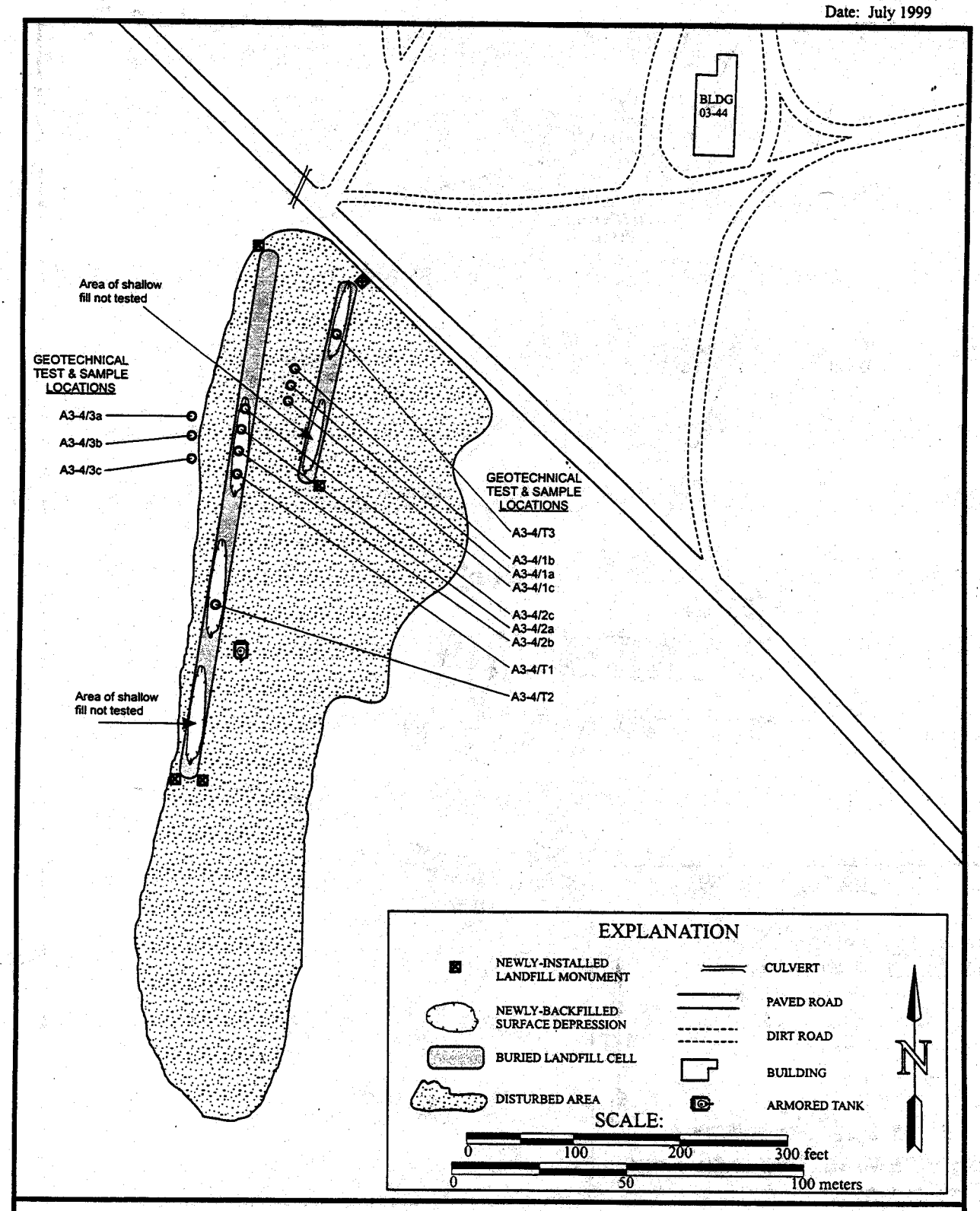

FIGURE 5
SITE PLAN FOR LANDFILL A3-4

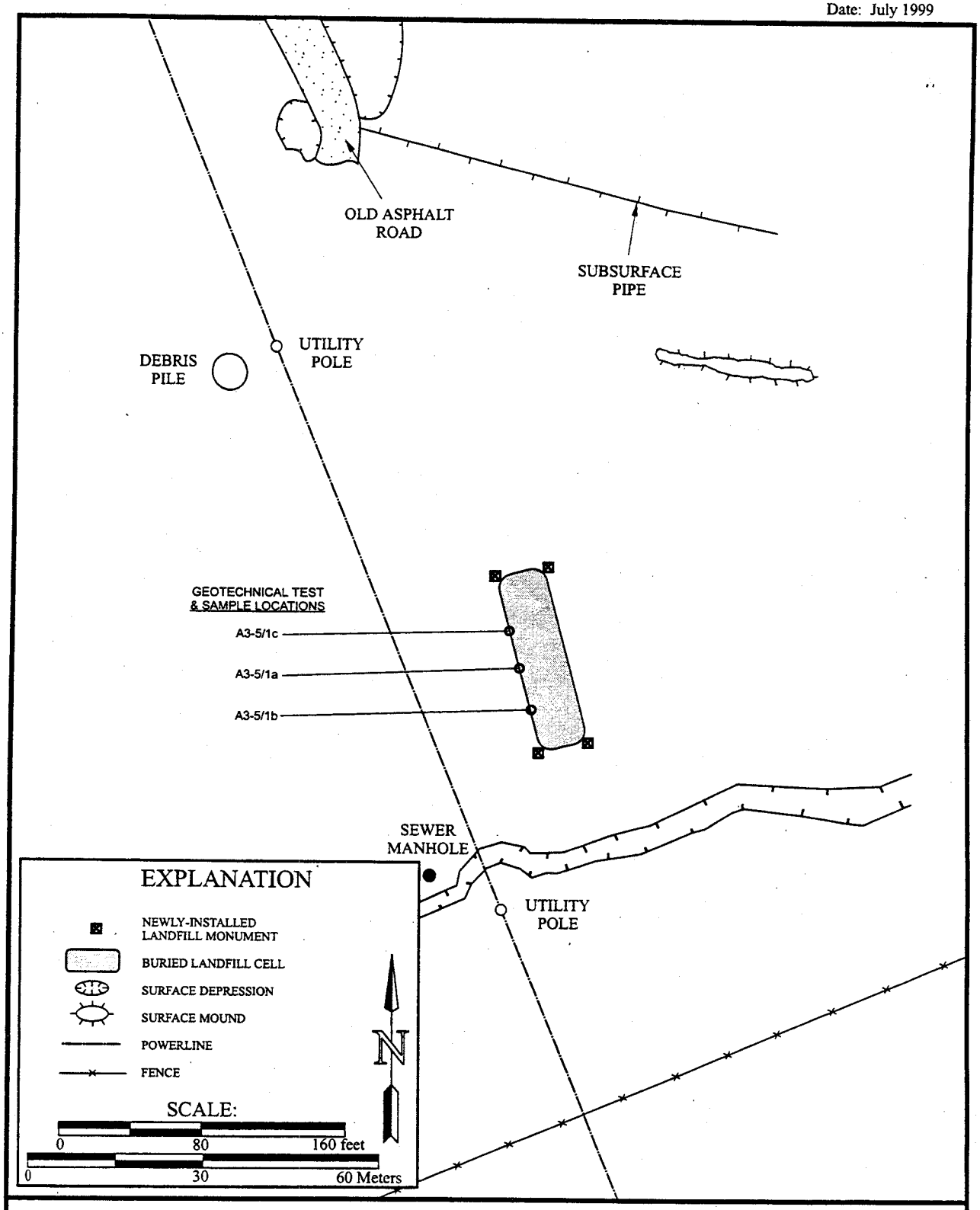

FIGURE 6
SITE PLAN FOR LANDFILL A3-5

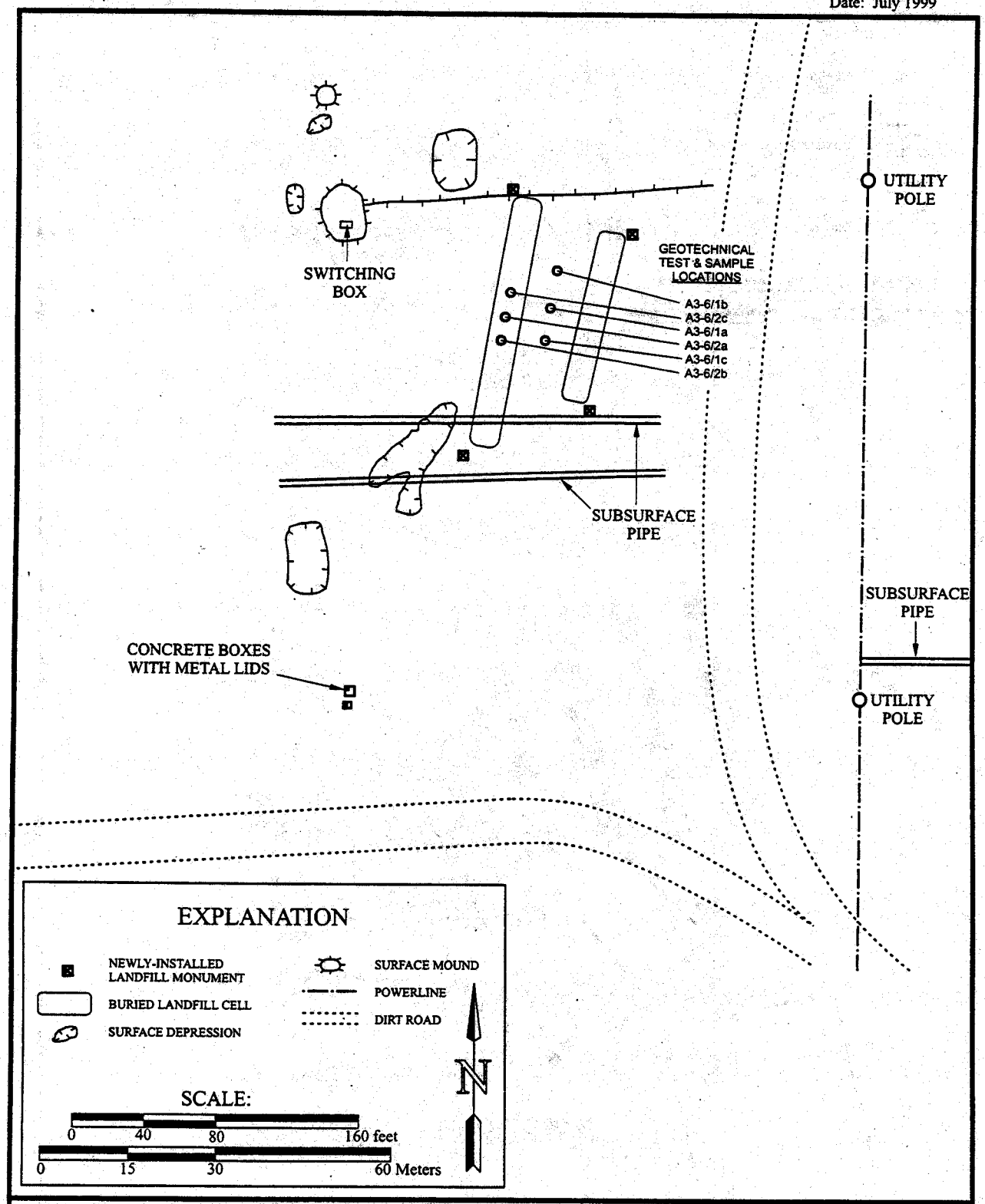

FIGURE 7
SITE PLAN FOR LANDFILL A3-6

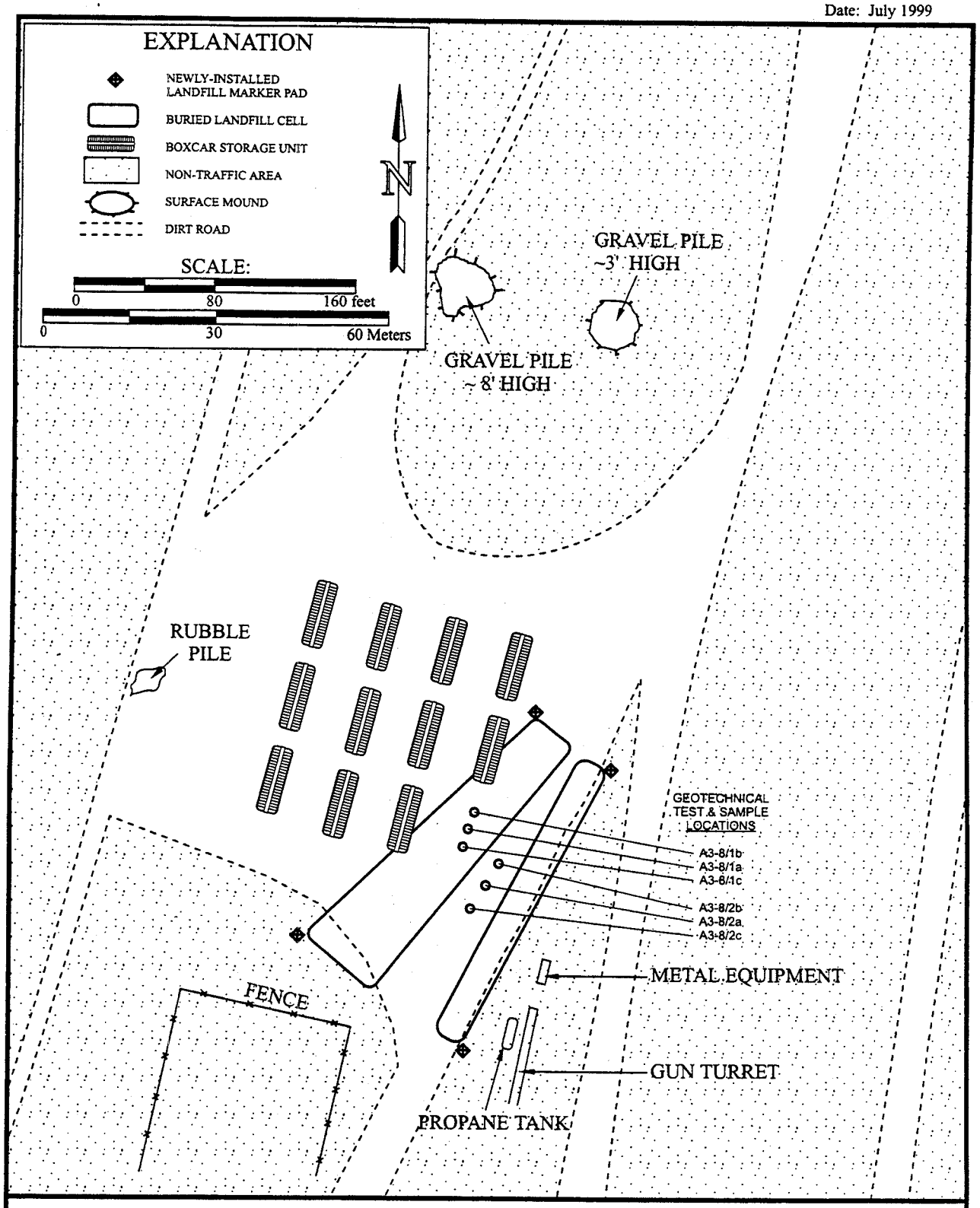

FIGURE 8
SITE PLAN FOR LANDFILL A3-8

diesel storage tank, but the sinkhole was backfilled without further investigation. A second cell is no longer suspected to be a buried waste cell after no landfill debris or COCs were found in two other borings.

Landfill A3-3 consists of three buried waste cells (Figure 4). Landfill debris but no COCs were found in five of eight borings. A fourth cell is no longer suspected to be a buried waste cell after no landfill debris or COCs were found in one other boring.

Landfill A3-4 consists of two buried waste cells (Figure 5). Landfill debris but no COCs were found in seven of seven borings. Surface depressions and fissures were noted. A geophysical anomaly is no longer suspected to be a waste cell after no landfill debris or COCs were found in one other boring.

Landfill A3-5 consists of one buried waste cell (Figure 6). Landfill debris but no COCs were found in two of three borings.

Landfill A3-6 consists of two buried waste cells (Figure 7). Landfill debris but no COCs were found in all five borings.

Landfill A3-7 is no longer suspected to be a landfill after no landfill debris or COCs were found in one soil boring; therefore, a site plan is not provided.

Landfill A3-8 consists of two buried waste cells (Figure 8). Landfill debris but no COCs were found in four of six borings. The western cell is partially overlain by two railroad boxcars used for storage. The boxcars are situated over shallow excavations (to lower their floors closer to ground level) which were reported to intersect the western cell, exposing landfill wastes. A third buried cell and a buried pit are no longer suspected to be waste cells after no landfill debris or COCs were found in two other borings.

Conclusions provided in the CADD (DOE, 1998a) indicated that corrective actions were needed to protect human health and the environment but that the Area 3 Landfill Complex did not have to meet the requirements pertaining to Class III solid waste facilities.

1.1 PURPOSE

The purpose of this CR is to:

- Document the closure activities and provide the information collected, as recommended in the CADD (DOE, 1998a) and proposed in the CAP (DOE, 1998b).
- Provide a Post-Closure Inspection Plan.

- Obtain a Notice of Completion from the NDEP.
- Recommend the movement of CAU 424 from Appendix III to Appendix IV of the FFACO.

1.2 SCOPE

The following closure activities were implemented for CAU 424:

- Partial excavation of Landfill A3-2 to remove reported petroleum hydrocarbon wastes (Corrective Action Alternative 3).
- Existing soil covers were repaired and maintained (backfilled excavation and surface depressions, re-compact, and re-grade); permanent landfill markers and warning signs were installed; and administrative use restrictions were enacted for CAS Numbers: 03-80-001-A301, 03-80-002-A302, 03-80-002-A303, 03-80-002-A304, 03-80-002-A305, 03-80-002-A306, and 03-80-002-A308 (Corrective Action Alternative 2).
- No action was performed at Landfill A3-7 CAS No. 03-80-002-A307 because the site is no longer believed to be a landfill (Corrective Action Alternative 1).
- Closure activities were coordinated with the USAF because of the location of the site and use restrictions.
- This CR documents remedial closure activities, provides a Post-Closure Inspection Plan, and proposes closure of CAU 424.

1.3 CLOSURE REPORT CONTENTS

This CR is divided into the following sections:

- Section 1.0 - Introduction: Site background, purpose, scope, and report contents
- Section 2.0 - Closure Activities: Corrective action activities, deviations from the CAP as approved, corrective action schedule as completed, and site plan
- Section 3.0 - Waste Disposition
- Section 4.0 - Closure Verification Results

- Section 5.0 - Post-Closure Inspection Plan
- Section 6.0 - Summary, Conclusions, and Recommendations
- Section 7.0 - References
- Appendix A - Analytical Laboratory Report for Landfill A3-2 Closure
- Appendix B - As-Built Engineering Drawings
- Appendix C - Waste Disposal Documentation
- Appendix D - Geotechnical Test Results
- Appendix E - Use Restriction Documentation
- Appendix F - Post-Closure Inspection Checklist
- Appendix G - NDEP Closure Report Comment Response

This report was developed using information and guidance from the following documents:

- Corrective Action Investigation Plan For CAU No. 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada, Revision 0, DOE/NV--476, DOE, 1997.
- Corrective Action Decision Document For The Area 3 Landfill Complex, Tonopah Test Range, CAU 424, Revision 0, DOE/NV--496, DOE, 1998a.
- Corrective Action Plan For Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada, DOE/NV-11718--241, DOE, 1998b.
- Nevada Environmental Restoration Project, Health and Safety Plan, Revision 3, DOE, 1998.
- Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, Nevada, Revision 1, DOE/NV--372, DOE, 1996.
- Nevada Environmental Restoration Project, Project Management Plan, Revision 0, DOE, 1994.

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2.0 CLOSURE ACTIVITIES

This section of the CR details the specific activities involved in the closure of the Area 3 Landfill Complex CAU 424. This section also includes the rationale for deviations from the approved CAP (DOE, 1998b) and a detailed schedule of site activities as completed.

2.1 DESCRIPTION OF CORRECTIVE ACTION ACTIVITIES

Closure activities performed at the Area 3 Landfill Complex are summarized in Table 2 and include:

- Excavation and removal of petroleum hydrocarbon wastes.
- Repair and maintenance of landfill soil covers.
- Installation of landfill markers and warning signs.
- Enactment of administrative use controls.

2.1.1 Petroleum Hydrocarbon-Impacted Wastes at Landfill A3-2

2.1.1.1 Investigation of Reported Buried Diesel Storage Tank

The buried diesel storage tank reported in the CADD (DOE, 1998a) was visible through a small recently-formed sinkhole. Approximately 0.75 m (2.5 ft) of cover soil was removed with a backhoe on August 3, 1998, and the tank was found to be an intact metal storage tank, with a horizontal axis aligned approximately north-south, with the north end approximately 2 m (7 ft) southeast of existing soil boring BH2-3 (Figure 3). The tank was approximately 3-m (10-ft) long, 1.5-m (5-ft) wide, and filled with soil. There were no visual signs of impacted soil in the tank and field monitoring instruments indicated only background levels of organic vapors after an initial momentary peak of nine parts per million (ppm) on the photoionization detector and a maximum two percent lower explosive limit. The tank and its contents were re-buried with the same cover soil before beginning the sludge excavation.

TABLE 2 - SUMMARY OF CLOSURE ACTIVITIES

LANDFILL	NO ACTION	REMOVED PETROLEUM HYDROCARBON WASTE	REPAIRED AND MAINTAINED LANDFILL SOIL COVERS	INSTALLED LANDFILL MARKERS AND SIGNS	ENACTED ADMINISTRATIVE USE RESTRICTIONS
A3-1			X	X	X
A3-2		X	X	X	X
A3-3				X	X
A3-4			X	X	X
A3-5				X	X
A3-6				X	X
A3-7	X				
A3-8			X	X	X

2.1.1.2 Excavation of Reported Sludge-Impacted Area

The excavation to remove sludge that was reported in the CADD (DOE, 1998a) began on August 3, 1998, at the surface location of BH2-3 using a backhoe. Below approximately 0.6 m (2 ft) of cover soil, the landfill was found to contain metal, reels of magnetic recording tape, foam rubber, rolls of rotted carpet, and pieces of heavy equipment. The loose, unconsolidated nature of the landfill necessitated that much of the debris exposed in the excavation be removed and that the excavation sidewalls be sloped sufficiently in order to minimize cave-in and maintain support for the backhoe. More-consolidated and debris-free native soil was observed beginning at a depth of approximately 2.4 m (8 ft).

Landfill wastes removed from the A3-2 sludge excavation were divided into two waste types. The first type consisted of approximately 15 cubic meters (m^3) (20 cubic yards [yd^3]) of relatively unimpacted landfill debris and soil which were set aside in two plastic-lined and plastic-covered bulk waste piles. This waste tended to originate from shallower depths.

The second waste type consisted of suspected waste consisting of visually stained soil, and nine partially to completely crushed 55-gallon (gal) (208- liter [L]) drums. Several drums contained and leaked limited amounts of liquids or sludge (less than 10 gal [38 L] total). A small amount of viscous gray liquid leaked from one crushed drum and a sample consisting of the puddle and impacted soil was collected and analyzed for TPH and volatile organic compounds (VOCs) (Sample ID: "Sludge1 [solid]" [Table 3]). A watery brown mud spilled out of another crushed drum upon removal from the excavation. In this case, the mud was collected and analyzed for VOCs (Sample ID: "Sludge2 [aqueous]") and the soil near that drum, which contained some of the spilled mud, was sampled and analyzed for TPH, VOCs, semi-volatile organic compounds (SVOCs), and toxicity characteristic leachate procedure (TCLP) metals (Sample ID: "Sludge2 [solid]"). The crushed drums and potentially impacted soils were placed into seven new 208 L (55-gal) and four new 321 L (85-gal) steel drums. The analytical samples and results are discussed in Section 3.0 and the analytical laboratory report for Landfill A3-2 is included in Appendix A.

The bottom of the excavation was sampled to determine if the native soil contained petroleum hydrocarbons, and if TPH concentrations decreased with depth. Nine soil samples (Sludge3 through Sludge11) were collected between approximate depths of 2.4 m (8 ft) and 3.7 m (12 ft). PetroFlag TPH field-screening tests and laboratory tests were performed. Collecting representative samples of native soil that was free of slumped landfill material from shallower depths, proved difficult. For this reason, the soil excavated from the bottom of the excavation were placed with the second waste group described in the preceding paragraph as a precaution. The results of TPH field tests and laboratory analyses are summarized in Table 3 and confirm that elevated TPH concentrations exist in the landfill, with the highest value in sample Sludge5 (31,000 mg/kg) from a depth of 2.7 m (9.0 ft). The non-detects in samples Sludge9 (3.4 m [11 ft]) and Sludge11 (3.7 m [12 ft]) indicate that the excavation had extended beyond the soil impacted above the TPH Regulatory Action Level. The excavation activities were halted after all

TABLE 3 - SUMMARY OF FIELD AND LABORATORY TPH TESTS

SAMPLE ID	COLLECTION DATE-TIME	SAMPLE DEPTH m (ft)	FIELD PID (HEADSPACE) ppm	FIELD TEST KIT (PETROFLAG) mg/kg	LABORATORY (EPA 8015) mg/kg
Sludge1	8/3/1998-1400	1.8 m (6.0 ft)	-	-	1,800
Sludge2	8/3/1998-1500	2.1 m (7.0 ft)	-	-	2,300
Sludge3	8/5/1998-1510	2.4 m (8.0 ft)	-	7217	4,800
Sludge4	8/5/1998-1525	2.6 ft (8.5 ft)	15	>2000	1,500 (J)
Sludge5	8/5/1998-1610	2.7 m (9.0 ft)	28	>2000	31,000 (J)
Sludge6	8/5/1998-1635	2.9 m (9.5 ft)	2.0	167	580
Sludge7	8/5/1998-1645	3.0 m (10 ft)	15.8	8060	1,600 (J)
Sludge8[a]	8/6/1998-1145	3.4 m (11 ft)	5.1	938	420 (J)
Sludge9[b]	8/6/1998-1145	3.4 m (11 ft)	5.1	938	ND (<10)
Sludge10	8/6/1998-1325	3.5 m (11.5 ft)	17	>2000	1,400 (J)
Sludge11	8/6/1998-1340	3.7 m (12 ft)	0.3	162	ND (<10)

Notes:
PID - photo-ionization detector (the headspace field-screening method consisted of placing approximately 0.1 kg (0.2 lb) of soil into a sealed plastic bag for approximately 10 minutes in the sun and then analyzing the contained atmosphere for organic compounds with the PID)
ppm - part per million
mg/kg - milligram per kilogram
TPH - total petroleum hydrocarbons, see Appendix A for laboratory report
(J) - laboratory estimated value due to probable matrix effects
ND - not detected (*<detection limit*)
a - matrix spike and matrix spike duplicates were taken for this sample
b - Sludge9 is a duplicate sample of Sludge8 and therefore has same field readings.

visible containers (crushed drums) and suspected-impacted soils were removed from the excavation and the maximum extension of the backhoe was reached. Off-site disposal of all excavated soil and debris is described in Section 3. No wastes were returned to the excavation.

2.1.2 Repair and Maintenance of Soil Covers

Several of the landfill soil covers had surface depressions and fissures which could promote erosion of the soil cover as well as ponding and infiltration of surface water. The surface depressions at Landfills A3-1 (including A3-1a), A3-2 (including the sludge excavation), and A3-4 were backfilled with borrow material from the Sandia Borrow Pit. Borrow material was also placed as berms around two railcar storage units at Landfill A3-8 to prevent the potential inflow of surface water into trenches that intersect waste cells. A shallow diversion channel was constructed to divert surface water run-on around the Landfill A3-3 waste cells. The Sandia Borrow Pit is located less than 1 km (0.6 mi) east of the Area 3 Compound (see Figure 1 and Engineering Drawings in Appendix B for the location of the borrow pit). The volumes of borrow material and applied water reported below are approximate.

2.1.2.1 Preparation and Conditioning of Borrow Material

At the beginning of field closure activities, a soil sample was collected from the Sandia Borrow Pit for geotechnical testing. The soil sample was collected to determine the maximum density (American Society for Testing and Materials [ASTM], 1997a [modified proctor test]) for compaction testing in backfilled areas. The results of geotechnical laboratory testing are discussed in Section 4.

Prior to placement of backfill, water was thoroughly mixed into the borrow material to control dust and to approximate the optimum moisture content for compaction purposes. Between July 20 and 24, 1998, 576,000 L (152,000 gal) of water was used for this phase of soil preparation and dust control. Water for the closure activities was obtained from the Roller Coaster Well located approximately 8 km (5 mi) south of the Area 3 Compound (see Figure 1 and Engineering Drawings in Appendix B for the location of the well).

2.1.2.2 Backfill of Surface Depressions

Between July 27, 1998 and August 7, 1998, a total of 5,038 m^3 (6,585 yd^3) of conditioned borrow material was transported from the Sandia Borrow Pit, using two 11.5 m^3 (15-yd^3) belly dump trucks, to Landfills A3-1/A3-1a, A3-2, A3-4, and A3-8, and placed as area backfill and grading material for the Area 3 Landfill Complex closure activities. Backfill of the Landfill A3-1 partially filled open cell and the Landfill A3-1a surface depression required a total of 4,923 m^3

(6,435 yd^3) of borrow material. Landfill A3-2 surface depressions and sludge excavation required 46 m^3 (60 yd^3) of borrow material which was temporarily stockpiled adjacent to the landfill until placed and compacted on August 12, 1998. Landfill A3-4 required 46 m^3 (60 yd^3) of borrow material to backfill surface depressions to grade. The placement of soil berms around two railcar storage units at Landfill A3-8 required 23 m^3 (30 yd^3) of borrow material. During placement of backfill, 1,516,000 L (400,000 gal) of water were used for dust control, soil conditioning, and compaction over the backfilled areas.

A loader/backhoe was used to distribute and compact the borrow material at each site requiring backfill. The backfill at Landfill A3-1/A3-1a was further compacted by the repeated passes of the water truck and belly dump trucks. The borrow material was placed in lifts of 0.2 m (8 inch [in]) except for the initial lifts in Landfill A3-1/A3-1a. In the partially filled open cell of Landfill A3-1, the presence of large, irregularly shaped pieces of concrete and asphalt construction rubble precluded compaction until several feet or more of backfill were placed in certain locations. In the A3-1a surface depression, the initial lifts of backfill varied in thickness due to the bowl-shaped bottom. Landfill A3-2 surface depressions and sludge excavation were backfilled on August 12, 1998. Backfill in the 3.7-m (12-ft) deep sludge excavation was placed in 0.2-m (8-in) lifts and compacted with downward blows from the backhoe bucket until the backfill reached a level close enough to the ground surface that compaction could be accomplished by being driven over by the backhoe. The berms at Landfill A3-8 were constructed using a combination of loader/backhoe and manual labor, and were not tested for compaction. The field performance specification for compaction of backfill and the results of compaction verification tests at Landfills A3-1/A3-1a, A3-2, and A3-4 are discussed in Section 4.2.

2.1.3 Installation of Markers and Warning Signs

The landfill boundaries in the Area 3 Landfill Complex were marked with monuments in low-traffic areas and with pads at grade in high-traffic areas. The monuments and pads were both constructed with rebar-reinforced concrete for durability and embedded with brass survey markers. The monuments are truncated pyramids approximately 1.8 m (6 ft) high with a square base (approximately 0.6 m by 0.6 m [2 ft by 2 ft]) and a square top (approximately 0.3 m by 0.3 m [1 ft by 1 ft]). In most cases, monuments are buried approximately 0.3 m (1 ft), leaving the top approximately 1.5 m (5 ft) above the ground surface. The pads at grade are roughly 0.6 m by 0.6 m (2 ft by 2 ft) square and 0.3 m (1 ft) deep. Warning signs were affixed to the monuments and the same message was stamped on the brass markers which were embedded into the pads. The warning messages read:

> **Warning, buried wastes. Before disturbing ground surface, contact Security 295-8285. FFACO CAU 424, Area 3 Landfill Complex, Landfill [identification number].**

2.2 DEVIATIONS FROM CORRECTIVE ACTION PLAN AS APPROVED

No deviations from the approved CAP (DOE, 1998b) occurred.

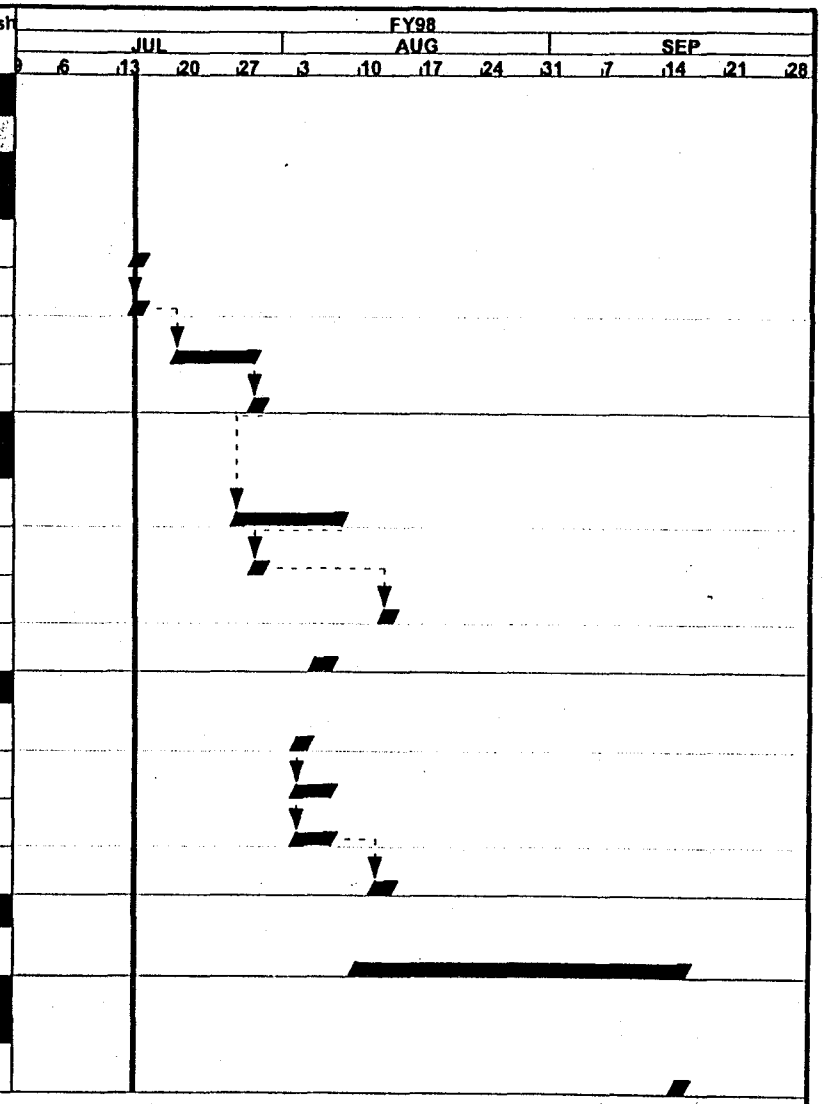
2.3 CORRECTIVE ACTION SCHEDULE AS COMPLETED

The corrective action activities were completed in a timely manner. A schedule of the project activities as completed can be found in Figure 9.

2.4 SITE PLAN/SURVEY PLAT

As-built engineering drawings are included in Appendix B and indicate that the soil covers over the waste cells are flat to slightly sloped, with minimal potential for ponding. The field work included construction of a shallow drainage channel along the upslope sides of the Landfill A3-3 waste cells, diverting sheetwash run-on around that landfill. The topography in the vicinity of CAU 424 is shown in Figure 10 and demonstrates that the Area 3 Landfill Complex is located in an area slightly sloped to the northeast and is not located in a low-lying area where significant ponding or channeling of surface water is likely. The CAU 424 area has been modified since the map was produced but no significant change to the drainage pattern was noted.

Activity ID	Activity Description	Actual Start	Actual Finish
424 Area 3 Landfill /TTR			
Closure Report (CR)			
Mobilization/Site Preparation			
CD0010	Conduct Geotechnical Sampling of Existing Soils	15JUL98A	15JUL98A
CD0020	Field Compaction Tests of Exist. Landfill Covers	15JUL98A	15JUL98A
CD0030	Soil Cond. & Geo. Sampling of Sandia Borrow Pit	20JUL98A	28JUL98A
CD0040	Exclusion Zone Boundary Set-Up	29JUL98A	29JUL98A
Corrective Actions			
Repair and Maintenance of Landfill Covers			
CD0060	Depression Backfilling (A3-1, A3-1A, A3-4)	27JUL98A	07AUG98A
CD0070	Nuclear Density Tests of Compacted Backfill	29JUL98A	29JUL98A
CD0075	Nuclear Density Tests of Compacted Backfill	13AUG98A	13AUG98A
CD0090	Construction of Berms (A3-8)	05AUG98A	06AUG98A
Removal of TPH Impacted Wastes (A3-2)			
CD0110	Investigation of Reported UST	03AUG98A	03AUG98A
CD0120	Excavation of Hydrocarbon Sludge Impacted Wastes	03AUG98A	06AUG98A
CD0130	Collection of Environmental Soil Samples	03AUG98A	06AUG98A
CD0140	Backfilling and Field Compaction Tests	12AUG98A	13AUG98A
All Area 3 Landfills			
CD0150	Landfill Markers and Warning Signs	10AUG98A	16SEP98A
Demobilization			
CD0170	Demobilization	16SEP98A	16SEP98A



Project Start 15JUL98
Project Finish 15JUL98
Data Date 15JUL98
Run Date 03DEC98

Early Bar
Progress Bar
Critical Activity

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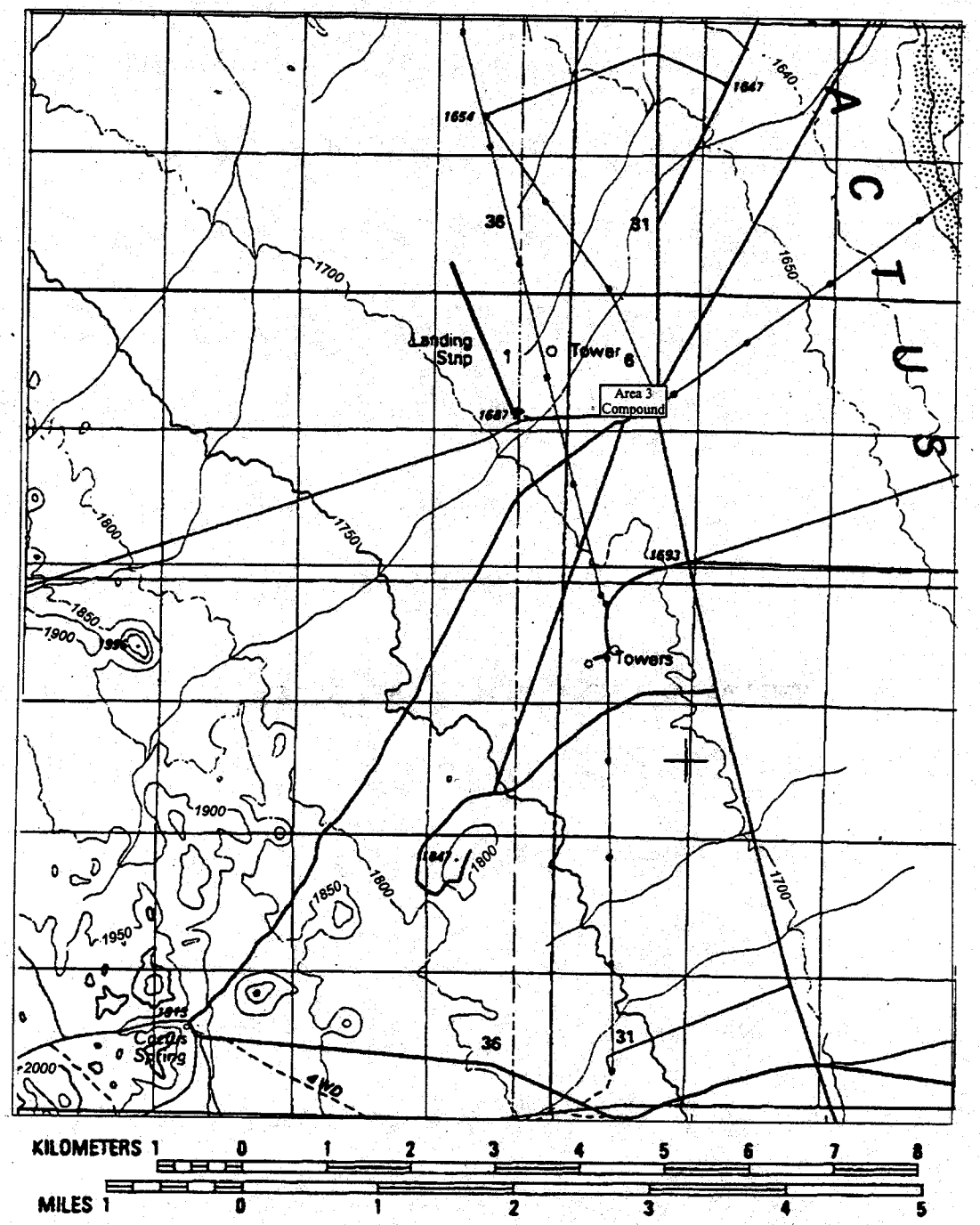
424W

Sheet 1 of 1

Figure 9
CORRECTIVE ACTION SCHEDULE
AS COMPLETED



Topographic base map modified from Cactus Flat, Nevada, 1988, U.S.G.S. 1:100,000-scale (30 x 60 minute) metric quadrangle. Elevations in meters.

N

FIGURE 10
TOPOGRAPHY IN THE VICINITY OF THE AREA 3 LANDFILL COMPLEX

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3.0 WASTE DISPOSITION

Based on available process knowledge, the waste inventory described in the CAIP (DOE, 1997), and analytical results in the CADD (DOE, 1998a), only petroleum hydrocarbon waste was expected in Landfill A3-2. None of the Area 3 Landfills are active and approved disposal facilities. Therefore, landfill wastes that were removed from the Landfill A3-2 sludge excavation were not returned to the excavation. As described in Section 2.1.2, landfill soil and debris removed from the excavation were segregated and stored as two waste types. The first waste type consisted of approximately 15 m^3 (20 yd^3) of the most shallow excavated landfill soil and debris which did not exhibit visual signs (such as staining or labeled containers) or elevated field instrumentation readings (photo-ionization and lower explosive limit) that would have indicated potential impact by petroleum hydrocarbon wastes. Landfill debris included materials such as carpeting, magnetic recording tape, electronic cable, and scrap metal. This waste was temporarily stored and covered with plastic as two bulk waste piles. The waste piles were assigned waste tracking No. BN0450. Based on the waste characterization in the CADD (DOE, 1998a), the waste piles were transported in covered end-dump trucks to an approved disposal facility (Landfill U10C at the NTS) on September 16, 1998.

The second waste type consisted of deeper landfill soil and debris suspected or observed to include liquid and sludge. These wastes were sampled for TPH, VOCs, SVOCs, and TCLP metals, then placed into 11 drums and held in a 90-day accumulation area. Analytical results are summarized in Table 4.

A number of VOCs (Acetone at 82 micrograms per kilogram [µg/kg], 2-Butanone at 26 µg/kg, n-Propylbenzene at 6 µg/kg, 1,2,4-Trimethylbenzene at 24 µg/kg, 1,3,5-Trimethylbenzene at 9 µg/kg, o-Xylene at 6 µg/kg, and m,p-Xylene at 9 µg/kg) were reported in one sample ("Sludge1"), but the results are not indicative of being RCRA-hazardous because of the low concentrations and lack of specific process information indicating these VOCs were disposed. Concentrations of SVOCs and TCLP metals were low to non-detectable. Therefore, the waste was characterized as containing only petroleum hydrocarbons (and non-RCRA-hazardous). The waste was assigned waste tracking No. BN0453 and transported to an approved disposal facility (Landfill U10C at the NTS) as petroleum-hydrocarbon waste on December 9, 1998. These wastes included decontamination rinsate, plastic sheeting, and personnel protective equipment. Waste disposal documentation is provided in Appendix C.

TABLE 4 - SUMMARY OF 1998 ANALYTICAL RESULTS

ANALYSES PERFORMED AND ANALYTES DETECTED	CONCENTRATION REPORTED (unless otherwise noted)	1998 EPA PRGs RESIDENTIAL / INDUSTRIAL (unless otherwise noted)
SLUDGE1 (solid)		
Total Petroleum Hydrocarbons		
Oil Range Organics	1,800 mg/kg	100 mg/kg (see note 1)
Volatile Organic Compounds		
Acetone	82 ug/kg	1,400,000 / 6,100,000 ug/kg
2-Butanone	26 ug/kg	6,900,000 / 27,000,000 ug/kg
n-Propylbenzene	6 ug/kg (J)	130,000 / 550,000 ug/kg
1,2,4-Trimethylbenzene	24 ug/kg (J)	51,000 / 170,000 ug/kg
1,3,5-Trimethylbenzene	9 ug/kg (J)	21,000 / 70,000 ug/kg
o-Xylene	6 ug/kg (J)	280,000 / 280,000 ug/kg
m,p-Xylene	9 ug/kg (J)	210,000 / 210,000 ug/kg (see note 2)
SLUDGE2 (solid)		
Total Petroleum Hydrocarbons		
Oil Range Organics	2,300 mg/kg	100 mg/kg (see note 1)
Volatile Organic Compounds		
none detected	nd	na / na
Semi-Volatile Organic Compounds		
none detected	nd	na / na
TCLP Metals		
Chromium	0.091 mg/L	5.0 mg/L (see note 3)

TABLE 4 - SUMMARY OF 1998 ANALYTICAL RESULTS (Continued)

ANALYSES PERFORMED AND ANALYTES DETECTED	CONCENTRATION REPORTED (unless otherwise noted)	1998 EPA PRGs RESIDENTIAL / INDUSTRIAL (ug/kg unless otherwise noted)
SLUDGE2 (aqueous)		
Volatile Organic Compounds		
none detected	nd	na / na

Notes:
Total Petroleum Hydrocarbons (TPH), EPA Method 8015
Volatile Organic Compounds (VOCs), EPA SW846, Method 8260B
Semi-Volatile Organic Compounds (SVOCs) by EPA 8270C
Toxicity Characteristic Lechate Potential (TCLP) Metals, EPA 6010A (7470A for Mercury)
PRG - Preliminary Remediation Goal
Note 1 - NDEP Regulatory Action Level for TPH
Note 2 - There are separate EPA PRGs for m-Xylene and p-Xylene. PRG for m-xylene is lower and used here
Note 3 - EPA Regulatory Level for chromium toxicity characteristic
ug/kg - microgram per kilogram
mg/kg - milligram per kilogram
ug/L - microgram per liter
nd - not detected
na - not applicable
J - laboratory estimated value due to probable matrix effects
See Appendix A for analytical laboratory report

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4.0 CLOSURE VERIFICATION RESULTS

4.1 GEOTECHNICAL TESTING OF EXISTING SOILS

In order to characterize the geotechnical site conditions and potential borrow materials, the following soil samples were collected prior to, or at the beginning of, area-filling and grading activities: 12 soil samples of existing landfill covers and adjacent disturbed and undisturbed areas; and 1 soil sample of the Sandia Borrow Pit material. These soil samples were submitted to the Bechtel Nevada Materials Testing Laboratory for Proctor (maximum) density tests (ASTM, 1997a), sieve analyses (ASTM, 1997b), and permeability tests (ASTM, 1997c). In addition, 43 nuclear density tests (ASTM, 1997d) were done at 15 locations on existing landfill covers and adjacent disturbed and undisturbed areas, to determine the field compaction of existing soils. Field test and sample collection locations are shown in Figures 3 through 8. Test results were reported in the geotechnical laboratory report (Appendix D) and are summarized with comparable data from the CADD (DOE, 1998a) in Table 5.

