Appendix A

Black Eagle Geotechnical Report

(Compact Disc, Portable Document Format)

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Geotechnical & Construction Services Reno, Nevada 89502-7140 Facsimile: 775/359-7766

Mr. Rich Mattucci
Brown and Caldwell
3264 Goni Road, Suite 153
Carson City, Nevada 89706

June 9, 2010
Project No.: 0155-21-1

RE: Summary of Site Sampling and Materials Testing – Evaporation Pond Interim Removal Acton for the Thumb Pond and Sub Area A
Yerington Mine Site
Yerington, Nevada

Dear Mr. Mattucci:

Black Eagle Consulting, Inc. is pleased to present the results of our site sampling and materials testing performed at the Yerington Mine site in Yerington, Nevada.

Field Sampling and Testing

Sampling of the north Vat Leach Tailings (VLT) borrow materials proposed for use as tailings capping material was performed in May 2009 by excavating 5 test pits, while sampling of the south VLT borrow materials was performed in August 2009 by excavating 6 test pits. Additional sampling of the south borrow materials was performed in May 2010 by excavating 4 additional test pits. The locations of the test pits are shown on the attached Plate 1 - Sampling Locations. Test pitting was accomplished using a John Deere® 160LC trackhoe to a maximum depth of approximately 20 feet below existing grade. Bulk samples for index testing were collected from excavation spoils obtained at specific depths in each material horizon. Due to the depth of the test pit and associated safety concerns, the depth to changes in stratigraphy and total depth of excavation in VLT borrow material could only be approximated.

During the 2009 test pit excavation within the VLT borrow material, representative material excavated from the test pit was spread out in a single approximate 18-inch-thick loose lift adjacent to the test pit and subjected to approximately 4 passes by the trackhoe. Nuclear density testing was then performed on the completed pads.

A geologist examined and identified all soils in the field in accordance with American Society for Testing and Materials (ASTM) D 2488. During test pitting, representative bulk samples were placed in sealed plastic bags and returned to our Reno, Nevada laboratory for possible testing. Additional soil classification was subsequently performed in accordance with ASTM 2487 (Unified Soil Classification System [USCS]) upon completion of laboratory testing as described below. Logs of the test pits are presented as Plate 2 - Test Pit Logs, and a USCS chart has been included as Plate 3 - Graphic Soils Classification Chart.

Field testing within the limits of the Red pond was performed using a nuclear density gauge to determine the in situ moisture content and dry density of the material present at the ground surface at each test location. Vane shear testing was also performed at the surface of each test location in order to document the in situ shear strength of the material.

A summary of the sampling locations and field testing is presented in Table 1 – VLT Borrow and Red Pond Materials Sampling Summary.