For native and existing landfill cover soils, maximum densities ranged from 1,956 to 2,075 kilograms per cubic meter (kg/m^3) (122.1 to 129.5 pounds per cubic foot [lb/ft^3]), field compaction ranged from 73.7 to 97.9 percent maximum density, and permeabilities of samples remolded to field conditions ranged from 1.28×10^{-6} to 3.43×10^{-3} centimeters per second (cm/sec).

For the Sandia Borrow Pit material, maximum density was 2,035 kg/m^3 (127.0 lb/ft^3) with permeabilities of 8.82×10^{-4}, 3.80×10^{-5}, and 1.39×10^{-5} cm/sec after recompaction to 85, 90, and 95 percent maximum density, respectively. Sieve analyses confirmed that the borrow material was similar to existing site soils (silty sand with gravel) and that size reduction of the borrow material was not required before use.

The geotechnical results shown in Table 5 reveal comparable degrees of field compaction for existing landfill covers and adjacent native soils (disturbed and undisturbed), indicating that subsidence due to consolidation of the landfill covers is unlikely. Except for Landfill A3-3, the permeabilities of existing landfill covers are less than, or comparable to, the permeabilities of adjacent native soils, indicating that preferential infiltration over the waste cells is unlikely. For Landfill A3-3, the existing cover was determined to be more permeable (4.51×10^{-5} to 3.43×10^{-3} cm/sec) than the adjacent native soil (5.32×10^{-6} to 6.24×10^{-6} cm/sec). The potential for preferential infiltration at Landfill A3-3 was minimized with the construction of a shallow drainage channel that diverts surface water that would otherwise run onto the Landfill A3-3 waste cells. The location of the diversion channel is shown in Figure 4 and in Appendix B. Most of the precipitation that falls directly onto the existing landfill covers, including the Landfill A3-3 cover, is expected either to run off due to the gently-sloping surfaces, or to evaporate due to the generally arid climate.

TABLE 5 - SUMMARY OF GEOTECHNICAL TESTS

TEST AND SAMPLE LOCATION[a]	REFERENCE NUMBER OF INDIVIDUAL TEST OR SOIL SAMPLE[a]	PERCENT FIELD COMPACTION n	min	avg	max	PROCTOR DENSITY kg/m³	lb/ft³	REMOLDED PERCENT COMPACTION[b]	PERMEABILITY[c] cm/sec
EXISTING SOILS									
Landfill A3-1/A3-2 native/disturbed	A3-1/1a, 1b, 1c	3	77.9	78.8	80.2	2,011	125.5	78.8	6.79×10^{-5}
Landfill A3-1 existing landfill cover	A3-1/2a, 2b, 2c	3	77.3	80.5	82.1	2,051	128.0	79.3	1.63×10^{-4}
Landfill A3-1 existing landfill cover	BH1-6 @ 0.45 m (1.5 ft)			NA		NA		NA	4.19×10^{-6}
Landfill A3-1 existing landfill cover	BH1-20 @ 0.45 m (1.5 ft)			NA		NA		NA	4.63×10^{-6}
Landfill A3-2 existing landfill cover	A3-2/1a, 1b, 1c	3	78.0	82.4	90.6	2,057	128.4	82.3	1.70×10^{-5}
Landfill A3-2 existing landfill cover	BH2-2 @ 0.45 m (1.5 ft)			NA		NA		NA	2.00×10^{-5}
Landfill A3-3 east native/disturbed	A3-3/2a, 2b, 2c	1		87.8		1,970	123.0	87.8	6.24×10^{-6}
Landfill A3-3 east existing landfill cover	A3-3/1a, 2b, 2c	3	85.5	91.7	97.9	2,011	125.5	89.7	9.02×10^{-4}
Landfill A3-3 west native/disturbed	A3-3/3a, 3b, 3c	3	86.4	88.3	90.2	1,970	123.0	88.3	5.32×10^{-6}
Landfill A3-3 west existing landfill cover	A3-3/4a, 4b, 4c	3	79.4	82.6	87.7	2,011	125.5	83.1	3.43×10^{-3}
Landfill A3-3 existing landfill cover	BH3-7 @ 0.30 m (1.0 ft)			NA		NA		NA	4.51×10^{-5}
Landfill A3-4 native/undisturbed	A3-4/3a, 3b, 3c	3	76.2	84.8	95.4	2,035	127.0	85.5	3.48×10^{-4}
Landfill A3-4 native/disturbed	A3-4/1a, 1b, 1c	3	82.5	83.4	84.6	2,035	127.0	83.5	6.07×10^{-5}
Landfill A3-4 existing landfill cover	A3-4/2a, 2b, 2c	3	80.1	85.4	95.6	2,075	129.5	85.3	2.97×10^{-4}
Landfill A3-4 existing landfill cover	BH4-4 @ 0.30 m (1.0 ft)			NA		NA		NA	2.84×10^{-5}
Landfill A3-5 existing plowed field	A3-5/1a, 1b, 1c	3	73.7	78.7	85.2	1,956	122.1	78.7	1.04×10^{-4}
Landfill A3-5 existing landfill cover	BH5-3 @ 0.45 m (1.5 ft)			NA		NA		NA	9.59×10^{-6}
Landfill A3-6 native/disturbed	A3-6/1a, 1b, 1c	3	79.6	80.7	81.7	2,003	125.0	80.1	3.06×10^{-3}
Landfill A3-6 existing landfill cover	A3-6/2a, 2b, 2c	3	81.1	83.6	88.1	1,986	124.0	83.6	4.83×10^{-5}
Landfill A3-6 existing landfill cover	BH6-3 @ 0.45 m (1.5 ft)			NA		NA		NA	1.28×10^{-6}
Landfill A3-8 native/disturbed	A3-8/2a, 2b, 2c	3	86.1	88.2	90.5	1,978	123.5	84.1	2.07×10^{-4}
Landfill A3-8 existing landfill cover	A3-8/1a, 1b, 1c	3	80.5	86.0	95.4	2,075	129.5	88.2	2.83×10^{-4}
Landfill A3-8 existing landfill cover	BH8-1 @ 0.45 m (1.5 ft)			NA		NA		NA	2.59×10^{-6}

(continued on following page)

TABLE 5 - SUMMARY OF GEOTECHNICAL TESTS (continued)

TEST AND SAMPLE LOCATION[a]	REFERENCE NUMBER OF INDIVIDUAL TEST OR SOIL SAMPLE[a]	PERCENT FIELD COMPACTION n	min	avg	max	PROCTOR DENSITY kg/m³	lb/ft³	REMOLDED PERCENT COMPACTION[b]	PERMEABILITY[c] cm/sec
BORROW MATERIAL									
Sandia Borrow Pit	Sandia Borrow			NA		2,035	127.0	85.0	8.82×10^{-4}
Sandia Borrow Pit	Sandia Borrow			NA		2,035	127.0	90.0	3.80×10^{-5}
Sandia Borrow Pit	Sandia Borrow			NA		2,035	127.0	95.0	1.39×10^{-5}
PERFORMANCE SPECIFICATION									
Initial compaction of borrow material	A3-1a/T1, T2; A3-1/T3, T4; A9/T1, T2	6	88.1	93.7	98.2	NA		NA	NA
COMPACTION VERIFICATION									
A3-1 compacted backfill	A3-1/T3, T4, T7, T8, T12 - T20	13	86.5	91.5	98.2	NA		NA	NA
A3-1a compacted backfill	A3-1a/T1, T2, T5, T6, T9 - T11	7	89.4	91.9	95.7	NA		NA	NA
A3-2 compacted backfill	A3-2/T1 - T3	3	86.2	88.9	90.6	NA		NA	NA
A3-4 compacted backfill	A3-4/T1 - T3	3	88.9	92.5	96.4	NA		NA	NA

Notes:
[a] - Location of Sandia Borrow Pit is shown in Figure 1. Area 3 test and sample locations are shown in Figures 3 through 8. Area 9 test locations are shown in Appendix D. All test/sample depths are at ground surface except where indicated otherwise. "BH" indicates subsurface samples collected in 1997 and reported in the CADD (DOE, 1998a).
[b] - Samples of "existing soils" were remolded to field conditions for permeability tests.
[c] - Permeability value is mean of final three readings of each test.
NA - Not applicable. Test not performed.

Nevada Administrative Code (NAC) 444.731 to 444.747 specifies closure requirements for a Class III landfill. The Area 3 landfills were not permitted as Class III sites (DOE, 1998a) and do not need to meet Class III closure requirements, but the Class III landfill closure requirements were used as guidance for the closure of the Area 3 landfills. The maximum permeability of 1×10^{-5} cm/sec allowable for a Class III site in Nevada Administrative Code (NAC) 444.743, was exceeded by eleven of the sixteen samples from existing Area 3 landfill covers.

4.2 FIELD COMPACTION TESTING OF BACKFILL

A total of 26 nuclear density tests (ASTM, 1997d) were performed at Area 3 Landfills A3-1, A3-1a, A3-2, and A3-4, to determine the field compaction of borrow material placed as backfill. Field test locations are shown in Figures 3 and 5. Test results are summarized in Table 5 and in Appendix D.

At the beginning of backfilling activities, a field performance specification was established to facilitate backfill compaction to at least 80 percent maximum density, as required in the CAP (DOE, 1998b). The field performance specification was based on a total of six nuclear density tests (two each at Landfills A3-1, A3-1a, and A9-1) performed on 0.2-m (8-in) lifts after being compacted by one complete pass (once forward and once back) of the loader. The percent compaction ranged from 88.1 to 98.2, meeting the compaction requirement.

During and following backfilling activities, an additional 22 nuclear density tests were done on compacted backfill to verify compaction in lifts midway in the backfilling operation (Landfills A3-1 and A3-1a), and in the final top lifts (Landfills A3-1, A3-1a, A3-2, and A3-4). The percent compaction of backfill ranged from 86.2 to 98.2, meeting the compaction requirement.

4.3 USE RESTRICTIONS

Closure activities conducted at the site were coordinated with and acknowledged by the USAF (Appendix E). The Acknowledgment of CAU 424 from the USAF was received by the DOE/NV on July 15, 1998, the CAU Use Restriction Information Forms were submitted by the DOE/NV to the USAF on April 29, 1999, and the Recordation of CAU 424 was sent by the USAF to the DOE/NV on July 1, 1999.

The future use of any land related to this CAU, as described in Appendix E, is restricted from any DOE or USAF activity that may alter or modify the containment control as identified in this CR or other documentation for this CAU unless appropriate concurrence is obtained in advance.

5.0 POST-CLOSURE INSPECTION PLAN

Post-closure inspection of the Area 3 Landfill sites is intended to determine:

- If maintenance and repairs to the landfill soil covers are needed.
- If maintenance and repairs to the landfill markers and warning signs are needed.
- If modifications to the use restriction administrative controls are needed.
- If termination of post-closure inspection can be proposed in the future.

5.1 POST-CLOSURE INSPECTION

The inspection will consist of biannual (twice per year) visual inspections of:

- The soil cover for indications of subsidence, erosion, unauthorized use, etc.
- The landfill markers and warning signs to verify they are in-place, intact, and readable.
- The inspections will be documented on a checklist (Appendix F) and with photography, if needed.

If damage to the soil covers, landfill markers, or warning signs is noted, then maintenance will be performed and may include placement and compaction of additional backfill, and repair or replacement of markers and signs. Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remedied within 90 days of discovery and documented in writing at the time of repair.

5.2 ANNUAL REPORTING

An annual report will be prepared that will provide the observations and describe modifications and/or repairs made to the cover and cover area. The annual post-closure inspection report will be prepared and submitted to NDEP following the second inspection of each year that post-closure inspection is conducted. The annual reports will include the following information:

- Discussion of observations.
- Inspection checklist (Appendix F) and maintenance record.
- Conclusions and recommendations.

5.3 DURATION

The biannual inspections will be performed for five years after the completion of closure activities, and will be documented on inspection forms.

Completion of post-closure inspection of CAU 424 may be proposed by DOE/NV to the NDEP after two consecutive years of visual inspections have not indicated the recurrence of subsidence. Completion of post-closure inspection may be proposed by DOE/NV to the NDEP within five years after the completion of closure activities.

6.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 SUMMARY AND CONCLUSIONS

The following summary and conclusions are based on the completed site closure activities and information provided in this report:

- The petroleum hydrocarbon sludge and sludge-impacted wastes that exceeded the TPH Regulatory Action Level of 100 mg/kg were removed from Landfill A3-2 and transported to approved landfills at the NTS.

- The Landfill A3-2 sludge excavation and surface depressions at Landfills A3-1, A3-1a, A3-2, and A3-4 were backfilled with soil from the Sandia Borrow Pit. Compaction results complied with the compaction requirement of at least 80 percent of the maximum density.

- Borrow soil berms were placed around the bases of two railroad box cars used for storage at Landfill A3-8 in order to minimize inflow of surface water. A shallow drainage channel was constructed on the upslope side of Landfill A3-3 to divert surface water run-on.

- Markers and signs were installed to document landfill locations and warn of buried wastes.

- Closure activities have been coordinated with the USAF.

- The CAU Use Restriction Information Forms were submitted to the USAF on April 29, 1999, for recordation. On July 1, 1999, the Recordation of CAU 424 was returned to the DOE/NV.

- The field closure activities conducted at the site were completed in accordance to the approved CAP (DOE, 1998b).

6.2 RECOMMENDATIONS

Since the closure activities for CAU 424 have been completed in accordance with the NDEP-approved CAP (DOE, 1998b) as documented in this CR, the DOE/NV requests:

- A Notice of Completion be provided by the NDEP to DOE/NV for the closure of CAU 424 (CAS Numbers 03-08-001-A301 and 03-08-002-A302 through A308).

- CAU 424 be moved from Appendix III to Appendix IV of the FFACO.

- DOE/NV will continue to perform post-closure inspection of the site as indicated in Section 5.0 of this CR.

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7.0 REFERENCES

American Society for Testing and Materials, see ASTM

ASTM, 1997a. Method D 1557-91: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort, 1997Annual Book of ASTM Standards, Volume 04.08, Soil and Rock (I): D 420 - D 4914.

ASTM, 1997b. Method D 422-63 (Reapproved 1990): Standard Test Method for Particle-Size Analysis of Soils, and Method D 1140-92: Standard Test Method for Amount of Material in Soils Finer Than the No. 200 Sieve, 1997 Annual Book of ASTM Standards, Volume 04.08, Soil and Rock (I): D 420 - D 4914.

ASTM, 1997c. Method D 2434-68 (Reapproved 1974): Standard Test Method for Permeability of Granular Soils (Constant Head), 1997 Annual Book of ASTM Standards, Volume 04.08, Soil and Rock (I): D 420 - D 4914.

ASTM, 1997d. Method D 2922-96: Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth), 1997 Annual Book of ASTM Standards, Volume 04.08, Soil and Rock (I): D 420 - D 4914.

DOE, 1994. Nevada Environmental Restoration Project, Project Management Plan, Rev. 0.

DOE, 1996. Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, Rev. 1, DOE/NV--372.

DOE, 1997. Corrective Action Investigation Plan for CAU No. 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada, Rev. 0, April 1997, DOE/NV--476 UC-700.

DOE, 1998a. Corrective Action Decision Document for the Area 3 Landfill Complex, Tonopah Test Range, CAU 424, Rev. 0, March 1998, DOE/NV--496 UC-700.

DOE, 1998b. Corrective Action Plan for Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada, August 1998, DOE/NV-11718-241 UC-702.

DOE, 1998c. Nevada Environmental Restoration Project, Health and Safety Plan, Rev. 3.

EPA, 1998. Region IX Preliminary Remediation Goals (PRGs), San Francisco, CA.

Federal Facilities Agreement and Consent Order, see FFACO

FFACO, 1996, Agreed to by the Nevada Division of Environmental Protection, the U.S. Department of Energy, and the U.S. Department of Defense.

U.S. Department of Energy, see DOE

U.S. Environmental Protection Agency, see EPA

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APPENDIX A

ANALYTICAL LABORATORY REPORT FOR LANDFILL A3-2 CLOSURE

NEL LABORATORIES
Reno • Las Vegas
Phoenix • Irvine

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 89030
(702) 657-1010 • Fax: (702) 657-1577
1-888-368-3282

CLIENT: Bechtel Nevada
P.O. Box 98521, M/S NTS273
Las Vegas, NV 89193-8521
ATTN: Ted Redding

PROJECT NAME: NA
PROJECT NUMBER: 17777

NEL ORDER ID: L9808068

Attached are the analytical results for samples in support of the above referenced project.

Samples submitted for this project were not sampled by NEL Laboratories. Samples were received by NEL in good condition, under chain of custody on 8/6/98.

Samples were analyzed as received.

Where applicable we have included the following quality control data:

Method blank - used to demonstrate absence of contamination or interferences in the analytical process.
Laboratory Control Spike (LCS) - used to demonstrate laboratory ability to perform the method within specifications by spiking representative analytes into a clean matrix.
Surrogates - compounds added to each sample to ensure that the method requirements are met for each individual sample.

Should you have any questions or comments, please feel free to contact our Client Services department at (702) 657-1010.

Some results have been flagged as follows:

Jc - This concentration should be considered an estimate. The continuing calibration check standard did not meet QC requirements for this analyte.
Jl - The batch MS and/or MSD were outside acceptance limits. The batch LCS was acceptable.
Jm - This concentration should be considered an estimate due to probable matrix effects.

Some surrogate results have been flagged as follows

D - Sample required dilution. Sample QC results were diluted outside the calibrated range.

Stan Van Wagenen
Laboratory Manager

08/12/98
Date

CERTIFICATIONS:

	Reno	Las Vegas	S. California
Arizona	AZ0520	AZ0518	AZ0583
California	1707	2002	2264
US Army Corps of Engineers	Certified	Certified	Certified

	Reno	Las Vegas	S. California
Idaho	Certified	Certified	
Montana	Certified	Certified	
Nevada	NV033	NV052	CA084
Washington			Certified

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: NA
PROJECT NUMBER: 17777

TEST: **Total Extractable Petroleum Hydrocarbons by EPA Method 8015M, July 1992**
METHOD: EPA 8015M
MATRIX: Solid

ANALYST: Suzanne

CLIENT SAMPLE ID	SAMPLE DATE	NEL SAMPLE ID	RESULT mg/kg	C.R.	Reporting Limit	Surrogate Recovery*	EXTRACTED	ANALYZED
TTR A3-2 Sludge 3	8/5/98	L9808068-01	4800	DO	100. mg/kg	100 %	8/10/98	8/11/98
TTR A3-2 Sludge 4	8/5/98	L9808068-02	1500 Jm	GDO	10. mg/kg	33 %	8/10/98	8/12/98
TTR A3-2 Sludge5	8/5/98	L9808068-04	31000 Jc	GDO	500. mg/kg	D %	8/10/98	8/~~11~~ 12/98 10/21/98
TTR A3-2 Sludge6	8/5/98	L9808068-05	580	DO	10. mg/kg	70 %	8/10/98	8/11/98
TTR A3-2 Sludge7	8/5/98	L9808068-06	1600 Jm	DO	100. mg/kg	50 %	8/10/98	8/11/98
TTR A3-2 Sludge8	8/6/98	L9808068-07	420 Jl	DO	10. mg/kg	81 %	8/10/98	8/11/98
TTR A3-2 Sludge9	8/6/98	L9808068-08	ND		10. mg/kg	89 %	8/10/98	8/11/98
TTR A3-2 Sludge10	8/6/98	L9808068-09	1400 Jm	GDO	10. mg/kg	36 %	8/10/98	8/12/98
TTR A3-2 Sludge11	8/6/98	L9808068-10	ND		10. mg/kg	91 %	8/10/98	8/11/98

CR: Carbon Range

DO Diesel Range Organics (C12 to C34) and Oil Range Organics (C12 to C38).
GDO Gas Range Organics (C8 to C12), Diesel Range Organics (C12 to C24) and Oil Range Organics (C12 to C38).

Note: The reporting limit for Oil Range Organics in soil is 50 mg/kg.

QUALITY CONTROL DATA (Total for Gas and Diesel Range):

Sample ID	Result	Acceptable Range	Surrogate Recovery*	Sample Number
Blank, 980810tphs -BLK	ND	< 10. mg/kg	105 %	NA
LCS, 980810tphs - LCS	86 %	55 - 102 %	107 %	NA
MS, 980810tphs - MS	79 %	38 - 107 %	51 %	L9808068-07
MSD, 980810tphs - MSD	104 %	38 - 107 %	69 %	L9808068-07

ND - Not Detected

***Surrogate used was Octacosane, acceptance limits 54-130% for solids, 60-121% for aqueous samples**

This report shall not be reproduced except in full, without the written approval of the laboratory.

Bechtel Nevada

ANALYTICAL SERVICES LABORATORY

SERVICES REQUEST & CHAIN OF CUSTODY RECORD

PROJECT/ CLIENT INFORMATION

Project: TTR Area 3 Landfill Complex BN Org#: 2150

Charge No.: C4P-1BODE ASL Prog.:

Project Manager: S. Nacht / D. Madsen

Phone: Fax: M/S:

REPORT INFORMATION

Send Report to: Dave Madsen

Phone: 295-7211 Fax: 295-7761 M/S: NTS 306

Turnaround: ( ) Standard - 30 days Non-rad, 60 Days Rad, Other: ( ) Rush Preliminary by: 8/12/98 Final by: 8/18/98

Final report format: (X) Standard ( ) NTS-WAC ( ) Other:

SAMPLE INFORMATION

Sampling Site: TTR A3-2 Landfill

The samples submitted contain (check): ( ) Hazardous ( ) Radioactive (X) Unknown contamination. If known, attach a brief narrative summary identifying contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

LAB USE ONLY

Rad SGD: Non-Rad SDG:

Rad Packet: Non-Rad Packet:

Client Services Representative:

Will these analyses be performed under a signed SOW? ( ) YES ( ) NO

If so, do analyses entered here agree with the SOW? ( ) YES ( ) NO ( ) N/A

If not, identify the variation

CSR initials indicating review and approval: Date:

SAMPLE RECEIPT INFORMATION

Are all sample containers received intact ( ) Yes ( ) No

Comments:

Do the labels agree with this form? ( ) Yes ( ) No

Comments:

Was a Material Clearance Tag submitted? ( ) Yes ( ) No

Comments:

ANALYSES & METHOD

	ITEM	ID / DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	Total TPH (8015)												COMMENTS (Preservative, size/volume, MS/MSD, special analysis, rad matrix code, count time, etc.)
(01)	0	TTR A3-2 Sludge 3	8/5/98	1510	Soil	X											1	
(02)	1	TTR A3-2 Sludge 4	8/5/98	1525	Soil	X											1	
(03)	2	EB080598	8/5/98	1540	Water	X											3	
(04)	3	TTR A3-2 Sludge 5	8/5/98	1610	Soil	X											1	
(05)	4	TTR A3-2 Sludge 6	8/5/98	1635	Soil	X											1	
(06)	5	TTR A3-2 Sludge 7	8/5/98	1645	Soil	X											1	
(07)	6	TTR A3-2 Sludge 8	8/6/98	1145	Soil	X											2	MS/MSD
(08)	7	TTR A3-2 Sludge 9	8/6/98	1155	Soil	X											1	
(09)	8	TTR A3-2 Sludge 10	8/6/98	1325	Soil	X											1	
(10)	9	TTR A3-2 Sludge 11	8/6/98	1340	Soil	X											1	

Transfer of samples submitted for analyses

Sampled/Relinquished (Signature/Organization)	DATE / TIME	Received by (Signature/Organization)
[signature] BN	8-6-98 1350	[signature] MRL

Complete for samples shipped to an OFF-SITE Subcontract Laboratory

Relinquished (BN Representative Signature)	DATE / TIME	Received (Courier & Tracking Info.)
Relinquished (Courier & Tracking Info.)	DATE / TIME	Received (1st tier Subcontractor Rep)
Relinquished (1st tier Subcontractor Rep)	DATE / TIME	Received (2nd tier Subcontractor Rep)

Distribution: Original - To be retained by laboratory performing final analysis
Copy 1 - To be retained by laboratory performing intermediate analysis
Copy 2 - To be retained by Analytical Services Laboratory
Copy 3 - To be retained by sampler

BN-0732 (02/98)

Bechtel Nevada

ANALYTICAL SERVICES LABORATORY
DATA PACKAGE REVIEW CHECKLIST

SAMPLE DELIVERY GROUP: V486
LABORATORY: NEL
FINAL REPORT RECEIVED: 10/20/98
DATE REVIEWED: 10/21/98

CLIENT: ER - DAVE MADSEN

REVIEWED BY:

TPH - GASOLINE / DIESEL / OIL:

MATRIX: SOIL & WATER

ARE TPH DATA ACCEPTABLE: YES

ARE CRITERIA MET

1. QC SAMPLES ACCEPTABLE	YES
2. MATRIX SPIKE ACCEPTABLE	YES
3. METHOD BLANK ACCEPTABLE	YES
4. HOLDING TIMES ACCEPTABLE	YES

		# DAYS	ACCEPTABLE
a. Earliest Date Sampled:	8/5/98	0	0
b. Date ASL Received:	N/A	N/A	1
c. Date Contract Lab Received:	8/6/98	1	5
d. Latest Date Extracted:	8/11/98	6	14
e. Latest Date Analyzed:	8/12/98	1	40

5. CALCULATIONS ACCEPTABLE:	YES
6. CORRECT CONC. UNITS USED:	YES
7. FORMS ACCEPTABLE:	YES
8. CHAIN-OF-CUSTODY AGREES:	YES

COMMENTS: Method associated quality assurance and control criteria were met. The reported "Analyzed" date for TTR A3-2 Sludge5 did not agree with the raw data. The date was corrected according to the raw data and initialed. Preliminary data were faxed to the client on August 13, 1998.

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: NA
PROJECT NUMBER: 17777

TEST: **Total Extractable Petroleum Hydrocarbons by EPA Method 8015M, July 1992**
METHOD: EPA 8015M
MATRIX: Aqueous
ANALYST: Suzanne

CLIENT SAMPLE ID	SAMPLE DATE	NEL SAMPLE ID	RESULT mg/L	C.R.	Reporting Limit	Surrogate Recovery*	EXTRACTED	ANALYZED
EB 080598	8/5/98	L9808068-03	ND		0.5 mg/L	88 %	8/11/98	8/12/98

CR: Carbon Range

DO Diesel Range Organics (C12 to C34) and Oil Range Organics (C12 to C38).
GDO Gas Range Organics (C8 to C12), Diesel Range Organics (C12 to C24) and Oil Range Organics (C12 to C38).

Note: The reporting limit for Oil Range Organics in soil is 50 mg/kg.

QUALITY CONTROL DATA (Total for Gas and Diesel Range):.

Sample ID	Result	Acceptable Range	Surrogate Recovery*	Sample Number
Blank, 980811tph -BLK	ND	< 0.5 mg/L	79 %	NA
LCS, 980811tph - LCS	78 %	61 - 104 %	107 %	NA
LCSD 980811tph - LCSD	82 %	61 - 104 %	116 %	NA

ND - Not Detected

***Surrogate used was Octacosane, acceptance limits 54-130% for solids, 60-121% for aqueous samples**

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APPENDIX B

AS-BUILT ENGINEERING DRAWINGS

UNITED STATES DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE

LAS VEGAS, NEVADA

TONOPAH TEST RANGE

AREA 3 LANDFILL COMPLEX CAU 424

AREA 52

INDEX

DRAWING NUMBER		DRAWING TITLE	STANDARD NUMBER	DESCRIPTION
TITLE				
SK-052-133-T3	REV 1	TITLE SHEET	STD T1 SHT 1 STD T2 SHT 1	STANDARDS INDEX GENERAL NOTES, DRAFTING SYMBOLS & AMSI STANDARDS
CIVIL				
JS-052-133-C7	REV 1	VICINTY MAP	STD C100 SHT 1	NOTES, LEGEND & SYMBOLS
JS-052-133-C8	REV 1	A3 LANDFILL COMPLEX SITE PLAN	STD C101 SHT 1	ABBREVIATIONS
JS-052-133-C9	REV 1	A3-1,10 SITE PLAN		
JS-052-133-C10	REV 1	A3-2 SITE PLAN		
JS-052-133-C11	REV 1	A3-3 SITE PLAN		
JS-052-133-C12	REV 1	A3-4 SITE PLAN		
JS-052-133-C13	REV 1	A3-5 SITE PLAN		
JS-052-133-C14	REV 1	A3-6 SITE PLAN		
JS-052-133-C15	REV 1	A3-8 SITE PLAN		
JS-052-133-C16	REV 1	MONUMENT DETAILS		

AS-BUILT

ORIGINAL AS-BUILT SIGNED BY

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

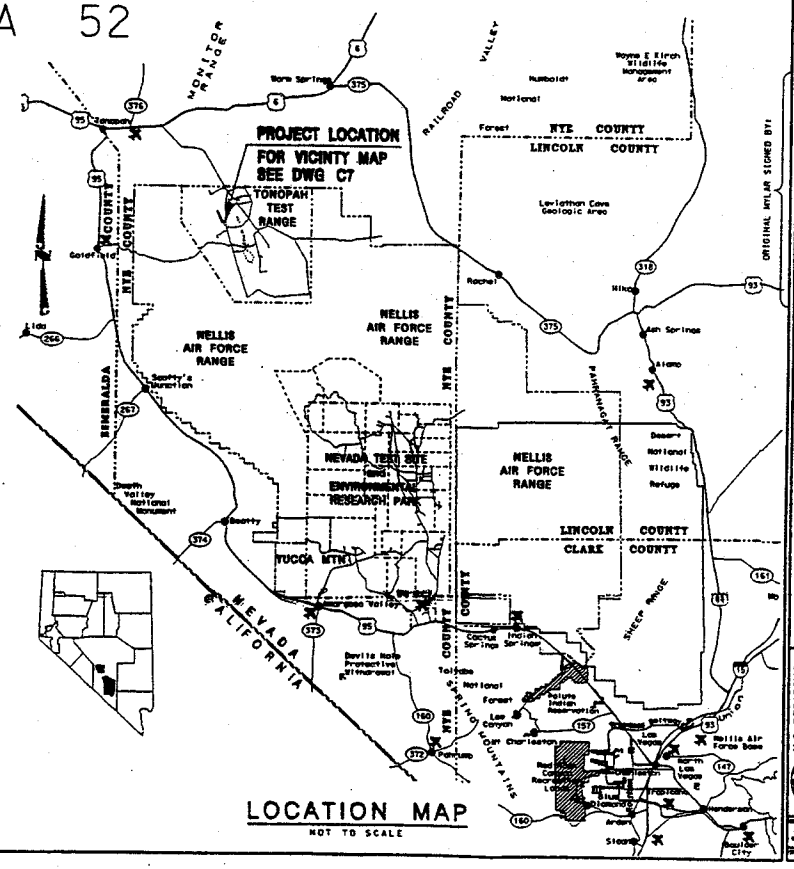
SCOPE OF WORK

THIS PROJECT INCLUDES THE RESTORATION OF 8 EXISTING LANDFILL LOCATIONS. WORK WILL PRIMARILY INVOLVE FILLING OF LOCAL SURFACE DEPRESSIONS WITH NATIVE SOILS.

AREA EVALUATION FOR RESIDUAL SOIL CONTAMINATION SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH DOE/NV 5480.11 AND THE CONTRACTOR'S STANDARD OPERATING PROCEDURES PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES

PROJECT NOTES

ALL CONSTRUCTION FEATURES, MATERIALS, TESTS AND DETAILS SHALL CONFORM TO "USDOE/NV STANDARD SPECIFICATIONS, DATED DECEMBER 1994". FOR STANDARDS REFERENCED ON THIS PROJECT. SEE THE NTS OVERHEAD POWER LINE STANDARDS AND THE RSN DESIGN DRAWING STANDARDS.



LOCATION MAP

NOT TO SCALE

REV	DATE	REVISION DESCRIPTION	DRAWN	CHKD	APPD
0	12/03/98	AS-BUILT, DATED 12/03/98			
1	7/14/98	ISSUED FOR CONSTRUCTION, DATED 7/14/98			

ORIGINAL MYLAR SIGNED BY:

DRAWN LJE SURVEYING REPORT REVIEW
CHECKED JAS KEN M SCHECHTER
APPROVED JAS
DATE OF CURRENT PROJECT CHANGES
CAD REF NO. N/A
PROJECT NUMBER 98189.3541 PROJECT-WIR-NO N/A ACTIVITY CODE C16.03003

TONOPAH TEST RANGE — AREA 52
AREA 3 LANDFILL COMPLEX
CAU 424

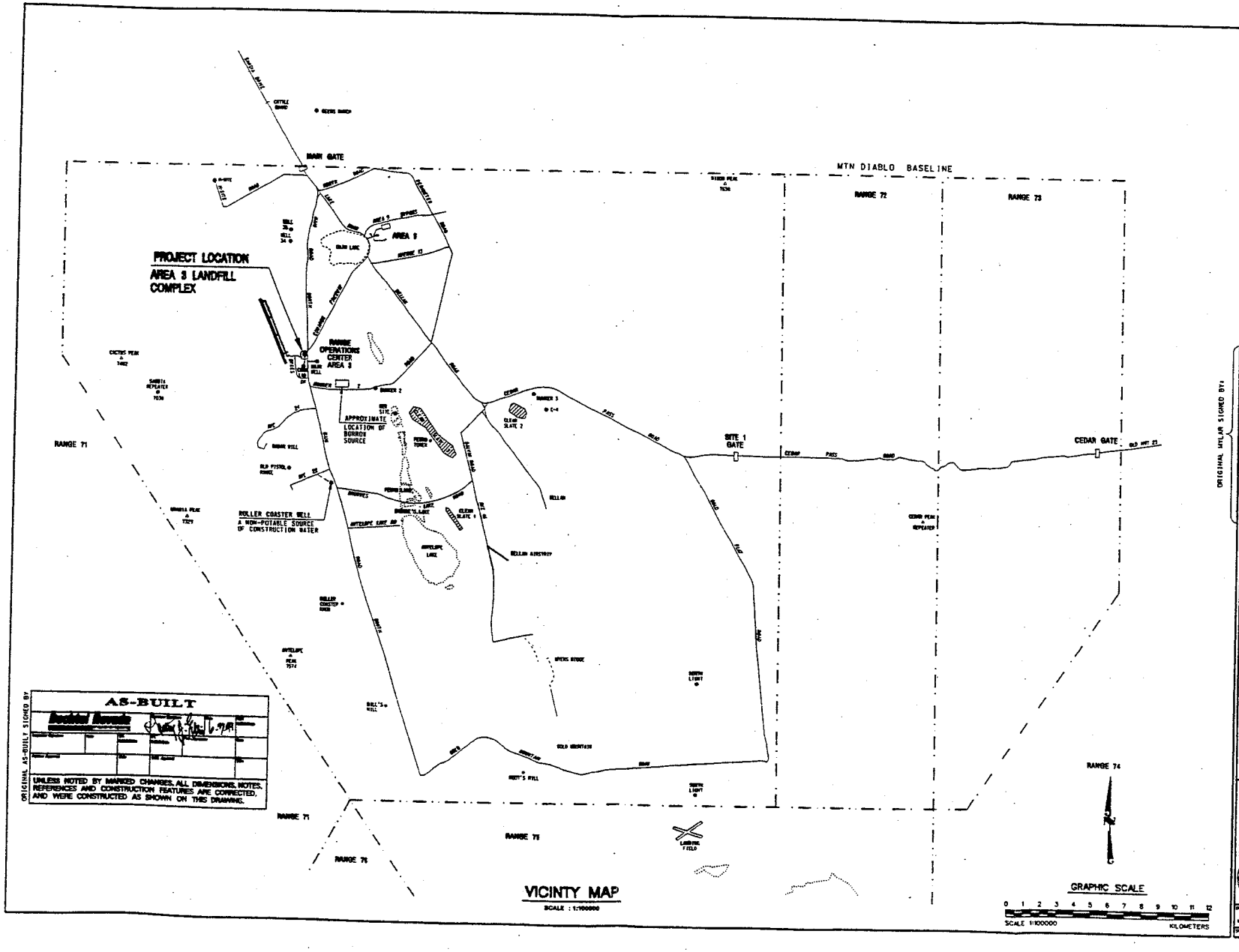
TITLE SHEET

U.S. DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE
LAS VEGAS, NEVADA

Bechtel Nevada
P.O. BOX 98521 LAS VEGAS, NEVADA 89193-8521

DRAWING NUMBER
JS-052-133-T3

SHEET # REV 1



AS-BUILT

Bechtel Nevada

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL AS-BUILT SIGNED BY

ORIGINAL MYLAR SIGNED BY:

REVISION	DATE	DESCRIPTION	DATE
0		AS-BUILT, DATED 12/02/98	
		ISSUED FOR CONSTRUCTION, DATED 7/14/98	

DRAWN LRE
CHECKED LRE
DATE
SUBMITTED BY: KEN M SCHECHTER
DATE
APPROVED JAS
DATE
DOE/NV
N/A
DOE/NV/11718-1067
ENGINEER
N/A
DOE/NV/11718-1067
DATE
N/A
DOE/NV/11718-1067

U.S. DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE
LAS VEGAS, NEVADA

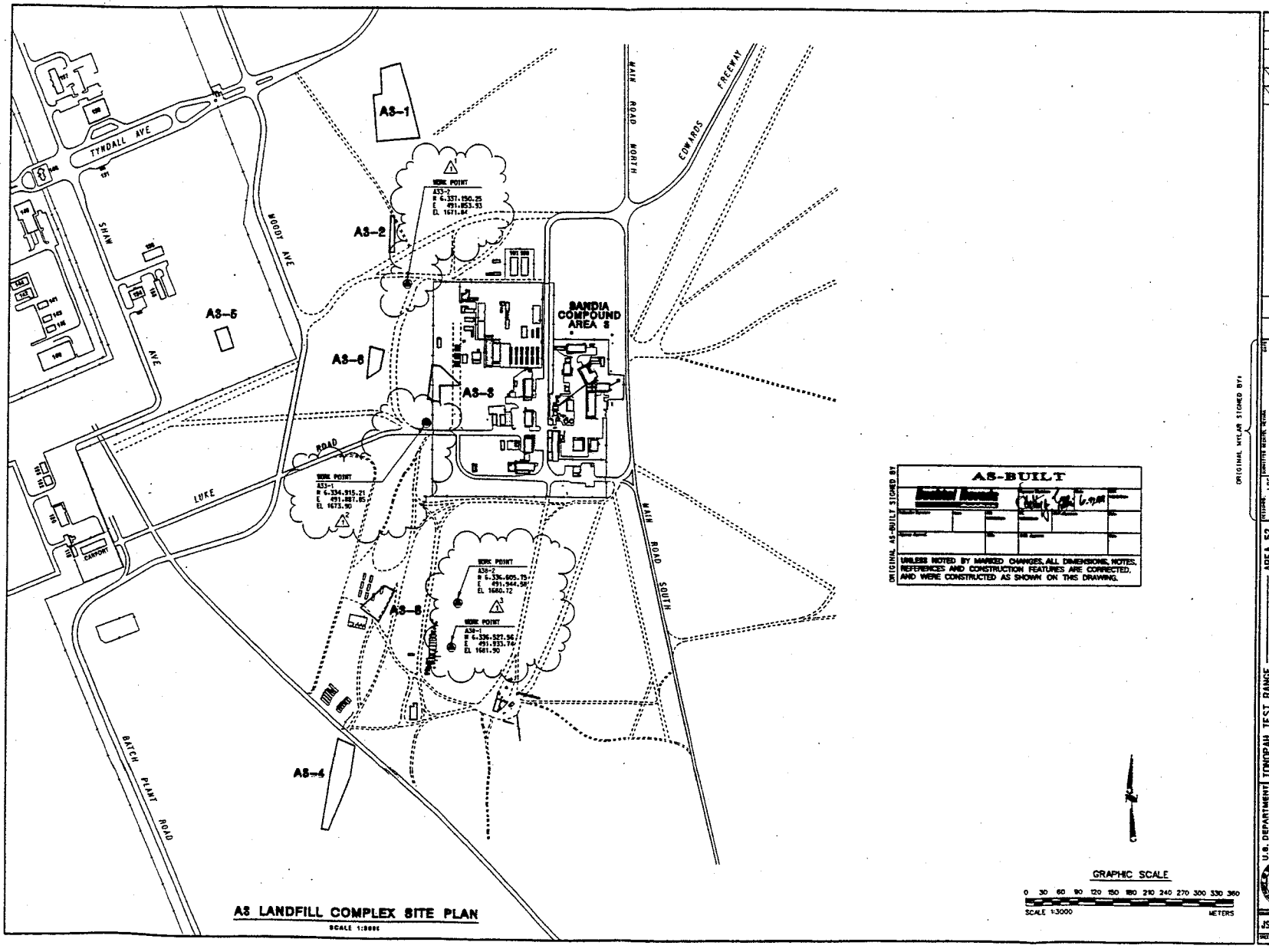
Bechtel Nevada

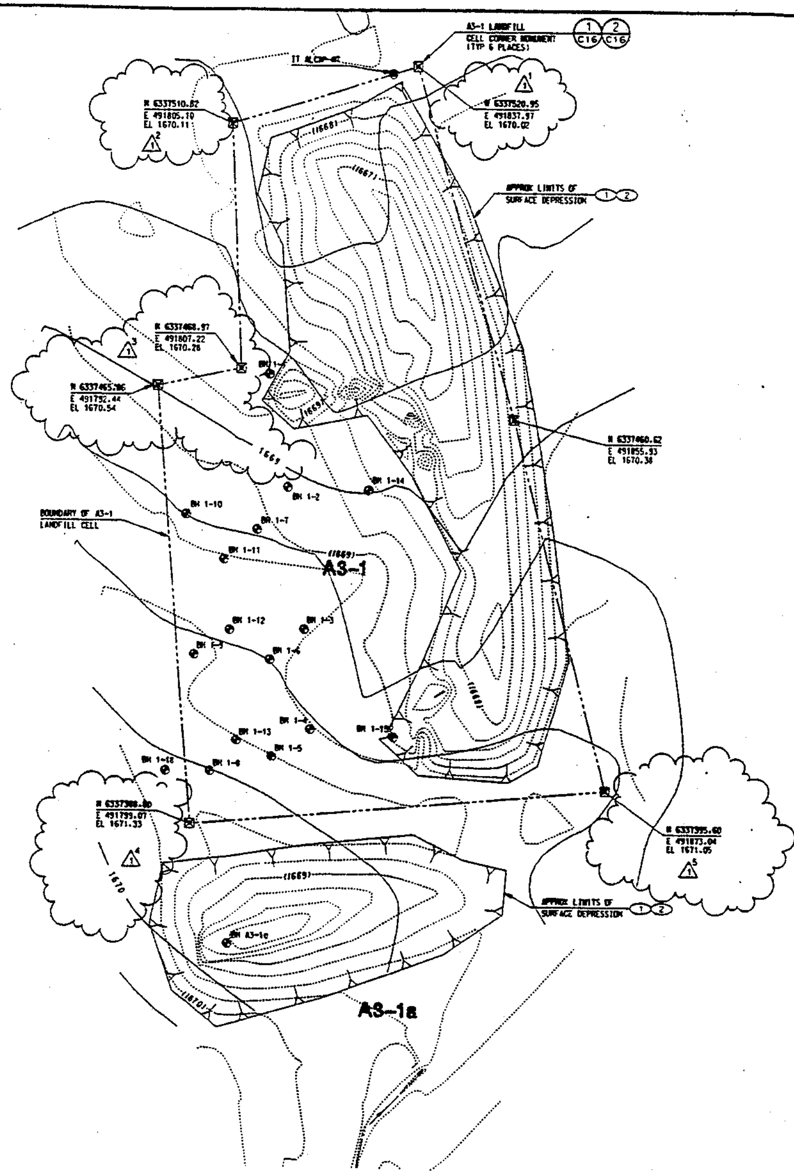
TONOPAH TEST RANGE — AREA 52
AREA 3 LANDFILL COMPLEX
CAU 424

VICINITY MAP

DRAWING NUMBER
JS-052-133-C7

SHEET 9 REV 1


A3 LANDFILL COMPLEX SITE PLAN
SCALE 1:3000
A3-1
A3-2
A3-3
A3-4
A3-5
A3-6
A3-8
SANDIA COMPOUND AREA 3
MAIN ROAD NORTH
MAIN ROAD SOUTH
COWAROS FREEWAY
TYNDALL AVE
SHAW AVE
WOODY AVE
LUKE ROAD
BATCH PLANT ROAD
CANOPY
WORK POINT
A33-2
N 6,331,150.25
E 491,853.93
EL 1671.84
WORK POINT
A33-1
N 6,334,915.21
E 491,887.85
EL 1673.90
WORK POINT
A38-2
N 6,336,605.75
E 491,944.58
EL 1680.72
WORK POINT
A38-1
N 6,336,527.56
E 491,933.76
EL 1681.90
AS-BUILT
UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.
ORIGINAL AS-BUILT STAMPED BY
ORIGINAL MYLAR STAMPED BY
GRAPHIC SCALE
0 30 60 90 120 150 180 210 240 270 300 330 360
SCALE 1:3000
METERS
U.S. DEPARTMENT OF ENERGY
TONOPAH TEST RANGE
AREA 52
AREA 3 LANDFILL COMPLEX
CAU 424
A3 LANDFILL COMPLEX SITE PLAN
J5-052-133-C8
ISSUED FOR CONSTRUCTION, DATED 7/14/98
AS-BUILT, DATED 12/02/98



LANDFILL A3-1,1a SITE PLAN

SCALE 1:400

KEY NOTES

(1) DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.

(2) OBTAIN BACKFILL MATERIAL FROM BORROW SOURCE SHOWN ON DWG C2.

N O T E S

1. ALL FILL SHALL BE COMPACTED TO 80% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
2. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX. TTR.

ORIGINAL AS-BUILT SIGNED BY

AS-BUILT

Bechtel Nevada

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

GRAPHIC SCALE

0 4 8 12 16 20 24 28 32 36 40 44 48

SCALE 1:400 METERS

(CONTOUR INTERVAL = 0.25M)

REV	DATE	REVISION DESCRIPTION
1		AS-BUILT, DATED 12/02/98
0		ISSUED FOR CONSTRUCTION, DATED 7/14/98

ORIGINAL MYLAR SIGNED BY:

DESIGNED LRE; DRAWN LRE; CHECKED JAS

KEN M SCHECHTER

PROJECT NUMBER 98189.A52 — N/A — ACTIVITY CODE C1L03D03

U.S. DEPARTMENT OF ENERGY

Bechtel Nevada

TONOPAH TEST RANGE — AREA 52

AREA 3 LANDFILL COMPLEX

CAU 424

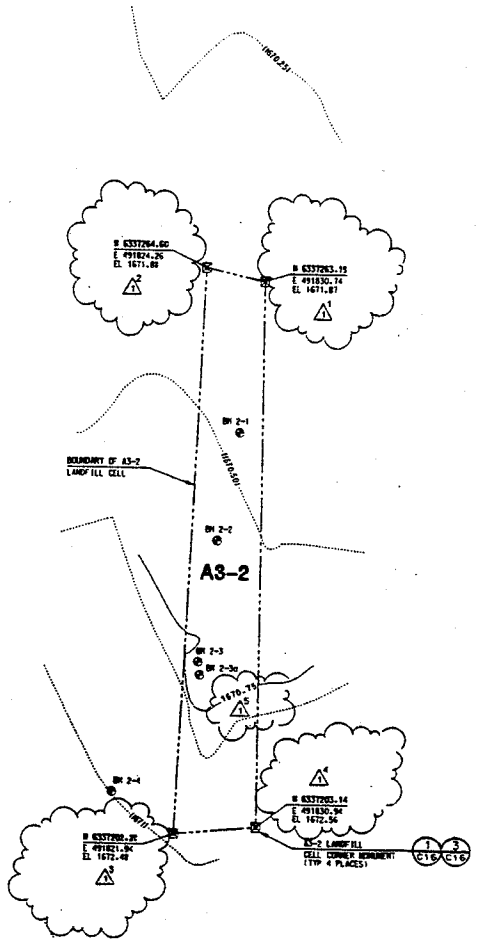
LANDFILL A3-1,1a SITE PLAN

JS-052-133-C9

REV 1

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.



LANDFILL A3-2 SITE PLAN

SCALE 1:250

ORIGINAL AS-BUILT SIGNED BY

AS-BUILT

Bechtel Nevada

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL MYLAR SIGNED BY

GRAPHIC SCALE

0 10 20 30

SCALE 1:250 METERS

(CONTOUR INTERVAL- 0.25M)

REV	DATE	REVISION DESCRIPTION	BY
3		AS-BUILT, DATED 12/02/98	
0		ISSUED FOR CONSTRUCTION, DATED 7/14/98	

DRAWN: L.ESTES
CHECKED: KEN M SCHECHTER
CHECKED: J.A.S.
DOE OF ENERGY PROJECT ENGINEER
PROJECT NUMBER: 98189.A52
PROJECT DWG NO: C10D003
SCALE: N/A

U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE
P.O. BOX 98518, LAS VEGAS, NEVADA

Bechtel Nevada

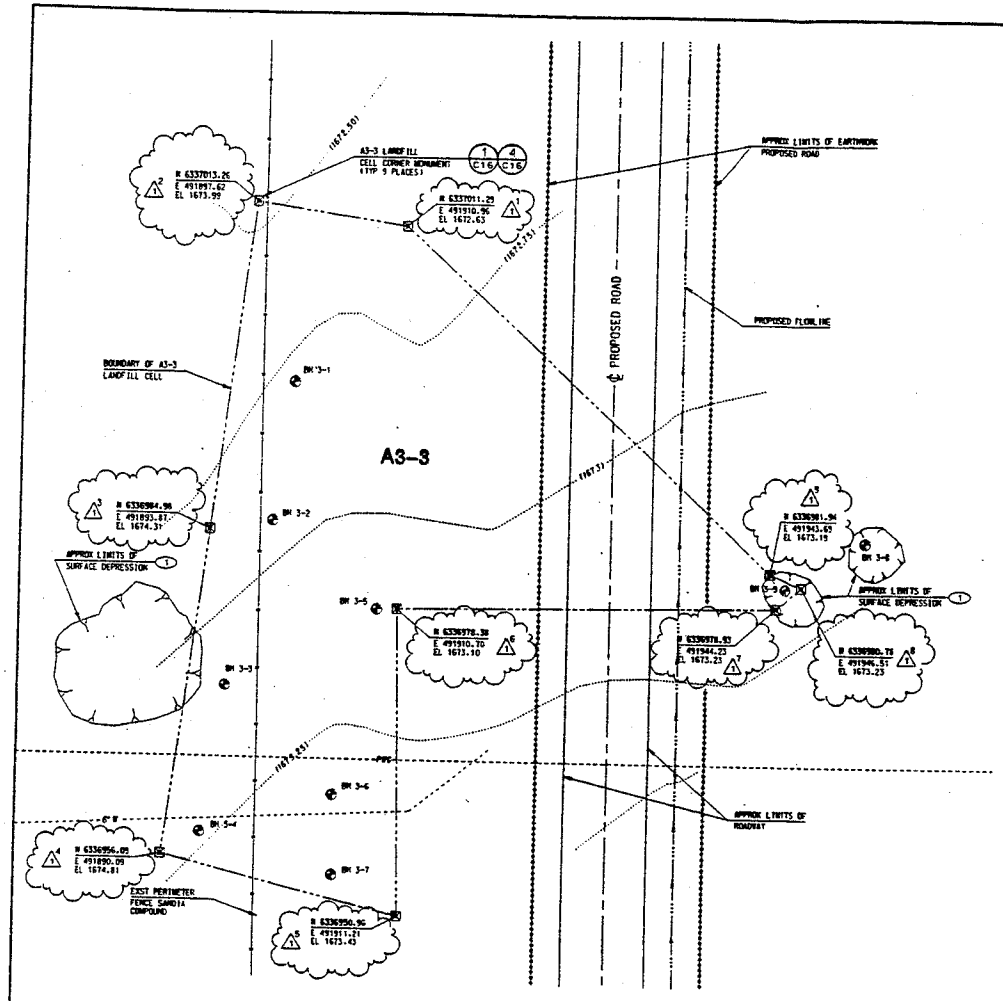
TONOPAH TEST RANGE — AREA 52

AREA 3 LANDFILL COMPLEX
CAU 424

LANDFILL A3-2 SITE PLAN

GRAPHIC NUMBER: JS-052-133-C10

SHEET 1 OF 1 REV 1



LANDFILL A3-3 SITE PLAN

SCALE 1:200

KEY NOTE

1. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY BN FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 80% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.

ORIGINAL MYLAR SIGNED BY

ORIGINAL AS-BUILT SIGNED BY

AS-BUILT

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONAL NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

GRAPHIC SCALE

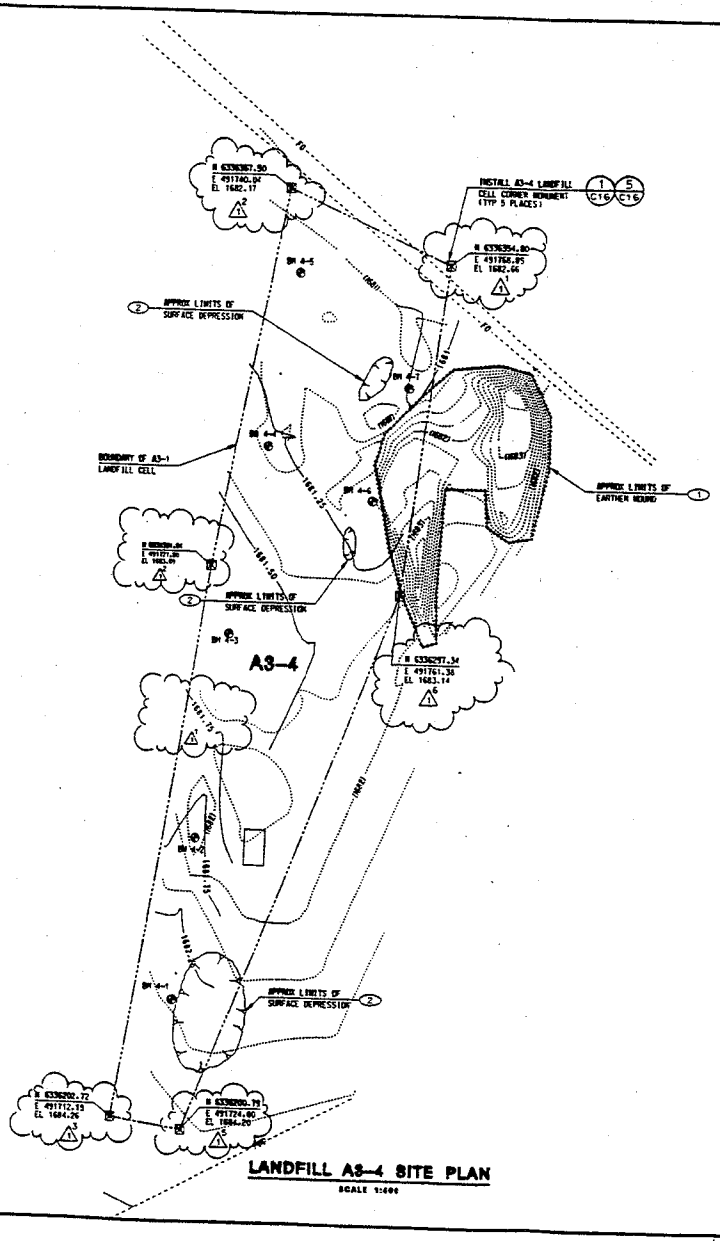
0 5 10 15 20 25 METERS

SCALE: 1:200

(CONTOUR INTERVAL = 0.25M)

REV	DATE	REVISION DESCRIPTION
0	12/02/98	AS-BUILT, DATED 12/02/98
1	7/14/99	ISSUED FOR CONSTRUCTION, DATED 7/14/99

DESIGNED LRE
DRAWN LRE
CHECKED JAS
SUBMITTED BENTE, NEVADA
KEN M SCHECHTER
TEST OF ENERGY PROJECT ENGINEER
PROJECT STAGE 98189.452
PROJECT DWG NO. N/A
MISSION AREA C1L02003
U.S. DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE
LAS VEGAS, NEVADA
Bechtel Nevada
TONOPAH TEST RANGE — AREA 52
AREA 3 LANDFILL COMPLEX
CAU 424
LANDFILL A3-3 SITE PLAN
DRAWING NUMBER
JS-052-133-C11
SHEET 1 REV 1



LANDFILL A3-4 SITE PLAN

SCALE 1:600

KEY NOTES

1. USE EXISTING MOUND IF SUITABLE FOR BACKFILL.
2. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY BN FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
3. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.

ORIGINAL AS-BUILT SIGNED BY

AS-BUILT

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL MYLAR SIGNED BY

GRAPHIC SCALE

0 4 8 12 16 20 24 28 32 36 40 44 48

SCALE 1:400 METERS

(CONTOUR INTERVAL = 0.25M)

REV	DATE	DESCRIPTION
0	12/02/98	AS-BUILT, DATED 12/02/98
	7/14/98	ISSUED FOR CONSTRUCTION, DATED 7/14/98

DRAWN LBE — DESIGNED LBE — CHECKED JAS — DATE

DRAWN BY: LBE — CHECKED BY: JAS — DATE

DESIGN BY: KEN M. SCHECHTER

DRAFT OF INDEX PROJECT FOLDER

PROJECT NUMBER: 98199.A52 — PROJECT DWG NO: 1 — PROJECT DWG NO: CIL030303

U.S. DEPARTMENT OF ENERGY — NEVADA OPERATIONS OFFICE, LAS VEGAS, NEVADA — Bechtel Nevada

TONOPAH TEST RANGE — AREA 52

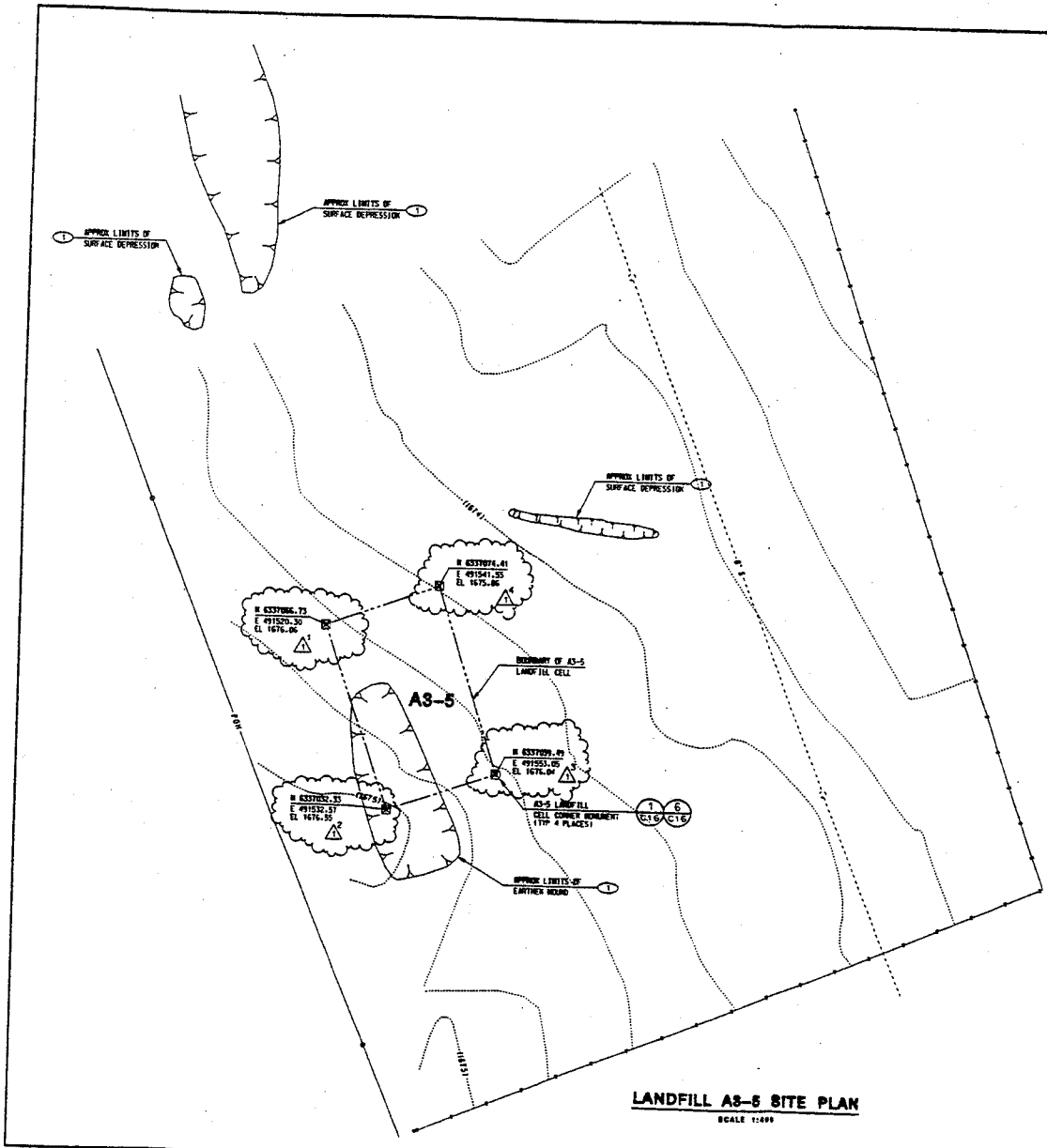
AREA 3 LANDFILL COMPLEX

CAU 424

LANDFILL A3-4 SITE PLAN

DRAWING NUMBER: JS-052-133-C12

SHEET: 9 — REV: 1



LANDFILL A3-5 SITE PLAN

SCALE 1:400

KEY NOTE

1. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY BN FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.

ORIGINAL AS-BUILT STAMPED BY:

AS-BUILT

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

GRAPHIC SCALE

0 4 8 12 16 20 24 28 32 36 40 44 48 METERS

SCALE 1:400

(CONTOUR INTERVAL = 0.25M)

ORIGINAL MYLAR STAMPED BY:

0	AS-BUILT, DATED 12/02/98	TTR	DPM
	ISSUED FOR CONSTRUCTION, DATED 7/14/98		
REV	REVISION DESCRIPTION	DRN	CHK

DRAWN: LJS
DESIGNED: LJS
CHECKED: JAS
DATE: 7/14/98
DRAWING NO: 1
SHEET NO: 1

U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE
LAS VEGAS, NEVADA

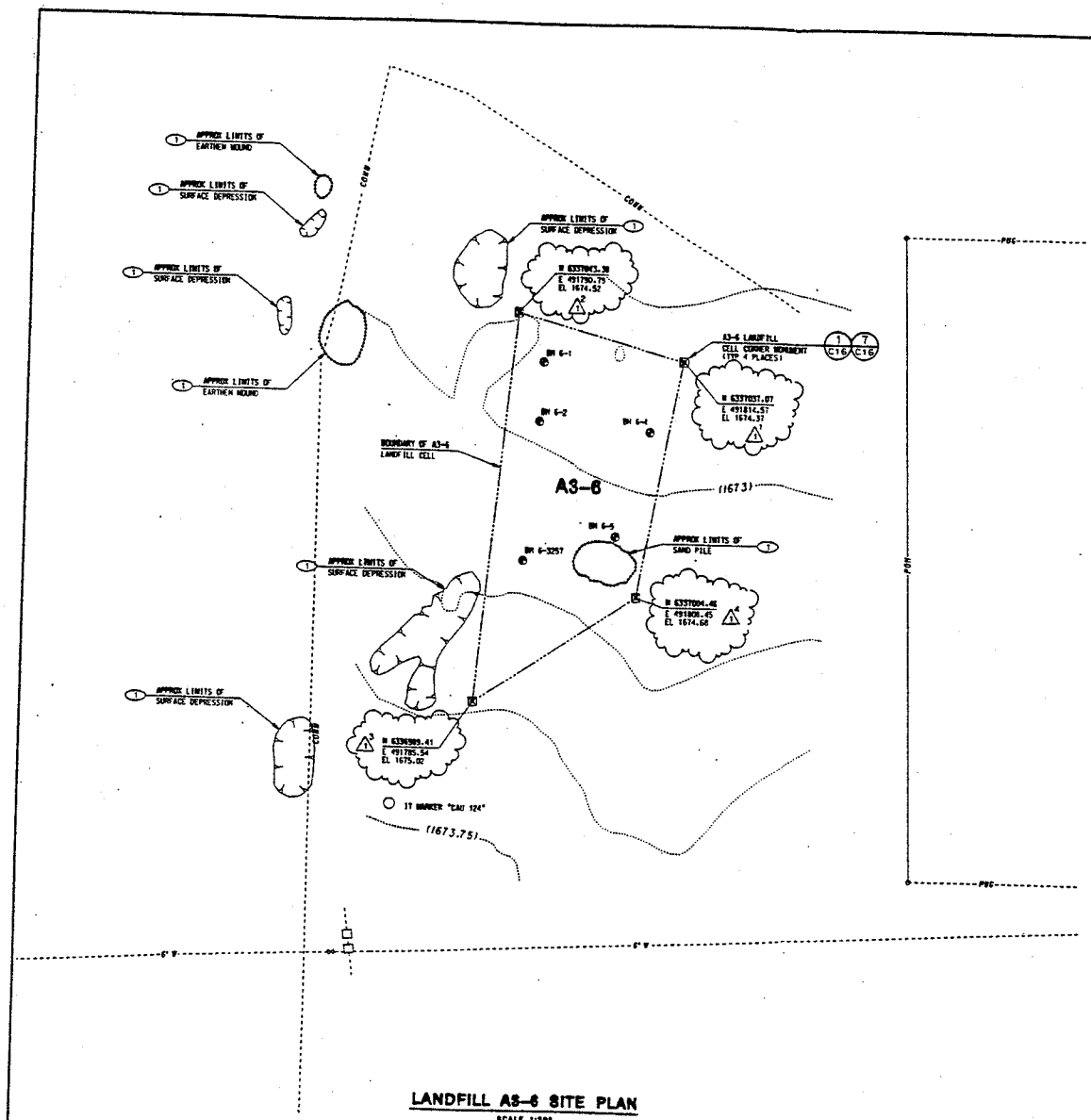
Bechtel Nevada

TONOPAH TEST RANGE
AREA 3 LANDFILL COMPLEX
CAU 424

AREA 52

LANDFILL A3-5 SITE PLAN

DRAWING NUMBER: 35-052-133-C13



LANDFILL A3-6 SITE PLAN

SCALE 1:300

KEY NOTE

1. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY BN FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 80% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.

ORIGINAL AS-BUILT SIGNED BY

AS-BUILT

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL MYLAR SIGNED BY

GRAPHIC SCALE

0 3 6 9 12 15 18 21 24 27 30 33 36

SCALE 1:300 METERS

(CONTOUR INTERVAL = 0.25M)

REV	DATE	REVISION DESCRIPTION
0		AS-BUILT, DATED 12/02/99
		ISSUED FOR CONSTRUCTION, DATED 7/14/98

DRAWING TITLE: LANDFILL A3-6 SITE PLAN

TONOPAH TEST RANGE — AREA 52
AREA 3 LANDFILL COMPLEX
CAU 424

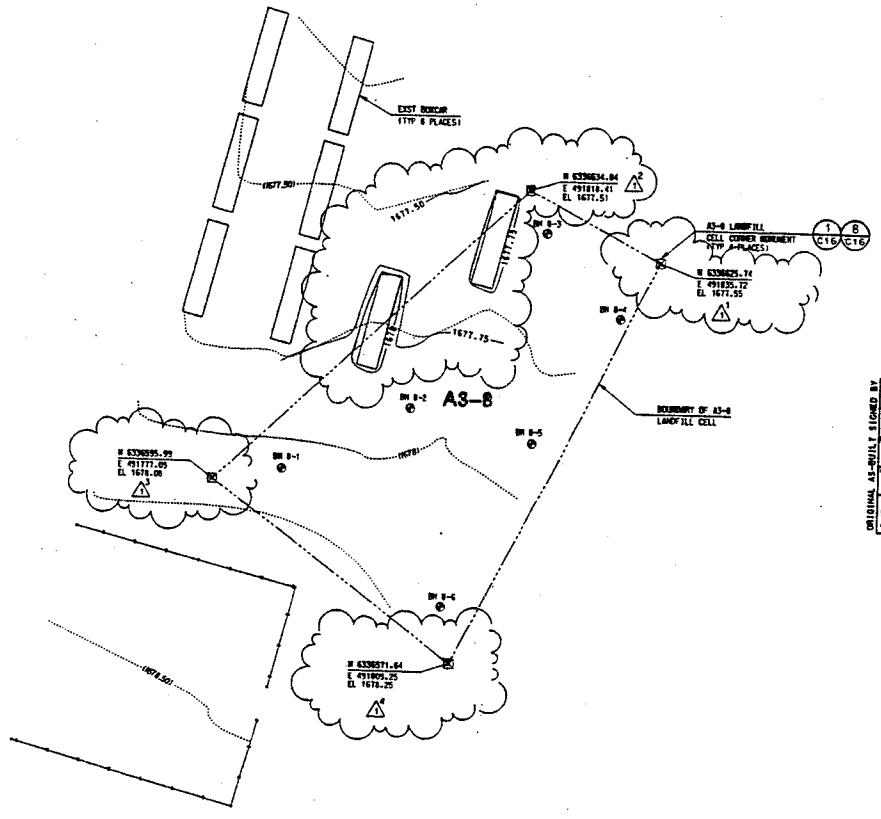
U.S. DEPARTMENT OF ENERGY

Bechtel Nevada

JS-052-133-C14

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE SURROUNDED BY EARTHEN BERMS OR FILLED.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 80% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.



LANDFILL A3-8 SITE PLAN

SCALE 1:300

ORIGINAL AS-BUILT SIGNED BY

AS-BUILT

Bechtel Nevada

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL MYLAR SIGNED BY

GRAPHIC SCALE

0 3 6 9 12 15 18 21 24 27 30 33 36

SCALE 1:300 METERS

(CONTOUR INTERVAL = 0.25M)

REV	DATE	REVISION DESCRIPTION
0		ISSUED FOR CONSTRUCTION, DATED 7/14/98
1		AS-BUILT, DATED 12/02/98

DESIGNED LBE — SUBMITTED BEFORE METHOD — DATE
DRAWN LBE — KEN M SCHECHTER — DATE
CHECKED JAS — DATE
DATE — DATE
NOT OF CURRENT PROJECT EMPHASIS
NOW NOT USE N/A
PROJECT NAME 98189.A52
PROJECT DWG NO N/A
DRAWING NO CTL03003

U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE
LAS VEGAS, NEVADA

Bechtel Nevada

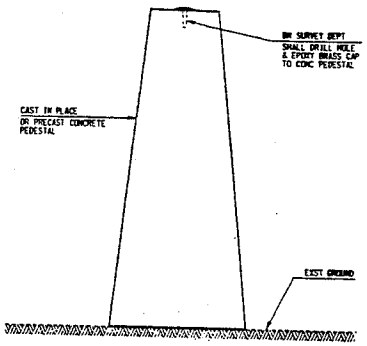
TONOPAH TEST RANGE
AREA 3 LANDFILL COMPLEX
CAU 424

AREA 52

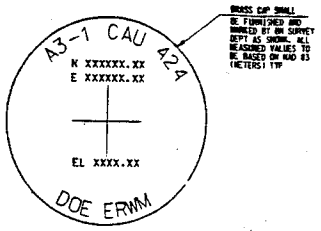
LANDFILL A3-8 SITE PLAN

DRAWING NUMBER JS-052-133-C15

SHEET 0 REV 1



MONUMENT DETAIL (1) C9 THRU C15
NOT TO SCALE



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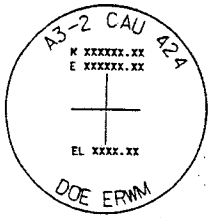
NOT TO SCALE



MARKER DETAIL (3) C10
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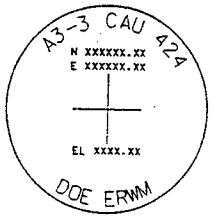
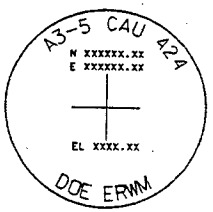
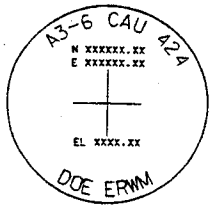


MARKER DETAIL (4) C11
NOT TO SCALE

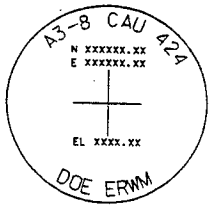
MARKER DETAIL (5) C12
NOT TO SCALE



MARKER DETAIL (6) C13
NOT TO SCALE



MARKER DETAIL (7) C14
NOT TO SCALE



MARKER DETAIL (8) C15
NOT TO SCALE

AS-BUILT

Bechtel Nevada

ORIGINAL AS-BUILT SIGNED BY:

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL MYLAR SIGNED BY:

REV	DATE	REVISION DESCRIPTION
0	12/05/98	AS-BUILT, DATED 12/05/98
	7/14/98	ISSUED FOR CONSTRUCTION, DATED 7/14/98

DESIGNED BY: LRE
DRAWN BY: LRE
CHECKED BY: JAS
DRAWING NUMBER: 98TR3-A52
PROJECT NO: N/A
ACTIVITY CODE: CE03003

U.S. DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE
Bechtel Nevada

TONOPAH TEST RANGE — AREA 52
AREA 3 LANDFILL COMPLEX
CAU 424
MONUMENT DETAILS

DRAWING NUMBER: JS-052-133-C16

APPENDIX C

WASTE DISPOSAL DOCUMENTATION

Bechtel Nevada

Interoffice Memorandum

NOV 12 12 53 PM '98

To: D. D. Madsen

Date: November 9, 1998

From: C. A. Stowell, Project Manager
Solid Waste Management, 295-6904

No.: 2150-CS-99-0010

Subject: **DISPOSAL RECOMMENDATION FOR WASTE GENERATED FROM CORRECTIVE ACTION UNIT (CAU) 424 - AREA 3 LANDFILL COMPLEX, TONAPAH TEST RANGE (TTR)**
Project No. 04047

Waste Management Program/Solid Waste Management personnel, concur with the characterization you have made for the waste generated during closure excavation activities at the CAU 424 Area 3 Landfill Complex at TTR.

The contents of the 11 containers, assigned waste tracking number BN-0453 and Wixel® tracking numbers BN-NTS-99-0001 through -0011, are not regulated under the Resource Conservation and Recovery Act, and can be sent to either the Area 6 Hydrocarbon or U10c Landfill. All free liquids must be absorbed prior to disposal. To arrange disposal, please submit a "Waste Management Program/NonRad Request for Services" form BN-0766, with a charge number to C. C. Gonzales at M/S NTS207.

If you have questions, please call S. S. Simplicio at 295-4838.

C. A. Stowell

SSS/CAS:cjs
Subject Code: WMT3

cc: Correspondence Control, NLV008
J. K. Brooks, NLV080
J. A. Dickinson, NLV080
EM Correspondence, NLV080
J. M. Elkins, NTS110
J. M. Fowler, NTS110
C. C. Gonzales, NTS207
R. H. Guymon, NTS327
A. M. Heidema, NLV102
S. J. Nacht, NTS306
C. J. Schwartze, NTS207
S. S. Simplicio, NTS207
C. A. Stowell, NTS207
L. S. Sygitowicz, NLV080
D. A. Watson, NLV022

This Shipping Order Must be legibly filled in, in ink, in indelible Pencil, or in Carbon and retained by the Agent.

Shipper's #

Carrier

Agent's No.

RECEIVE, subject to the classifications and tariffs in effect on the date of the issue of this Shipping Order,

at _____ 19____ from TTR Landfill A3-2

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Consigned to: Bechtel Nevada (Mail or street address of consignee—For purposes of notification only.)

Destination NTS Area 6 Hydrocarbon Landfill State of Nevada Zip Code NA County of NYE

Routing Highway 6 US 95 Delivering Carrier BN Vehicle or Car Initial _____ No. _____

Collect On Delivery $ _____ and remit to: _____

_____ Street _____ City _____ State

C. O. D. charge to be paid by { Shipper ☐ Consignee ☐

No. Packages	Description of Articles, Special Marks, and Exceptions	*Weight (Sub. to Cor.)	Class or Rate	Check Column
11	Seven 55-gal drums and four 85-gal drums of hydrocarbon-impacted soil and debris excavated from CAU 424 Landfill A3-2 at Tonopah Test Range. Brady No. BN 0453 (see attached memo for WMD approval for disposal at Area 6 Hydrocarbon Landfill	14,000#		

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight." NOTE—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statements:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

If charges are to be prepaid, write or stamp here, "TO BE PREPAID."

Received $ _____ to apply to prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____

(the signature here acknowledges only the amount Prepaid.)

Charges Advanced:

$ _____

_____ Shipper, Per _____

Permanent post-office address of shipper.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

2

(This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

From: Cirilo Gonzales
To: franchesca
Date: 8/10/98 9:51am
Subject: The TTR Waste

Regarding the hydrocarbon (HC) waste and debris pile from the TTR:
If the total HC waste content is Less Than 50 cubic yards, ALL of the waste (the HC and the debris pile) is acceptable for disposal at the Area 9 U10c Landfill. This will allow you the freedom to send the shipment to the NTS at your own convenience, knowing that the 10c Landfill is open every day and manned on a regular basis. (Plus, you save on man-hour and equipment charges from us for using the Area 6 Landfill.)

You'll still need to have a Bill-of-Lading, Weigh Ticket, and Rad-Safe tag for each load, but you can put the destination as the Area 9 U10c Landfill instead. Remember, also, that your drivers will be looking at additional drive-time though since the 10c Landfill is located at the NE side of NTS.

Please call me if you have any questions, 5-7277.

CC: daved

Bechtel Nevada

RADIATION SURVEY REPORT

RCT(s): Colglazier	SIGNATURE: [signature]	SUPERVISOR: Bertrand	
INSTRUMENT(S) TYPE & NO.: Electra #2232, ~~Tennelec~~ Protean (Decon Facility)		HEALTH PHYSICIST: Ryland	
COUNTING INFORMATION	COUNT TIME: 1min	EFFICIENCY: α 31.23 β 43.77	CORRECTION FACTOR: —
MDA: α 15.66 β 13.24			
DATE SURVEYED: 8-27-98	EVENT CODE: —	PURPOSE: Green Tag Survey	REQUESTER/AWP NO.: —

ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☑ YES ☐ NO (SEE COMMENTS)

FOLLOW UP REQUIRED? ☐ YES ☑ NO

SAMPLE NO.	TIME	DATE ANALYZED	DESCRIPTION OF SURVEY	NO. OF POINTS	RESULTS α+β PI cpm	RESULTS α dpm/100cm²	RESULTS β dpm/100cm²	RESULTS
N/A	N/A	8-28-98	BACKGROUND	N/A	980	1.28	1.83	N/A
1	~~28~~ 0916	8-28-98	Soil, Debris Pile (A-3 TTR)	12	72	1.92	9.60	
2	0934	8-28-98	Drums (A-3 TTR)	19	Ø	0.60	5.03	

COMMENTS:

DISTRIBUTION: 1 HPD Records Center, MS NTS 450
2 HPD CP6-72 File, MS NTS 450
3 Requester's Copy

BN 0108 (06/96)

☆GPO:1996-583-463

DATE: 9-14-98 NO. A000147

Bechtel Nevada

Radiological Control Department- Ramatrol

Material Clearance

MONITOR: Calculator

ISSUING ORGANIZATION: BNER

REQUESTING ORGANIZATION: BNER

SURVEY LOCATION: TTR A-3

FROM: TTR A-3

TO: 10-C or Hydrocarbon Landfill (NTS)

THIS MATERIAL HAS BEEN SURVEYED FOR RADIOACTIVITY AND MEETS DOE STANDARDS FOR RELEASE TO PUBLIC USE	INITIAL
	[illegible]

DESCRIPTION: Soil and Debris Pile (Several Loads)

REMARKS: Expires 9-21-98

THIS TAG EXPIRES 7 DAYS FROM ISSUE DATE

COPY 1: HPD RECORDS M/S NTS450
COPY 2: WITH ITEMS THAT WERE CLEARED

BN-0488 (10/96)

954557/28620

ADAMS BUSINESS FORMS
9013 (3-PART FORM)

UNIFORM STRAIGHT BILL OF LADING Original—Not Negotiable—Domestic

Shipper's #

Carrier

Agent's No.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading,

at September 16 19 98 from CAU 424 Area 3 Landfill Complex, TTR

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address of consignee—For purposes of notification only.)

Consigned to Bechtel Nevada

Destination U10c Landfill, Nevada Test Site State of NV Zip Code NA County of NYE

Routing Highway 6, US95 Delivering Carrier BN Vehicle or Car Initial ____ No. ____

Collect On Delivery

$ ____ and remit to: ____

Street ____ City ____ State ____

C. O. D. charge to be paid by { Shipper ☐ Consignee ☐

No. Packages	Description of Articles, Special Marks, and Exceptions	*Weight (Sub. to Cor.)	Class or Rate	Check Column
LOAD #1	Hydrocarbon impacted soil and debris from CAU 424 at Tonopah Test Range Brady No. BN 04502 (see copy of the manifest form & MID approval form and disposal data at U10c)			

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight." NOTE—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding ____ per ____

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statements:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

If charges are to be prepaid, write or stamp here, "TO BE PREPAID."

Received $ ____ to apply to prepayment of the charges on the property described hereon.

Agent or Cashier

Per ____

(the signature here acknowledges only the amount Prepaid.)

Charges Advanced:

$ ____

Shipper, Per ____ Agent, Per ____

Permanent post-office address of shipper,

1

(This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

Bill of Lading

954557/28620

ADAMS BUSINESS FORMS
9013 (3-PART FORM)

UNIFORM STRAIGHT BILL OF LADING Original—Not Negotiable—Domestic

Shipper's #

Carrier

Agent's No.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading,

at September 16 19 98 from CAU424 Area 3 Landfill complex, TTR

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address of consignee—For purposes of notification only.)

Consigned to Bechtel Nevada

Destination U10c Landfill, Nevada Test Site State of NV Zip Code NA County of NYE

Routing Hwy 6, US 95 Delivering Carrier BN Vehicle or Car Initial ____ No. ____

Collect On Delivery

$ ____ and remit to: ____

____ Street ____ City ____ State

No. Packages	Description of Articles, Special Marks, and Exceptions	*Weight (Sub. to Cor.)	Class or Rate	Check Column
LOAD	Hydrocarbon [illegible]			
#3	from CAU424 at Imopah Test Range			
	Bradley No. 0456			
	(see copy of [illegible]			
	approval for disposal at U10c)			

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight." NOTE—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding ____ per ____

C. O. D. charge to be paid by { Shipper ☐ Consignee ☐

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statements:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

If charges are to be prepaid, write or stamp here, "TO BE PREPAID."

Received $ ____ to apply to prepayment of the charges on the property described hereon.

Agent or Cashier

Per ____
(the signature here acknowledges only the amount Prepaid.)

Charges Advanced:

$ ____

____ Shipper, Per ____ ____ Agent, Per ____ 1

Permanent post-office address of shipper,

(This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

Bill of Lading

WEIGH TICKET

GATE 100 INSPECTION STATION

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.
POST OFFICE BOX 98521 • LAS VEGAS, NV 89193-8521

NO. 004142

PROPERTY REMOVAL NO. _____

COMMODITY Hydrocarbon FROM TTR DATE 9 17 '98

CUSTOMER NO. BN ( ) P/O _____ ( ) SHIPPER _____

DELIVER TO LLOC ( ) AREA 9 ( ) BLDG. NO. _____

VEHICLE LICENSE NO. _____ TRUCK NO. 82768 TRAILER(S) LICENSE NO. _____

DRIVER'S SIGNATURE (IN) David Noland DRIVER'S SIGNATURE (OUT) David Noland

47860
37620

LBS. GROSS — DRIVER OFF ( )

LBS. TARE — DRIVER OFF ( )

LBS. NET

GROSS-VERIFIED ( ) WEIGHMASTER'S SIGNATURE _____ SUPERVISOR'S SIGNATURE Posted 9/26/98 cg

TARE-VERIFIED ( ) WEIGHMASTER'S SIGNATURE _____ SUPERVISOR'S SIGNATURE _____

RE-8632 (6/86)

☆ GPO: 1997-685-405

DATE: 12-8-98 NO. A003509

Bechtel Nevada

Radiological Control Department- Ramatrol

Material Clearance

MONITOR: McClaskey

ISSUING ORGANIZATION: BNCR

REQUESTING ORGANIZATION: DN/DOE

SURVEY LOCATION: TTR

FROM: TTR

TO: A-6 Hydrocarbon Landfill

THIS MATERIAL HAS BEEN SURVEYED FOR RADIOACTIVITY AND MEETS DOE STANDARDS FOR RELEASE TO PUBLIC USE	INITIAL
	[illegible]

DESCRIPTION:

11 EA BARRELS
CONTAINING HYDROCARBON
IMPACTED SOIL

REMARKS: EXP- 12-17-98

THIS TAG EXPIRES 7 DAYS FROM ISSUE DATE

COPY 1: HPD RECORDS M/S NTS450
COPY 2: WITH ITEMS THAT WERE CLEARED

BN-0488 (10/96)

WEIGH TICKET

GATE 100 INSPECTION STATION

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.
POST OFFICE BOX 98521 • LAS VEGAS, NV 89193-8521

NO. 004224

COMMODITY SR Hydrocarbon waste FROM A-6 PROPERTY REMOVAL NO.

CUSTOMER NO. CG ( ) P/O ( ) DATE 12/9/98

DELIVER TO LOC Landfill ( ) AREA ( ) SHIPPER B.N.C.

VEHICLE LICENSE NO. TRUCK NO. 84712 ( ) BLDG. NO.

DRIVER'S SIGNATURE (IN) C. Mance DRIVER'S SIGNATURE (OUT) C. Mance TRAILER(S) LICENSE NO.

GROSS-VERIFIED ( ) WEIGHMASTER'S SIGNATURE LBS. GROSS — DRIVER OFF ( )

TARE-VERIFIED ( ) WEIGHMASTER'S SIGNATURE LBS. TARE — DRIVER OFF ( )

LBS. NET

SUPERVISOR'S SIGNATURE

SUPERVISOR'S SIGNATURE

Posted 12/10/98
TM

RE-8632 (8/88)

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WEIGH TICKET
GATE 100 INSPECTION STATION

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.
POST OFFICE BOX 98521 • LAS VEGAS, NV 89193-8521

NO. 004141

PROPERTY REMOVAL NO.

COMMODITY CRcg Hydrocarbon FROM TTR DATE 9 17 98

CUSTOMER NO. BN ( ) P/O ( ) SHIPPER

DELIVER TO U/Oc ( ) AREA 9 ( ) BLDG. NO.

VEHICLE LICENSE NO. TRUCK NO. 83289 TRAILER(S) LICENSE NO.

DRIVER'S SIGNATURE (IN) Jack Ron DRIVER'S SIGNATURE (OUT) Jack Ron

55800

LBS. GROSS — DRIVER OFF ( )

LBS. TARE — DRIVER OFF ( )

LBS. NET

18240
37620

GROSS-VERIFIED ( ) WEIGHMASTER'S SIGNATURE SUPERVISOR'S SIGNATURE Posted 9/26/98 ccg

TARE-VERIFIED ( ) WEIGHMASTER'S SIGNATURE SUPERVISOR'S SIGNATURE

RE-8632 (6/98)

954557/28820

ADAMS BUSINESS FORMS
9013 (3-PART FORM)

UNIFORM STRAIGHT BILL OF LADING Original—Not Negotiable—Domestic

Shipper's #

Carrier

Agent's No.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading,

at September 16 19 98 from CAU424 Area 3 Landfill Complex, TTR

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address of consignee—For purposes of notification only.)

Consigned to Bechtel Nevada

Destination U10c Landfill, Nevada Test Site State of NV Zip Code NA County of NYE

Routing Hwy 6, US 95 Delivering Carrier BN Vehicle or Car Initial ____ No. ____

Collect On Delivery

$ _____ and remit to: _____

_____ Street _____ City _____ State

No. Packages	Description of Articles, Special Marks, and Exceptions	*Weight (Sub. to Cor.)	Class or Rate	Check Column
LOAD #2	1/4 yd³ of contaminated soil and debris from CAU424 that is impacted test range. Bray No. 0450 (see copy of e-mail for WRD approval for disposal at U10c)			

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's" weight. NOTE—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

C. O. D. charge to be paid by { Shipper ☐ Consignee ☐

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statements:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

If charges are to be prepaid, write or stamp here, "TO BE PREPAID."

Received $ _____ to apply to prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
(the signature here acknowledges only the amount Prepaid.)

Charges Advanced:

$ _____

Rec'd 9/17/98

_____ Shipper, Per _____ _____ Agent, Per _____

Permanent post-office address of shipper.

1

(This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

Bill of Lading

WEIGH TICKET

GATE 100 INSPECTION STATION

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.
POST OFFICE BOX 98521 • LAS VEGAS, NV 89193-8521

NO. 004145

PROPERTY REMOVAL NO.

COMMODITY Hydrocarbon

FROM TTR

DATE 9 17 98

CUSTOMER NO. BN ( ) P/O ( ) SHIPPER

DELIVER TO UNOC ( ) AREA 9 ( ) BLDG. NO.

VEHICLE LICENSE NO. TRUCK NO. 84677 TRAILER(S) LICENSE NO.

DRIVER'S SIGNATURE (IN) Darrell Nolan

DRIVER'S SIGNATURE (OUT) Darrell Nolan

62920
37280
25640

LBS. GROSS — DRIVER OFF ( )

LBS. TARE — DRIVER OFF ( )

LBS. NET

GROSS-VERIFIED ( ) WEIGHMASTER'S SIGNATURE

TARE-VERIFIED ( ) WEIGHMASTER'S SIGNATURE

SUPERVISOR'S SIGNATURE Posted 9/26/98 cg

SUPERVISOR'S SIGNATURE

RE-8632 (6/88)

BECHTEL NEVADA
P.O. BOX 98521
LAS VEGAS, NV 89193-8521

WEIGH TICKET
GATE 100 INSPECTION STATION

3769

PROPERTY REMOVAL _____

DATE _____

COMMODITY _____ FROM _____ TRUCK NO. 5677

DELIVER TO _____ AREA _____ SHIPPER _____

DRIVER'S SIGNATURE (IN) _____

DRIVER'S SIGNATURE (OUT) _____

37280 lb (1) LBS GROSS - DRIVER OFF

LBS TARE - DRIVER OFF

LBS NET

WEIGHMASTER'S SIGNATURE (IN) _____

WEIGHMASTER'S SIGNATURE (OUT) _____

METTLER - TOLEDO SCALE CO. - LAS VEGAS, NV 54615

APPENDIX D

GEOTECHNICAL TEST RESULTS

October 05, 1998

TRNS:MTL:001:99

David D. Madsen
Bechtel Nevada
P. O. Box 98521, M/S NST 306
Las Vegas, NV 89193-8521

TONOPAH TEST RANGE AREA 3

As requested, the Materials Testing Laboratory performed Modified Proctor, Gradation, Nuclear Moisture / Density, and Permeability tests. On 07/15/98 Nuclear Moisture / Density tests were taken at 15 different locations. A Proctor sample was also taken at 12 of the 15 locations. A proctor was also run on the Sandia borrow pit. Permeability tests were remolded and run on the average Moisture and Density for each location. Permeabilities were also run for the Sandia borrow pit material remolded at 85%, 90%, and 95% optimum density at optimum moisture content. On 07/28/98, 07/29/98, and 08/13/98 compaction tests were taken on Sandia borrow pit material being placed at various locations. The test locations were designated by Curtis Obi. The test results and locations are attached.

If you have any further questions concerning this matter or need additional tests, please contact me at 295-6813.

Charles Dale Herrington

Charles Dale Herrington
Senior Technologist

Enclosures
As Stated

bc: V. Thummala, w/encl.
C. Obi, w/encl.
MTL Files, w/encl. (C4P1C0DE)

APPENDIX

1. NUCLEAR MOISTURE / DENSITY
2. PROCTOR
3. PROCTOR SUMMARY
4. GRADATION
5. GRADATION CURVE
6. COMPACTION TESTS
7. PERMEABILITY
8. LOCATIONS

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	C4P1CODE 07/31/96 1 OF 4

Requested by D. MADSEN User/Agency BECHTEL Material NATIVE

Project TTR AREA 3 Location of Tests SEE BELOW

Tested by D. HERRINGTON Date Tested 07/15/98 Checked by L. D. Johnson

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 07/15/98

LABORATORY NO	1930	1931	1932		1933	1934	1935	
TEST LOCATION	A3-1/1A	A3-1/1B	A3-1/1C		A3-1/2A	A3-1/2B	A3-1/2C	
DEPTH OF PROBE	BS	BS	BS		BS	BS	BS	
DEPTH OF TESTS Below grade	Grade	Grade	Grade	AVG	Grade	Grade	Grade	AVG
WET DENSITY-PCF	101.5	105.6	102.8	103.3	111.9	111.2	105.5	109.5
DRY DENSITY-PCF	97.8	100.7	98.3	98.9	104.9	105.1	99.0	103.0
MOISTURE %	3.8	4.8	4.6	4.4	6.7	5.8	6.6	6.4
MAX DENSITY-PCF	125.5	125.5	125.5		128.0	128.0	128.0	
OPTIMUM MOISTURE %	9.6	9.6	9.6		9.7	9.7	9.7	
PERCENT COMPACTION	77.9	80.2	78.3	78.8	82.0	82.1	77.3	80.5

LABORATORY NO	1936	1937	1938		1939	1940	1941	
TEST LOCATION	A3-2/1A	A3-2/1B	A3-2/1C		A3-3/1A	A3-3/1B	A3-3/1C	
DEPTH OF PROBE	BS	BS	BS		BS	BS	BS	
DEPTH OF TESTS Below grade	Grade	Grade	Grade	AVG	Grade	Grade	Grade	AVG
WET DENSITY-PCF	120.2	104.9	104.0	109.7	112.5	126.3	119.1	119.3
DRY DENSITY-PCF	116.3	100.9	100.2	105.8	107.3	122.9	114.9	115.0
MOISTURE %	3.4	3.9	3.8	3.7	4.8	2.8	3.7	3.8
MAX DENSITY-PCF	128.4	128.4	128.4		125.5	125.5	125.5	
OPTIMUM MOISTURE %	8.7	8.7	8.7		9.5	9.5	9.5	
PERCENT COMPACTION	90.6	78.6	78.0	82.4	85.5	97.9	91.6	91.7

GAUGE NO 23205 DATE OF STANDARDIZATION 07/15/98 VALUE OF STANDARDIZATION M 633 D 2944

REMARKS: AVERAGE MOISTURE AND DENSITY WILL BE USED FOR PERMEABILITY.
BOLD = PROCTOR USED IS NOT FROM SAME AREA

CC: D. MADSEN BECHTEL
MTL BN FILES .