TABLE 1 – VLT BORROW AND RED POND MATERIALS SAMPLING SUMMARY

Test Location	Location Designation	Test Depth (Inches)	Moisture Content (%)	Dry Density (pcf)	Vane Shear Value	Shear Strength (kPa)	Shear Strength (psi)	UTM Coordinates	
								Northings	Eastings
Red Pond (RP)	RP-01	6	82.4	49.1	15	23	3	4,319,296	309,947
	RP-02	6	68.2	58.1	21	32	5	4,319,290	309,991
	RP-03	6	51.0	77.4	23	35	5	4,319,250	309,996
	RP-04	6	68.4	57.4	35	53	8	4,319,224	309,982
	RP-05	6	71.3	54.9	34	51	7	4,319,219	309,927
	RP-06	6	35.3	61.7	30	45	7	4,319,255	309,940
	RP-07	6	35.6	61.2	8	12	2	4,319,287	309,958
	RP-08	4	32.5	60.6	10	15	2	4,319,273	309,949
	RP-09	4	36.4	64.9	4	6	1	4,319,268	309,976
	RP-10	6	34.4	54.9	21	32	5	4,319,271	309,997
	RP-11	4	33.2	62.0	24	36	5	4,319,246	309,970
VLT Borrow Materials									
North Area - Lower Bench	Test Pit (TP)-01 OX	6*	5.2	111.1	NT	NT	NT	4,320,056	308,481
		12*	5.2	113.0	NT	NT	NT		
	TP-02 OX	6*	7.1	98.5	NT	NT	NT	4,320,172	308,386
		12*	5.4	114.3	NT	NT	NT		
North Area - Middle Bench	TP-03 OX	6*	6.4	104.3	NT	NT	NT	4,319,981	308,410
		12*	5.6	109.5	NT	NT	NT		
North Area - Upper Bench	TP-04 OX	6*	5.2	113.6	NT	NT	NT	4,319,915	308,358
		12*	4.7	117.6	NT	NT	NT		
	TP-05 OX	6*	5.2	113.2	NT	NT	NT	4,320,072	308,289
		12*	4.9	115.9	NT	NT	NT		
South Area	TP-06 OX	6*	5.7	115.1	NT	NT	NT	4,319,175	308,710
		12*	5.5	118.5	NT	NT	NT		
	TP-07 OX	6*	5.9	120.8	NT	NT	NT	4,319,204	308,674
		10*	6.0	121.3	NT	NT	NT		
	TP-08 OX	6*	6.2	114.0	NT	NT	NT	4,319,245	308,644
		12*	5.7	116.4	NT	NT	NT		
	TP-09 OX	6*	6.7	113.4	NT	NT	NT	4,319,307	308,601
		12*	6.4	119.1	NT	NT	NT		
	TP-10 OX	6*	5.0	121.6	NT	NT	NT	4,319,282	308,702
		12*	5.0	123.5	NT	NT	NT		
	TP-11 OX	6*	5.7	118.8	NT	NT	NT	4,319,328	308,716
		12*	5.7	122.8	NT	NT	NT		
	TP-12 OX	NT	NT	NT	NT	NT	NT	4,319,464	308,253
	TP-13 OX	NT	NT	NT	NT	NT	NT	4,319,421	308,223
	TP-14 OX	NT	NT	NT	NT	NT	NT	4,319,438	308,199
	TP-15 OX	NT	NT	NT	NT	NT	NT	4,319,487	308,218

NR = Not Recorded
NT = Not Tested
NM = Not Measured
* Test performed on 18-inch section of oxide tailings material spread out and compacted by 4 passes of a John Deere® 160LC trackhoe.
**Reading influenced by density of underlying asphalt liner.

Laboratory Testing

All soils testing performed in the Black Eagle Consulting, Inc. soils laboratory is conducted in accordance with the standards and methodologies described in Volume 4.08 of the ASTM standards.

Representative samples of the VLT borrow materials were analyzed to determine their in situ moisture content (ASTM D 2216), grain size distribution (ASTM D 422), and plasticity index (ASTM D 4318). Test results were used to classify the soils

according to ASTM D 2487 and to verify field logs, which were then updated as appropriate. Classification in this manner provides an indication of the soil's mechanical properties. Results of these tests are shown on Plate 4 - Index Test Results.

Moisture-density relationship tests (ASTM D 1557) were performed on representative samples of the VLT borrow materials. The maximum density shown by this test is compared with field densities to determine the percent relative compaction. The moisture density curves are included as Plate 5 - Moisture-Density Relationship Test Results.

Specific gravity tests (ASTM D 5550) were performed on representative samples of VLT borrow materials to aid in hydrometer of these materials. Test results are presented in Table 2 – VLT Borrow Materials Laboratory Test Summary.

A summary of all the laboratory testing performed on the VLT borrow materials is shown in Table 2.

TABLE 2 – VLT BORROW MATERIALS LABORATORY TEST SUMMARY

Sample Identification and Location Test Pit (TP) No.	Sample Depth (ft)	Sample No.	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	% < #200 Sieve	Max. Size (mm)	Water Content (%)	Max. Dry Density (pcf)	Optimum Moisture Content (%)	Specific Gravity	USCS Classification
TP-01 OX	0.0	Bulk	27	20	7	9	19	5.7	135.0	5.9	2.587	SP-SC
TP-01 OX	5.0	A	28	16	12	8	19	5.2				SP-SC
TP-02 OX	20.0	D	29	18	11	9	19	6.5			2.667	GP-GC
TP-03 OX	0.0	Bulk	28	19	9	11	19	6.4	136.2	5.1	2.636	SP-SC
TP-03 OX	10.0	B	31	18	13	10	19	6.8				SP-SC
TP-04 OX	15.0	C	28	20	8	9	19	7.1				GP-GC
TP-05 OX	0.0	Bulk	27	20	7	12	19	6.4	136.8	5.4	2.643	SP-SC
TP-06 OX	0.0	Bulk	28	20	8	14	19	4.2	131.8	7.1		SC
TP-07 OX	10	C	29	19	10	12	19	5.7				SC
TP-08 OX	5	B	31	19	12	12	19	5.8				SP-SC
TP-09 OX	0.0	Bulk	28	22	6	11	19	4.6	133.9	8.4		GP-GC
TP-10 OX	15	D	28	16	12	10	19	6.9				GP-GC
TP-11 OX	0.0	Bulk	31	19	12	12	19	6.0	133.3	8.9		SC
TP-12 OX	0.0	Bulk	25	19	6	11	19	6.8	129.6	9.4		SP-SC
TP-13 OX	0.0	Bulk	27	16	11	11	19	6.9	135.0	8.9		SP-SC
TP-14 OX	0.0	Bulk	26	20	6	12	19	7.5	136.0	7.4		SC-SM
TP-15 OX	0.0	Bulk	25	17	8	11	19	6.7	136.2	8.8		GP-GC