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS189 LAS VEGAS, NV 89193-8521	C4P1CODE 07/31/98 2 OF 4

Requested by D. MADSEN User/Agency BECHTEL Material NATIVE

Project TTR AREA 3 Location of Tests SEE BELOW

Tested by D. HERRINGTON Date Tested 07/15/98 Checked by

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 07/15/98

LABORATORY NO		1942	N/A	N/A		1943	1944	1945	
TEST LOCATION		A3-3/2A	A3-1/1B	A3-1/1C		A3-3/3A	A3-3/3B	A3-3/3C	
DEPTH OF PROBE		BS	N/A	N/A		BS	BS	BS	
DEPTH OF TESTS	Below grade	Grade	N/A	N/A	AVG	Grade	Grade	Grade	AVG
WET DENSITY-PCF		112.3	N/A	N/A	N/A	114.9	117.5	112.8	115.[illegible]
DRY DENSITY-PCF		108.0	N/A	N/A	N/A	108.6	110.9	106.3	108.[illegible]
MOISTURE %		4.0	N/A	N/A	N/A	5.8	6.0	6.1	6.[illegible]
MAX DENSITY-PCF		123.0	N/A	N/A	N/A	123.0	123.0	123.0	
OPTIMUM MOISTURE %		8.9	N/A	N/A	N/A	8.9	8.9	8.9	
PERCENT COMPACTION		87.8	N/A	N/A	N/A	88.3	90.2	86.4	88.[illegible]

LABORATORY NO		1946	1947	1948		1949	1950	1951	
TEST LOCATION		A3-3/4A	A3-3/4B	A3-3/4C		A3-4/1A	A3-4/1B	A3-4/1C	
DEPTH OF PROBE		BS	BS	BS		BS	BS	BS	
DEPTH OF TESTS	Below grade	Grade	Grade	Grade	AVG	Grade	Grade	Grade	AVG
WET DENSITY-PCF		117.2	106.2	106.8	110.1	107.6	109.4	111.6	109.[illegible]
DRY DENSITY-PCF		110.1	99.7	101.2	103.7	104.8	105.6	107.4	105.[illegible]
MOISTURE %		6.4	6.5	5.6	6.2	2.7	3.5	3.9	3.[illegible]
MAX DENSITY-PCF		125.5	125.5	125.5		127.0	127.0	127.0	
OPTIMUM MOISTURE %		9.5	9.5	9.5		8.8	8.8	8.8	
PERCENT COMPACTION		87.7	79.4	80.6	82.6	82.5	83.1	84.6	83.[illegible]

GAUGE NO 23205 DATE OF STANDARDIZATION 07/15/98 VALUE OF STANDARDIZATION M 633 D 2944

REMARKS: AVERAGE MOISTURE AND DENSITY WILL BE USED FOR PERMEABILITY.

BOLD = PROCTOR USED IS NOT FROM SAME AREA

CC: D. MADSEN BECHTEL
MTL BN FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	C4P1CODE 07/31/98 3 OF 4

Requested by D. MADSEN User/Agency BECHTEL Material NATIVE

Project TTR AREA 3 Location of Tests SEE BELOW

Tested by D. HERRINGTON Date Tested 07/15/98 Checked by R.D. Johnson

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 07/15/98

LABORATORY NO		1952	1953	1954		1955	1956	1957	
TEST LOCATION		A3-4/2A	A3-4/2B	A3-4/2C		A3-4/3A	A3-4/3B	A3-4/3C	
DEPTH OF PROBE		BS	BS	BS		BS	BS	BS	
DEPTH OF TESTS	Below grade	Grade	Grade	Grade	AVG	Grade	Grade	Grade	AVG
WET DENSITY-PCF		108.1	126.9	107.1	114.0	123.4	98.6	108.8	110.3
DRY DENSITY-PCF		104.2	123.8	103.7	110.6	121.1	96.8	105.2	107.7
MOISTURE %		3.8	2.5	3.2	3.2	1.9	1.9	3.5	2.4
MAX DENSITY-PCF		129.5	129.5	129.5		**127.0**	**127.0**	**127.0**	
OPTIMUM MOISTURE %		8.4	8.4	8.4		**8.8**	**8.8**	**8.8**	
PERCENT COMPACTION		80.5	95.6	80.1	85.4	95.4	76.2	82.8	84.8

LABORATORY NO		1958	1959	1960		1961	1962	1963	
TEST LOCATION		A3-5/1A	A3-5/1B	A3-5/1C		A3-6/1A	A3-6/1B	A3-6/1C	
DEPTH OF PROBE		BS	BS	BS		BS	BS	BS	
DEPTH OF TESTS	Below grade	Grade	Grade	Grade	AVG	Grade	Grade	Grade	AVG
WET DENSITY-PCF		100.0	109.7	97.1	102.3	105.5	108.1	103.5	105.7
DRY DENSITY-PCF		94.4	104.0	90.0	96.1	101.1	102.1	99.5	100.9
MOISTURE %		5.9	5.5	7.9	6.4	4.4	5.8	3.9	4.7
MAX DENSITY-PCF		122.1	122.1	122.1		125.0	125.0	125.0	
OPTIMUM MOISTURE %		9.0	9.0	9.0		10.1	10.1	10.1	
PERCENT COMPACTION		77.3	85.2	73.7	78.7	80.9	81.7	79.6	80.7

GAUGE NO 23205 DATE OF STANDARDIZATION 07/15/98 VALUE OF STANDARDIZATION M 633 D 2944

REMARKS: AVERAGE MOISTURE AND DENSITY WILL BE USED FOR PERMEABILITY.

BOLD = PROCTOR USED IS NOT FROM SAME AREA

CC: D. MADSEN BECHTEL
MTL BN FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521; M/S NTS188 LAS VEGAS, NV 89193-8521	C4P1CODE 07/31/96 4 OF 4

Requested by D. MADSEN User/Agency BECHTEL Material NATIVE

Project TTR AREA 3 Location of Tests SEE BELOW

Tested by D. HERRINGTON Date Tested 07/15/98 Checked by

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 07/15/98

LABORATORY NO		1964	1965	1966		1967	1968	1969	
TEST LOCATION		A3-6/2A	A3-6/2B	A3-6/2C		A3-8/1A	A3-8/1B	A3-8/1C	
DEPTH OF PROBE		BS	BS	BS		BS	BS	BS	
DEPTH OF TESTS	Below grade	Grade	Grade	Grade	AVG	Grade	Grade	Grade	AVG
WET DENSITY-PCF		112.7	104.1	104.7	107.2	129.3	109.9	111.7	117.0
DRY DENSITY-PCF		109.3	100.6	101.1	103.7	123.6	104.2	106.2	111.3
MOISTURE %		3.1	3.5	3.6	3.4	4.6	5.5	5.2	5.1
MAX DENSITY-PCF		124.0	124.0	124.0		129.5	129.5	129.5	
OPTIMUM MOISTURE %		9.0	9.0	9.0		8.3	8.3	8.3	
PERCENT COMPACTION		88.1	81.1	81.5	83.6	95.4	80.5	82.0	86.0

LABORATORY NO		1970	1971	1972		N/A	N/A	N/A	N/A
TEST LOCATION		A3-8/2A	A3-8/2B	A3-8/2C					
DEPTH OF PROBE		BS	BS	BS					
DEPTH OF TESTS	Below grade	Grade	Grade	Grade	AVG				
WET DENSITY-PCF		116.6	114.9	112.4	114.6				
DRY DENSITY-PCF		111.8	108.7	106.3	108.9				
MOISTURE %		4.3	5.6	5.7	5.2				
MAX DENSITY-PCF		123.5	123.5	123.5					
OPTIMUM MOISTURE %		8.7	8.7	8.7					
PERCENT COMPACTION		90.5	88.0	86.1	88.2				

GAUGE NO 23205 DATE OF STANDARDIZATION 07/15/98 VALUE OF STANDARDIZATION M 633 D 2944

REMARKS: AVERAGE MOISTURE AND DENSITY WILL BE USED FOR PERMEABILITY.

BOLD = PROCTOR USED IS NOT FROM SAME AREA

CC: D. MADSEN BECHTEL
MTL BN FILES

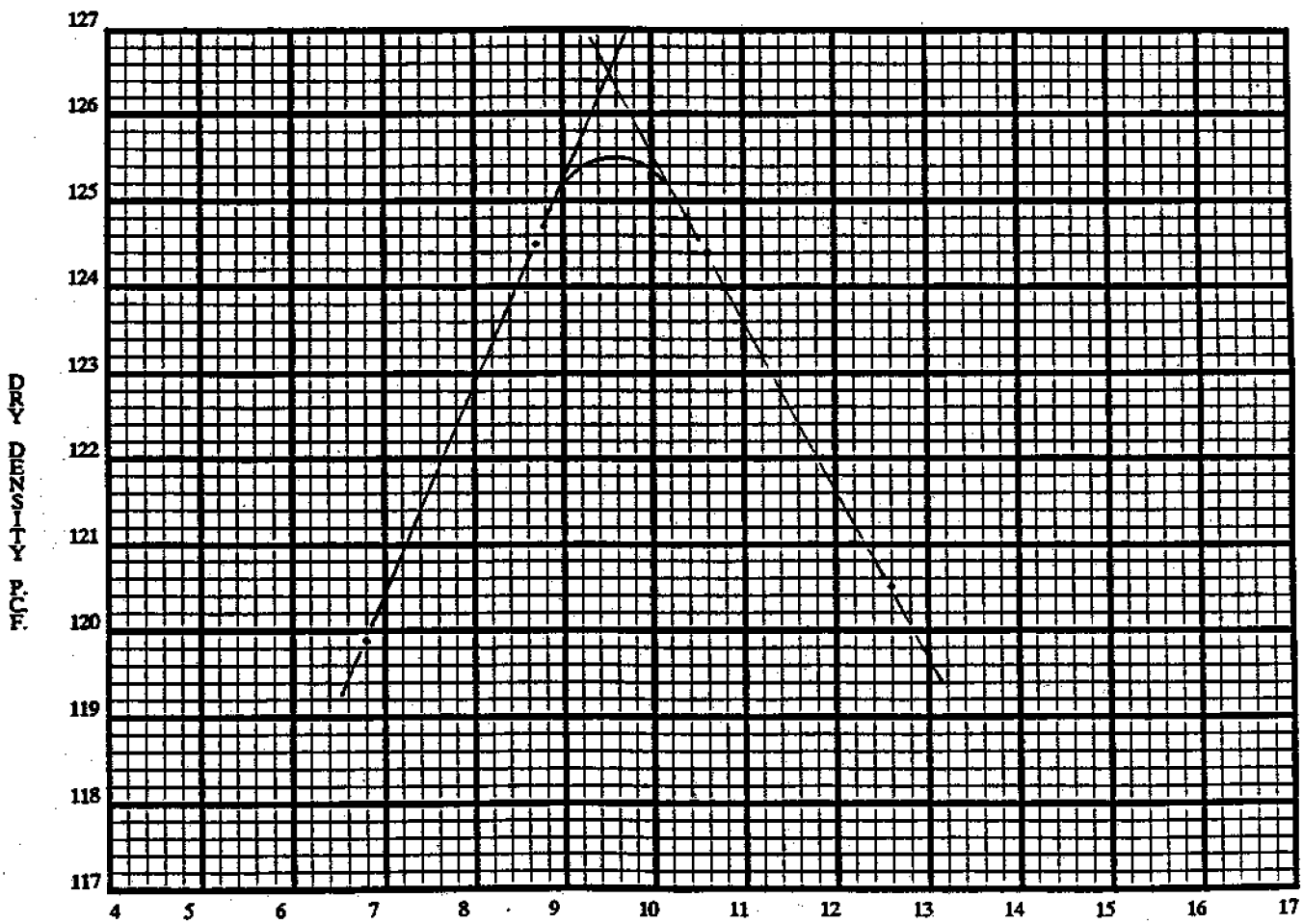
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1918 DATE 07/27/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-1/1 A,B,C

Tested by: D. HERRINGTON Date tested: 07/25/98 Checked by: L.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7525.6	7456.3	7444.5	7202.4	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	N/A	N/A
3	Wt. wet soil	4682.3	4613.0	4601.2	4359.1	N/A	N/A
4	Wet Density, PCF	137.6	135.6	135.3	128.1	N/A	N/A
5	Moisture Tare #	112.0	112.0	113.0	127.0	N/A	N/A
6	Wt wet soil + tare	1202.5	1290.8	1400.1	1297.4	N/A	N/A
7	Wt dry soil + tare	1088.4	1148.7	1289.8	1215.6	N/A	N/A
8	Wt moisture	114.1	142.1	110.3	81.8	N/A	N/A
9	Wt tare	16.9	17.0	16.9	17.3	N/A	N/A
10	Wt dry soil	1071.5	1131.7	1272.9	1198.3	N/A	N/A
11	% Moisture	10.6	12.6	8.7	6.8	N/A	N/A
12	Dry Density, PCF	124.4	120.5	124.5	119.9	N/A	N/A



MAX. DENSITY = 125.5 PCF

OPT. MOISTURE = 9.6 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

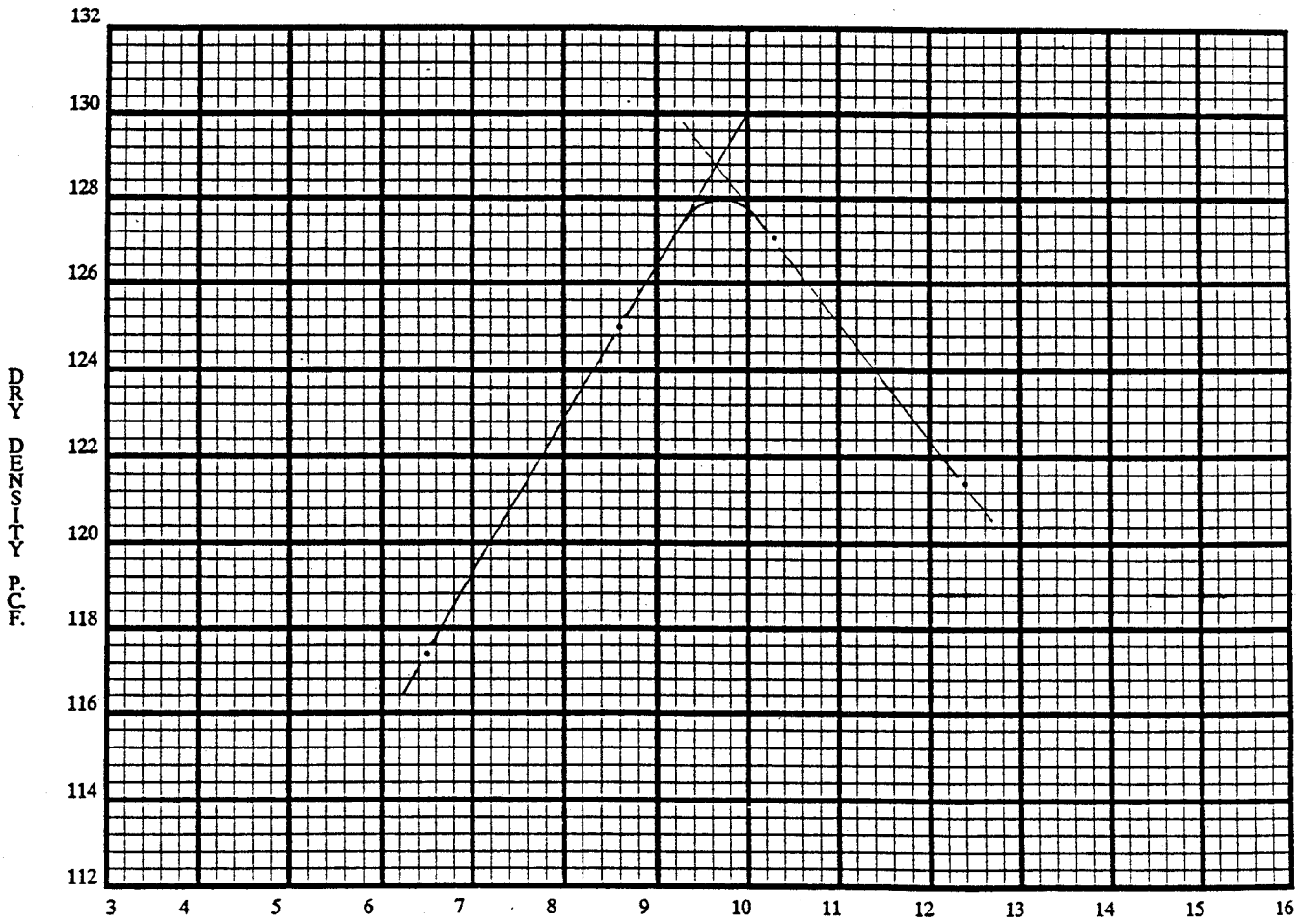
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODI LAB # 1919 DATE 07/27/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-1/2 A,B,C

Tested by: D. HERRINGTON Date tested: 07/25/98 Checked by: R.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7613.7	7462.6	7096.3	10278.1	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	5635.0	N/A	N/A
3	Wt. wet soil	4770.4	4619.3	4253.0	4643.1	N/A	N/A
4	Wet Density, PCF	140.2	135.8	125.0	136.5	N/A	N/A
5	Moisture Tare #	113.0	117.0	128.0	116.0	N/A	N/A
6	Wt wet soil + tare	1072.5	1339.4	1206.2	1378.1	N/A	N/A
7	Wt dry soil + tare	973.5	1234.7	1133.4	1227.8	N/A	N/A
8	Wt moisture	99.0	104.7	72.8	150.3	N/A	N/A
9	Wt tare	16.8	17.0	17.3	16.9	N/A	N/A
10	Wt dry soil	956.7	1217.7	1116.1	1210.9	N/A	N/A
11	**% Moisture**	**10.3**	**8.6**	**6.5**	**12.4**	**N/A**	**N/A**
12	**Dry Density, PCF**	**127.1**	**125.0**	**117.4**	**121.4**	**N/A**	**N/A**



MAX. DENSITY = 128.0 **PCF**

OPT. MOISTURE = 9.7 **%**

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

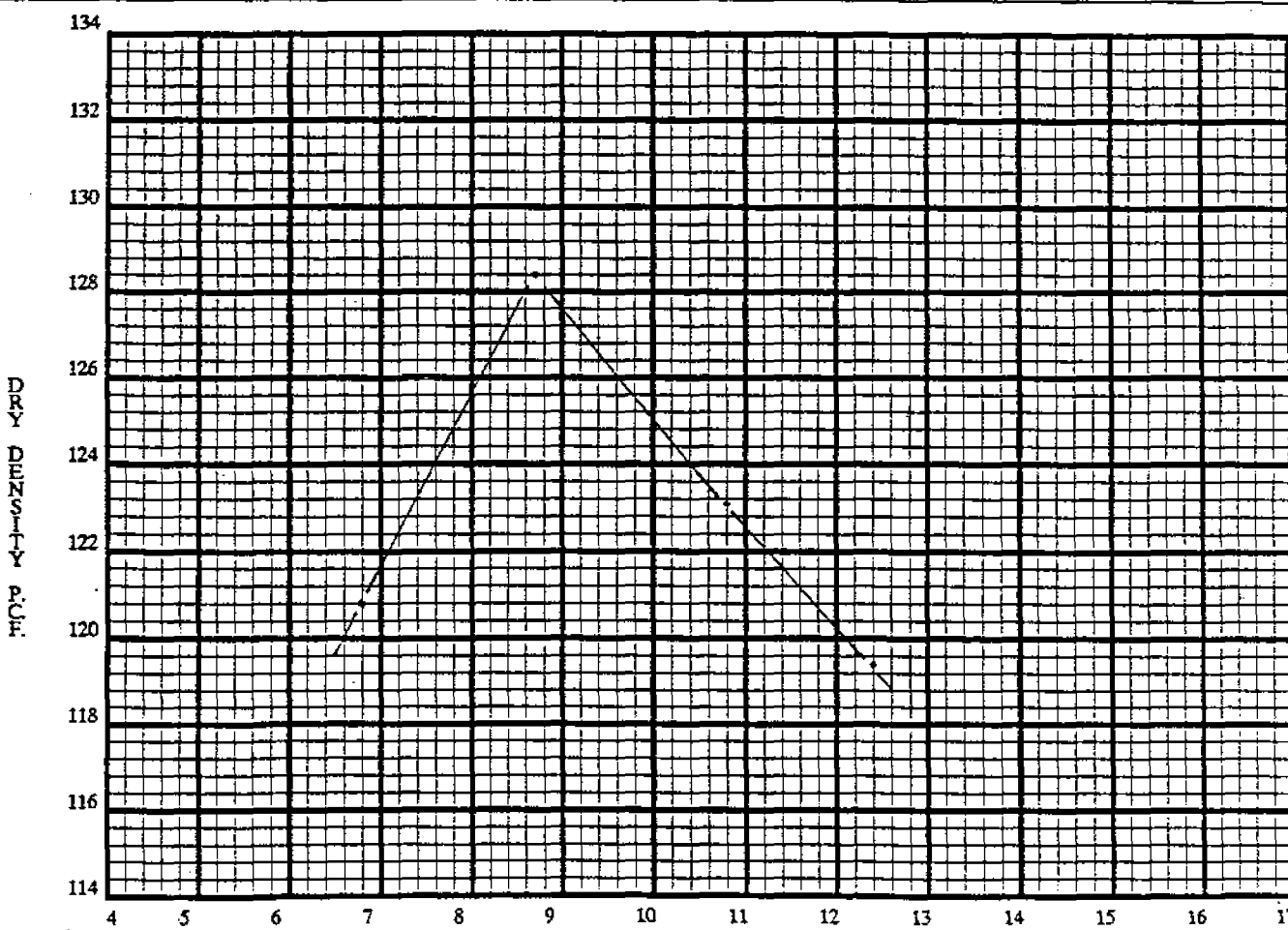
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1920 DATE 07/27/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-2/1 A,B,C

Tested by: D. HERRINGTON Date tested: 07/25/98 Checked by: L.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7590.9	7482.9	7232.1	7410.7	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	N/A	N/A
3	Wt. wet soil	4747.6	4639.6	4388.8	4567.4	N/A	N/A
4	Wet Density, PCF	139.6	136.4	129.0	134.3	N/A	N/A
5	Moisture Tare #	115	118	119	124	N/A	N/A
6	Wt wet soil + tare	1430.6	1366.1	1235.4	1238.7	N/A	N/A
7	Wt dry soil + tare	1317.8	1234.8	1158.3	1103.7	N/A	N/A
8	Wt moisture	112.8	131.3	77.1	135.0	N/A	N/A
9	Wt tare	16.9	17.0	17.0	17.0	N/A	N/A
10	Wt dry soil	1300.9	1217.8	1141.3	1086.7	N/A	N/A
11	**% Moisture**	**8.7**	**10.8**	**6.8**	**12.4**	**N/A**	**N/A**
12	**Dry Density, PCF**	**128.4**	**123.1**	**120.8**	**119.4**	**N/A**	**N/A**



MAX. DENSITY = 128.4 PCF MOISTURE CONTENT %

OPT. MOISTURE = 8.7 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16. PTL W1256. Cal. date: 06/02/98. Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

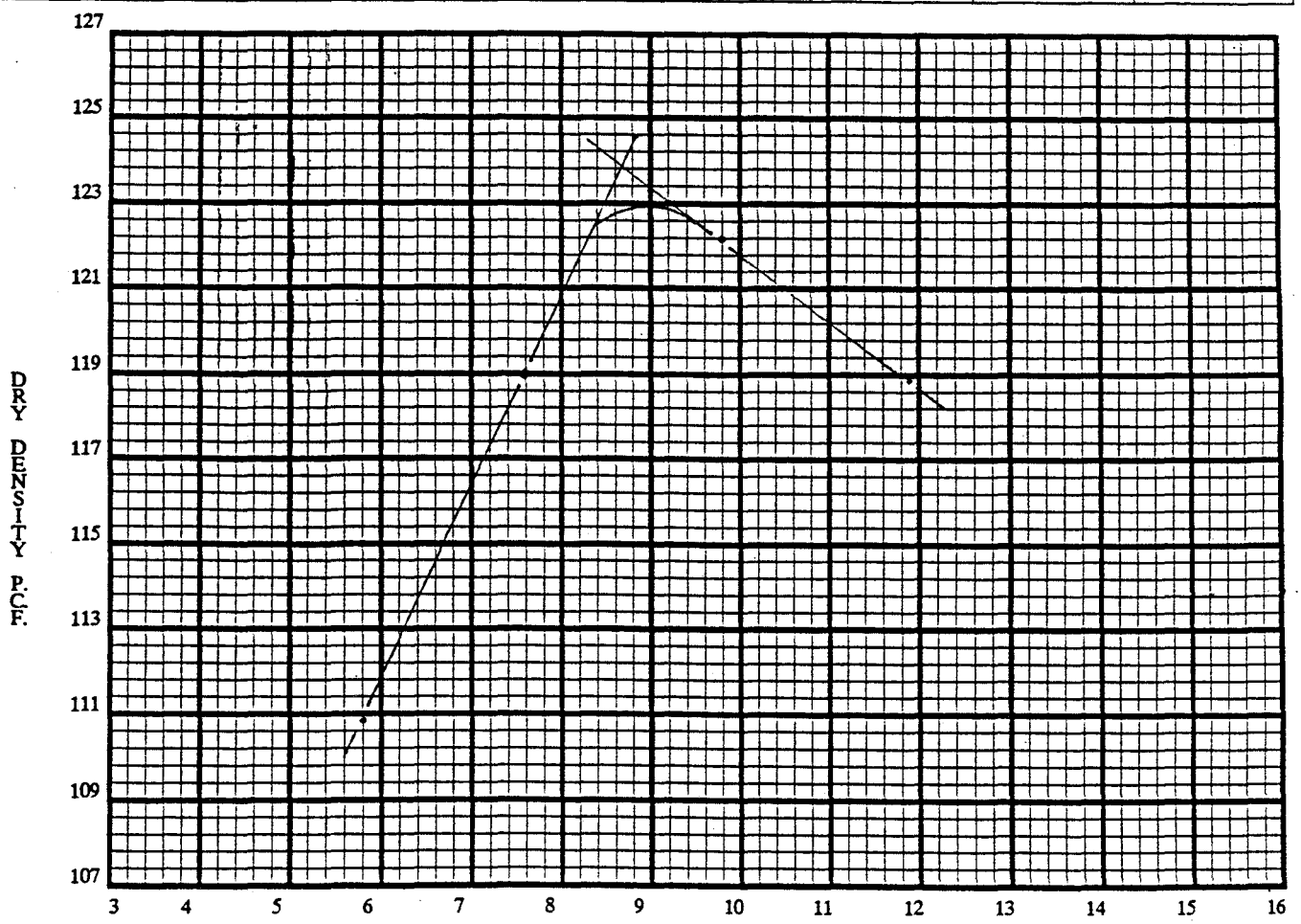
PROCTOR TEST ASTM D 1557–91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193–8521	CHARGE # C4P1CODE LAB # 1921 DATE 07/27/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3–3/3 A,B,C

Tested by: D. HERRINGTON Date tested: 07/25/98 Checked by: R.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7201.3	7404.7	6834.9	7367.3	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	N/A	N/A
3	Wt. wet soil	4358.0	4561.4	3991.6	4524.0	N/A	N/A
4	Wet Density, PCF	128.1	134.1	117.3	133.0	N/A	N/A
5	Moisture Tare #	116	120	122	125	N/A	N/A
6	Wt wet soil + tare	1260.7	1625.8	1243.5	1371.1	N/A	N/A
7	Wt dry soil + tare	1172.6	1482.7	1175.8	1227.3	N/A	N/A
8	Wt moisture	88.1	143.1	67.7	143.8	N/A	N/A
9	Wt tare	16.9	17.2	17.1	17.1	N/A	N/A
10	Wt dry soil	1155.7	1465.5	1158.7	1210.2	N/A	N/A
11	**% Moisture**	**7.6**	**9.8**	**5.8**	**11.9**	**N/A**	**N/A**
12	**Dry Density, PCF**	**119.0**	**122.2**	**110.9**	**118.9**	**N/A**	**N/A**



MAX. DENSITY = 123.0 PCF

OPT. MOISTURE = 8.9 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

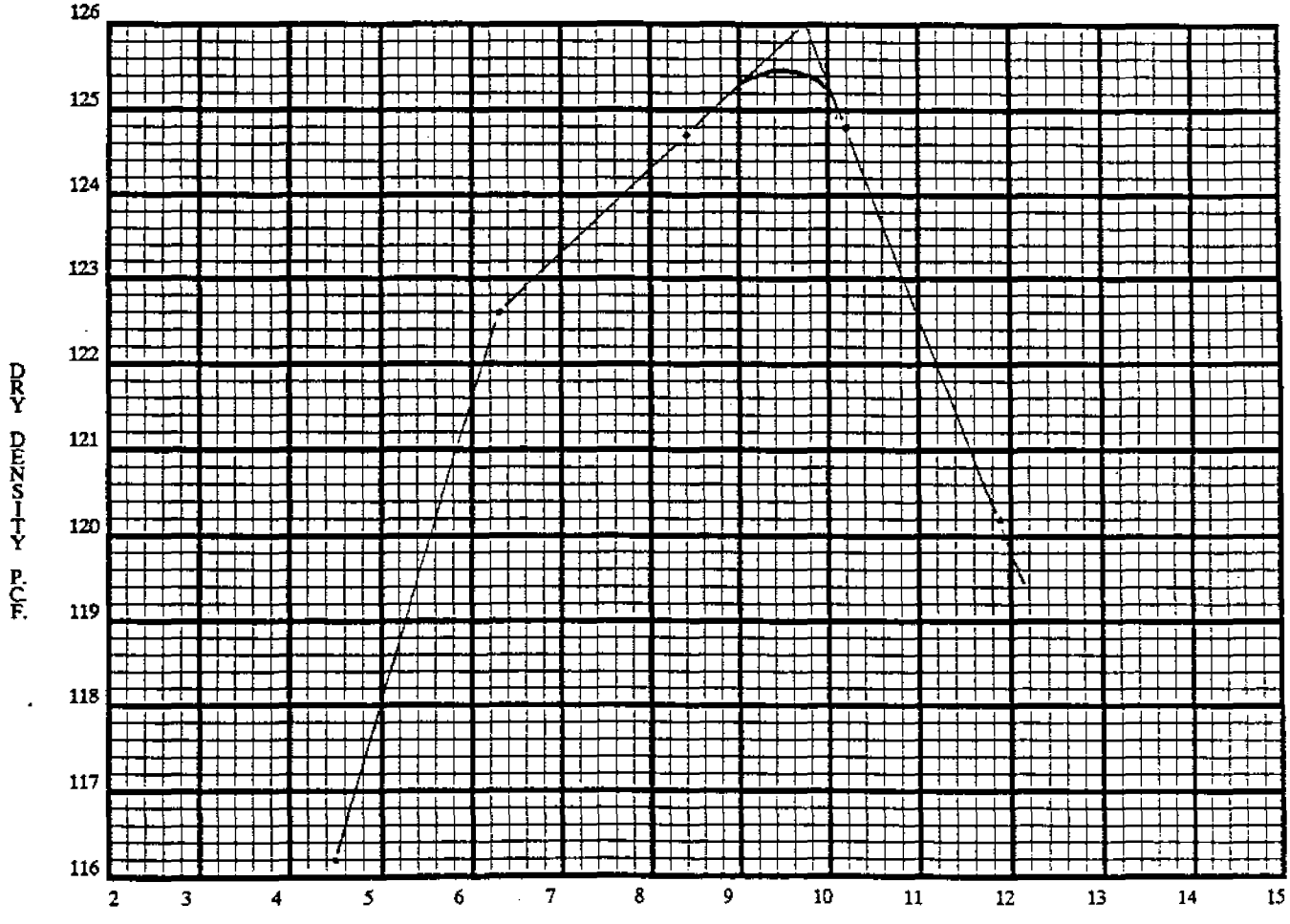
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1922 DATE 07/27/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-3/4 A,B,C

Tested by: D. HERRINGTON Date tested: 07/25/98 Checked by: L.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7275.0	7443.5	7522.4	6975.6	10212.1	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	5633.8	N/A
3	Wt. wet soil	4431.7	4600.2	4679.1	4132.3	4578.3	N/A
4	Wet Density, PCF	130.3	135.2	137.5	121.5	134.6	N/A
5	Moisture Tare #	117	121	126	123	129	N/A
6	Wt wet soil + tare	1100.9	1362.6	1404.1	1161.8	1182.7	N/A
7	Wt dry soil + tare	1036.7	1258.0	1275.7	1112.6	1058.3	N/A
8	Wt moisture	64.2	104.6	128.4	49.2	124.4	N/A
9	Wt tare	16.9	17.2	17.2	17.2	17.0	N/A
10	Wt dry soil	1019.8	1240.8	1258.5	1095.4	1041.3	N/A
11	% Moisture	6.3	8.4	10.2	4.5	11.9	N/A
12	Dry Density, PCF	122.6	124.7	124.8	116.2	120.2	N/A



MAX. DENSITY = 125.5 PCF

OPT. MOISTURE = 9.5 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

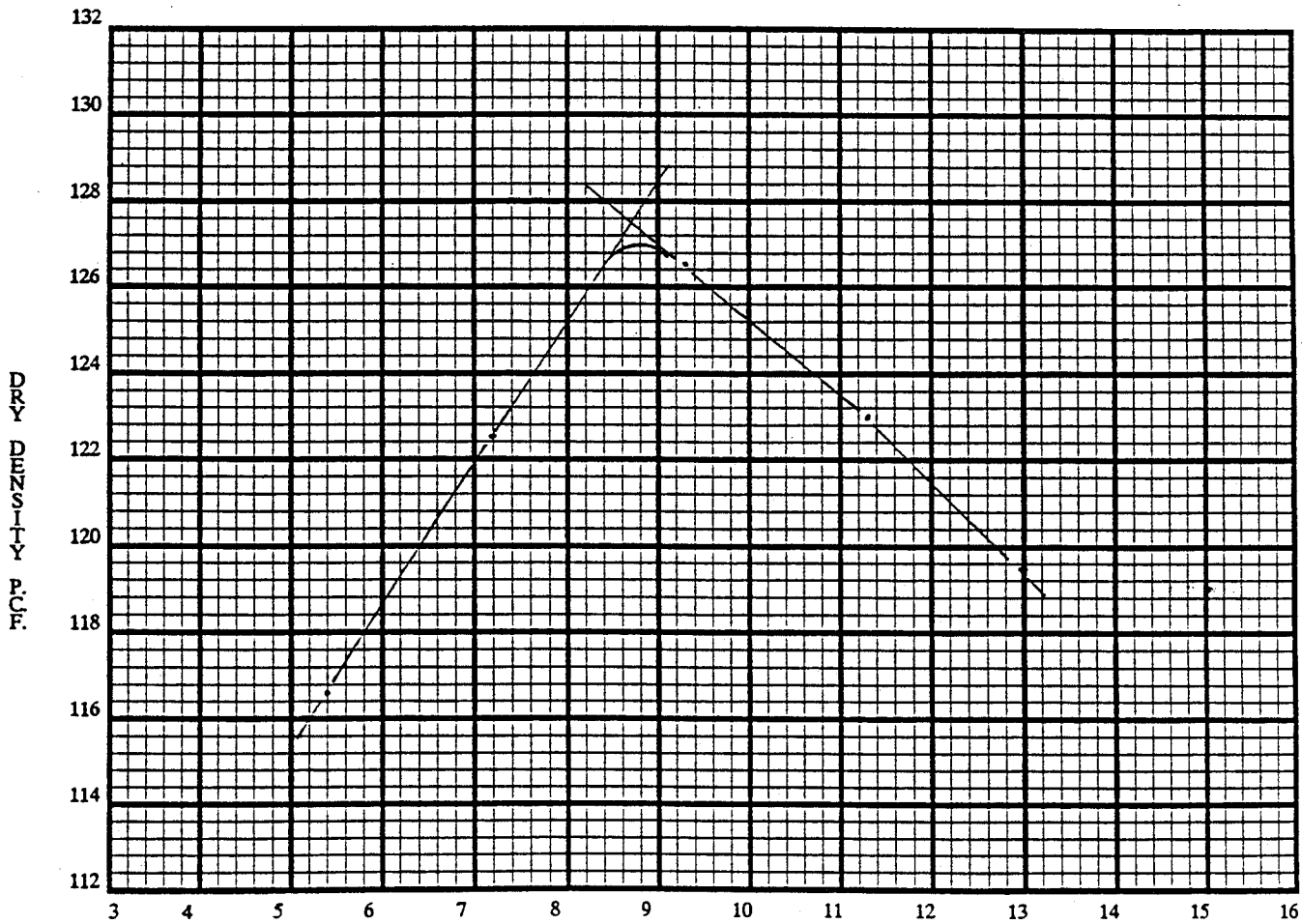
PROCTOR TEST ASTM D 1557–91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193–8521	CHARGE # C4P1CODE LAB # 1923 DATE 07/28/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3–4/1 A,B,C

Tested by: D. HERRINGTON Date tested: 07/28/98 Checked by: L.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7307.6	7545.3	7501.9	7025.0	10227.9	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	5633.8	N/A
3	Wt. wet soil	4464.3	4702.0	4658.6	4181.7	4594.1	N/A
4	Wet Density, PCF	131.2	138.2	136.9	122.9	135.0	N/A
5	Moisture Tare #	A	H	114	114	113	N/A
6	Wt wet soil + tare	1166.1	1298.3	1219.3	1074.2	1442.1	N/A
7	Wt dry soil + tare	1089.3	1189.8	1096.8	1019.7	1278.1	N/A
8	Wt moisture	76.8	108.5	122.5	54.5	164.0	N/A
9	Wt tare	16.8	16.9	16.9	17.0	16.9	N/A
10	Wt dry soil	1072.5	1172.9	1079.9	1002.7	1261.2	N/A
11	**% Moisture**	**7.2**	**9.3**	**11.3**	**5.4**	**13.0**	**N/A**
12	**Dry Density, PCF**	**122.5**	**126.5**	**123.0**	**116.6**	**119.5**	**N/A**



MAX. DENSITY = 127.0 PCF

OPT. MOISTURE = 8.8 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL

MTL BECHTEL FILES

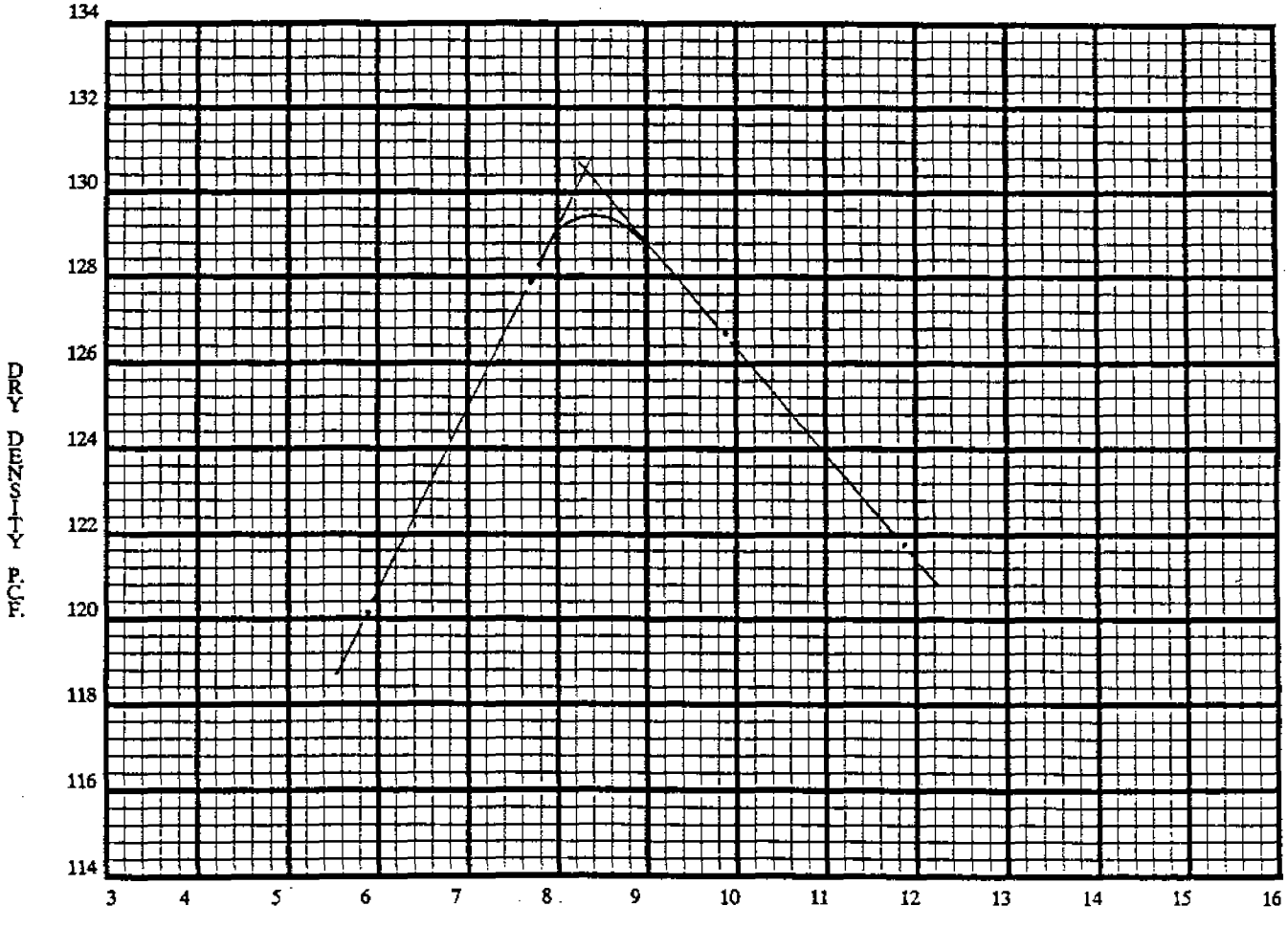
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1924 DATE 07/30/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-4/2 A,B,C

Tested by: D. HERRINGTON Date tested: 07/28/98 Checked by: R.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7530.4	7581.8	7170.6	10268.0	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	5633.8	N/A	N/A
3	Wt. wet soil	4687.1	4738.5	4327.3	4634.2	N/A	N/A
4	Wet Density, PCF	137.8	139.3	127.2	136.2	N/A	N/A
5	Moisture Tare #	B	108	109	115	N/A	N/A
6	Wt wet soil + tare	1051.9	1311.5	1245.4	1297.6	N/A	N/A
7	Wt dry soil + tare	977.9	1194.7	1176.7	1161.6	N/A	N/A
8	Wt moisture	74.0	116.8	68.7	136.0	N/A	N/A
9	Wt tare	16.9	17.6	17.5	16.9	N/A	N/A
10	Wt dry soil	961.0	1177.1	1159.2	1144.7	N/A	N/A
11	% Moisture	7.7	9.9	5.9	11.9	N/A	N/A
12	Dry Density, PCF	127.9	126.7	120.1	121.8	N/A	N/A



MAX. DENSITY = 129.5 PCF

OPT. MOISTURE = 8.4 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

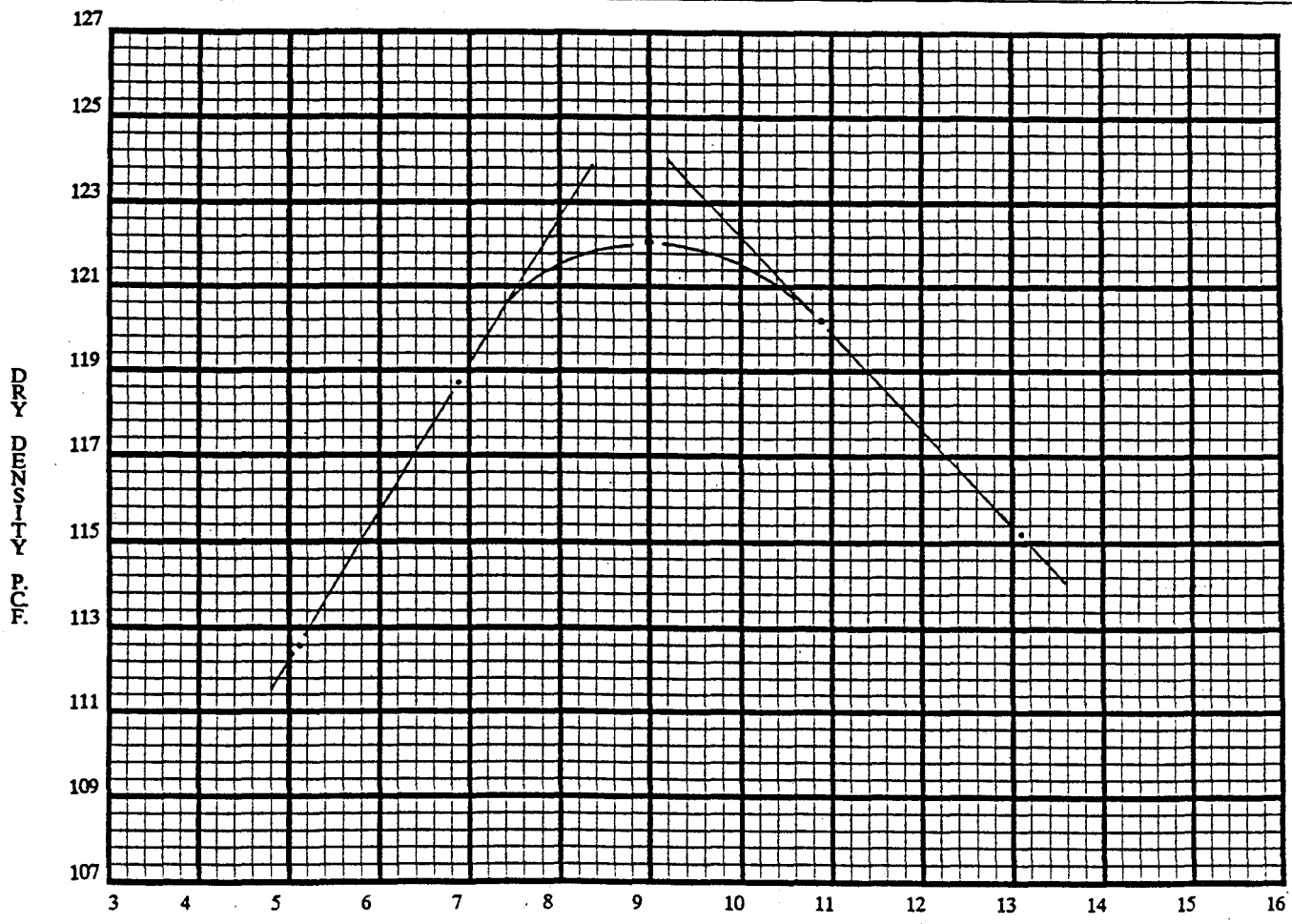
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1925 DATE 07/30/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-5/1 A,B,C

Tested by: D. HERRINGTON Date tested: 07/28/98 Checked by: R.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7158.7	7373.2	7375.6	7278.3	6868.7	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	2843.3	N/A
3	Wt. wet soil	4315.4	4529.9	4532.3	4435.0	4025.4	N/A
4	Wet Density, PCF	126.9	133.2	133.2	130.4	118.3	N/A
5	Moisture Tare #	C	109	115	117	116	N/A
6	Wt wet soil + tare	1099.8	1053.6	1270.5	1388.8	1021.2	N/A
7	Wt dry soil + tare	1029.8	967.9	1147.7	1229.7	972.4	N/A
8	Wt moisture	70.0	85.7	122.8	159.1	48.8	N/A
9	Wt tare	17.0	17.6	16.9	17.0	17.6	N/A
10	Wt dry soil	1012.8	950.3	1130.8	1212.7	954.8	N/A
11	% Moisture	6.9	9.0	10.9	13.1	5.1	N/A
12	Dry Density, PCF	118.7	122.1	120.2	115.2	112.6	N/A



MAX. DENSITY = 122.1 PCF

OPT. MOISTURE = 9.0 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

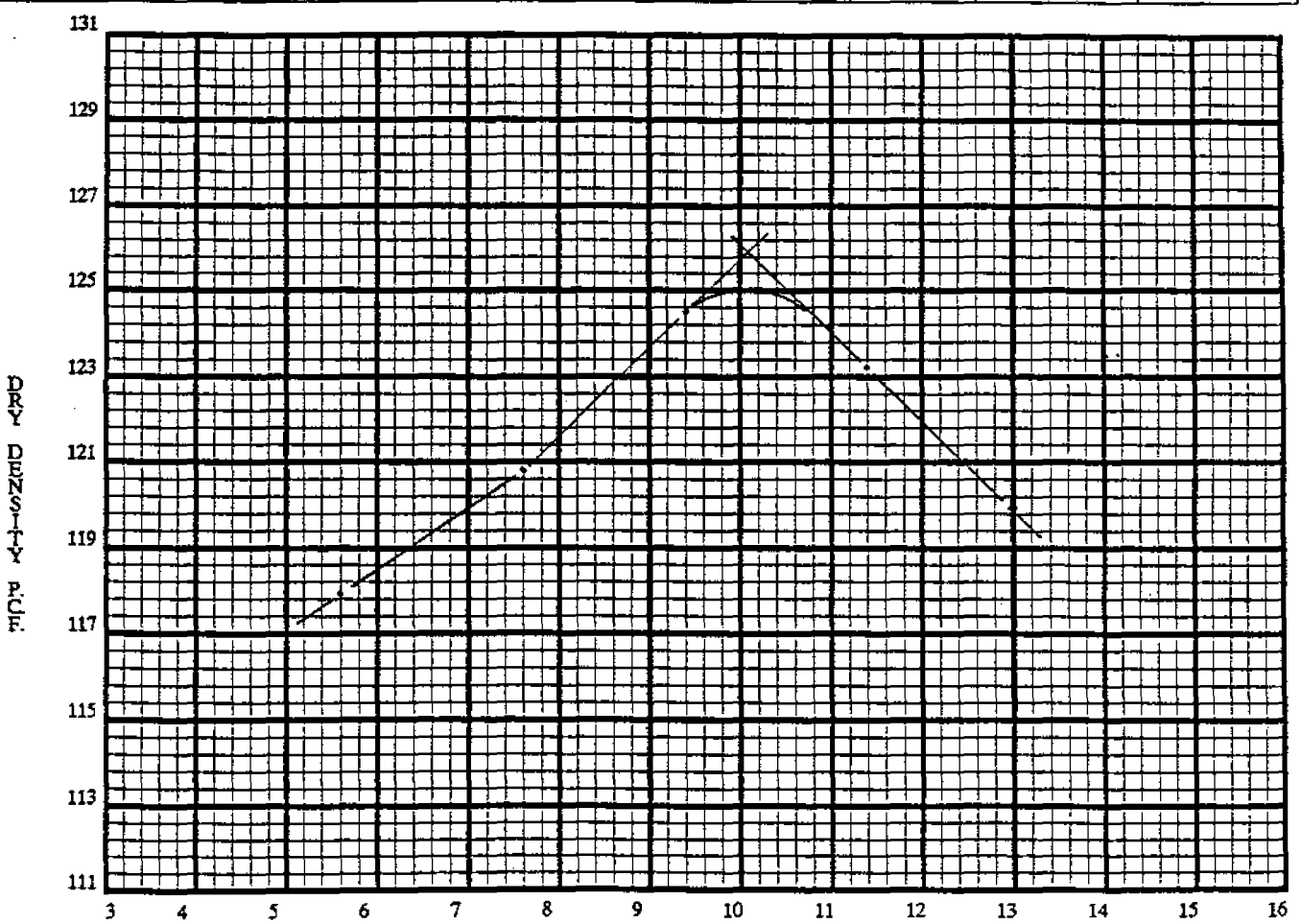
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1926 DATE 07/31/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-6/1 A,B,C

Tested by: D. HERRINGTON Date tested: 07/28/98 Checked by: R. D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7267.2	7479.4	7512.6	10240.0	7080.4	N/A
2	Wt. mold	2843.3	2843.3	2843.3	5633.0	2843.3	N/A
3	Wt. wet soil	4423.9	4636.1	4669.3	4607.0	4237.1	N/A
4	Wet Density, PCF	130.0	136.3	137.3	135.4	124.6	N/A
5	Moisture Tare #	D	110	116	118	126	N/A
6	Wt wet soil + tare	1222.4	1223.7	1305.4	1264.6	1016.9	N/A
7	Wt dry soil + tare	1137.2	1119.7	1173.8	1121.5	963.9	N/A
8	Wt moisture	85.2	104.0	131.6	143.1	53.0	N/A
9	Wt tare	17.1	17.1	17.6	17.1	17.3	N/A
10	Wt dry soil	1120.1	1102.6	1156.2	1104.4	946.6	N/A
11	**% Moisture**	**7.6**	**9.4**	**11.4**	**13.0**	**5.6**	**N/A**
12	**Dry Density, PCF**	**120.8**	**124.5**	**123.2**	**119.9**	**117.9**	**N/A**



MAX. DENSITY = 125.0 PCF

OPT. MOISTURE = 10.1 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

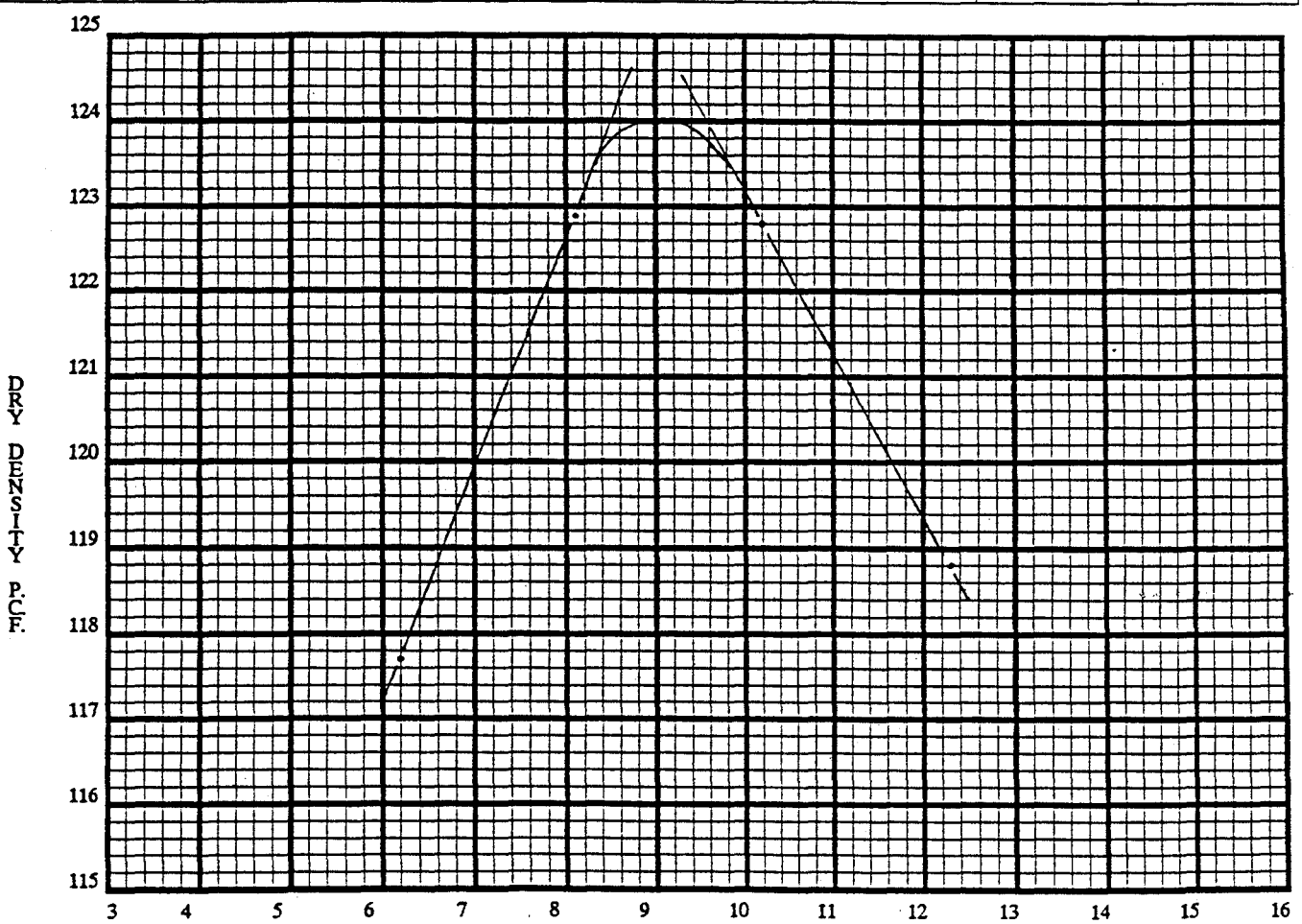
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1927 DATE 07/28/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-6/2 A,B,C

Tested by: D. HERRINGTON Date tested: 07/28/98 Checked by: R.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7362.6	7447.3	7096.0	7382.0	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	N/A	N/A
3	Wt. wet soil	4519.3	4604.0	4252.7	4538.7	N/A	N/A
4	Wet Density, PCF	132.8	135.3	125.0	133.4	N/A	N/A
5	Moisture Tare #	E	111	108	119	N/A	N/A
6	Wt wet soil + tare	1214.4	1185.0	1126.1	1352.2	N/A	N/A
7	Wt dry soil + tare	1125.0	1077.0	1061.6	1206.3	N/A	N/A
8	Wt moisture	89.4	108.0	64.5	145.9	N/A	N/A
9	Wt tare	17.0	17.0	17.5	17.1	N/A	N/A
10	Wt dry soil	1108.0	1060.0	1044.1	1189.2	N/A	N/A
11	**% Moisture**	**8.1**	**10.2**	**6.2**	**12.3**	**N/A**	**N/A**
12	**Dry Density, PCF**	**122.9**	**122.8**	**117.7**	**118.8**	**N/A**	**N/A**



MAX. DENSITY = 124.0 **PCF**
OPT. MOISTURE = 9.0 **%**

NO SPECIFICATIONS: INFORMATION ONLY
Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

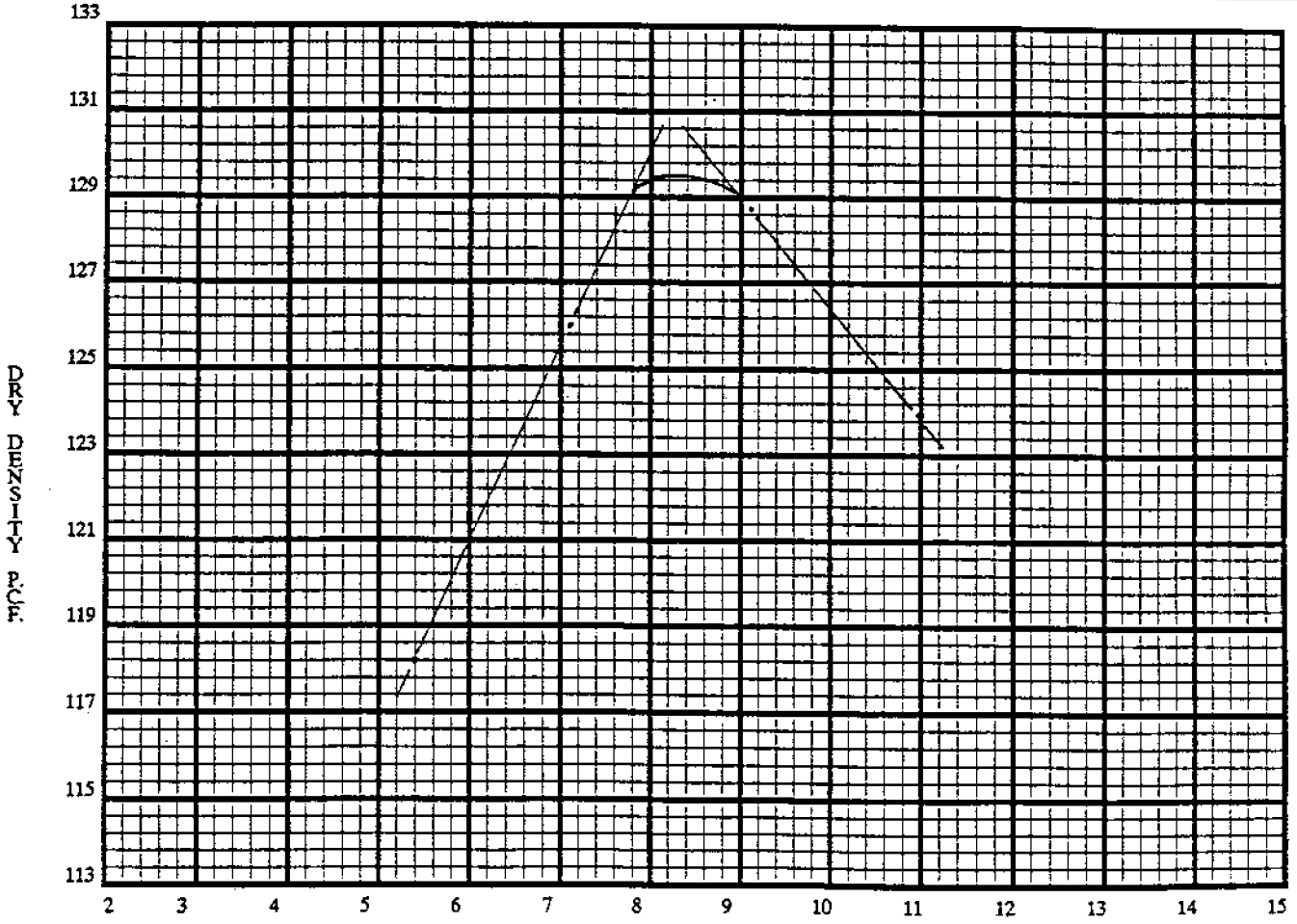
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1928 DATE 07/28/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-8/1 A,B,C

Tested by: D. HERRINGTON Date tested: 07/28/98 Checked by: R.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7435.1	7618.8	7082.4	10310.7	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	5633.8	N/A	N/A
3	Wt. wet soil	4591.8	4775.5	4239.1	4676.9	N/A	N/A
4	Wet Density, PCF	135.0	140.4	124.6	137.5	N/A	N/A
5	Moisture Tare #	F	112	110	117	N/A	N/A
6	Wt wet soil + tare	1182.5	1129.1	1123.2	1335.5	N/A	N/A
7	Wt dry soil + tare	1105.2	1036.3	1066.2	1204.8	N/A	N/A
8	Wt moisture	77.3	92.8	57.0	130.7	N/A	N/A
9	Wt tare	16.9	17.0	17.0	16.9	N/A	N/A
10	Wt dry soil	1088.3	1019.3	1049.2	1187.9	N/A	N/A
11	**% Moisture**	**7.1**	**9.1**	**5.4**	**11.0**	**N/A**	**N/A**
12	**Dry Density, PCF**	**126.0**	**128.7**	**118.2**	**123.9**	**N/A**	**N/A**



MAX. DENSITY = 129.5 PCF

OPT. MOISTURE = 8.3 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256. Cal. date: 06/02/98. Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

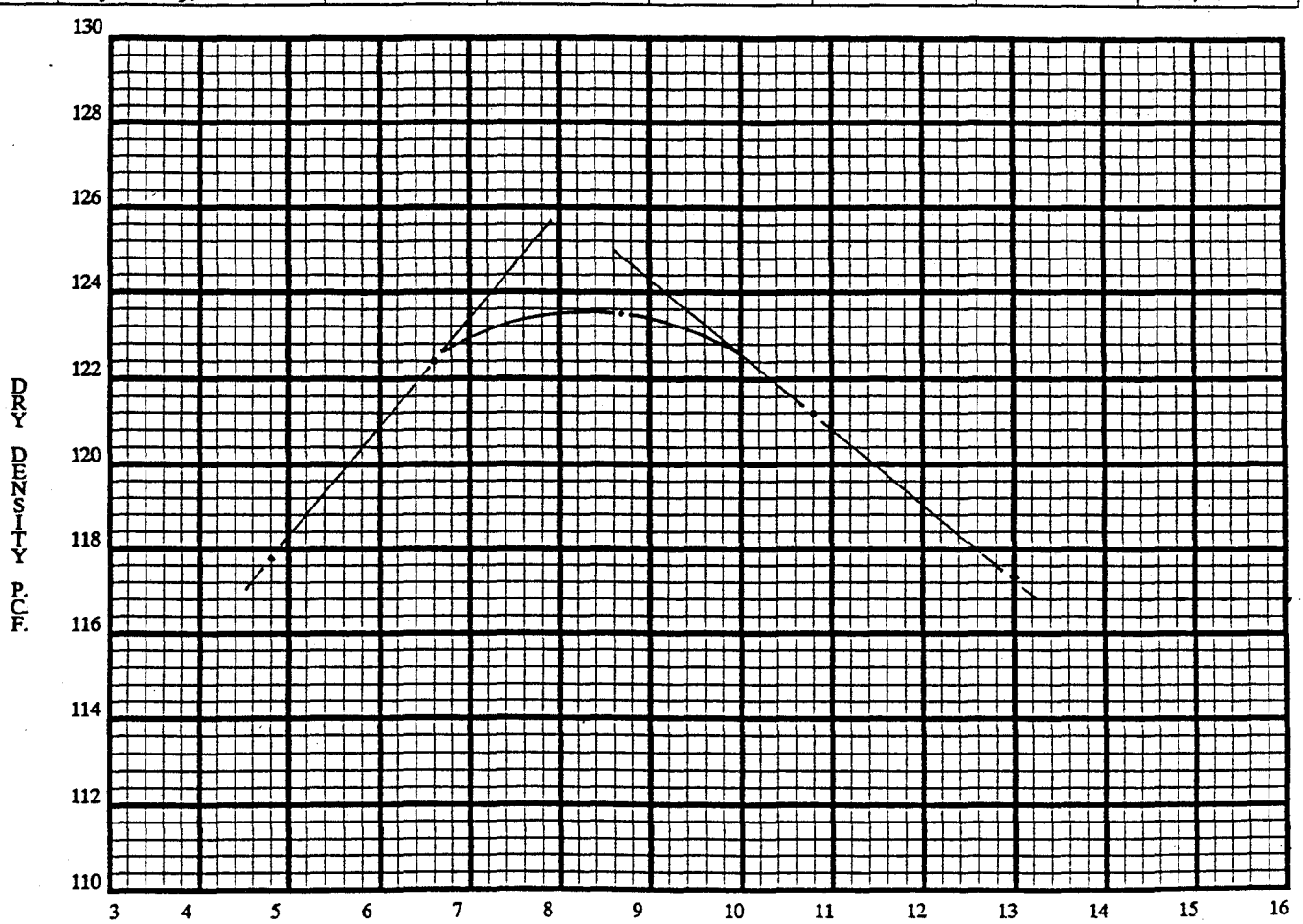
PROCTOR TEST ASTM D 1557-91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193-8521	CHARGE # C4P1CODE LAB # 1929 DATE 07/30/98

Project: TTR AREA 3 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/15/98 Material: A3-8/2 A,B,C

Tested by: D. HERRINGTON Date tested: 07/28/98 Checked by: R.D. Johnson

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7280.8	7407.5	7410.7	7043.6	10144.6	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	5633.8	N/A
3	Wt. wet soil	4437.5	4564.2	4567.4	4200.3	4510.8	N/A
4	Wet Density, PCF	130.4	134.2	134.3	123.5	132.6	N/A
5	Moisture Tare #	G	113	112	111	125	N/A
6	Wt wet soil + tare	1158.7	1171.5	1278.6	1187.2	1295.5	N/A
7	Wt dry soil + tare	1088.3	1079.4	1155.9	1133.7	1148.2	N/A
8	Wt moisture	70.4	92.1	122.7	53.5	147.3	N/A
9	Wt tare	17.1	16.9	17.1	17.0	17.1	N/A
10	Wt dry soil	1071.2	1062.5	1138.8	1116.7	1131.1	N/A
11	**% Moisture**	**6.6**	**8.7**	**10.8**	**4.8**	**13.0**	**N/A**
12	**Dry Density, PCF**	**122.4**	**123.5**	**121.2**	**117.8**	**117.3**	**N/A**



MAX. DENSITY = 123.5 PCF MOISTURE CONTENT %

OPT. MOISTURE = 8.7 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16, PTL W1256, Cal. date: 06/02/98, Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

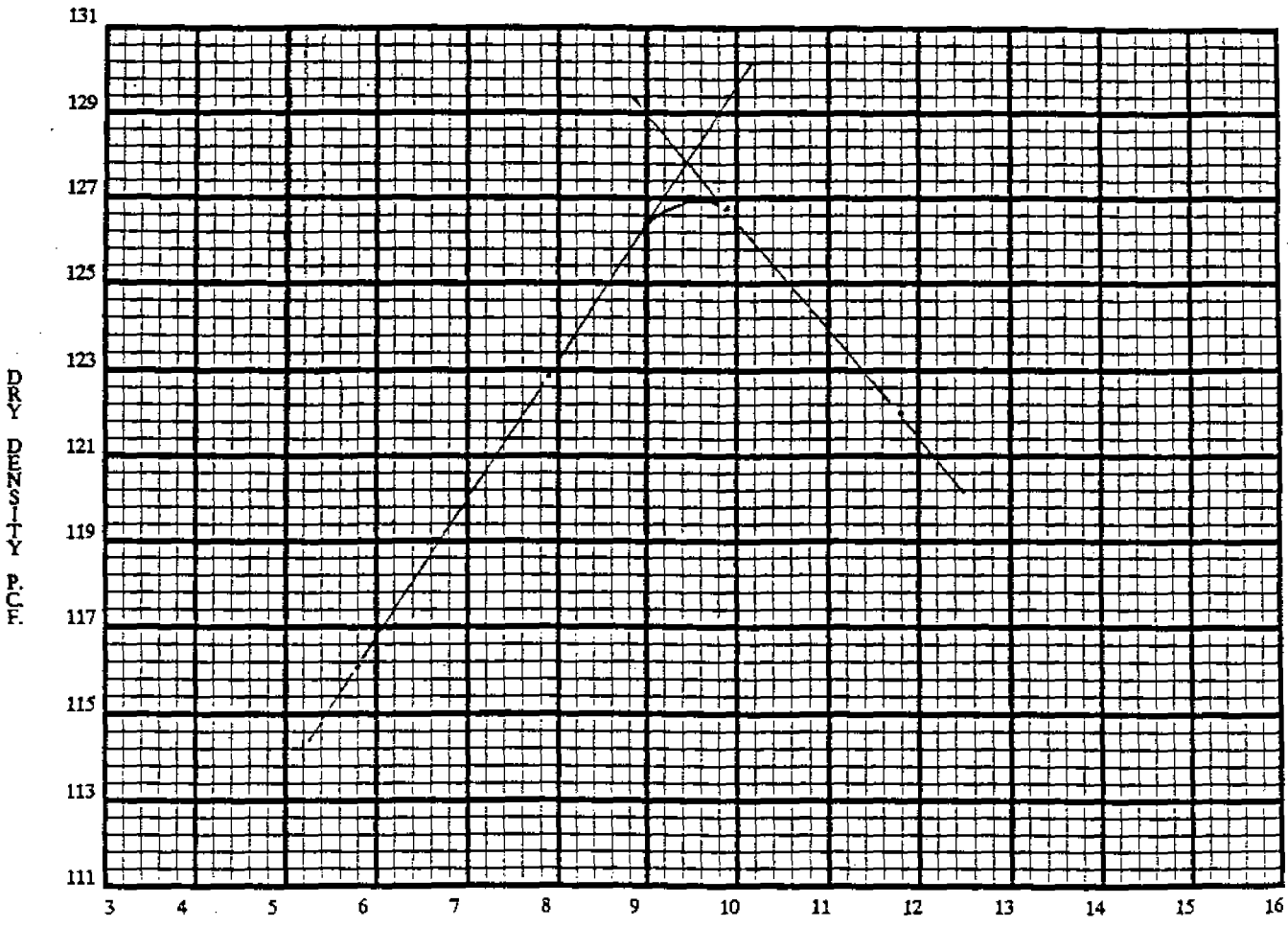
PROCTOR TEST ASTM D 1557–91 METHOD C	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521 LAS VEGAS, NV 89193–8521	CHARGE # C4P1CODE LAB # 1987 DATE 07/31/98

Project: TTR AREA 3 & 9 Requested by: D. MADSEN User/Agency: BECHTEL

Sampled by: D. HERRINGTON Date sampled: 07/28/98 Material: SANDIA BORROW PIT

Tested by: T. HIGH Date tested: 07/30/98 Checked by: [signature]

	TRIAL	1	2	3	4	5	6
1	Wt.mold + wet soil	7583.4	7485.8	7354.3	7019.3	N/A	N/A
2	Wt. mold	2843.3	2843.3	2843.3	2843.3	N/A	N/A
3	Wt. wet soil	4740.1	4642.5	4511.0	4176.0	N/A	N/A
4	Wet Density, PCF	139.3	136.5	132.6	122.8	N/A	N/A
5	Moisture Tare #	124	127	128	108	N/A	N/A
6	Wt wet soil + tare	1181.2	1332.7	1291.8	1147.9	N/A	N/A
7	Wt dry soil + tare	1076.1	1193.4	1198.3	1086.4	N/A	N/A
8	Wt moisture	105.1	139.3	93.5	61.5	N/A	N/A
9	Wt tare	17.1	17.2	17.2	17.2	N/A	N/A
10	Wt dry soil	1059.0	1176.2	1181.1	1069.2	N/A	N/A
11	**% Moisture**	**9.9**	**11.8**	**7.9**	**5.8**	**N/A**	**N/A**
12	**Dry Density, PCF**	**126.8**	**122.0**	**122.9**	**116.1**	**N/A**	**N/A**



MAX. DENSITY = 127.0 PCF MOISTURE CONTENT %

OPT. MOISTURE = 9.5 %

NO SPECIFICATIONS: INFORMATION ONLY

Equipment used: PM 16. PTL W1256. Cal. date: 06/02/98. Cal. due: 06/02/99

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

PROCTORS FOR TTR AREA 3

DATE: 07/31/98

CHARGE #: C4P1CODE

LAB #	LOCATION	DRY DENSITY	MOISTURE	
1918	A/3–1/1	125.5	9.6	
1919	A/3–1/2	128.0	9.7	
1920	A/3–2/1	128.4	8.7	
1921	A/3–3/3	123.0	8.9	
1922	A/3–3/4	125.5	9.5	
1923	A/3–4/1	127.0	8.8	
1924	A/3–4/2	129.5	8.4	
1925	A/3–5/1	122.1	9.0	
1926	A/3–6/1	125.0	10.1	
1927	A/3–6/2	124.0	9.0	
1928	A/3–8/1	129.5	8.3	
1929	A/3–8/2	123.5	8.7	
1987	SANDIA BORROW	123.0	10.4	OLD
		127.0	9.5	NEW

COMPILED FROM OTHER REPORTS. NO EQUIPMENT USED.

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1918

Project: TTR AREA 3 | Material: NATIVE A3-1/1
Sampled by: D. HERRINGTON | Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON | Date tested: 07/22/98
Checked by: D. HERRINGTON | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-95)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-95)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	31.1	2%	98%	N/A
4	146.5	11%	89%	N/A
10	261.6	19%	81%	N/A
40	470.9	34%	66%	N/A
100	680.4	50%	50%	N/A
200	853.9	62.5%	37.5%	N/A

Soil Class: Sample Wt (g): DRY = 1366.3 WET = N/A

MOISTURE CONTENT

	PAN # 30	N/A	N/A
Wet Weight + Tare	2345.7	N/A	N/A
Dry Weight + Tare	2262.3	N/A	N/A
Water	83.4	N/A	N/A
Tare	896.0	N/A	N/A
Dry Weight	1366.3	N/A	N/A
Moisture %	6.1%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	N/A	N/A
Percent Porosity	N/A	N/A

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1CODE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1919

Project: TTR AREA 3 | Material: NATIVE A3-1/2
Sampled by: D. HERRINGTON | Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON | Date tested: 07/22/98
Checked by: D. HERRINGTON | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	180.8	8%	92%	N/A
4	449.9	21%	79%	N/A
10	815.9	38%	62%	N/A
40	1323.7	62%	38%	N/A
100	1626.6	76%	24%	N/A
200	1787.6	83.2%	16.8%	N/A

Soil Class: Sample Wt (g): DRY = 2148.0 WET = N/A

MOISTURE CONTENT

	PAN # 31	N/A	N/A
Wet Weight + Tare	3184.2	N/A	N/A
Dry Weight + Tare	3044.9	N/A	N/A
Water	139.3	N/A	N/A
Tare	896.9	N/A	N/A
Dry Weight	2148.0	N/A	N/A
Moisture %	6.5%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	N/A	N/A
Percent Porosity	N/A	N/A

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by:	D. MADSEN	Charge #:	C4P1C0DE
User/Agency:	BECHTEL Log # N/A	MTL Lab #:	1920

Project:	TTR AREA 3	Material:	NATIVE A3-2/1
Sampled by:	D. HERRINGTON	Date Sampled:	07/15/98
Tested By:	T. HIGH & D. JOHNSON	Date tested:	07/22/98
Checked by:	D. HERRINGTON Dal H.	Date checked:	10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	39.9	3%	97%	N/A
4	154.5	10%	90%	N/A
10	320.1	20%	80%	N/A
40	664.3	42%	58%	N/A
100	982.7	63%	37%	N/A
200	1221.3	77.7%	22.3%	N/A
Sample Wt (g):	DRY =	1571.1	WET =	N/A

Soil Class:

MOISTURE CONTENT

	PAN # 32	N/A	N/A
Wet Weight + Tare	2551.8	N/A	N/A
Dry Weight + Tare	2465.6	N/A	N/A
Water	86.2	N/A	N/A
Tare	894.5	N/A	N/A
Dry Weight	1571.1	N/A	N/A
Moisture %	5.5%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	**N/A**	**N/A**
Percent Porosity	**N/A**	**N/A**

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1921

Project: TTR AREA 3 | Material: NATIVE A3-3/3
Sampled by: D. HERRINGTON | Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON | Date tested: 07/22/98
Checked by: D. HERRINGTON Dal H. | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	20.7	1%	99%	N/A
4	89.1	5%	95%	N/A
10	211.9	12%	88%	N/A
40	522.9	29%	71%	N/A
100	1042.3	59%	41%	N/A
200	1333.9	74.9%	25.1%	N/A
Sample Wt (g):	DRY =	1781.2	WET =	N/A

Soil Class:

MOISTURE CONTENT

	PAN # 33	N/A	N/A
Wet Weight + Tare	2861.7	N/A	N/A
Dry Weight + Tare	2721.1	N/A	N/A
Water	140.6	N/A	N/A
Tare	939.9	N/A	N/A
Dry Weight	1781.2	N/A	N/A
Moisture %	7.9%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	**N/A**	**N/A**
Percent Porosity	**N/A**	**N/A**

Oversize Specific Gravity: N/A | **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1922

Project: TTR AREA 3 | Material: NATIVE A3-3/4
Sampled by: D. HERRINGTON | Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON | Date tested: 07/22/98
Checked by: D. HERRINGTON Dal H. | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	75.8	5%	95%	N/A
4	315.0	20%	80%	N/A
10	610.8	38%	62%	N/A
40	1050.6	66%	34%	N/A
100	1263.3	79%	21%	N/A
200	1398.5	87.3%	12.7%	N/A

Soil Class: Sample Wt (g): DRY = 1601.5 WET = N/A

MOISTURE CONTENT

	PAN # 34	N/A	N/A
Wet Weight + Tare	2642.9	N/A	N/A
Dry Weight + Tare	2537.8	N/A	N/A
Water	105.1	N/A	N/A
Tare	936.3	N/A	N/A
Dry Weight	1601.5	N/A	N/A
Moisture %	6.6%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	N/A	N/A
Percent Porosity	N/A	N/A

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN — Charge #: C4P1C0DE
User/Agency: BECHTEL — Log # N/A — MTL Lab #: 1923

Project: TTR AREA 3 — Material: NATIVE A3-4/1
Sampled by: D. HERRINGTON — Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON — Date tested: 07/23/98
Checked by: D. HERRINGTON Dal H. — Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	114.3	6%	94%	N/A
4	328.7	18%	82%	N/A
10	593.9	33%	67%	N/A
40	1100.5	62%	38%	N/A
100	1324.9	74%	26%	N/A
200	1475.8	82.7%	17.3%	N/A

Soil Class: Sample Wt (g): DRY = 1785.0 WET = N/A

MOISTURE CONTENT

	PAN # 35	N/A	N/A
Wet Weight + Tare	2814.3	N/A	N/A
Dry Weight + Tare	2682.0	N/A	N/A
Water	132.3	N/A	N/A
Tare	897.0	N/A	N/A
Dry Weight	1785.0	N/A	N/A
Moisture %	7.4%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	N/A	N/A
Percent Porosity	N/A	N/A

Oversize Specific Gravity: N/A — **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1924

Project: TTR AREA 3 | Material: NATIVE A3-4/2
Sampled by: D. HERRINGTON | Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON | Date tested: 07/23/98
Checked by: D. HERRINGTON DLH. | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	118.5	6%	94%	N/A
4	362.3	19%	81%	N/A
10	723.8	38%	62%	N/A
40	1298.0	68%	32%	N/A
100	1514.1	80%	20%	N/A
200	1631.8	86.1%	13.9%	N/A

Soil Class: Sample Wt (g): DRY = 1896.2 WET = N/A

MOISTURE CONTENT

	PAN # 36	N/A	N/A
Wet Weight + Tare	2895.3	N/A	N/A
Dry Weight + Tare	2792.6	N/A	N/A
Water	102.7	N/A	N/A
Tare	896.4	N/A	N/A
Dry Weight	1896.2	N/A	N/A
Moisture %	5.4%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	**N/A**	**N/A**
Percent Porosity	**N/A**	**N/A**

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193–8521

Request / Test Report

Requested by: D. MADSEN — Charge #: C4P1C0DE
User/Agency: BECHTEL — Log # N/A — MTL Lab #: 1925

Project: TTR AREA 3 — Material: NATIVE A3–5/1
Sampled by: D. HERRINGTON — Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON — Date tested: 07/23/98
Checked by: D. HERRINGTON — Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C–136–98)
- [ ] (ASTM C–117–95)
- [X] (ASTM D–422–90)
- [X] (ASTM D–1140–92)
- [ ] Moisture Content (ASTM C–566–98)
- [X] (ASTM D–2216–92)
- [ ] Unit Weight (ASTM C–29–91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C–127–88/128–93)
- [ ] (ASTM D–584–92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	12.2	1%	99%	N/A
4	81.1	4%	96%	N/A
10	240.7	13%	87%	N/A
40	558.4	31%	69%	N/A
100	993.0	54%	46%	N/A
200	1281.6	70.1%	29.9%	N/A

Soil Class: Sample Wt (g): DRY = 1827.9 WET = N/A

MOISTURE CONTENT

	PAN # 37	N/A	N/A
Wet Weight + Tare	2939.2	N/A	N/A
Dry Weight + Tare	2809.2	N/A	N/A
Water	130.0	N/A	N/A
Tare	981.3	N/A	N/A
Dry Weight	1827.9	N/A	N/A
Moisture %	7.1%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	N/A	N/A
Percent Porosity	N/A	N/A

Oversize Specific Gravity: N/A — **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1926

Project: TTR AREA 3 | Material: NATIVE A3-6/1
Sampled by: D. HERRINGTON | Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON | Date tested: 07/23/98
Checked by: D. HERRINGTON D. H. | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	87.8	4%	96%	N/A
4	317.9	15%	85%	N/A
10	777.9	38%	62%	N/A
40	1003.8	49%	51%	N/A
100	1781.7	87%	13%	N/A
200	1882.0	91.5%	8.5%	N/A

Soil Class: Sample Wt (g): DRY = 2056.3 WET = N/A

MOISTURE CONTENT

	PAN # 38	N/A	N/A
Wet Weight + Tare	3153.1	N/A	N/A
Dry Weight + Tare	3060.2	N/A	N/A
Water	92.9	N/A	N/A
Tare	1003.9	N/A	N/A
Dry Weight	2056.3	N/A	N/A
Moisture %	4.5%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	**N/A**	**N/A**
Percent Porosity	**N/A**	**N/A**

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193–8521

Request / Test Report

Requested by:	D. MADSEN	Charge #:	C4P1C0DE
User/Agency:	BECHTEL Log # N/A	MTL Lab #:	1927

Project:	TTR AREA 3	Material:	NATIVE A3–6/2
Sampled by:	D. HERRINGTON	Date Sampled:	07/15/98
Tested By:	T. HIGH & D. JOHNSON	Date tested:	07/23/98
Checked by:	D. HERRINGTON	Date checked:	10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C–136–96)
- [ ] (ASTM C–117–95)
- [X] (ASTM D–422–90)
- [X] (ASTM D–1140–92)
- [ ] Moisture Content (ASTM C–566–96)
- [X] (ASTM D–2216–92)
- [ ] Unit Weight (ASTM C–29–91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C–127–88/128–93)
- [ ] (ASTM D–584–92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	113.4	5%	95%	N/A
4	298.1	14%	86%	N/A
10	542.1	25%	75%	N/A
40	988.1	45%	55%	N/A
100	1384.8	64%	36%	N/A
200	1634.4	75.2%	24.8%	N/A

Soil Class: Sample Wt (g): DRY = 2173.3 WET = N/A

MOISTURE CONTENT

	PAN # 39	N/A	N/A
Wet Weight + Tare	3152.8	N/A	N/A
Dry Weight + Tare	3048.6	N/A	N/A
Water	104.2	N/A	N/A
Tare	875.3	N/A	N/A
Dry Weight	2173.3	N/A	N/A
Moisture %	4.8%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	N/A	N/A
Percent Porosity	N/A	N/A

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1928

Project:	TTR AREA 3	Material:	NATIVE A3-8/1
Sampled by:	D. HERRINGTON	Date Sampled:	07/15/98
Tested By:	T. HIGH & D. JOHNSON	Date tested:	07/23/98
Checked by:	D. HERRINGTON DLH.	Date checked:	10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- Moisture Content
- [ ] (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- Unit Weight
- [ ] (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- Specific Gravity
- [ ] (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

Soil Class:

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	161.5	8%	92%	N/A
4	375.2	20%	80%	N/A
10	738.6	38%	62%	N/A
40	1303.4	68%	32%	N/A
100	1513.3	79%	21%	N/A
200	1643.5	85.5%	14.5%	N/A
Sample Wt (g):	DRY =	1922.7	WET =	N/A

MOISTURE CONTENT

	PAN # 40	N/A	N/A
Wet Weight + Tare	2941.3	N/A	N/A
Dry Weight + Tare	2795.6	N/A	N/A
Water	145.7	N/A	N/A
Tare	872.9	N/A	N/A
Dry Weight	1922.7	N/A	N/A
Moisture %	7.6%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	**N/A**	**N/A**
Percent Porosity	**N/A**	**N/A**

Oversize Specific Gravity: N/A

Specific Gravity: N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1929

Project: TTR AREA 3 | Material: NATIVE A3-8/2
Sampled by: D. HERRINGTON | Date Sampled: 07/15/98
Tested By: T. HIGH & D. JOHNSON | Date tested: 07/23/98
Checked by: D. HERRINGTON | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- [ ] Moisture Content (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- [ ] Unit Weight (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- [ ] Specific Gravity (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	0.0	0%	100%	N/A
3/8"	154.2	7%	93%	N/A
4	416.3	19%	81%	N/A
10	754.6	35%	65%	N/A
40	1238.6	57%	43%	N/A
100	1584.1	73%	27%	N/A
200	1805.7	83.0%	17.0%	N/A

Soil Class: Sample Wt (g): DRY = 2175.6 WET = N/A

MOISTURE CONTENT

	PAN # 41	N/A	N/A
Wet Weight + Tare	3212.9	N/A	N/A
Dry Weight + Tare	3065.4	N/A	N/A
Water	147.5	N/A	N/A
Tare	889.8	N/A	N/A
Dry Weight	2175.6	N/A	N/A
Moisture %	6.8%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	N/A	N/A
Percent Porosity	N/A	N/A

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

REMARKS: NONE

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

Request / Test Report

Requested by: D. MADSEN | Charge #: C4P1C0DE
User/Agency: BECHTEL | Log # N/A | MTL Lab #: 1987

Project: TTR AREA 3 | Material: SANDIA BORROW PIT
Sampled by: D. HERRINGTON | Date Sampled: 07/28/98
Tested By: D. JOHNSON | Date tested: 08/01/98
Checked by: D. HERRINGTON | Date checked: 10-1-98

LABORATORY TEST REQUIRED

- [ ] Sieve Analysis (ASTM C-136-96)
- [ ] (ASTM C-117-95)
- [X] (ASTM D-422-90)
- [X] (ASTM D-1140-92)
- Moisture Content
- [ ] (ASTM C-566-96)
- [X] (ASTM D-2216-92)
- Unit Weight
- [ ] (ASTM C-29-91)
- [ ] Soil Classification
- [ ] Percent Porosity
- Specific Gravity
- [ ] (ASTM C-127-88/128-93)
- [ ] (ASTM D-584-92)
- [ ] Other (as noted)

SIEVE ANALYSIS

U.S. Standard Sieve #	Cumulative Wt Retained	% Retained	% Passing	Spec % Passing
3"	0.0	0%	100%	N/A
1 1/2"	0.0	0%	100%	N/A
3/4"	27.8	2%	98%	N/A
3/8"	108.1	9%	91%	N/A
4	257.9	22%	78%	N/A
10	469.1	40%	60%	N/A
40	775.5	66%	34%	N/A
100	921.8	78%	22%	N/A
200	1004.4	85.2%	14.8%	N/A

Soil Class: Sample Wt (g): DRY = 1179.1 WET = N/A

MOISTURE CONTENT

	PAN # 4	N/A	N/A
Wet Weight + Tare	1313.8	N/A	N/A
Dry Weight + Tare	1196.1	N/A	N/A
Water	117.7	N/A	N/A
Tare	17.0	N/A	N/A
Dry Weight	1179.1	N/A	N/A
Moisture %	10.0%	N/A	N/A

UNIT WEIGHT

	Loose	Rodded
Container Size(ft^3)	N/A	N/A
Total Weight (lb)	N/A	N/A
Tare Weight (lb)	N/A	N/A
Material Weight (lb)	N/A	N/A
Unit Weight (P.C.F.)	**N/A**	**N/A**
Percent Porosity	**N/A**	**N/A**

Oversize Specific Gravity: N/A **Specific Gravity:** N/A

EQUIPMENT USED: PM 16, PTL #1256, Calibration Date: 06/02/98 Calibration Due: 06/02/99

Sieve 1 1/2"	PTL # Y303222	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/4"	PTL # Y303276	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve 3/8	PTL # Y302106	Cal. Date: 03/27/98	Cal. Due: 03/27/99
Sieve # 4	PTL # Y302043	Cal. Date: 03/26/98	Cal. Due: 03/26/99
Sieve # 10	PTL # Y11621	Cal. Date: 10/08/97	Cal. Due: 10/08/99
Sieve # 16	PTL # Y302079	Cal. Date: 03/25/98	Cal. Due: 03/26/99
Sieve # 40	PTL # Y106	Cal. Date: 10/09/97	Cal. Due: 10/09/99
Sieve # 100	PTL # Y10035	Cal. Date: 05/21/98	Cal. Due: 05/21/99
Sieve # 200	PTL # Y11599	Cal. Date: 10/09/97	Cal. Due: 10/09/99

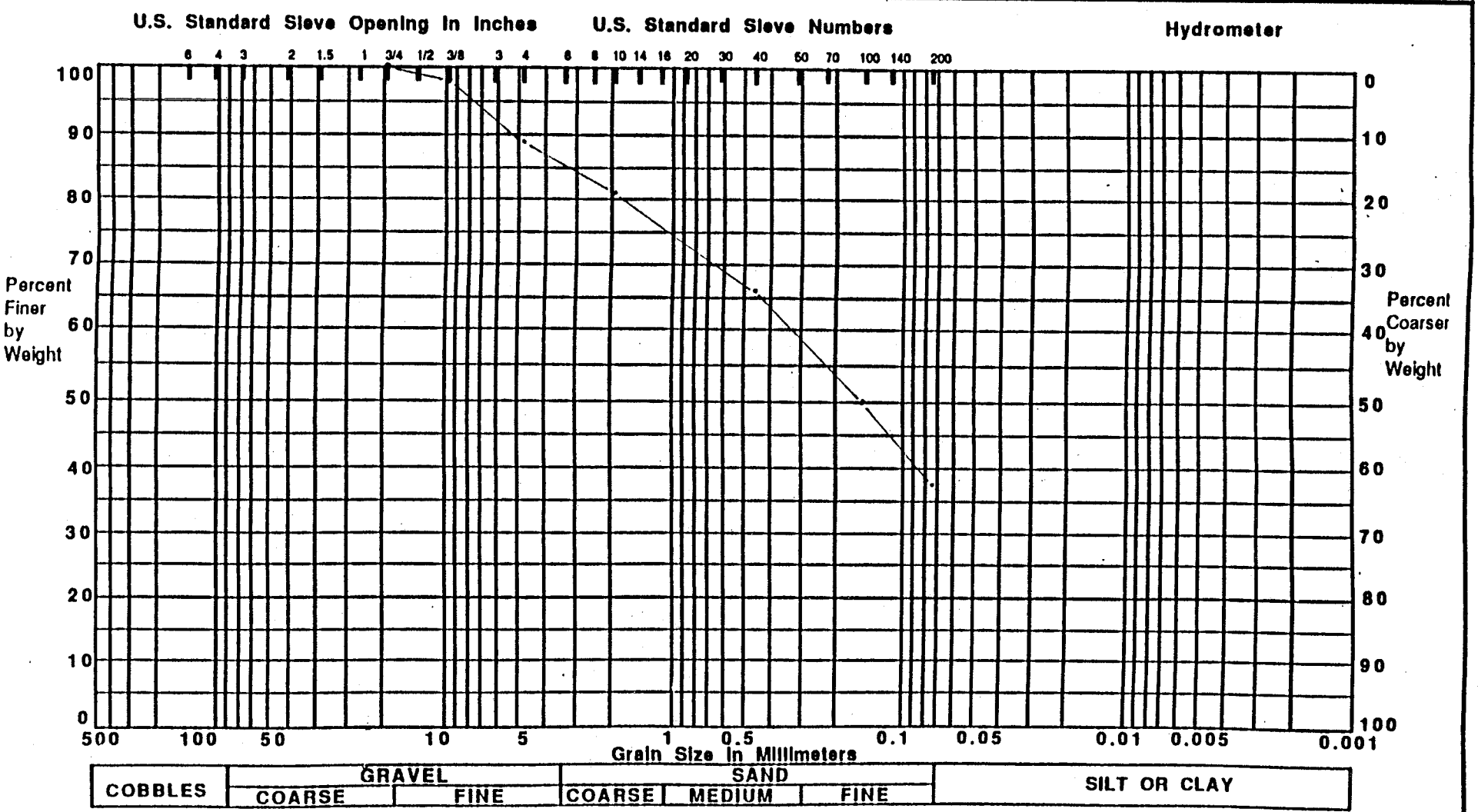
REMARKS: NONE

GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193–8521

LAB NO. 1918
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3
CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON DeH.
DATE CHECKED: 10-5-98
MATERIAL NATIVE A3–1/1

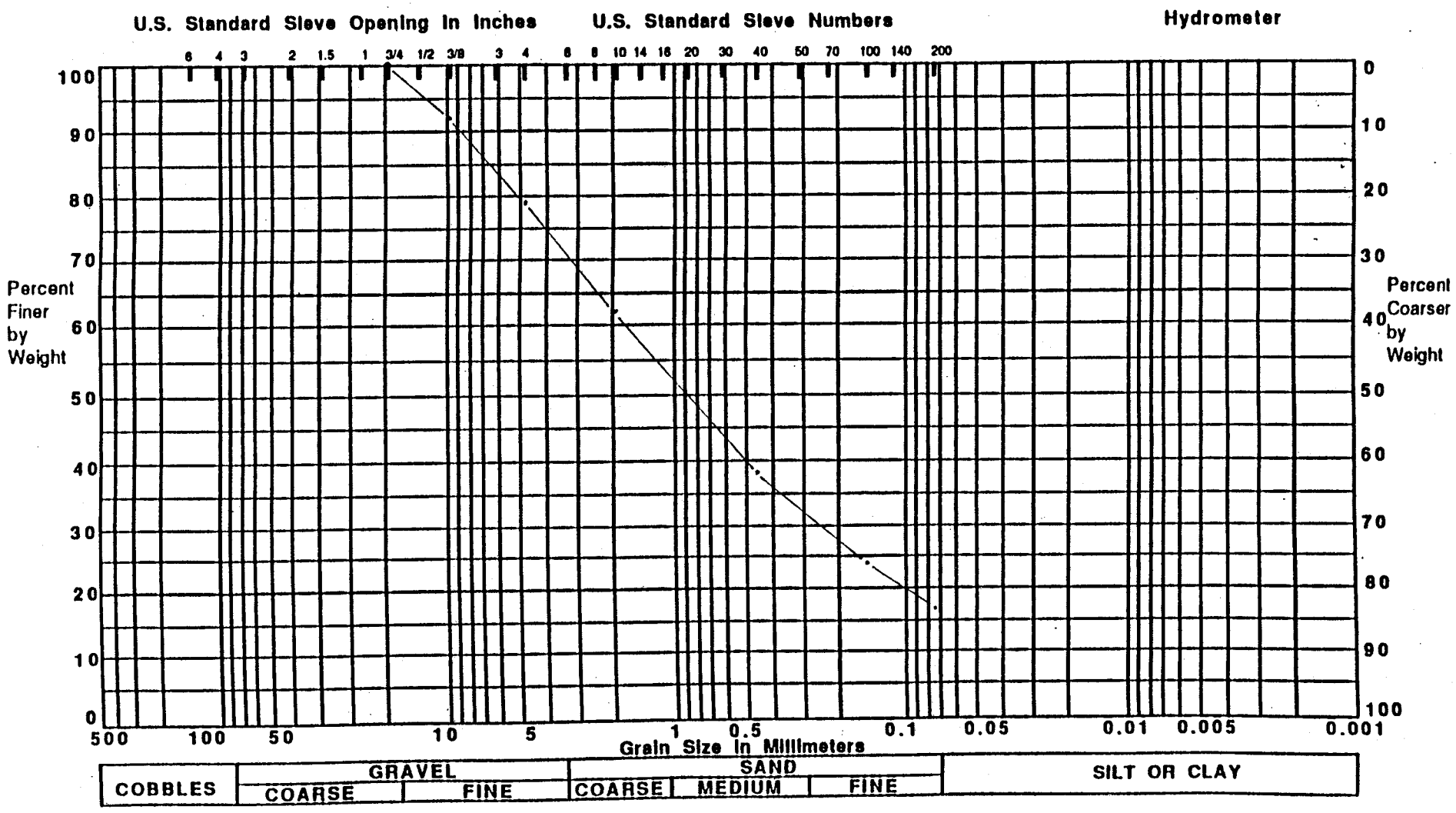


GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

LAB NO. 1919
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3
CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON
DATE CHECKED: 10-5-98
MATERIAL NATIVE A3-1/2



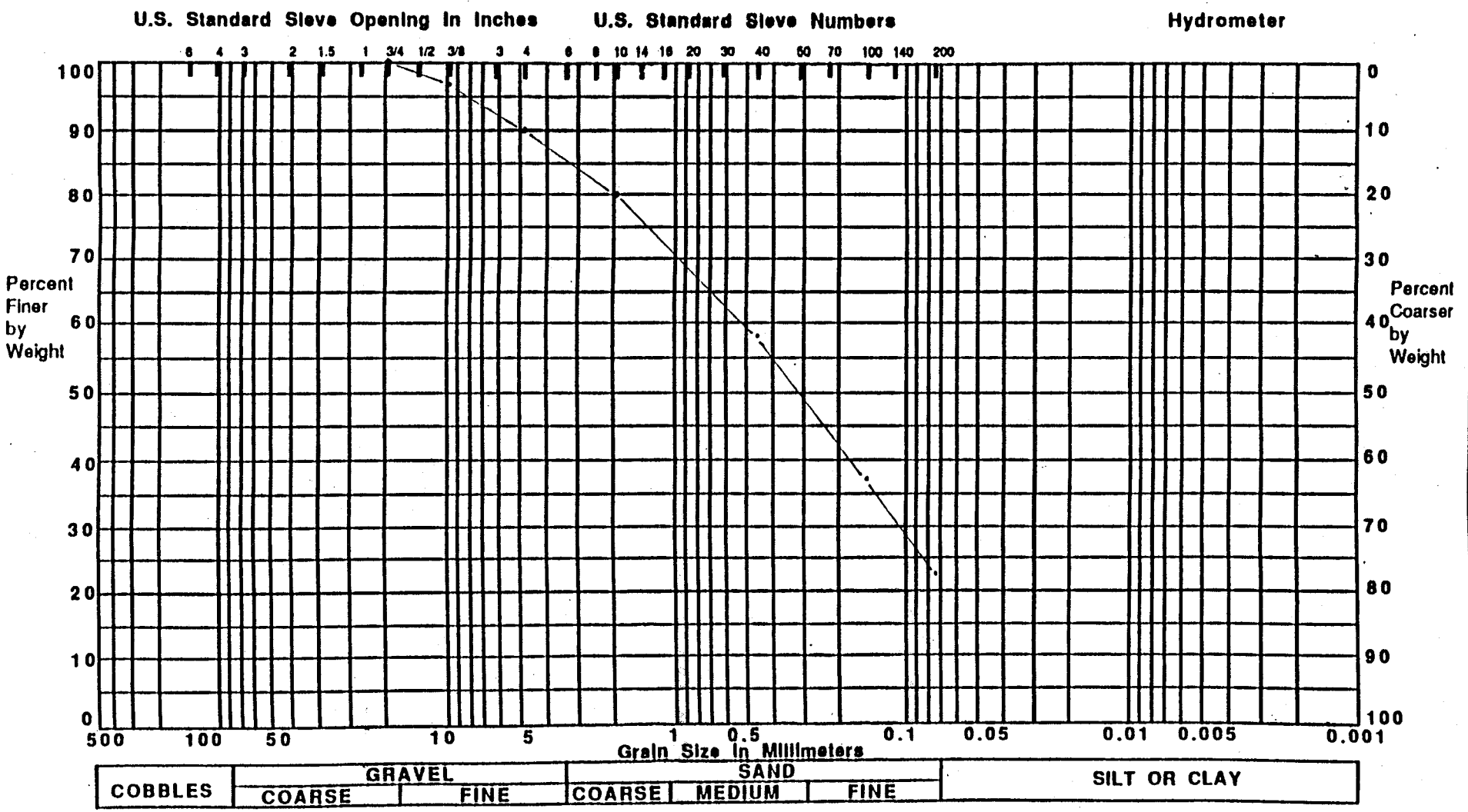
NO EQUIPMENT USED.

GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

LAB NO. 1920
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3 CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON DATE CHECKED: 10-5-98 MATERIAL NATIVE A3-2/1

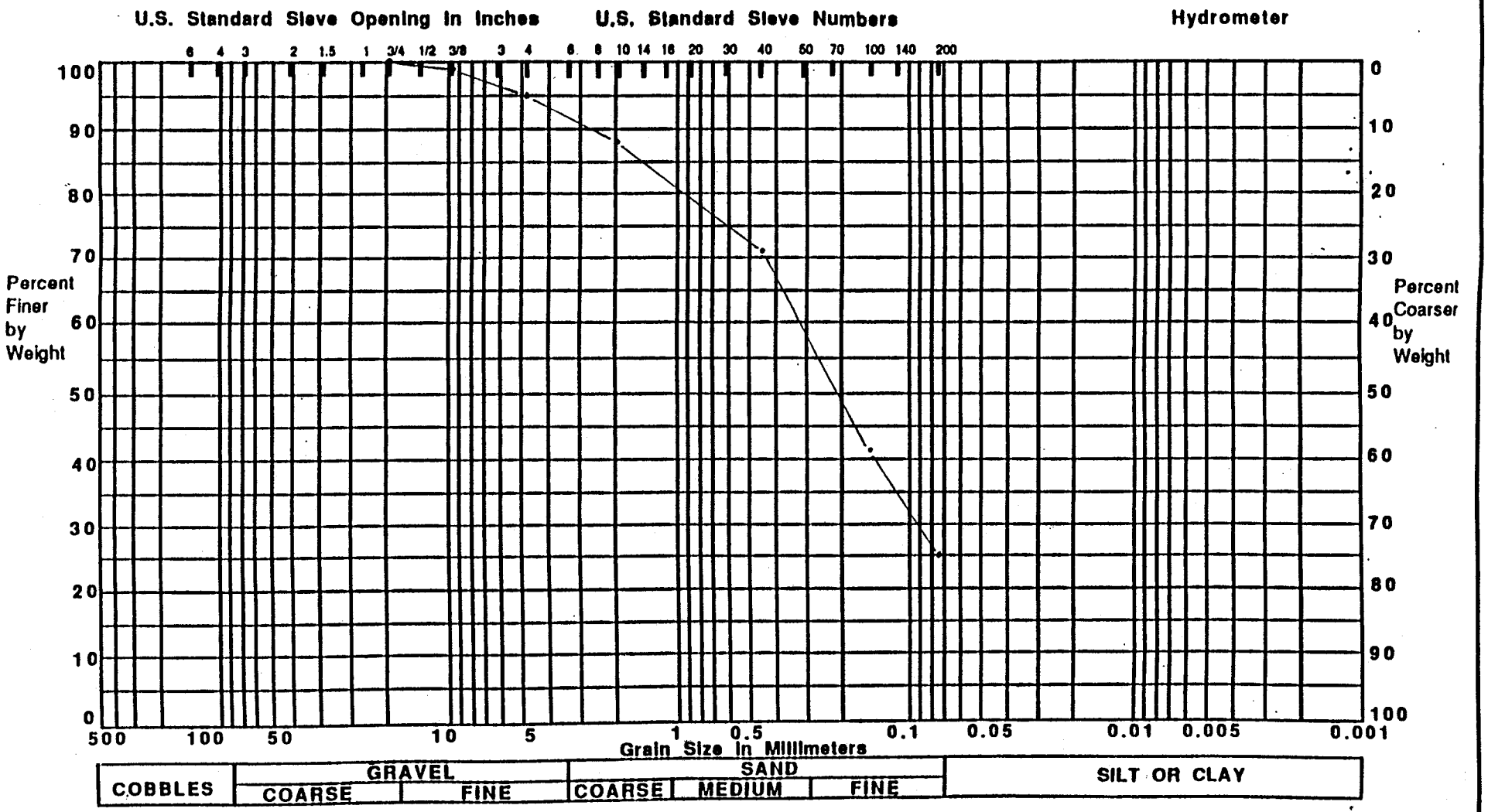


GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

LAB NO. 1921
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3
CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON Dl H.
DATE CHECKED: 10-5-98
MATERIAL NATIVE A3-3/3



NO EQUIPMENT USED.

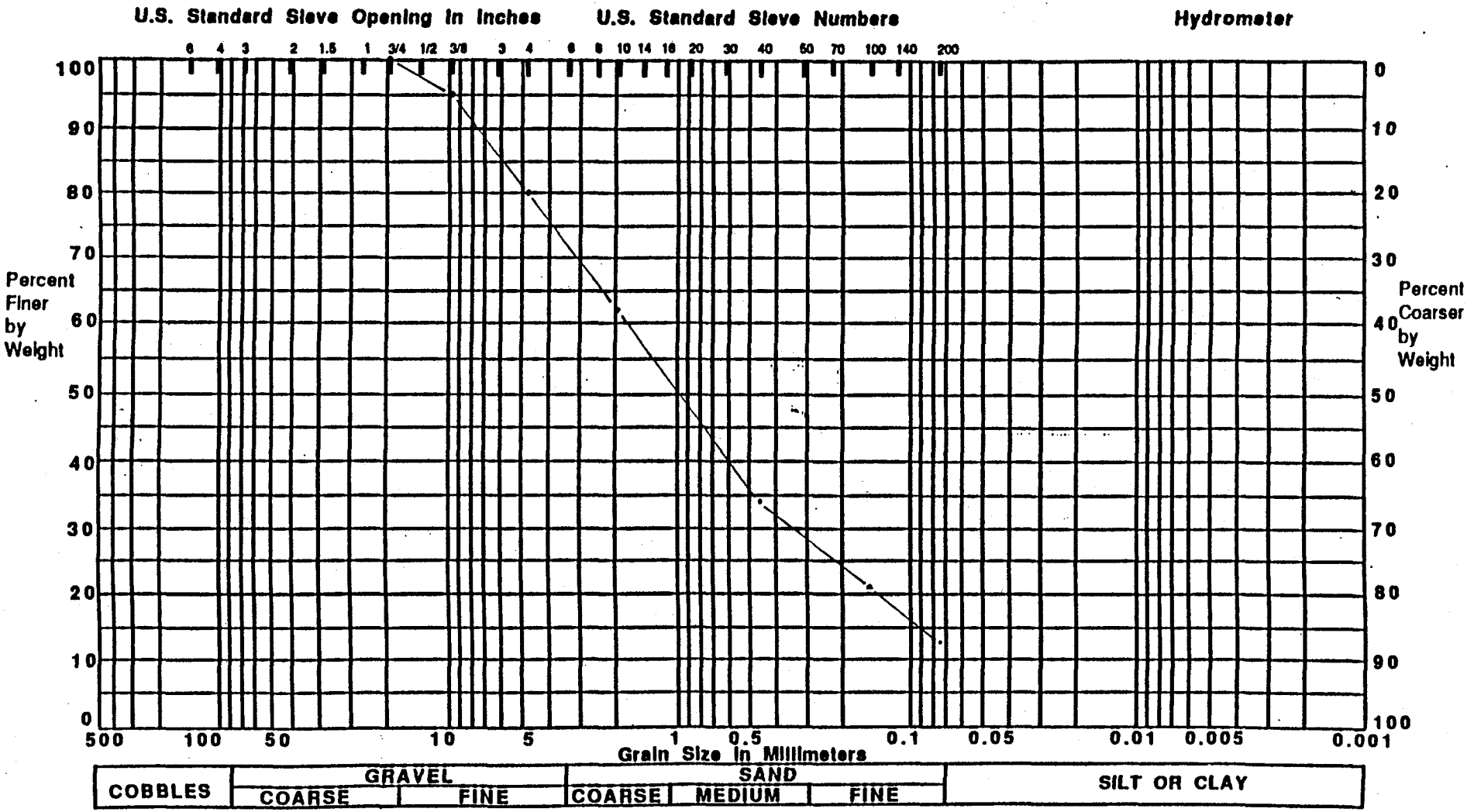
GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193–8521

LAB NO.	1922
CHARGE #	C4P1C0DE
DATE	10/01/98

PROJECT: TTR AREA 3 CLASSIFICATION: SM

CHECKED BY: D. HERRINGTON DATE CHECKED: 10-5-98 MATERIAL NATIVE A3–3/4



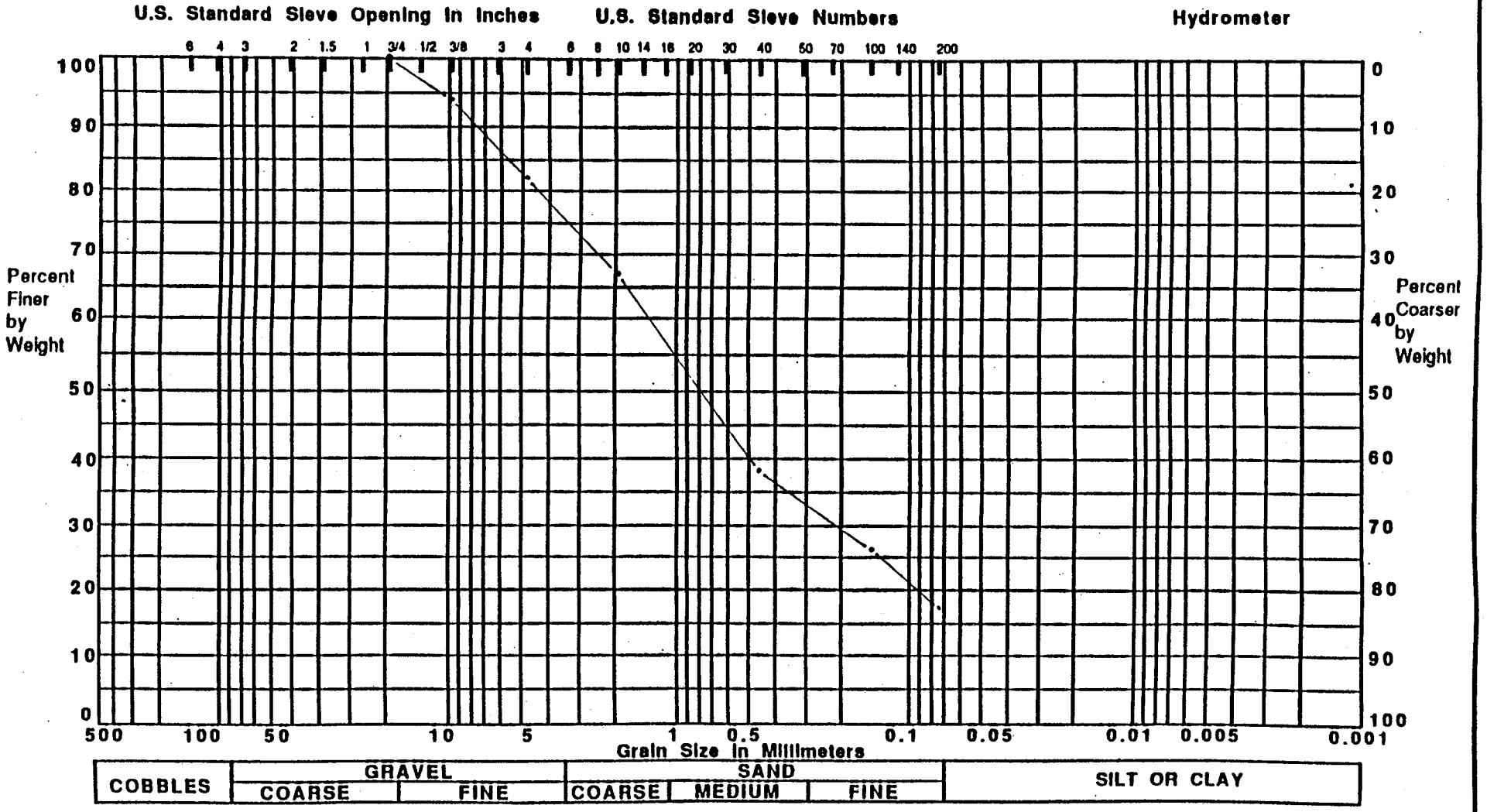
NO EQUIPMENT USED.

GRADATION CURVES

MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193–8521

NO.
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3
CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON
DATE CHECKED: 10-5-98
MATERIAL NATIVE A3–4/1



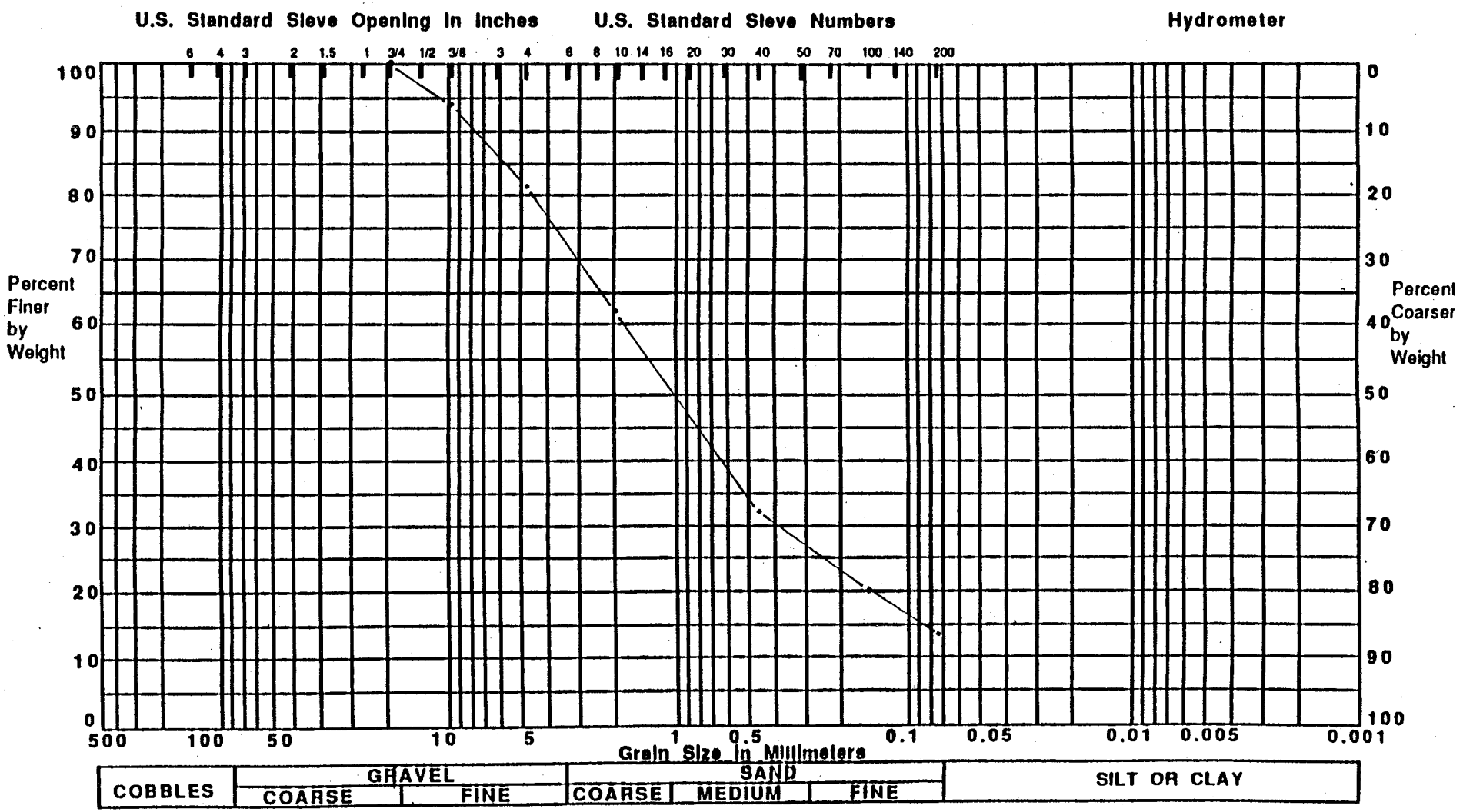
NO EQUIPMENT USED.

GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193–8521

LAB NO. 1924
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3
CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON D.L.H.
DATE CHECKED: 10-5-98
MATERIAL NATIVE A3–4/2



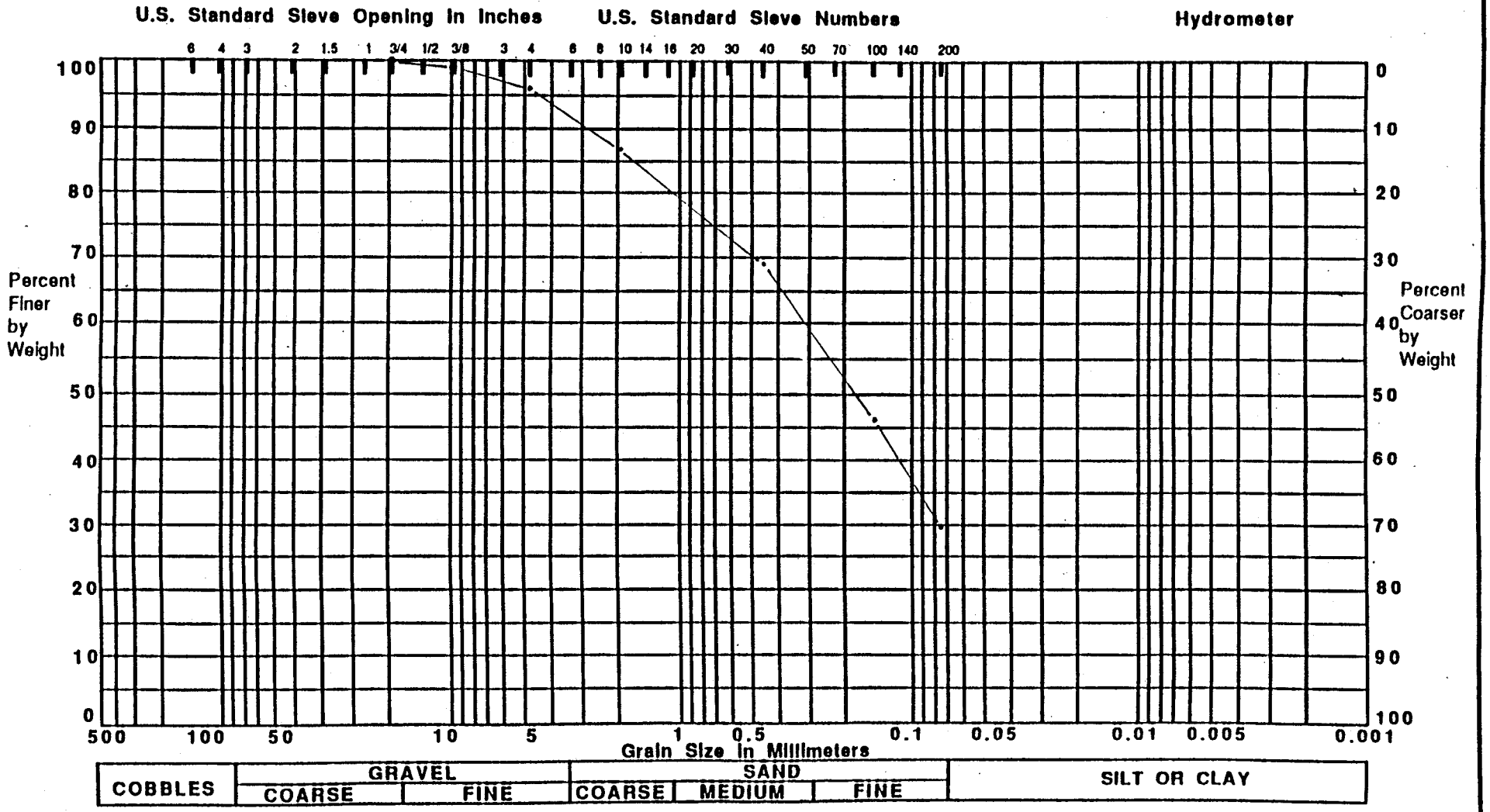
NO EQUIPMENT USED.

GRADATION CURVES

MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

NO.
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3
CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON Dal H.
DATE CHECKED: 10-5-98
MATERIAL NATIVE A3-5/1



NO EQUIPMENT USED.

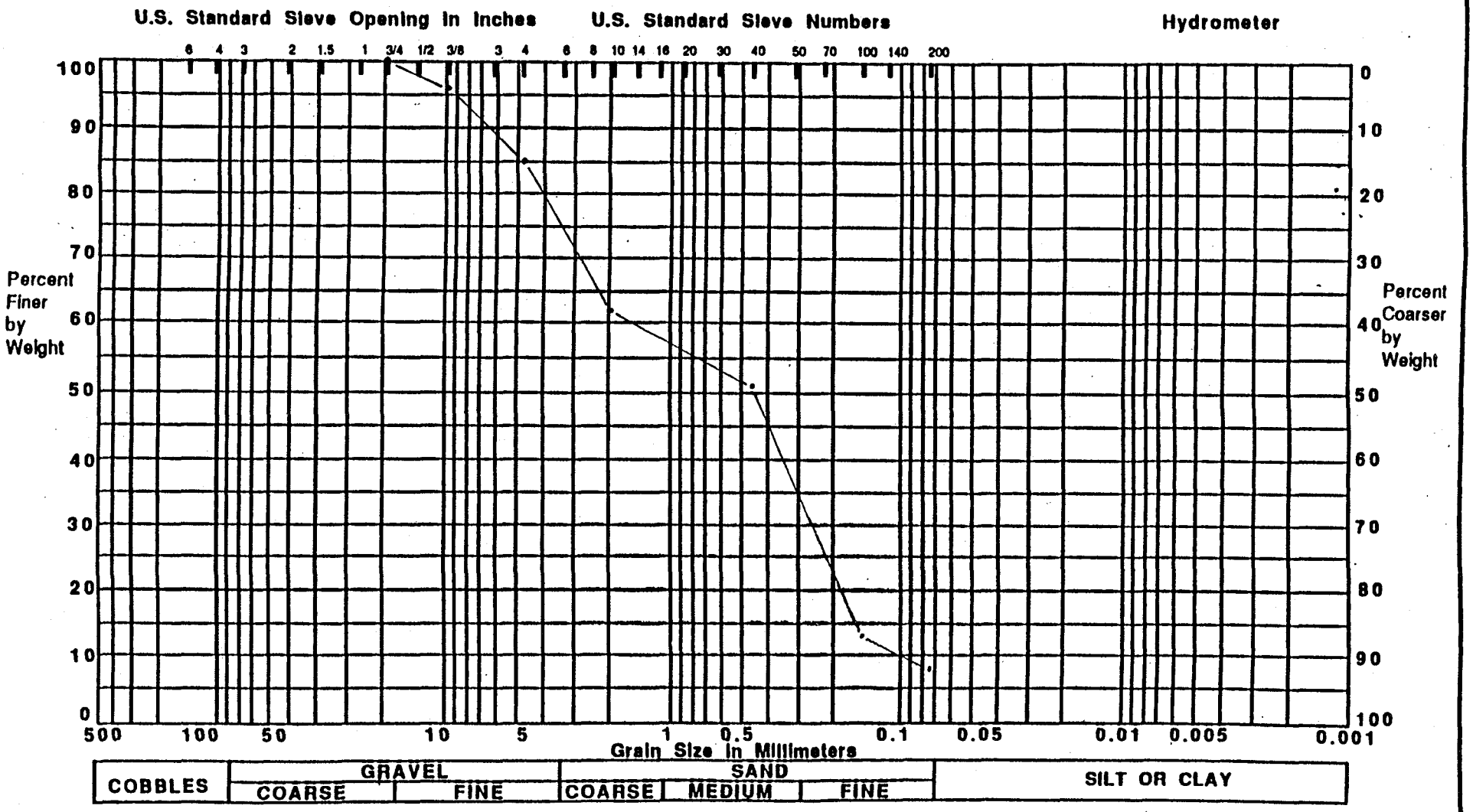
GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

LAB NO.	1926
CHARGE #	C4P1C0DE
DATE	10/01/98

PROJECT: TTR AREA 3 CLASSIFICATION: SM / SW

CHECKED BY: D. HERRINGTON DATE CHECKED: 10-5-98 MATERIAL NATIVE A3-6/1



NO EQUIPMENT USED.

GRADATION CURVES

Bechtel NC, Inc.
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

LA[illegible] 19[illegible]

CHARGE # C4P1C0DE

DATE 10/01/98

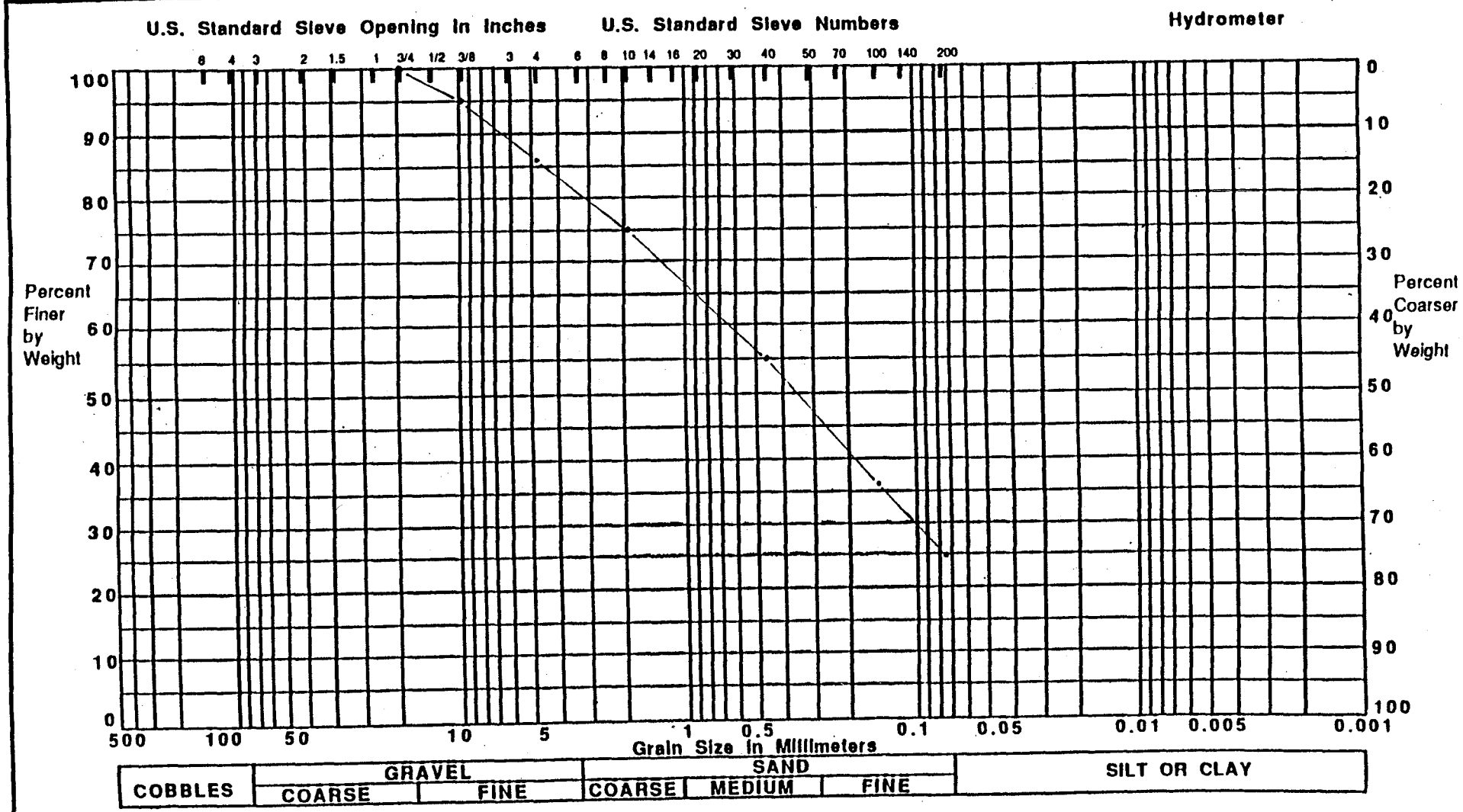
PROJECT: TTR AREA 3

CLASSIFICATION: SM

CHECKED BY: D. HERRINGTON Del H.

DATE CHECKED: 10-5-98

MATERIAL NATIVE A3-6/2



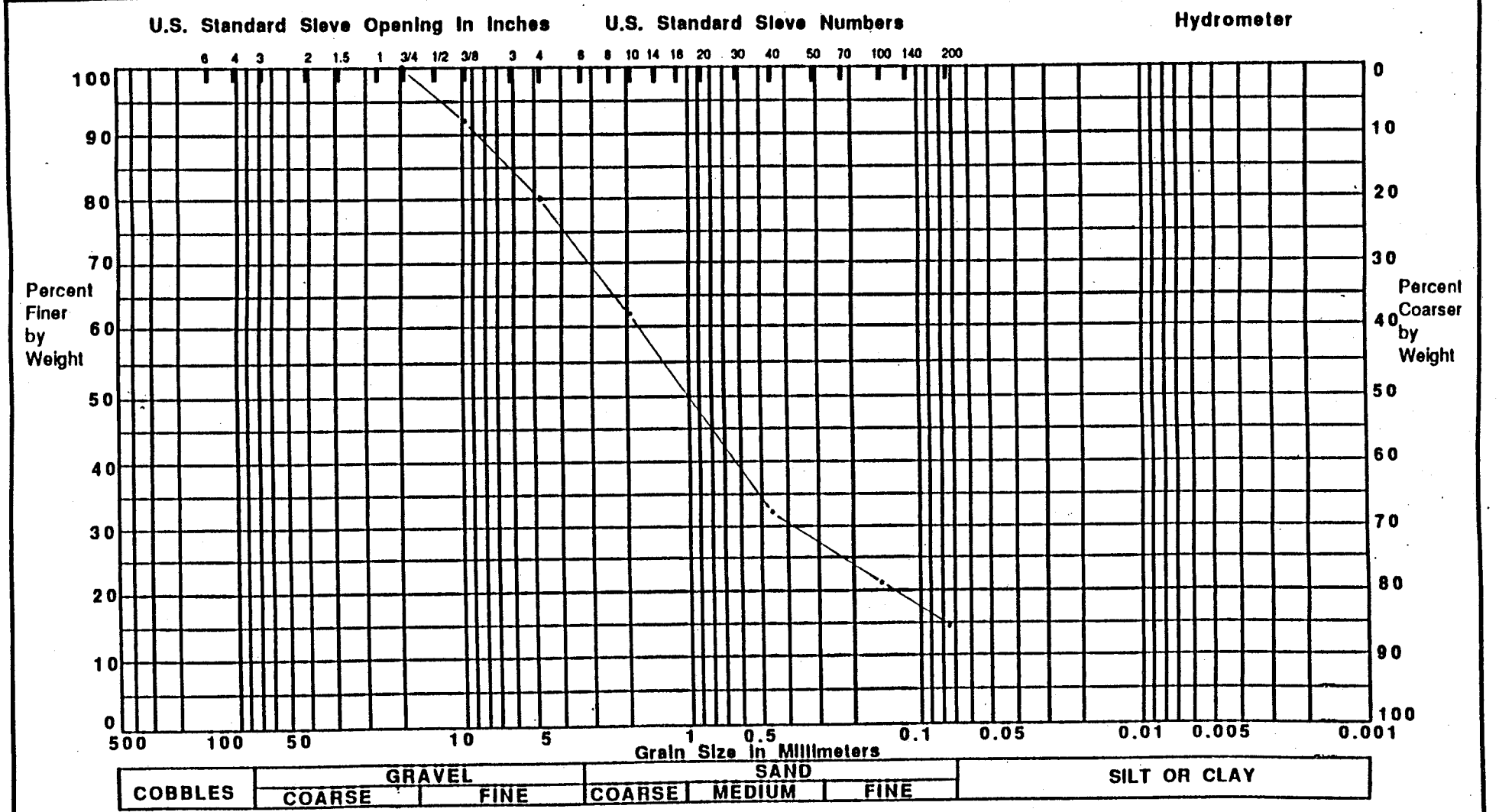
NO EQUIPMENT USED.

GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

LAB NO. 1928
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3
CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON
DATE CHECKED: 10-5-98
MATERIAL NATIVE A3-8/1



NO EQUIPMENT USED.

GRADATION CURVES

MATERIALS TESTING LABORATORY
P. O. BOX 98521
LAS VEGAS, NV 89193-8521

CHARGE # C4P1C0DE
DATE 10/01/98

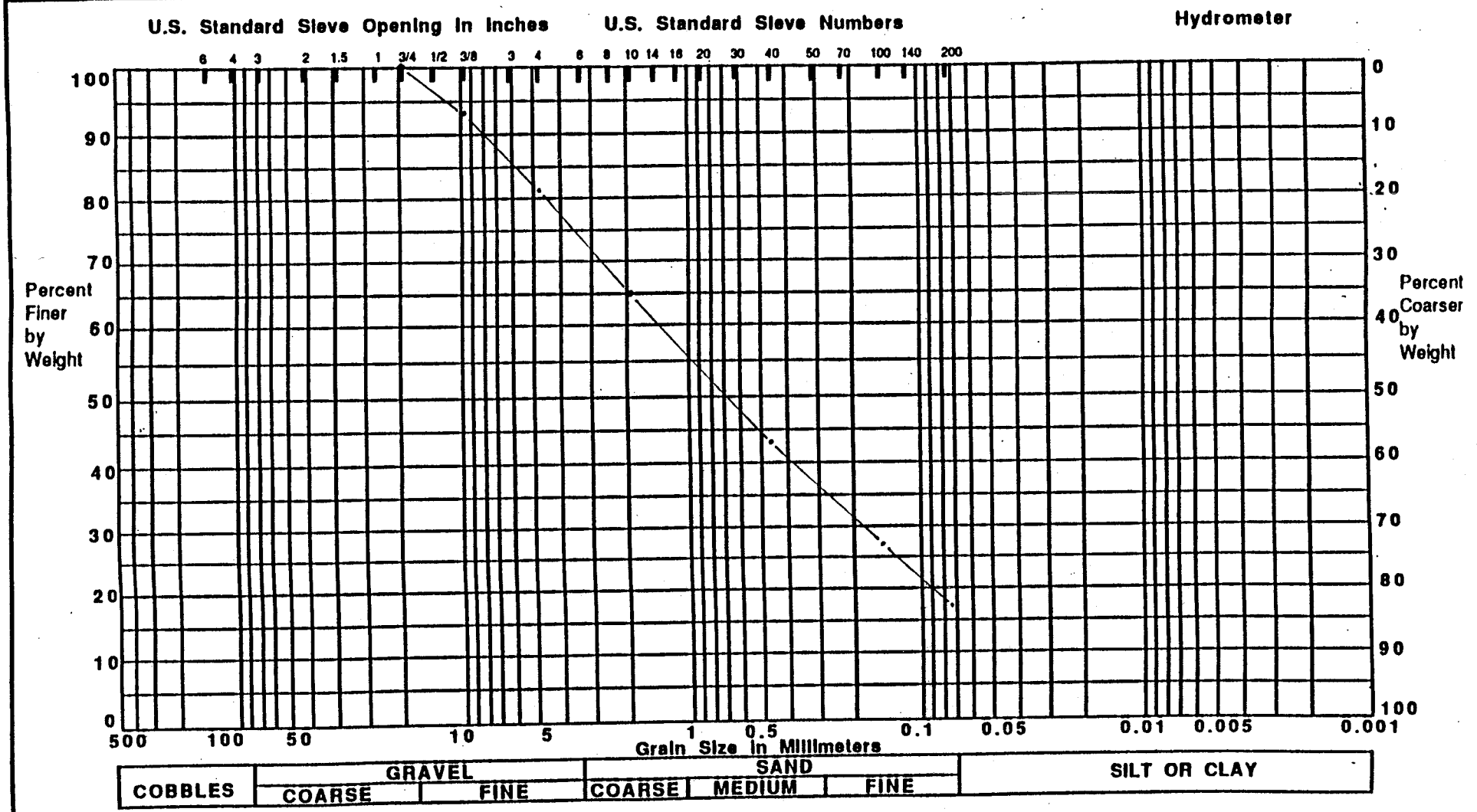
PROJECT: TTR AREA 3

CLASSIFICATION: SM

CHECKED BY: D. HERRINGTON

DATE CHECKED: 10-5-98

MATERIAL NATIVE A3-8/2



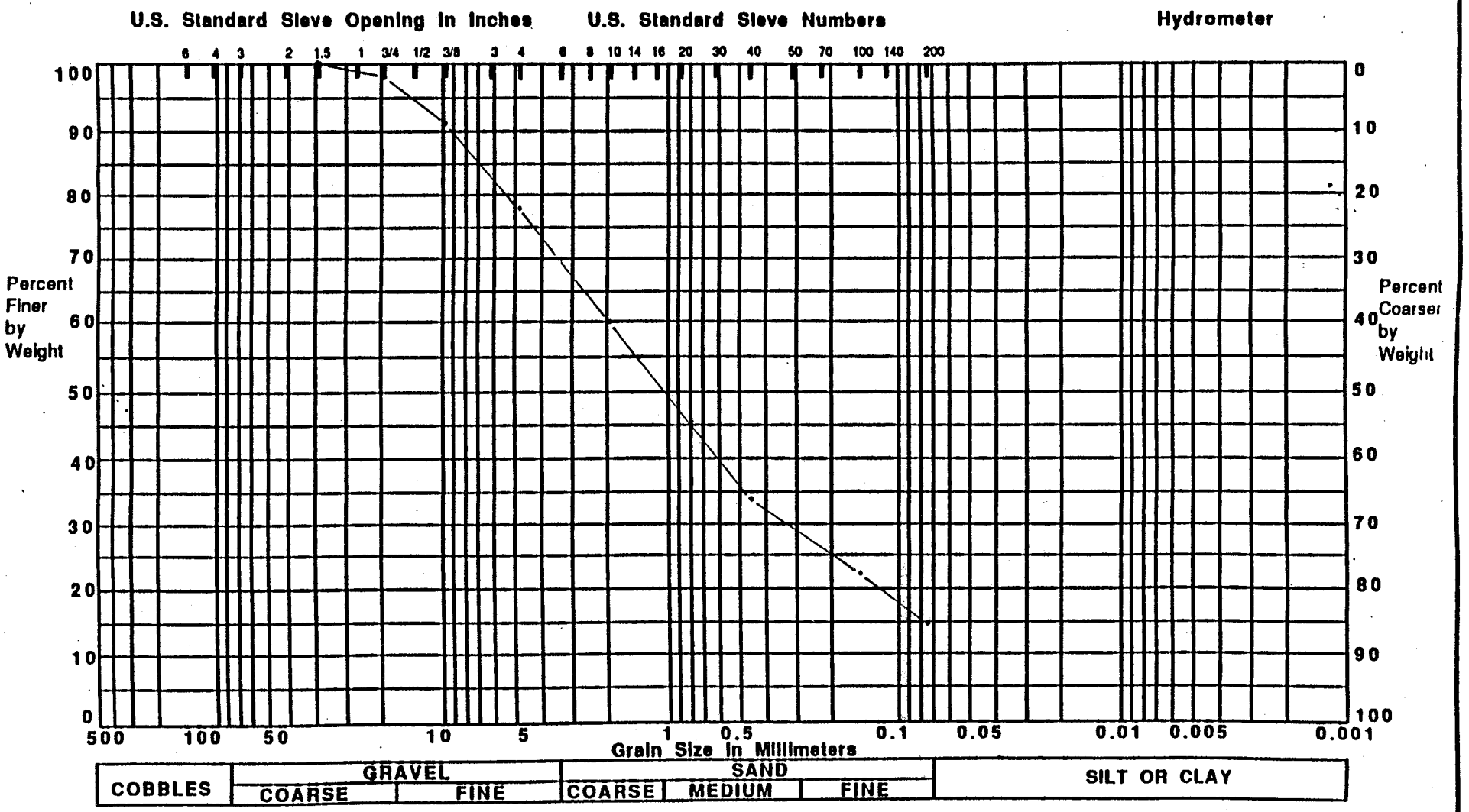
NO EQUIPMENT USED.

GRADATION CURVES

Bechtel Nevada
MATERIALS TESTING LABORATORY
P.O. BOX 98521
LAS VEGAS, NV 89193-8521

LAB NO. 1987
CHARGE # C4P1C0DE
DATE 10/01/98

PROJECT: TTR AREA 3 CLASSIFICATION: SM
CHECKED BY: D. HERRINGTON D.L.H. DATE CHECKED: 10-5-98 MATERIAL SANDIA BORROW PIT



NO EQUIPMENT USED.

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE #: C4P1CODE DATE TYPED 07/31/98 PAGE 1 OF 1

Requested by D. FINNEY User/Agency BECHTEL Material SANDIA BORROW

Project TTR AREA 3 Location of Tests TRENCH

Tested by D. HERRINGTON Date Tested 07/28/98 Checked by R.D. Johnson

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 07/28/98

LABORATORY NO	1993	1994	1995	1996	N/A	N/A
TEST LOCATION	A3-1A/T1	A3-1A/T2	A3-1/T3	A3-1/T4		
DEPTH OF PROBE	12"	12"	12"	12"		
DEPTH OF TESTS Below grade	36"	24"	24"	24"		
DRY DENSITY-PCF	121.5	118.0	124.7	117.5		
MOISTURE %	7.2	8.5	8.2	9.1		
MAX DENSITY PCF	127.0	127.0	127.0	127.0		
OPTIMUM MOISTURE %	9.5	9.5	9.5	9.5		
PERCENT COMPACTION	95.7	92.9	98.2	92.5		
REQUIRED COMPACTION %	80.0	80.0	80.0	80.0		
IN / OUT of SPECIFICATION	WITHIN	WITHIN	WITHIN	WITHIN		

GAUGE NO 23205 DATE OF STANDARDIZATION 07/28/98 VALUE OF STANDARDIZATION M 633 D 2944

PLOT PLAN

REMARKS: A SAMPLE OF THE BORROW MATERIAL FROM THE SANDIA PIT WAS TAKEN AND A NEW PROCTOR WAS RUN. THE NEW PROCTOR RESULTS ARE SHOWN ABOVE.