Seismic Design Criteria

The 2006 *International Building Code* (ICC, 2006), adopted by the City of Yerington, requires a detailed soils evaluation to a depth of 100 feet to develop appropriate soils criteria. However, the code states that a Site Class D may be used as a default value when the soil properties are not known in sufficient detail to determine the soil profile type. The Site Class D soil profile is for stiff soils with a shear velocity between 600 and 1,200 feet per second, or with an N (Standard Penetration Test [SPT])

value between 15 and 50 or an undrained shear strength between 1,000 and 2,000 pounds per square foot (psf). Based on our experience and the geology at the Yerington mine site, it is our opinion that the default Site Class D is appropriate. With that assumption, the recommended seismic design criteria follow:

TABLE 3 – SEISMIC DESIGN CRITERIA USING 2006 *INTERNATIONAL BUILDING CODE* (USGS, 2007)	
Approximate Latitude	39.00
Approximate Longitude	-119.20
Spectral Response at Short Periods, S_s, percent of gravity	1.246
Spectral Response at 1-Second Period, S_1, percent of gravity	0.478
Site Class	D
Site Coefficient F_a, decimal	1.00
Site Coefficient F_v, decimal	1.32
Site Adjusted Spectral Response at Short Periods, S_{MS}, percent of gravity	1.246
Site Adjusted Spectral Response at Long Periods, S_{M1}, percent of gravity	0.632

Closing

This report has been prepared with generally accepted geotechnical practices. The information submitted is based upon field exploration performed at the locations described in this letter-report. This report does not reflect soils or ground water variations that may be evident during the construction period. We recommend our firm be retained to perform construction observation in all phases of the project related to geotechnical factors. The owner shall be responsible for distribution of this geotechnical investigation to all designer and contractors whose work is related to geotechnical factors.

We appreciate being of service to you on this project. If you have any questions, or require additional information or clarification, please do not hesitate to contact us.

Sincerely,

Black Eagle Consulting, Inc.

PROFESSIONAL ENGINEER-STATE OF NEVADA
PATRICK A. PILLING
6-9-10
CIVIL
No. 9153
Exp 12-31-11

Patrick A. Pilling, Ph.D., P.E., D.GE.
President

PAP:mrc/lmk

Enclosures: Plate 1 – Sampling Locations
Plate 2 – Test Pit Logs
Plate 3 – Graphic Soils Classification Chart
Plate 4 – Index Test Results
Plate 5 – Moisture-Density Relationship Test Results

Copies to: Addressee (3 copies and PDF via email)

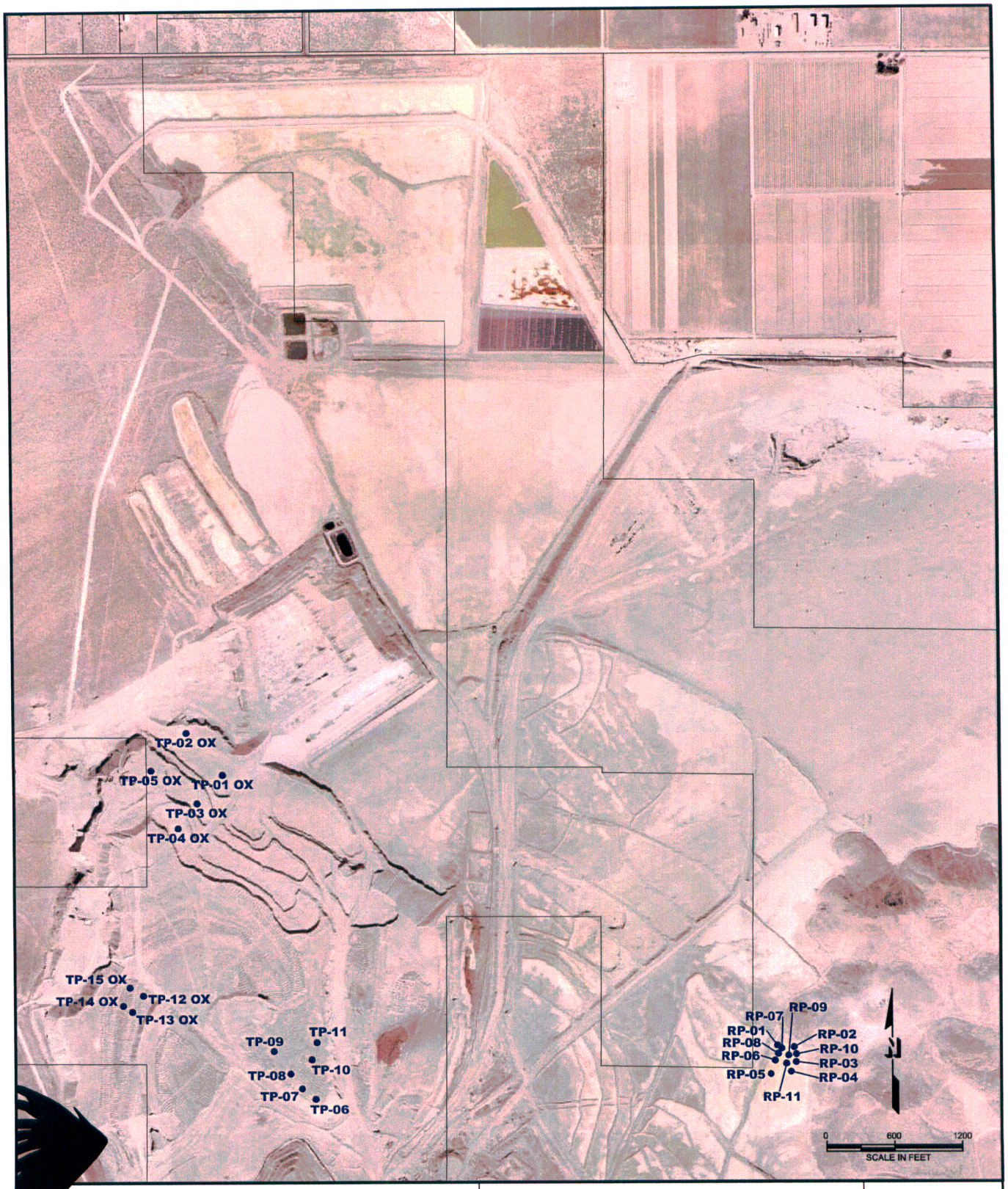
References:

American Society for Testing and Materials (ASTM), 2005, *Soil and Rock; Dimension Stone; Geosynthetics*, Volume 4.08.

International Code Council (ICC), 2006, *International Building Code*.

United States Geological Survey (USGS), 2007, *Earthquake Ground Motion Parameters*, Version 5.0.8.

PLATES



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Brown & Caldwell

Sample Locations

Yerington Mine

Yerington, Nevada

Project No.
0155-21-1

Plate 1

TEST PIT LOG

TEST PIT NO.: TP-01 OX

DATE: 5/27/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
					2, 4	SP-SC		0.0' - 5.0': **Poorly Graded Sand with Clay and Gravel** Brown, tan, dry to slightly moist, dense, with an estimated 10-15% non-plastic to low plasticity fines, 45-50% fine to coarse sand, and 35-40% fine to coarse angular gravel.
A	GRAB		5.2	12	6, 8, 10, 12, 14, 16, 18, 20	SP-SC		5.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with 5-10% medium plasticity fines, 45-50% fine to coarse sand, and 40-45% fine to coarse angular gravel.
B	GRAB							
C	GRAB							
D	GRAB							

Excavated in the Oxide Tailings.
N 4320056 E 308481 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-02 OX