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521; M/S NTS168 LAS VEGAS, NV 89193-8521	CHARGE #: C4P1CODE DATE TYPED 07/31/98 PAGE 1 OF 1

Requested by D. FINNEY User/Agency BECHTEL Material SANDIA BORROW

Project TTR AREA 3 Location of Tests TRENCH

Tested by D. HERRINGTON Date Tested 07/29/98 Checked by R.D. Johnson

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 07/29/98

LABORATORY NO	1997	1998	1999	2000	N/A	N/A
TEST LOCATION	A3-1A/T5	A3-1A/T6	A3-1/T7	A3-1/T8		
DEPTH OF PROBE	8"	8"	8"	8"		
DEPTH OF TESTS Below grade	24"	12"	12"	12"		
DRY DENSITY-PCF	115.3	113.6	114.0	115.7		
MOISTURE %	9.7	9.0	7.2	6.4		
MAX DENSITY PCF	127.0	127.0	127.0	127.0		
OPTIMUM MOISTURE %	9.5	9.5	9.5	9.5		
PERCENT COMPACTION	90.8	89.4	89.8	91.1		
REQUIRED COMPACTION %	80.0	80.0	80.0	80.0		
IN / OUT of SPECIFICATION	WITHIN	WITHIN	WITHIN	WITHIN		

GAUGE NO 23205 DATE OF STANDARDIZATION 07/29/98 VALUE OF STANDARDIZATION M 633 D 2944

PLOT PLAN

REMARKS: NONE

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS166 LAS VEGAS, NV 89193-8521	C4P1CODE 08/27/96 1 OF 2

Requested by D. MADSEN User/Agency BECHTEL Material SANDIA BORROW

Project TTR AREA 3 Location of Tests SEE BELOW

Tested by D. HERRINGTON Date Tested 08/13/98 Checked by R. D. Johnson

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 08/13/98

LABORATORY NO	2162	2163	2164	2165	2166	2167
TEST LOCATION	A3-2/T1	A3-2/T2	A3-2/T3	A3-1A/T9	A3-1A/T10	A3-1A/T11
DEPTH OF PROBE	10"	12"	12"	12"	12"	12"
DEPTH OF TESTS Below grade	Final grade	Final grade	Final grade	Final grade	Final grade	Final grade
WET DENSITY-PCF	122.7	116.9	121.9	121.9	125.6	123.0
DRY DENSITY-PCF	115.0	109.5	114.1	114.9	117.9	115.6
MOISTURE %	6.7%	6.8%	6.8%	6.1%	6.5%	6.4%
MAX DENSITY-PCF	127.0	127.0	127.0	127.0	127.0	127.0
OPTIMUM MOISTURE %	9.5	9.5	9.5	9.5	9.5	9.5
PERCENT COMPACTION	90.6	86.2	89.8	90.5	92.8	91.0
REQUIRED COMPACTION %	80.0	80.0	80.0	80.0	80.0	80.0
IN / OUT of SPECIFICATION	IN	IN	IN	IN	IN	IN

LABORATORY NO	2168	2169	2170	2171	2172	2173
TEST LOCATION	A3-1/T12	A3-1/T13	A3-1/T14	A3-1/T15	A3-1/T16	A3-1/T17
DEPTH OF PROBE	12"	12"	12"	12"	12"	12"
DEPTH OF TESTS Below grade	Final grade	Final grade	Final grade	Final grade	Final grade	Final grade
WET DENSITY-PCF	120.8	125.8	121.6	119.9	122.0	122.7
DRY DENSITY-PCF	114.7	118.7	115.6	115.3	115.5	115.6
MOISTURE %	5.3%	6.0%	5.2%	4.0%	5.6%	6.1%
MAX DENSITY-PCF	127.0	127.0	127.0	127.0	127.0	127.0
OPTIMUM MOISTURE %	9.5	9.5	9.5	9.5	9.5	9.5
PERCENT COMPACTION	90.3	93.5	91.0	90.8	90.9	91.0
REQUIRED COMPACTION %	80.0	80.0	80.0	80.0	80.0	80.0
IN / OUT of SPECIFICATION	IN	IN	IN	IN	IN	IN

GAUGE NO 23205 DATE OF STANDARDIZATION 08/13/98 VALUE OF STANDARDIZATION M 568 D 2944

REMARKS: TEST AREAS WERE DESIGNATED BY CURTIS OBI.

CC: D. MADSEN BECHTEL
MTL BN FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MG-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	C4P1CODE 08/27/98 2 OF

Requested by D. MADSEN User/Agency BECHTEL Material SANDIA BORROW

Project TTR AREA 3 Location of Tests SEE BELOW

Tested by D. HERRINGTON Date Tested 08/13/98 Checked by [signature]

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 08/13/98

LABORATORY NO	2174	2175	2176	2177	2178	2179
TEST LOCATION	A3-1/T18	A3-1/T19	A3-1/T20	A3-4/T1	A3-4/T2	A3-4/T3
DEPTH OF PROBE	12"	12"	10"	6"	6"	6"
DEPTH OF TESTS Below grade	Final grade	Final grade	Final grade	Final grade	Final grade	Final grade
WET DENSITY-PCF	122.8	124.5	115.2	122.0	127.2	117.6
DRY DENSITY-PCF	115.4	117.6	109.8	117.2	122.4	112.9
MOISTURE %	6.4%	5.9%	4.9%	4.1%	3.9%	4.2%
MAX DENSITY-PCF	127.0	127.0	127.0	127.0	127.0	127.0
OPTIMUM MOISTURE %	9.5	9.5	9.5	9.5	9.5	9.5
PERCENT COMPACTION	90.9	92.6	86.5	92.3	96.4	88.9
REQUIRED COMPACTION %	80.0	80.0	80.0	80.0	80.0	80.0
IN / OUT of SPECIFICATION	IN	IN	IN	IN	IN	IN

LABORATORY NO	N/A	N/A	N/A	N/A	N/A	N/A
TEST LOCATION						
DEPTH OF PROBE						
DEPTH OF TESTS Below grade						
WET DENSITY-PCF						
DRY DENSITY-PCF						
MOISTURE %						
MAX DENSITY-PCF						
OPTIMUM MOISTURE %						
PERCENT COMPACTION						
REQUIRED COMPACTION %						
IN / OUT of SPECIFICATION						

GAUGE NO 23205 DATE OF STANDARDIZATION 08/13/98 VALUE OF STANDARDIZATION M 568 D 2944

REMARKS: TEST AREAS WERE DESIGNATED BY CURTIS OBI.

CC: D. MADSEN BECHTE
MTL BN FILES

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P. O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE #: C4T2CODE DATE TYPED 07/31/98 PAGE 1 OF 1

Requested by D. FINNEY User/Agency BECHTEL Material SANDIA BORROW

Project TTR AREA 9 Location of Tests OPEN PIT

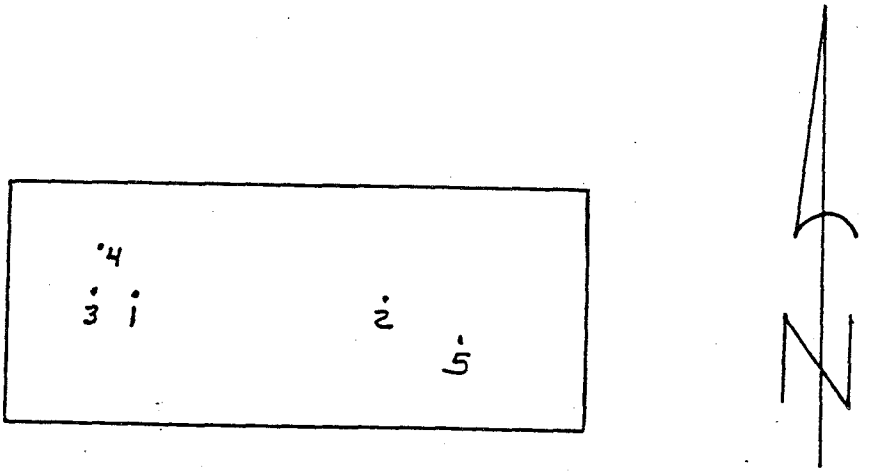
Tested by D. HERRINGTON Date Tested 07/28/98 Checked by V. [illegible]

Information given to CURTIS OBI By D. HERRINGTON How VERBAL Date 07/28/98

LABORATORY NO	1988	1989	1990	1991	1992	N/A
TEST LOCATION	1	2	3	4	5	
DEPTH OF PROBE	12"	12"	8"	12"	12"	
DEPTH OF TESTS Below grade	36"	24"	24"	Subgrade	Subgrade	
DRY DENSITY-PCF	111.9	120.7	111.8	115.5	114.7	
MOISTURE %	7.6	9.1	8.8	7.1	8.6	
MAX DENSITY PCF	127.0	127.0	127.0	127.0	127.0	
OPTIMUM MOISTURE %	9.5	9.5	9.5	9.5	9.5	
PERCENT COMPACTION	88.1	95.0	88.0	90.9	90.3	
REQUIRED COMPACTION %	80.0	80.0	80.0	80.0	80.0	
IN / OUT of SPECIFICATION	WITHIN	WITHIN	WITHIN	WITHIN	WITHIN	

GAUGE NO 23205 DATE OF STANDARDIZATION 07/28/98 VALUE OF STANDARDIZATION M 633 D 2944

PLOT PLAN



REMARKS: TESTS 1 AND 2 WERE TAKEN IN THE MORNING.
TEST 3 WAS TAKEN AFTER PLACING ANOTHER 1'.
TESTS 4 AND 5 WERE TAKEN IN THE AFTERNOON.

CC: D. MADSEN BECHTEL
MTL BECHTEL FILES

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Table 1.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1918	16.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-171	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-1/1	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 103.3 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
7	958	50	90.8	10.00	705.0	0.00049628	5.9580	8.08E-05	08/18/98	AM
7	958	50	90.8	10.00	726.0	0.00048192	5.9580	7.85E-05	08/18/98	AM
7	958	50	90.8	10.00	903.0	0.00038746	5.9580	6.31E-05	08/18/98	AM
7	958	51	90.7	10.00	963.0	0.00036332	5.9514	5.92E-05	08/18/98	AM
7	958	52	90.6	10.00	701.0	0.00049911	5.9449	8.15E-05	08/18/98	AM

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Table 2.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3
Requestor: D. MADSEN
Organization: Bechtel
Address: NTS306
Phone: 5-7211
Tested by: DALE, TOM, DAVE
Test start: 08/11/98

MTL Lab: 1919
Request #: S-171
Charge #: C4P1C0DE
Sample Origin: A3-1/2
Sample Type: REMOLDED @ AVERAGE 108.0 WET DENSITY
Water Temperature: 21.4 C
Checked by: D. HERRINGTON

15.240 = Sample Length (cm)
6.033 = Sample Diameter (cm)
28.58 = X-Sec. Area (sq cm)

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
8	957	58	89.9	10.00	266.0	0.00131533	5.8990	2.16E-04	08/19/98	AM
8	957	58	89.9	10.00	305.0	0.00114714	5.8990	1.89E-04	08/19/98	AM
8	957	56	90.1	10.00	340.0	0.00102905	5.9121	1.69E-04	08/19/98	AM
8	957	56	90.1	10.00	379.0	0.00092316	5.9121	1.52E-04	08/19/98	AM
8	957	55	90.2	10.00	342.0	0.00102303	5.9186	1.68E-04	08/19/98	AM

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Table 3.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1920	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-171	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-2/1	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 109.7 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
8	957	37	92.0	0.44	165.0	0.00009330	6.0367	1.50E-05	08/19/98	AM
8	957	36	92.1	0.84	300.0	0.00009797	6.0433	1.57E-05	08/19/98	AM
8	957	37	92.0	0.90	250.0	0.00012596	6.0367	2.02E-05	08/19/98	AM

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Table 4.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1922 SOIL	16.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-171	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-3/1	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 116.9 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/17/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
7	953	60	89.3	10.00	137.0	0.00255385	5.8596	4.23E-04	08/18/98	AM
7	953	53	90.0	10.00	98.0	0.00357017	5.9055	5.87E-04	08/18/98	AM
7	953	54	89.9	10.00	78.0	0.00448560	5.8990	7.38E-04	08/18/98	AM
7	953	56	89.7	10.00	70.0	0.00499824	5.8858	8.24E-04	08/18/98	AM
7	953	57	89.6	10.00	59.0	0.00593012	5.8793	9.79E-04	08/18/98	AM
7	953	57	89.6	10.00	64.0	0.00546683	5.8793	9.02E-04	08/18/98	AM

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Table 5.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1921 SOIL	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-171	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-3/2	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 112.3 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
8	972	37	93.5	0.67	420.0	0.00005581	6.1352	8.83E-06	08/19/98	AM
8	972	37	93.5	0.47	330.0	0.00004983	6.1352	7.88E-06	08/19/98	AM
8	971	35	93.6	0.72	840.0	0.00002999	6.1417	4.74E-06	08/19/98	AM
8	971	36	93.5	0.60	545.0	0.00003852	6.1352	6.09E-06	08/19/98	AM

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Table 6.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1921	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-171	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C00E	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3 3/3	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 116.1 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
8	792	38	75.4	0.18	149.0	0.00004227	4.9475	8.29E-06	08/19/98	AM
8	972	38	93.4	0.63	542.0	0.00004035	6.1286	6.39E-06	08/19/98	AM
8	971	36	93.5	0.59	702.0	0.00002941	6.1352	4.65E-06	08/19/98	AM
8	971	35	93.6	0.44	493.0	0.00003123	6.1417	4.93E-06	08/19/98	AM

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Table 7.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1922	16.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-171	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.59 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-3/4	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 110.1 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/17/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
7	996	53	94.3	10.00	15.0	0.02332514	6.1877	3.66E-03	08/18/98	AM
7	996	53	94.3	10.00	15.0	0.02332514	6.1877	3.66E-03	08/18/98	AM
7	996	53	94.3	10.00	16.0	0.02186732	6.1877	3.43E-03	08/18/98	AM
7	996	53	94.3	10.00	16.0	0.02186732	6.1877	3.43E-03	08/18/98	AM
7	996	53	94.3	10.00	16.0	0.02186732	6.1877	3.43E-03	08/18/98	AM

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Table 8.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3
Requestor: D. MADSEN
Organization: Bechtel
Address: NTS306
Phone: 5-7211
Tested by: DALE, TOM, DAVE
Test start: 08/12/98

MTL Lab: 1923
Request #: S-170
Charge #: C4P1C0DE
Sample Origin: A3-4/1
Sample Type: REMOLDED @ AVERAGE 109.7 WET DENSITY
Water Temperature: 21.4 C
Checked by: D. HERRINGTON

15.240 = Sample Length (cm)
6.033 = Sample Diameter (cm)
28.58 = X-Sec. Area (sq cm)

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
6	940	49	89.1	10.00	1059.0	0.00033038	5.8465	5.48E-05	08/18/98	AM
6	940	48	89.2	10.00	1095.0	0.00031952	5.8530	5.30E-05	08/18/98	AM
6	940	48	89.2	10.00	1206.0	0.00029011	5.8530	4.81E-05	08/18/98	AM
6	939	48	89.1	10.00	1417.0	0.00024691	5.8465	4.10E-05	08/18/98	AM
7	955	38	91.7	10.00	854.0	0.00040969	6.0171	6.61E-05	08/19/98	AM
7	954	50	90.4	10.00	762.0	0.00045916	5.9318	7.51E-05	08/19/98	AM

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Table 9.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1924	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-170	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-4/2	
Phone: 6-7211	Sample Type: REMOLDED @ AVERAGE 114.0 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/12/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
1	881	49	83.2	10.00	205.0	0.00170672	5.4593	3.03E-04	08/13/98	AM
1	881	49	83.2	10.00	198.0	0.00176706	5.4593	3.14E-04	08/13/98	AM
1	880	51	82.9	10.00	204.0	0.00171508	5.4396	3.06E-04	08/13/98	AM
1	880	51	82.9	10.00	208.0	0.00168210	5.4396	3.00E-04	08/13/98	AM
1	879	48	83.1	10.00	218.0	0.00160494	5.4528	2.86E-04	08/13/98	AM

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Table 10.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3
Requestor: D. MADSEN
Organization: Bechtel
Address: NTS306
Phone: 5-7211
Tested by: DALE, TOM, DAVE
Test start: 08/12/98

MTL Lab: 1923 SOIL
Request #: S-170
Charge #: C4P1C0DE
Sample Origin: A3-4/3
Sample Type: REMOLDED @ AVERAGE 111.2 WET DENSITY
Water Temperature: 21.4 C
Checked by: D. HERRINGTON

15.240 = Sample Length (cm)
6.033 = Sample Diameter (cm)
28.68 = X-Sec. Area (sq cm)

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
5	958	55	90.3	10.00	162.0	0.00215973	5.9252	3.54E-04	08/17/98	AM
5	958	55	90.3	10.00	166.0	0.00210769	5.9252	3.45E-04	08/17/98	AM
5	958	55	90.3	10.00	166.0	0.00210769	5.9252	3.45E-04	08/17/98	AM
5	958	55	90.3	10.00	162.0	0.00215973	5.9252	3.54E-04	08/17/98	AM

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Table 11.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1925	16.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-170	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-6/1	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 102.3 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/12/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
1	977	52	92.5	10.00	539.0	0.00064912	6.0696	1.04E-04	08/13/98	AM
1	977	52	92.5	10.00	538.0	0.00065033	6.0696	1.04E-04	08/13/98	AM
1	977	52	92.5	10.00	536.0	0.00065276	6.0696	1.04E-04	08/13/98	AM

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Table 12.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1926	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-170	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-6/1	
Phone: 6-7211	Sample Type: REMOLDED @ AVERAGE 104.8 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/12/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
0	976	36	94.0	10.00	18.0	0.01943761	6.1680	3.06E-03	08/12/98	AM
0	976	36	94.0	10.00	18.0	0.01943761	6.1680	3.06E-03	08/12/98	AM
0	976	36	94.0	10.00	18.0	0.01943761	6.1680	3.06E-03	08/12/98	AM
0	976	36	94.0	10.00	18.0	0.01943761	6.1680	3.06E-03	08/12/98	AM

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Table 13.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1927	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-170	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.68 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-6/2	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 107.2 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/12/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
7	973	37	93.6	0.40	83.0	0.00016862	6.1417	2.66E-05	08/19/98	AM
7	973	37	93.6	0.75	106.0	0.00024755	6.1417	3.91E-05	08/19/98	AM
7	973	37	93.6	0.79	99.0	0.00027919	6.1417	4.41E-05	08/19/98	AM
7	973	37	93.6	0.77	85.0	0.00031695	6.1417	5.01E-05	08/19/98	AM
7	973	37	93.6	0.55	60.0	0.00032072	6.1417	5.07E-05	08/19/98	AM

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Table 14.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1928	16.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-170	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-8/1	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 114.6 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
0	973	60	91.3	10.00	216.0	0.00161980	5.9908	2.62E-04	08/12/98	AM
0	973	60	91.3	10.00	210.0	0.00166608	5.9908	2.70E-04	08/12/98	AM
0	973	60	91.3	10.00	202.0	0.00173206	5.9908	2.81E-04	08/12/98	AM
0	973	60	91.3	10.00	191.0	0.00183182	5.9908	2.97E-04	08/12/98	AM

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Table 15.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3	MTL Lab: 1929	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-170	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.68 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: A3-5/2	
Phone: 5-7211	Sample Type: REMOLDED @ AVERAGE 114.6 WET DENSITY	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
6	940	55	88.5	10.00	665.0	0.00052613	5.8071	8.79E-05	08/18/98	AM
6	940	54	88.6	10.00	679.0	0.00051528	5.8136	8.60E-05	08/18/98	AM
6	940	54	88.6	10.00	670.0	0.00052220	5.8136	8.72E-05	08/18/98	AM
6	940	54	88.6	10.00	590.0	0.00059301	5.8136	9.90E-05	08/18/98	AM
6	940	55	88.5	10.00	497.0	0.00070398	5.8071	1.18E-04	08/18/98	AM
6	939	56	88.3	10.00	440.0	0.00079518	5.7940	1.33E-04	08/18/98	AM
6	939	56	88.3	10.00	450.0	0.00077750	5.7940	1.30E-04	08/18/98	AM
7	955	54	90.1	10.00	243.0	0.00143982	5.9121	2.36E-04	08/19/98	AM
7	953	56	89.7	10.00	225.0	0.00155501	5.8858	2.56E-04	08/19/98	AM

Materials Testing Laboratory
P.O.BOX 98521, M/S NTS 188, LAS VEGAS, NV 89193
(702) 295-6669

Table 16.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3 & A/9	MTL Lab: 1987	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-178	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.58 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: SANDIA BORROW	
Phone: 5-7211	Sample Type: REMOLDED (85%) @ 118.2 WET DENSITY & 9.5% MOISTURE	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
6	958	49	90.9	10.00	80.0	0.00437346	5.9646	7.11E-04	08/18/98	AM
6	958	42	91.6	10.00	87.0	0.00402158	6.0105	6.49E-04	08/18/98	AM
6	958	39	91.9	10.00	68.0	0.00514525	6.0302	8.28E-04	08/18/98	AM
6	958	39	91.9	10.00	61.0	0.00573569	6.0302	9.23E-04	08/18/98	AM
6	958	40	91.8	10.00	63.0	0.00555360	6.0236	8.95E-04	08/18/98	AM

Bechtel Nevada
Materials Testing Laboratory
P.O.BOX 98521, M/S NTS 188, LAS VEGAS, NV 89193
(702) 295-6669

Table 17.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

Project: TTR A/3 & A/9	MTL Lab: 1987	15.240 = Sample Length (cm)
Requestor: D. MADSEN	Request #: S-178	6.033 = Sample Diameter (cm)
Organization: Bechtel	Charge #: C4P1C0DE	28.68 = X-Sec. Area (sq cm)
Address: NTS306	Sample Origin: SANDIA BORROW	
Phone: 5-7211	Sample Type: REMOLDED (90%) @ 125.2 WET DENSITY & 9.5% MOISTURE	
Tested by: DALE, TOM, DAVE	Water Temperature: 21.4 C	
Test start: 08/11/98	Checked by: D. HERRINGTON	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
6	957	38	91.9	0.30	107.0	0.00009810	6.0302	1.58E-05	08/18/98	AM
6	957	38	91.9	0.73	100.0	0.00025541	6.0302	4.11E-05	08/18/98	AM
6	957	40	91.7	0.65	105.0	0.00021659	6.0171	3.49E-05	08/18/98	AM
6	957	40	91.7	0.90	127.0	0.00024794	6.0171	4.00E-05	08/18/98	AM
6	957	42	91.5	0.85	128.0	0.00023234	6.0039	3.75E-05	08/18/98	AM
6	957	40	91.7	0.78	121.0	0.00022554	6.0171	3.64E-05	08/18/98	AM

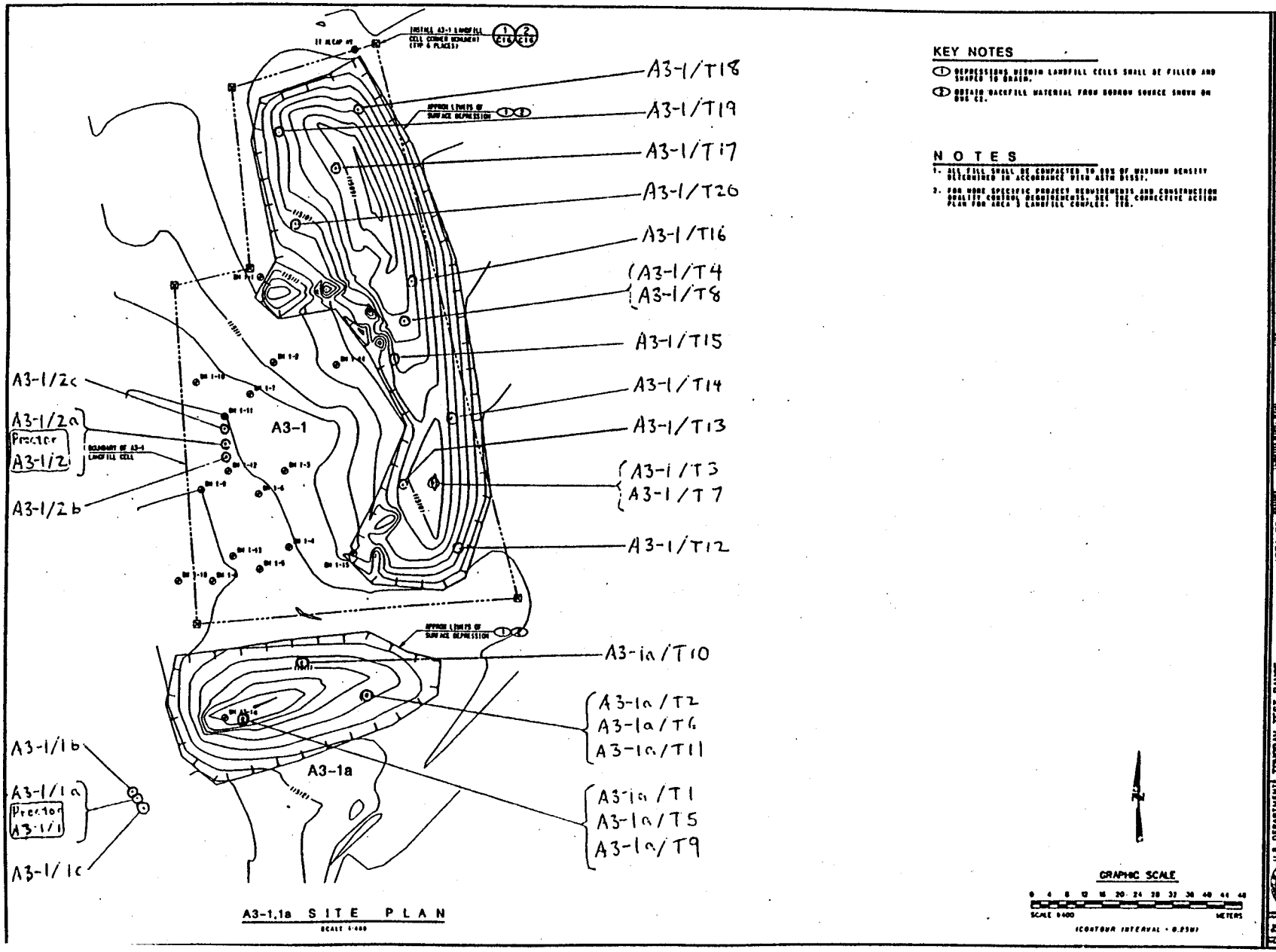
Materials Testing Laboratory
P.O.BOX 98521, M/S NTS 188, LAS VEGAS, NV 89193
(702) 295-6669

Table 18.

SAMPLE TTR PERMEABILITY TO DI WATER
ASTM D 2434-68 (Reapproved 1974)
Standard Test Method for Permeability of Granular Soils (Constant Head)

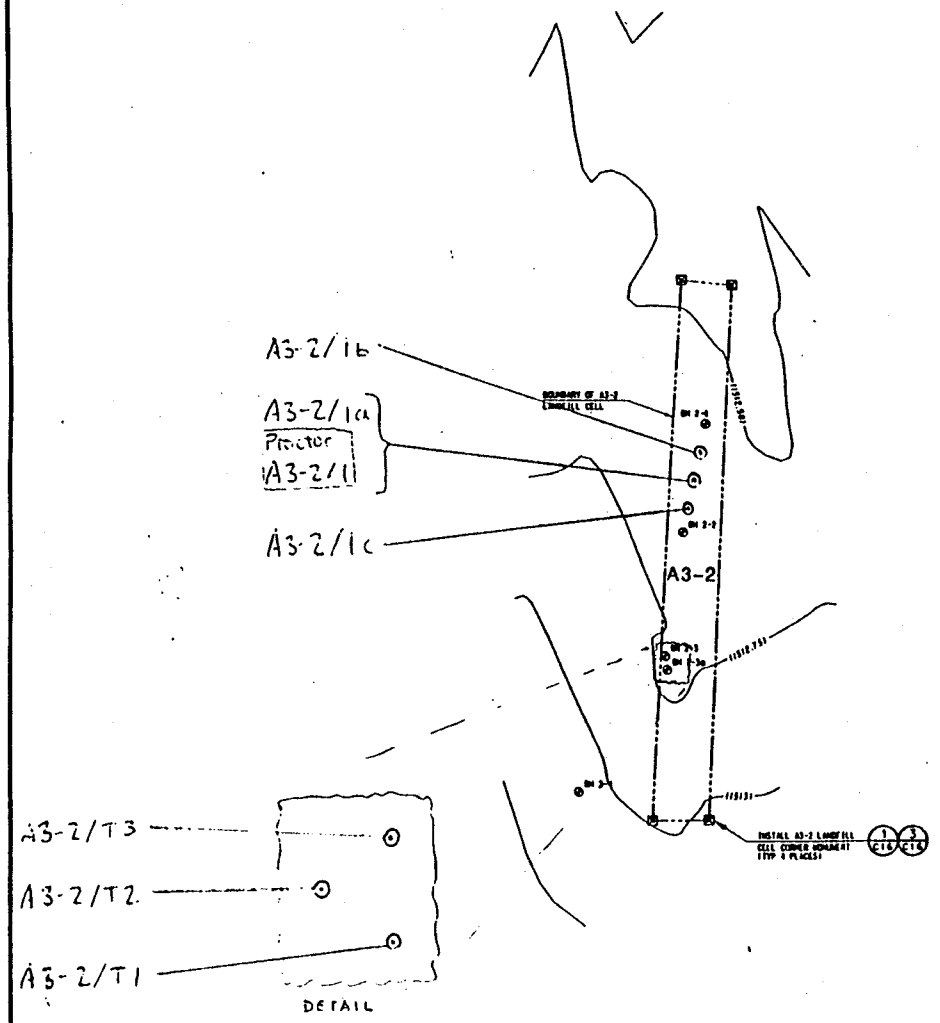
Project: TTR A/3 & A/9	**MTL Lab: 1987**	**15.240 = Sample Length (cm)**
Requestor: D. MADSEN	**Request #: S-178**	**6.033 = Sample Diameter (cm)**
Organization: Bechtel	**Charge #: C4P1C0DE**	**28.58 = X-Sec. Area (sq cm)**
Address: NTS306	**Sample Origin: SANDIA BORROW**	
Phone: 5-7211	**Sample Type: REMOLDED (95%) @ 132.1 WET DENSITY & 9.5% MOISTURE**	
Tested by: DALE, TOM, DAVE	**Water Temperature: 21.4 C**	
Test start: 08/11/98	**Checked by: D. HERRINGTON** DLH	

Reading # Days From Start	Manometers H1 mm	Manometers H2 mm	Head cm	Q cm^3	t sec.	Q/At	h/l	k - 20 C cm/sec	Date Tested	Time Tested
6	957	36	92.1	0.72	370.0	0.00006808	6.0433	1.09E-05	08/18/98	AM
6	957	40	91.7	0.40	68.0	0.00020581	6.0171	3.32E-05	08/18/98	AM
6	957	40	91.7	1.11	199.0	0.00019516	6.0171	3.15E-05	08/18/98	AM
6	955	38	91.7	0.70	473.0	0.00005178	6.0171	8.35E-06	08/18/98	AM
6	955	36	91.9	0.95	678.0	0.00004902	6.0302	7.89E-06	08/18/98	AM
6	955	40	91.5	0.70	373.0	0.00006566	6.0039	1.06E-05	08/18/98	AM
6	954	37	91.7	0.74	330.0	0.00007846	6.0171	1.27E-05	08/18/98	AM
6	954	37	91.7	0.50	357.0	0.00004900	6.0171	7.90E-06	08/18/98	AM
6	953	38	91.5	0.67	484.0	0.00004843	6.0039	7.83E-06	08/18/98	AM
6	953	38	91.5	0.48	196.0	0.00008568	6.0039	1.38E-05	08/18/98	AM
6	953	38	91.5	0.63	243.0	0.00009071	6.0039	1.47E-05	08/18/98	AM
6	953	38	91.5	1.00	428.0	0.00008175	6.0039	1.32E-05	08/18/98	AM


A3-1/T18
A3-1/T19
A3-1/T17
A3-1/T20
A3-1/T16
A3-1/T4
A3-1/T8
A3-1/T15
A3-1/T14
A3-1/T13
A3-1/T3
A3-1/T7
A3-1/T12
A3-1a/T10
A3-1a/T2
A3-1a/T6
A3-1a/T11
A3-1a/T1
A3-1a/T5
A3-1a/T9
A3-1/2c
A3-1/2a
Proctor
A3-1/2
A3-1/2b
A3-1
A3-1a
A3-1/1b
A3-1/1a
Proctor
A3-1/1
A3-1/1c
A3-1,1a SITE PLAN
SCALE 1:400
GRAPHIC SCALE
SCALE 1:400
METERS
(CONTOUR INTERVAL = 0.25M)
KEY NOTES
NOTES
TONOPAH TEST RANGE
AREA 52
AREA 3 LANDFILL CLOSURES
CAU 424
A3-1,1a SITE PLAN
U.S. DEPARTMENT OF ENERGY
Bechtel Nevada
ISSUED FOR CONSTRUCTION

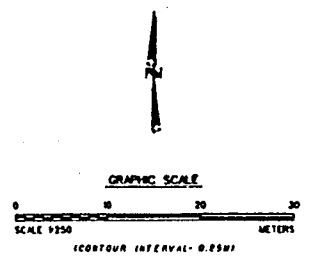
NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, ITR.



A3-2 SITE PLAN

SCALE 1:200



0	ISSUED FOR CONSTRUCTION, DATED 7/14/90

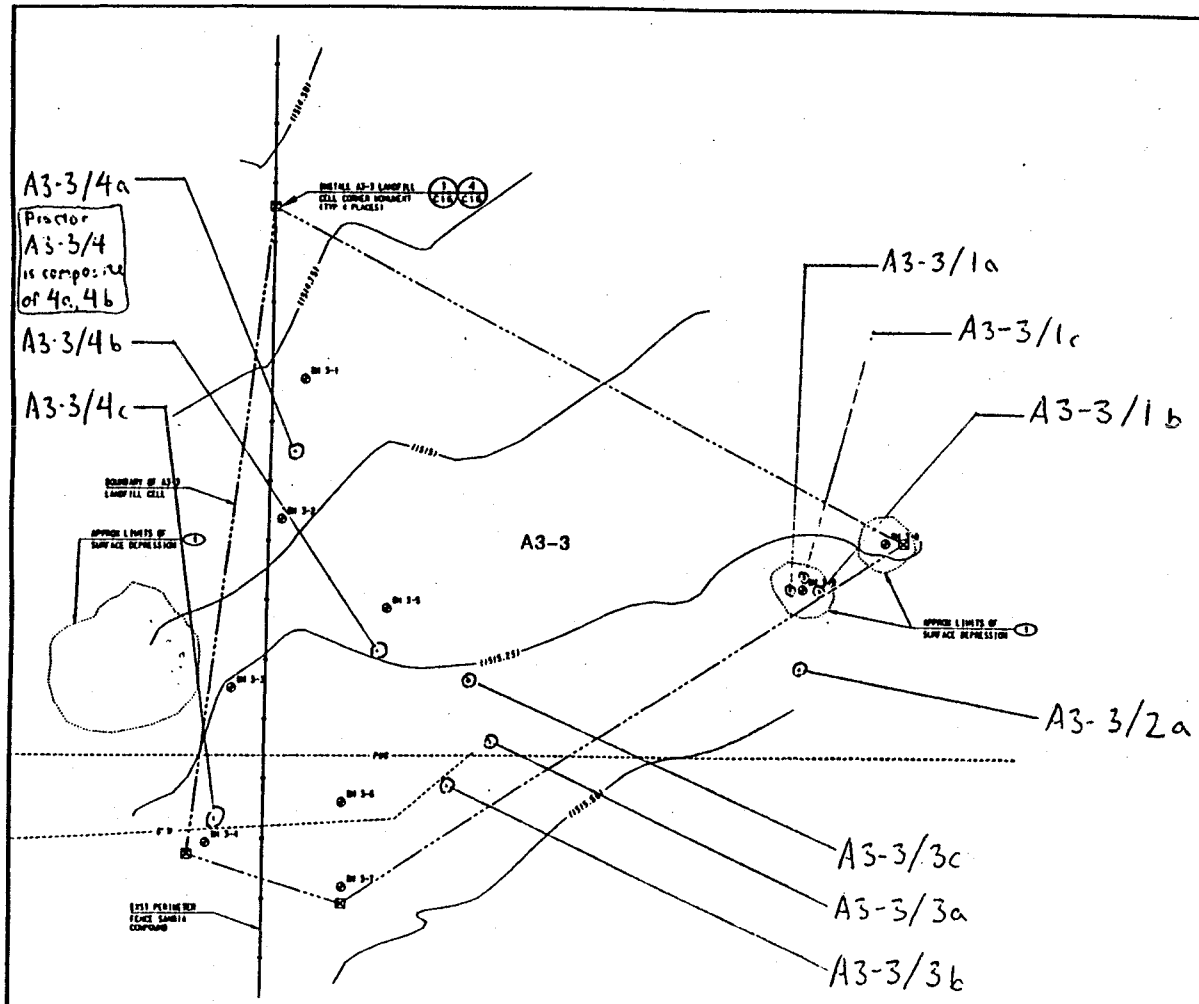
TONOPAH TEST RANGE — AREA 52
AREA 3 LANDFILL CLOSURES
CAU 424

A3-2 SITE PLAN

U.S. DEPARTMENT OF ENERGY

Bechtel Nevada

J5-052-133-C10



A3-3 SITE PLAN

SCALE 1:400

KEY NOTE

1. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY ON FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.

GRAPHIC SCALE

0 5 10 15 20 25

SCALE: 1:200 METERS

(CONTOUR INTERVAL = 0.25M)

U.S. DEPARTMENT OF ENERGY

Bechtel Nevada

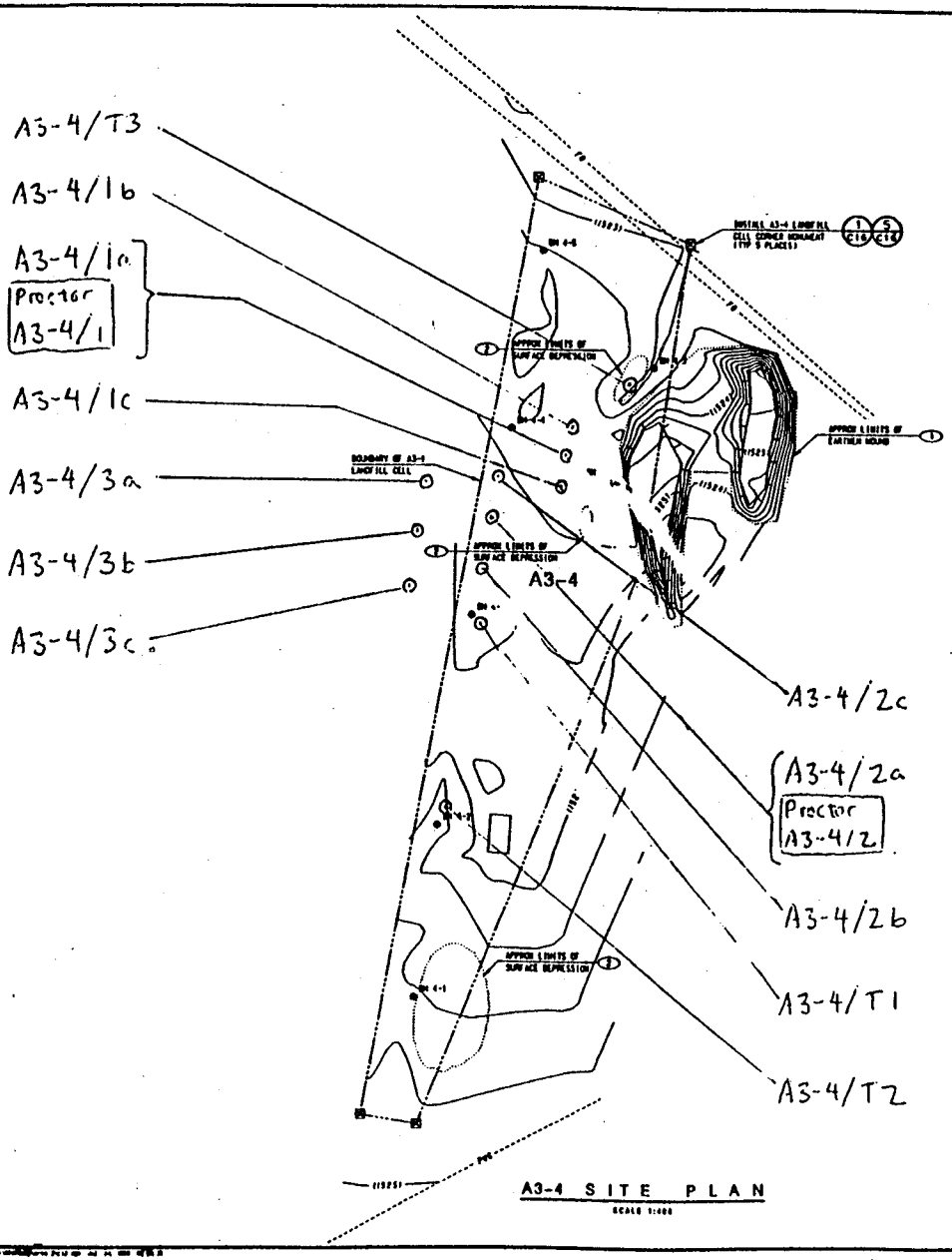
TONOPAH TEST RANGE — AREA 52

AREA 3 LANDFILL CLOSURES

CAU 424

A3-3 SITE PLAN

JS-052-133-C11



A3-4 SITE PLAN

SCALE 1:400

KEY NOTES

1. USE EXISTING MOUND IF SUITABLE FOR BACKFILL.
2. SURFACE FEATURES IDENTIFIED BY EF BUT NOT CONFIRMED BY DM FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
3. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.

GRAPHIC SCALE

0 4 8 12 16 20 24 28 32 36 40 44 48

SCALE 1:400 METERS

(CONTOUR INTERVAL = 0.25M)

U.S. DEPARTMENT OF ENERGY

TONOPAH TEST RANGE — AREA 52

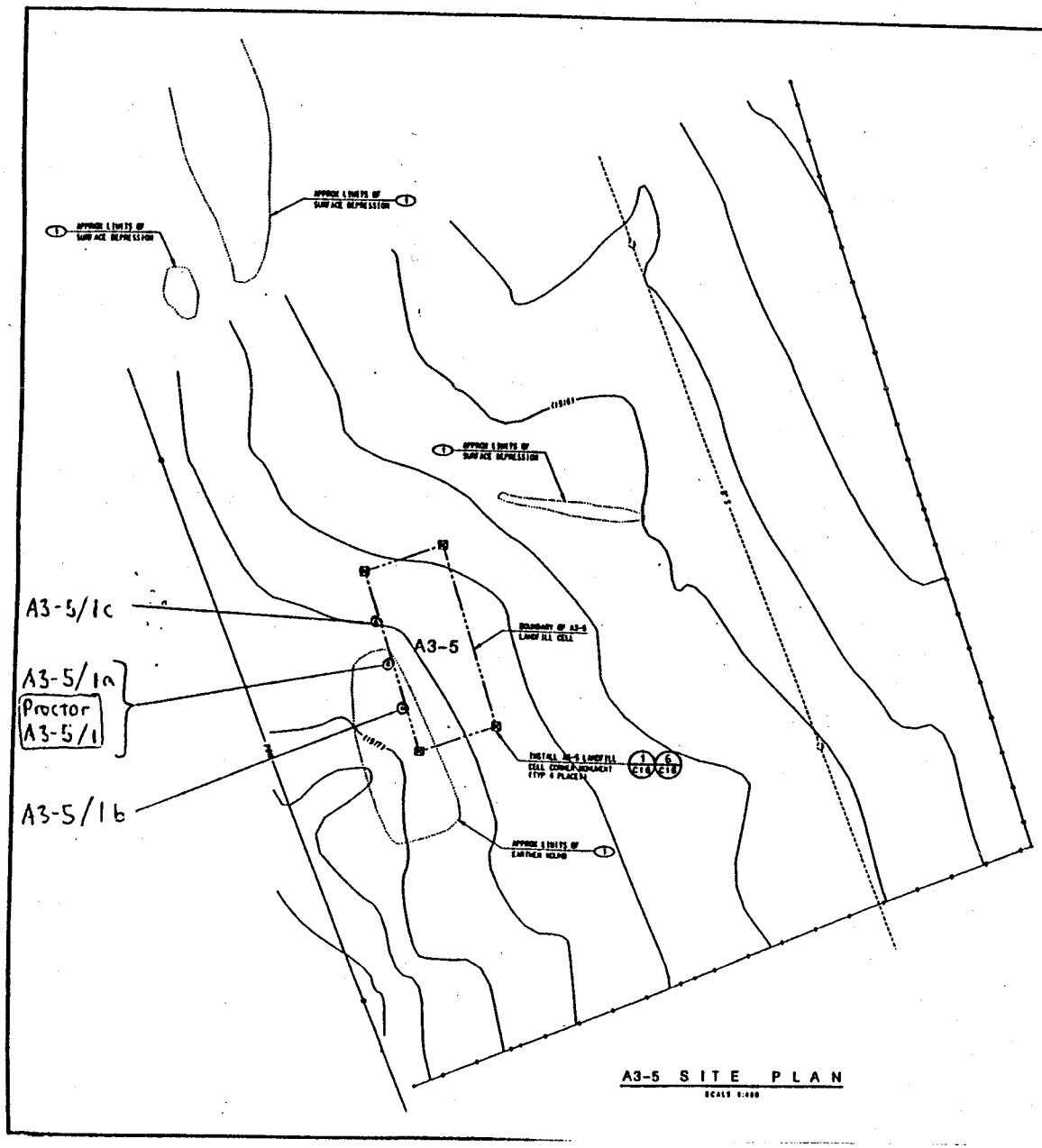
AREA 3 LANDFILL CLOSURES

CAU 424

A3-4 SITE PLAN

Bechtel Nevada

A3-052-133-C12



A3-5 SITE PLAN

SCALE 1:400

KEY NOTE

1. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY ON FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO DRAIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, TTR.

GRAPHIC SCALE

0 4 8 12 16 20 24 28 32 36 40 44 48

SCALE 1:400 METERS

(CONTOUR INTERVAL - 0.25M)

U.S. DEPARTMENT OF ENERGY

Bechtel Nevada

TONOPAH TEST RANGE — AREA 52

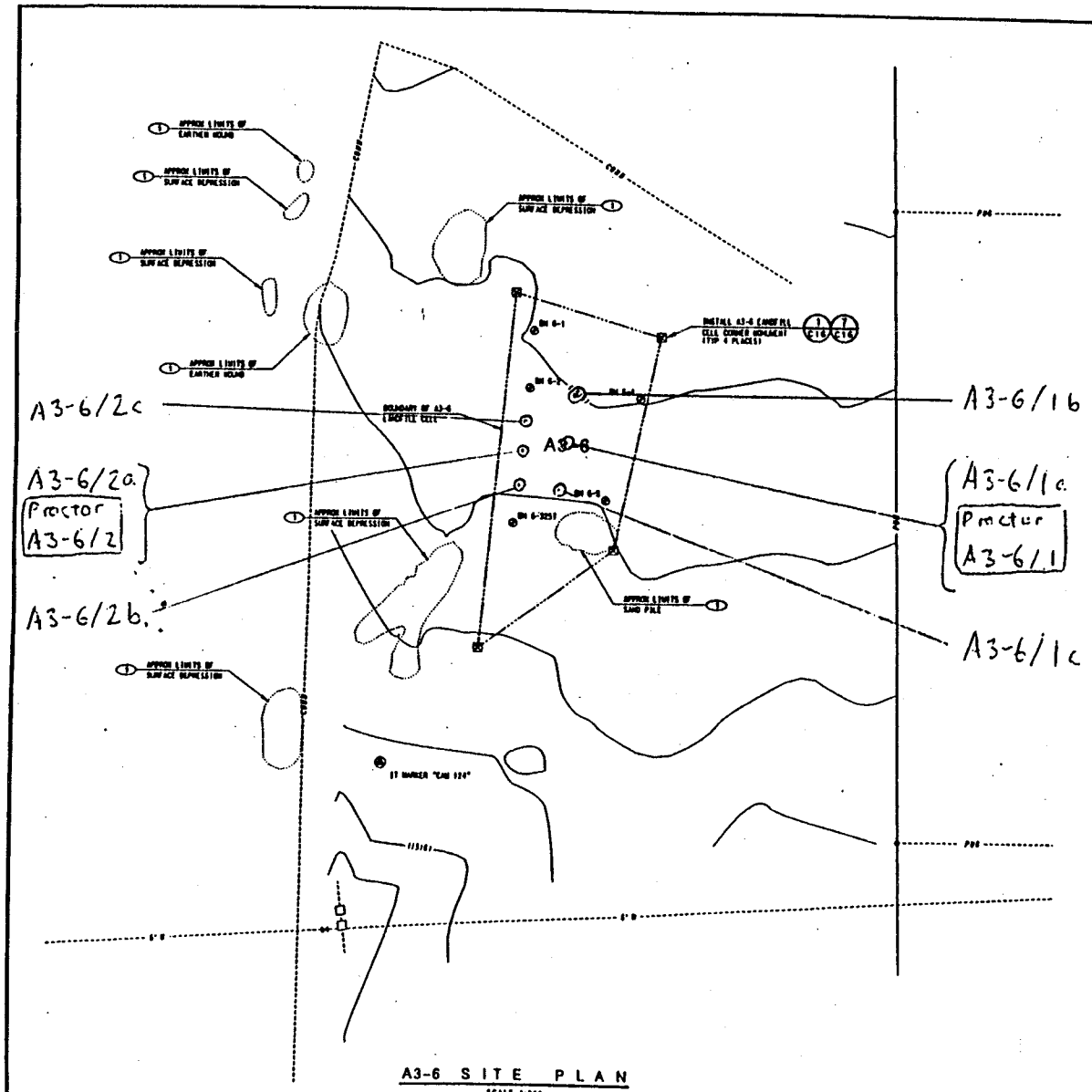
AREA 3 LANDFILL CLOSURES

CAU 424

A3-5 SITE PLAN

ISSUED FOR CONSTRUCTION, DATED 7/14/99

JS-002-133-C13



A3-6 SITE PLAN

SCALE 1:300

KEY NOTE

1. SURFACE FEATURES IDENTIFIED BY IT BUT NOT CONFIRMED BY DOE FIELD SURVEY.

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE FILLED AND SHAPED TO BASIN.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL CLOSURES, ETC.

GRAPHIC SCALE

0 3 6 9 12 15 18 21 24 27 30 33 36

SCALE 1:300 METERS

(CONTOUR INTERVAL = 0.25M)

ISSUED FOR CONSTRUCTION, DATED 7/14/95

U.S. DEPARTMENT OF ENERGY

TONOPAH TEST RANGE — AREA 52

AREA 3 LANDFILL CLOSURES

CAU 424

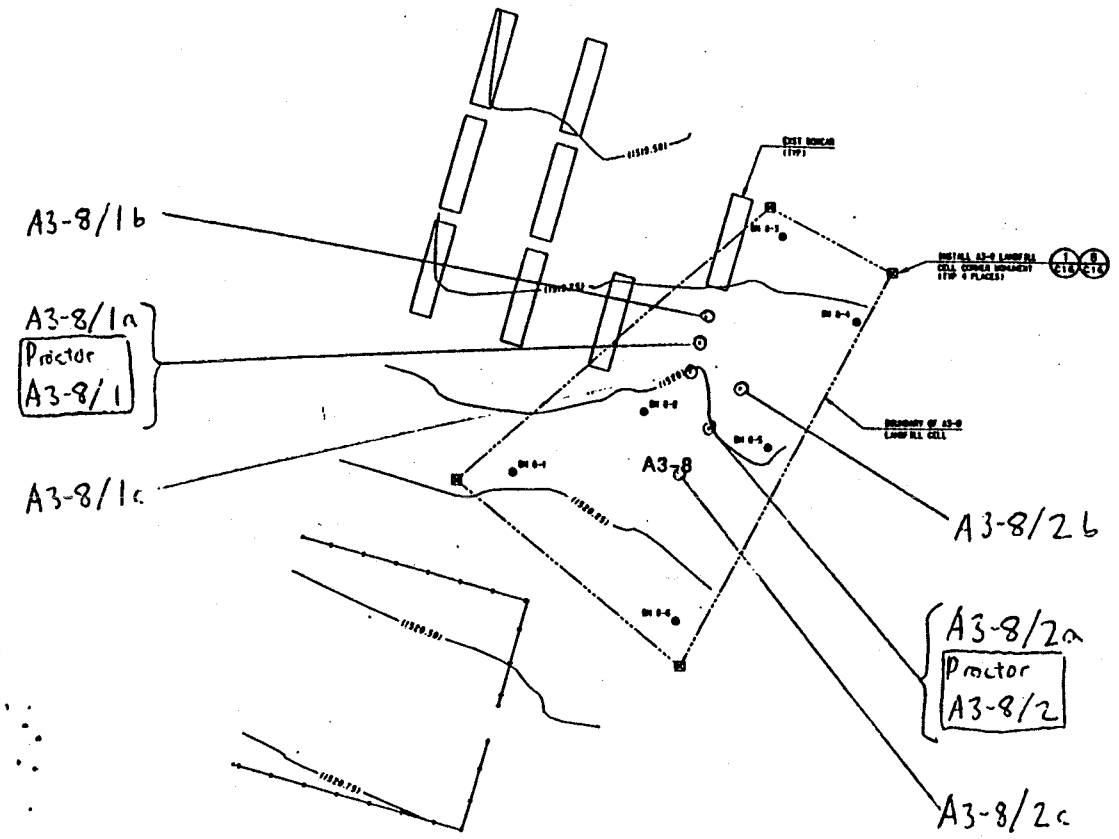
A3-6 SITE PLAN

Bechtel Nevada

25-052-133-014

NOTES

1. DEPRESSIONS WITHIN LANDFILL CELLS SHALL BE SURROUNDED BY EARTHEN BERMS OR FILLED.
2. OBTAIN BACKFILL MATERIAL FROM BARROW SOURCE SHOWN ON DWG C2.
3. ALL FILL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. FOR MORE SPECIFIC PROJECT REQUIREMENTS AND CONSTRUCTION QUALITY CONTROL REQUIREMENTS, SEE THE CORRECTIVE ACTION PLAN FOR AREA 3 LANDFILL COMPLEX, ETC.



A3-8 SITE PLAN

SCALE 1:500

GRAPHIC SCALE

0 3 6 9 12 15 18 21 24 27 30 33 36

SCALE 1:300 METERS

(CONTOUR INTERVAL = 0.25M)

U.S. DEPARTMENT OF ENERGY

Bechtel Nevada

TONOPAH TEST RANGE — AREA 52

AREA 3 LANDFILL CLOSURES

CAU 424

A3-8 SITE PLAN

ISSUED FOR CONSTRUCTION, DATED 7/14/98

JS-052-133-C15

APPENDIX E

USE RESTRICTION DOCUMENTATION

USAF ACKNOWLEDGMENT OF CAU 424

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 99TH AIR BASE WING (ACC)
NELLIS AIR FORCE BASE, NEVADA

JUL 15 1998

Colonel Michael F. Fukey
Director, Environmental Management
4349 Duffer Dr., Ste. 1601
Nellis AFB NV 89191-7007

Ms. Runore C. Wycoff,
Director, Environmental Restoration Division
DOE Nevada Operations Office
P.O. Box 98518
Las Vegas NV 89193-8518

ACKNOWLEDGEMENT OF CORRECTIVE ACTION UNIT (CAU) 424

Nellis Air Force Base (Nellis) has reviewed the U. S. Department of Energy's (DOE) Corrective Action Decision Document for Corrective Action Unit (CAU) 424. Nellis has the right to use this land for military purposes under Public Law 99-606, as amended, and Public Land Order 7131.

Nellis can only impose restrictions on its use of the land while under its control. For the above referenced site, these self-imposed restrictions by Nellis on its use of this section of NAFR (hereafter "use restrictions") will be placed in the Geographic Information System (GIS) for NAFR. The Range Management Office (RMO) at Nellis will administer use restrictions to ensure that there are institutional controls on users of the NAFR, ensuring that they are aware of these restrictions located in the GIS, which should assist the DOE in working with the state regulators on Corrective Active Units. If RMO determines that a proposed mission use would not comport with existing use restrictions or that there is a proposed transfer/relinquishment of all or part of the NAFR, it will notify DOE of the proposed transfer/relinquishment. Then DOE must contact the regulators or transferee/returnee to address and resolve cleanup issues associated with the proposed use or transfer/relinquishment.

If RMO needs to modify its use restrictions thereby causing additional cleanup requirements to meet the proposed land-use scenarios, then DOE will clean the restricted land up to the level to meet the proposed land-use scenarios in an expeditious manner so that RMO may amend the use restrictions.

Also, Nellis and DOE are negotiating a Memorandum of Understanding that will address DOE's future obligations to clean up any of its contaminated areas.

Please contact me at 652-6828 if you have any questions.

Sincerely

Michael F. Fukey

MICHAEL F. FUKEY, Colonel, USAF

cc:
HQAWC RMO/RML
HQ AWFC/JAV

CAU USE RESTRICTION INFORMATION FORMS

065666

Department of Energy
Nevada Operations Office
P. O. Box 98518
Las Vegas, NV 89193-8518

MAY 3 10 38 AM '99

APR 29 1999

BECHTEL CCR REC'D

Colonel Michael F. Fukey, USAF
Director, Environmental Management
4349 Duffer Dr., Ste. 1601
Nellis AFB, NV 89191-7007

SUBMITTAL OF THE *CAU USE RESTRICTION INFORMATION FORMS FOR* CAU 424 AREA 3 LANDFILL COMPLEX, AND CAU 453 AREA 9 UNEXPLODED ORDNANCE LANDFILL

Please find enclosed copies of the subject CAU Use Restriction Information forms for your office to file in your GIS system. All sites are on the Tonopah Test Range. The use restriction coordinates are in UTM NAD83 (meters). A reply letter is requested stating that the use restriction information has been recorded.

If you have any questions, please contact Kevin J. Cabble, of my staff, at (702) 295-5000.

for Runore C. Wycoff, Director
Environmental Restoration Division

ERD:KJC

Enclosure:
As stated

ENV 3

cc w/o encl:
Col. G. C. Carpenter, USAF Liaison, DOE/NV, Las Vegas, NV
P. J. Liebendorfer, NDEP, Carson City, NV
K. K. Beckley, NDEP, Carson City, NV
M. D. McKinnon, NDEP, Las Vegas, NV
J. J. Johnson, NDEP, Carson City, NV
D. A. Bedsun, DTRA, Mercury, NV
Vern Gabbard, SNL/TTR, Tonopah, NV
R. B. Jackson, IT, Las Vegas, NV
J. M. Moore, IT, Las Vegas, NV
L. F. Roos, IT, Las Vegas, NV
D. K. Cowser, BN, Las Vegas, NV
D. D. Madsen, BN, Mercury, NV NT5306
K. A. Hoar, ESHD, DOE/NV, Las Vegas, NV
R. C. Wycoff, ERD, DOE/NV, Las Vegas, NV
J. L. Appenzeller-Wing, ERD, DOE/NV, Las Vegas, NV
P. L. Hall, EM, DOE/NV, Las Vegas, NV

CAU Use Restriction Information

CAU Number/Description: CAU 424 (Area 3 Landfill Complex, Tonopah Test Range, NV)

Applicable CAS Numbers/Descriptions: CAS No. 03-08-001-A301 (Landfill A3-1)

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTMs):

4,182,762.49 mN, 521,188.69 mE;
4,182,702.25 mN, 521,206.86 mE;
4,182,637.31 mN, 521,224.19 mE;
4,182,630.25 mN, 521,150.27 mE;
4,182,707.26 mN, 521,143.37 mE;
4,182,710.42 mN, 521,158.13 mE;
4,182,752.25 mN, 521,155.86 mE.

Survey Date 11/20/1998 **Survey Method (GPS, etc.)** GPS **Datum** NAD 83

Site Monitoring Requirements: Visual inspection as specified by the closure documentation

Required Frequency (quarterly, annually?): inspections biannually to commence six months after the closure concurrence date

Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: Kevin Cabble **Date:** 4/28/99

Attachments: Survey Map

CAU Use Restriction Information

CAU Number/Description: CAU 424 (Area 3 Landfill Complex, Tonopah Test Range, NV)

Applicable CAS Numbers/Descriptions: CAS No. 03-08-002-A302 (Landfill A3-2)

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTMs):

4,182,504.79 mN, 521,182.38 mE;
4,182,444.76 mN, 521,182.79 mE;
4,182,443.86 mN, 521,173.80 mE;
4,182,506.17 mN, 521,175.89 mE.

Survey Date 11/20/1998 **Survey Method (GPS, etc.)** GPS **Datum** NAD 83

Site Monitoring Requirements: Visual inspection as specified by the closure documentation

Required Frequency (quarterly, annually?): inspections biannually to commence six months after the closure concurrence date

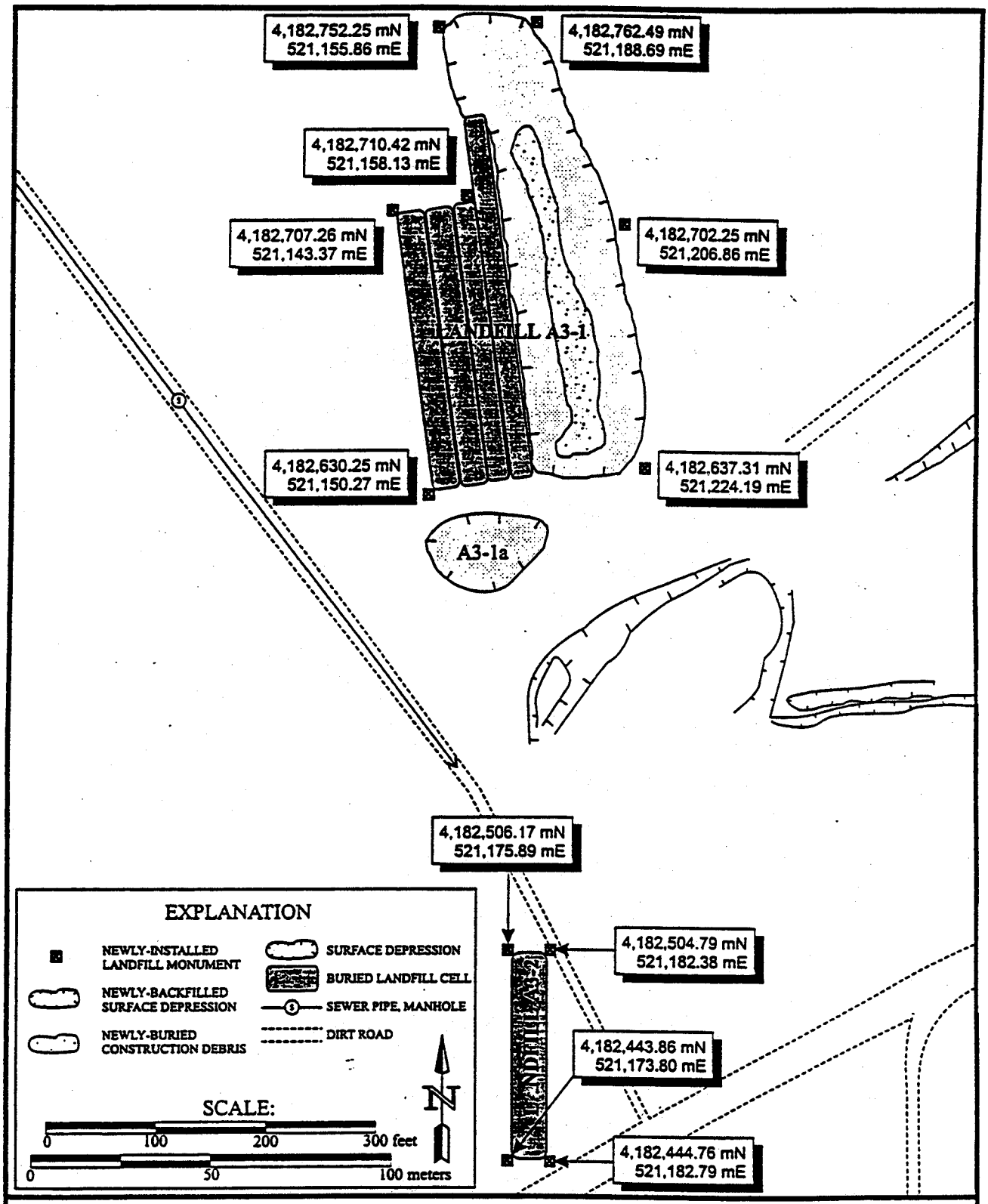
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: Kevin Cabble **Date:** 4/28/99

Attachments: Survey Map



USE RESTRICTION COORDINATES (UTM NAD83)
FOR LANDFILL A3-1 (CAS 03-08-001-A301)
AND LANDFILL A3-2 (CAS 03-08-002-A302)
AT TTR AREA 3 LANDFILL COMPLEX (CAU 424)

CAU Use Restriction Information

CAU Number/Description: CAU 424 (Area 3 Landfill Complex, Tonopah Test Range, NV)

Applicable CAS Numbers/Descriptions: CAS No. 03-08-002-A303 (Landfill A3-3)

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTMs):

4,182,253.25 mN, 521,263.47 mE;
4,182,224.02 mN, 521,296.29 mE;
4,182,222.87 mN, 521,299.12 mE;
4,182,221.02 mN, 521,296.85 mE;
4,182,220.35 mN, 521,263.33 mE;
4,182,192.94 mN, 521,263.94 mE;
4,182,197.99 mN, 521,242.80 mE;
4,182,226.89 mN, 521,246.48 mE;
4,182,255.17 mN, 521,250.13 mE.

Survey Date 11/20/1998 **Survey Method (GPS, etc.)** GPS **Datum** NAD 83

Site Monitoring Requirements: Visual inspection as specified by the closure documentation

Required Frequency (quarterly, annually?): inspections biannually to commence six months after the closure concurrence date

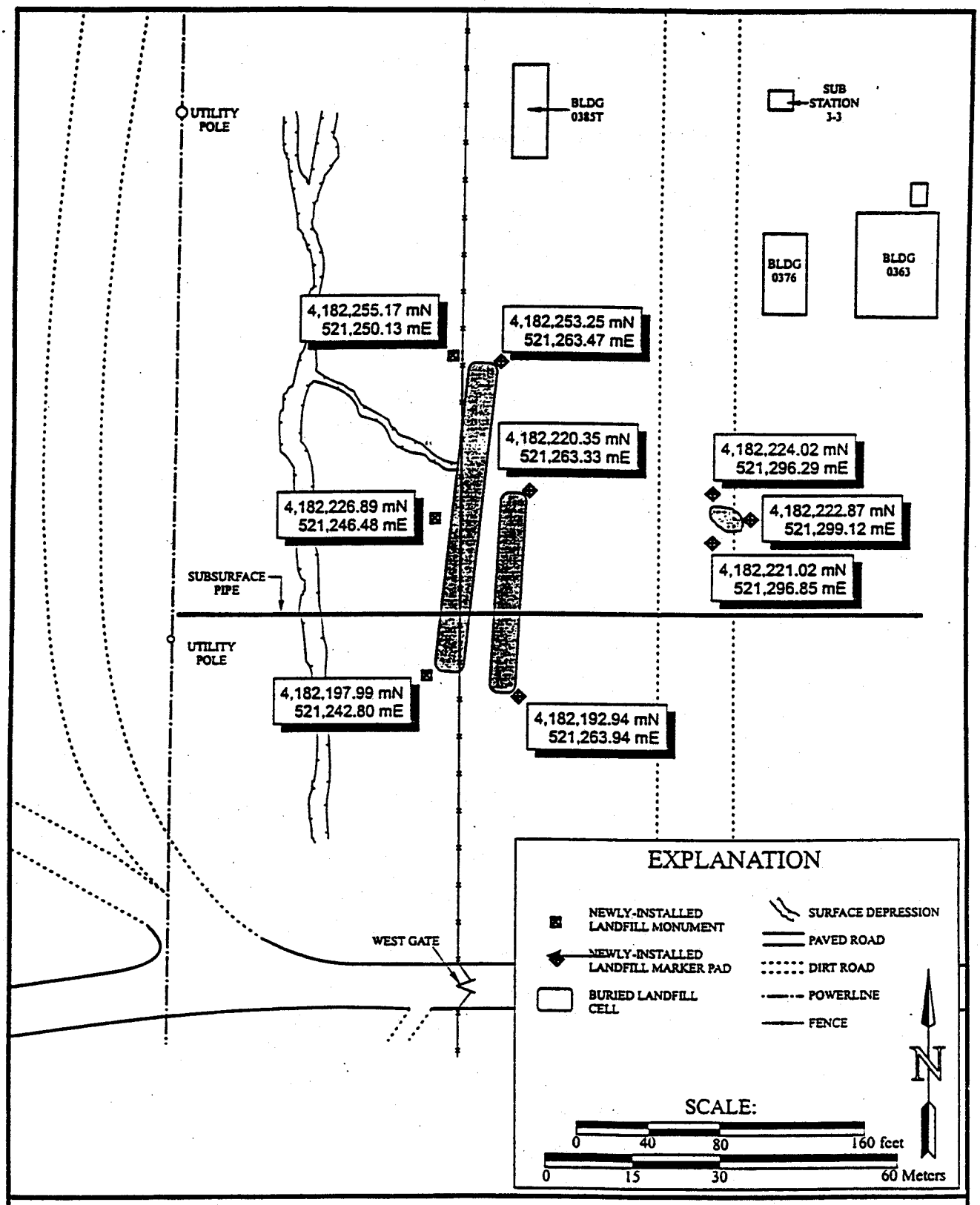
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: Kevin Cabble **Date:** 4/28/99

Attachments: Survey Map



USE RESTRICTION COORDINATES (UTM NAD83)
FOR LANDFILL A3-3 (CAU 03-08-002-A303)
AT TTR AREA 3 LANDFILL COMPLEX (CAU 424)

CAU Use Restriction Information

CAU Number/Description: CAU 424 (Area 3 Landfill Complex, Tonopah Test Range, NV)

Applicable CAS Numbers/Descriptions: CAS No. 03-08-002-A304 (Landfill A3-4)

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTMs):

4,181,596.45 mN, 521,123.78 mE;
4,181,538.98 mN, 521,116.48 mE;
4,181,442.33 mN, 521,080.25 mE;
4,181,444.21 mN, 521,067.64 mE;
4,181,543.36 mN, 521,082.89 mE;
4,181,609.04 mN, 521,094.90 mE.

Survey Date 11/20/1998 **Survey Method (GPS, etc.)** GPS **Datum** NAD 83

Site Monitoring Requirements: Visual inspection as specified by the closure documentation

Required Frequency (quarterly, annually?): inspections biannually to commence six months after the closure concurrence date

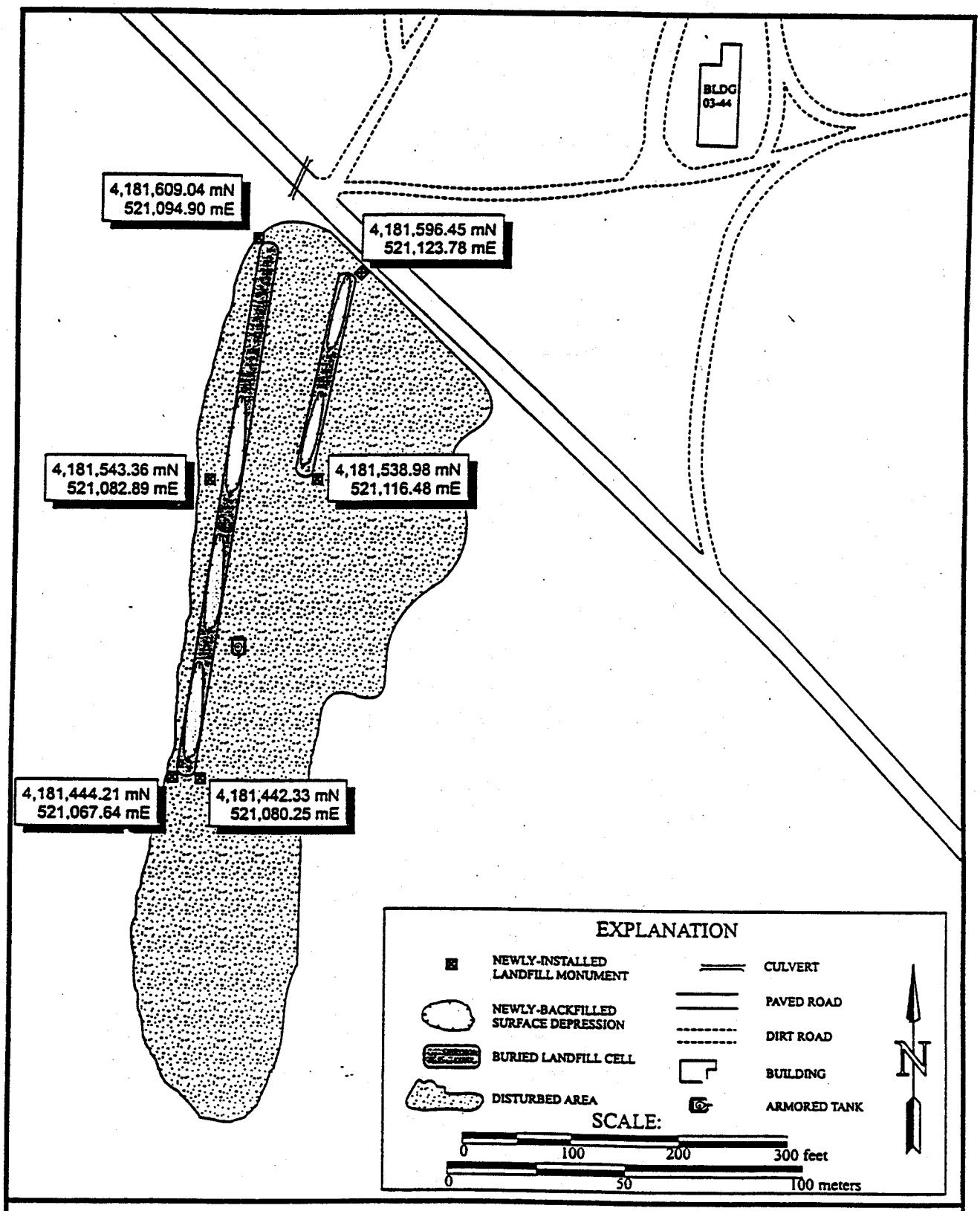
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: Kevin Cabble **Date:** 4/28/99

Attachments: Survey Map



USE RESTRICTION COORDINATES (UTM NAD83)
FOR LANDFILL A3-4 (CAU 03-08-002-A304)
AT TTR AREA 3 LANDFILL COMPLEX (CAU 424)

CAU Use Restriction Information

CAU Number/Description: CAU 424 (Area 3 Landfill Complex, Tonopah Test Range, NV)

Applicable CAS Numbers/Descriptions: CAS No. 03-08-002-A305 (Landfill A3-5)

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTMs):

4,182,315.03 mN, 520,893.95 mE;
4,182,280.16 mN, 520,905.57 mE;
4,182,272.93 mN, 520,885.12 mE;
4,182,307.28 mN, 520,872.73 mE.

Survey Date 11/20/1998 **Survey Method (GPS, etc.)** GPS **Datum** NAD 83

Site Monitoring Requirements: Visual inspection as specified by the closure documentation

Required Frequency (quarterly, annually?): inspections biannually to commence six months after the closure concurrence date

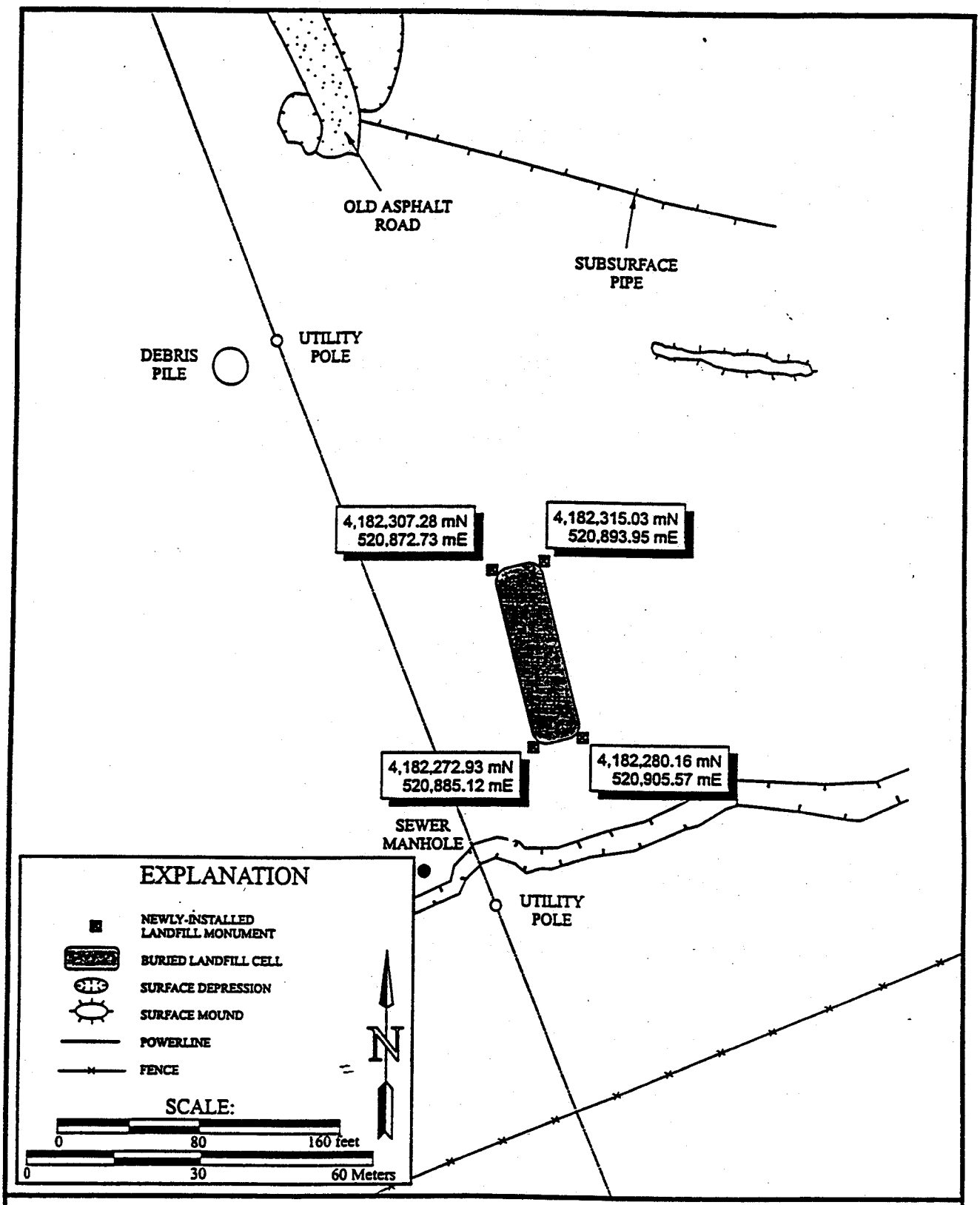
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: Kevin Cabble **Date:** 4/28/99

Attachments: Survey Map



USE RESTRICTION COORDINATES (UTM NAD83)
FOR LANDFILL A3-5 (CAS 03-08-002-A305)
AT TTR AREA 3 LANDFILL COMPLEX (CAU 424)

CAU Use Restriction Information

CAU Number/Description: CAU 424 (Area 3 Landfill Complex, Tonopah Test Range, NV)

Applicable CAS Numbers/Descriptions: CAS No. 03-08-002-A306 (Landfill A3-6)

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTMs):

4,182,278.68 mN, 521,167.02 mE;
4,182,246.08 mN, 521,161.02 mE;
4,182,230.93 mN, 521,138.17 mE;
4,182,284.90 mN, 521,143.22 mE.

Survey Date 11/20/1998 **Survey Method (GPS, etc.)** GPS **Datum** NAD 83

Site Monitoring Requirements: Visual inspection as specified by the closure documentation

Required Frequency (quarterly, annually?): inspections biannually to commence six months after the closure concurrence date

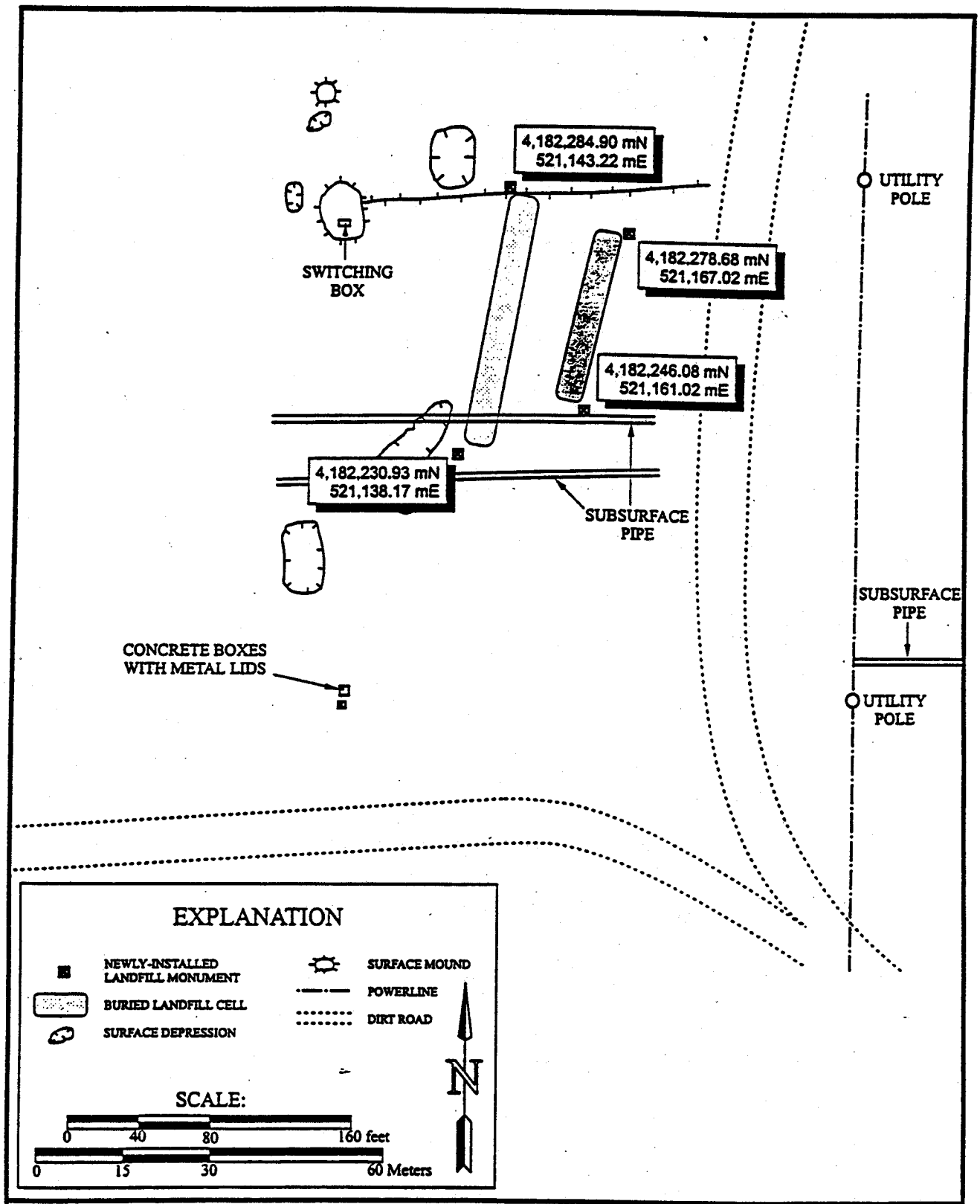
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: Kevin Cabble **Date:** 4/28/99

Attachments: Survey Map



USE RESTRICTION COORDINATES (UTM NAD83)
FOR LANDFILL A3-6 (CAU 03-08-002-A306)
AT TTR AREA 3 LANDFILL COMPLEX (CAU 424)

CAU Use Restriction Information

CAU Number/Description: CAU 424 (Area 3 Landfill Complex, Tonopah Test Range, NV)

Applicable CAS Numbers/Descriptions: CAS No. 03-08-002-A308 (Landfill A3-8)

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTMs):

4,181,867.55 mN, 521,189.63 mE;
4,181,813.37 mN, 521,163.36 mE;
4,181,837.60 mN, 521,131.12 mE;
4,181,876.58 mN, 521,172.29 mE.

Survey Date 11/20/1998 **Survey Method (GPS, etc.)** GPS **Datum** NAD 83

Site Monitoring Requirements: Visual inspection as specified by the closure documentation

Required Frequency (quarterly, annually?): inspections biannually to commence six months after the closure concurrence date

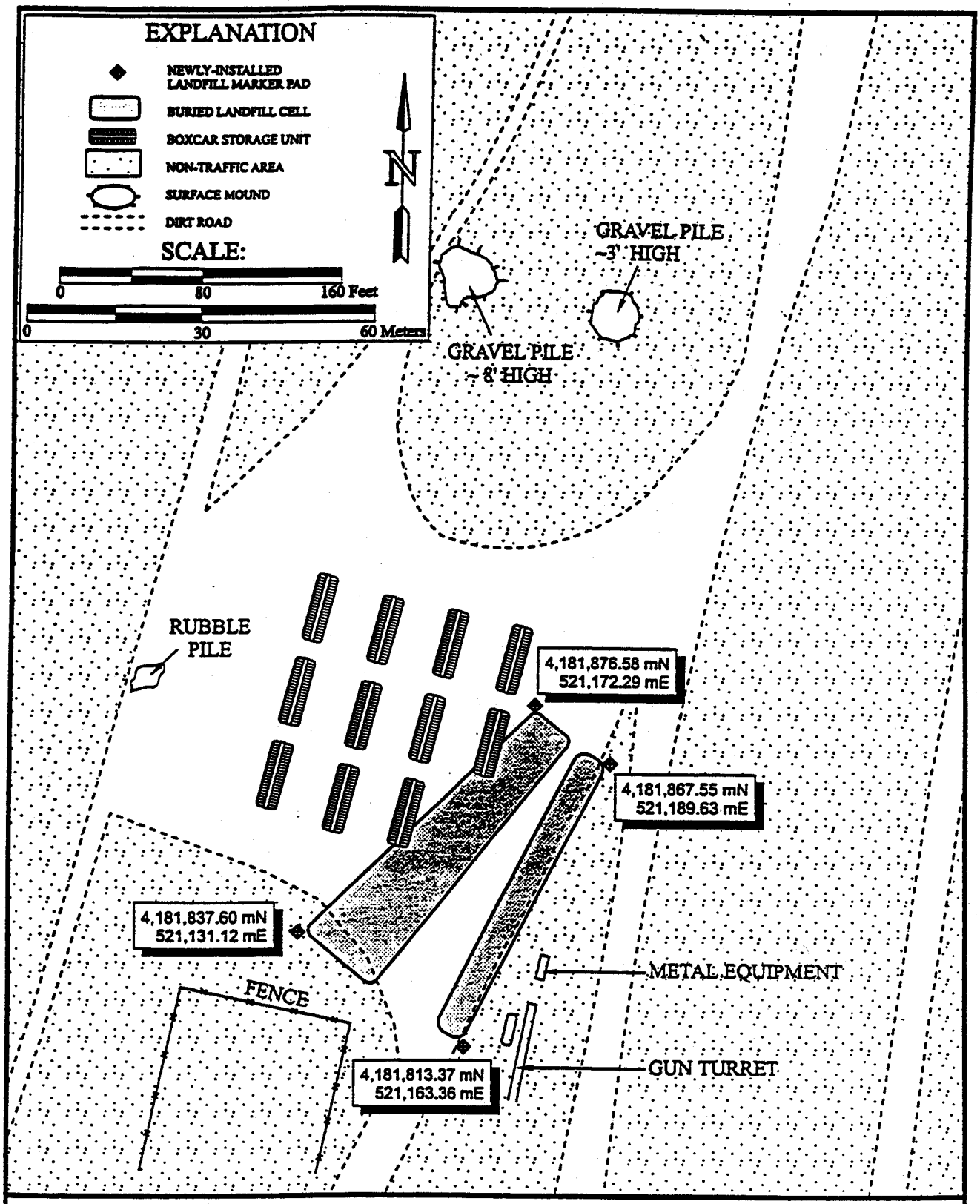
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: Kevin Cabble **Date:** 4/28/99

Attachments: Survey Map



USE RESTRICTION COORDINATES (UTM NAD83)
FOR LANDFILL A3-8 (CAS 03-08-002-A308)
AT TTR AREA 3 LANDFILL COMPLEX (CAU 424)

USAF RECORDATION OF CAU 424

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 99TH AIR BASE WING (ACC)
NELLIS AIR FORCE BASE, NEVADA

Ms. Eloisa Hopper
Director, Environmental Management
4349 Duffer Drive, Suite 1601
Nellis AFB NV 89191-7007

1 Jul 99

Ms. Runore C. Wycoff
Director, Environmental Restoration Branch
DOE Nevada Operations Office
P.O. Box 98518
Las Vegas NV 89193-8518

RECORDATION OF CORRECTIVE ACTION UNIT (CAU) 424

Nellis Air Force Base (Nellis) has recorded the U.S. Department of Energy's Use Restriction Information for Corrective Action Unit (CAU) 424. The information was placed in the Geographic Information System at the Range Management Office, Nellis.

Please contact me at 652-4123 if you have any questions.

Sincerely,

Eloisa V. Hopper
ELOISA HOPPER
Director, Environmental Management

cc:
NDEP
HQ AWC RMO/RML
HQ AWFC/JAV

APPENDIX F

POST-CLOSURE INSPECTION CHECKLIST

AREA 3 LANDFILL COMPLEX, POST-CLOSURE INSPECTION CHECKLIST

Date of Last Inspection:	Reason for Last Inspection:
Responsible Agency:	Project Manager:
Inspection Date:	
Inspector (name, title, organization):	
Assistant Inspector (name, title, organization):	

A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is made. Attach the additional pages and number all pages upon completion of the inspection.
3. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, annotated site maps.
4. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to inspect the entire surface and all features specifically described in this checklist.
5. A standard set of color 35mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
6. This unit will be inspected biannually with formal reporting to the Nevada Division of Environmental Protection to be done annually. The annual report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.			
2. Previous inspection reports reviewed.			
a. Were anomalies or trends detected on previous inspections?			
b. Was maintenance performed?			
3. Site maintenance and repair records reviewed.			
a. Has site repair resulted in a change from as-built conditions?			
b. Are revised as-builts available that reflect repair changes?			

C. SITE INSPECTION (To be completed during inspection)	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?			
b. Are there any new roads or trails?			
c. Has there been a change in the position of nearby washes?			
d. Has there been lateral excursion or erosion/deposition of nearby washes?			
e. Are there new drainage channels?			
f. Change in surrounding vegetation?			
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?			
b. Have any signs been damaged or removed? (Number of signs replaced: _____)			
c. Were gates locked?			

AREA 3 LANDFILL COMPLEX, POST-CLOSURE INSPECTION CHECKLIST

3. Waste Unit cover.	YES	NO	EXPLANATION
a. Is there evidence of settling?			
b. Is there cracking?			
c. Is there evidence of erosion around the cap (wind or water)?			
d. Is there evidence of animal burrowing?			
e. Have the site markers been disturbed by man or natural processes?			
f. Is the vegetation on the cover?			
g. Do natural processes threaten to integrity of any cover or site marker?			
h. Other?			
4. Photo Documentation			
a. Has a photo log been prepared?			
c. Number of photos exposed ( )			

D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)			
Person/Agency to whom report made:			
2. Are more frequent inspections required?			
3. Are existing maintenance/repair actions satisfactory?			
4. Is other maintenance/repair necessary?			
5. Is current status/condition of vegetative cover satisfactory?			

6. Rationale for field conclusions:

E. CERTIFICATION

I have conducted an inspection of the Area 3 Landfill Complex, CAU 424, at the TTR in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature:	Printed Name:
Title:	Date:

APPENDIX G

NDEP DOCUMENT REVIEW SHEET

DOCUMENT REVIEW SHEET

1. Document Title/Number: Draft Closure Report for Corrective Action Unit 424: Area 3 Landfill Complex, Tonopah Test Range, Nevada, December 1998
2. Document Date: December 1998
3. Revision Number: 0
4. Originator/Organization: Curtis Obi, Bechtel Nevada Environmental Restoration
5. Date Comments Due: January 7, 1999
6. Reviewer/Organization: Nevada Division of Environmental Protection (NDEP)

7. Comment Number/ Location	8. Type[a]	9. Comment	10. Comment Response	11. Accept
1	M	Page 12, bullet item 2 and 3. There appears to be a discrepancy between these two bullets with respect to 03-80-002-A307. The Landfill either had action taken or didn't, not both. Also, bullet 2 makes reference to 03-80-002-A309. There were only eight landfills and this is probably a typographical error.	Text in second bullet of Section 1.2 has been revised with the following changes: 03-80-002-A307 has been removed because it was mistakenly included; 03-80-002-A309 does not exist and has been corrected to 03-80-002-A308.	Yes
2	M	Page 16. The decisions above need to be consistent with what is reported in table 2.	Revisions in response to Comment 1 are now consistent with Table 2.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

7. Comment Number/ Location	8. Type[a]	9. Comment	10. Comment Response	11. Accept
3	M	Page 20. This page discusses "average" density and compaction. While averages are important to give an overall picture of the site, high and low values are critical to making decisions that are in line with regs.	Text in Section 2.1.2.2 has been revised and geotechnical results are now only discussed in Section 4 where the range of field compaction results for each test location are presented.	Yes
4	M	Page 28. The permeability results in Table 5 need to be presented consistently with information presented in previous documents. Depth is a factor to be considered when discussing permeability and reporting values. It should be demonstrated that the adjacent soil is more permeable that the caps otherwise, the caps on the landfills appear to be less protective and actually create a "sponge" effect. Also, include a discussion as to why it may be acceptable to provide less protection than the minimum regulatory requirements that were proposed to be utilized as guidance in closure of this site.	Appropriate permeability results from the CADD have been added to Table 5 and are included in the Section 4 permeability discussion which states that, except for Landfill A3-3, the permeabilities of existing landfill covers are less than, or comparable to, the permeabilities of adjacent native soils, indicating that preferential infiltration over the waste cells is unlikely. For Landfill A3-3, the discussion states that the potential for preferential infiltration at Landfill A3-3 was minimized with the construction of a shallow drainage channel to divert surface water run on.	Yes

a. Comment Types: M=Mandatory S=Suggested

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DISTRIBUTION LIST

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