DATE: 5/27/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
					2, 4	SP-SC		0.0' - 5.0': **Poorly Graded Sand with Clay and Gravel** Brown, tan, dry to slightly moist, dense, with an estimated 10-15% non-plastic to low plasticity fines, 45-50% fine to coarse sand, and 35-40% fine to coarse angular gravel.
A	GRAB				6, 8, 10, 12, 14	SP-SC		5.0' - 15.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-10% medium plasticity fines, 45-50% fine to coarse sand, and 40-45% fine to coarse angular gravel.
B	GRAB							
C	GRAB				16, 18	GP-GC		15.0' - 20.0': **Poorly Graded Gravel with Clay and Sand** Brown, slightly moist, very dense, with 5-10% medium plasticity fines, 30-35% fine to coarse sand, and 55-60% angular gravel.
D	GRAB		6.5	11	20			

Excavated in the Oxide Tailings.
N 4320172 E 308386 UTM NAD83

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VLT Borrow Materials

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PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-03 OX

DATE: 5/28/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
					2, 4, 6, 8, 10, 12, 14, 16, 18, 20	SP-SC		0.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
A	GRAB							
B	GRAB		6.8	13				
C	GRAB							
D	GRAB							

Excavated in the Oxide Tailings.
N 4319981 E 308410 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-04 OX

DATE: 5/28/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
					2, 4			0.0' - 12.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
A	GRAB				6	SP-SC		
					8			
B	GRAB				10			
					12			12.0' - 20.0': **Poorly Graded Gravel with Clay and Sand** Brown, slightly moist, very dense, with 5-10% medium plasticity fines, 40-45% fine to coarse sand, and 45-50% angular gravel.
					14			
C	GRAB		7.1	8	16	GP-GC		
					18			
D	GRAB				20			

Excavated in the Oxide Tailings.
N 4319915 E 308358 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-05 OX

DATE: 5/28/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
					2, 4, 6, 8, 10, 12, 14	SP-SC		0.0' - 15.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
A	GRAB							
B	GRAB							
C	GRAB				16, 18	GP-GC		15.0' - 20.0': **Poorly Graded Gravel with Clay and Sand** Brown, slightly moist, very dense, with 5-10% medium plasticity fines, 40-45% fine to coarse sand, and 45-50% angular gravel.
D	GRAB				20			

Excavated in the Oxide Tailings.
N 4320072 E 308289 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-06 OX

DATE: 8/12/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
								0.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
A	GRAB				2			
					4			
B	GRAB				6			
					8			
					10	SP-SC		
C	GRAB				12			
					14			
D	GRAB				16			
					18			
					20			
E	GRAB							

Excavated in the Oxide Tailings. Bulk sample collected 0 - 20'.
N 4319175 E 308710 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-07 OX

DATE: 8/12/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
A	GRAB				2	SP-SC		0.0' - 11.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
					4			
B	GRAB				6			
					8			
					10			
C	GRAB				12	SP-SC		11.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-10% medium plasticity fines, 45-50% fine to coarse sand, and 40-45% fine to coarse angular gravel.
					14			
D	GRAB				16			
					18			
					20			
E	GRAB							

Excavated in the Oxide Tailings.
N 4319204 E 308674 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-08 OX

DATE: 8/12/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
A	GRAB				2			0.0' - 12.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
					4			
B	GRAB				6	SP-SC		
					8			
					10			
C	GRAB				12			
					14			12.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-10% medium plasticity fines, 45-50% fine to coarse sand, and 40-45% fine to coarse angular gravel.
D	GRAB				16	SP-SC		
					18			
					20			
E	GRAB							

Excavated in the Oxide Tailings.
N 4319245 E 308644 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-09 OX

DATE: 8/12/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
								0.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
A	GRAB				2			
					4			
B	GRAB				6			
					8			
					10	SP-SC		
C	GRAB				12			
					14			
D	GRAB				16			
					18			
					20			
E	GRAB							

Excavated in the Oxide Tailings. Bulk sample collected 0 - 20'.
N 4319307 E 308601 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-10 OX

DATE: 8/12/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
								0.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
A	GRAB				2			
					4			
B	GRAB				6			
					8			
					10	SP-SC		
C	GRAB				12			
					14			
D	GRAB				16			
					18			
					20			
E	GRAB							

Excavated in the Oxide Tailings.
N 4319282 E 308702 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-11 OX

DATE: 8/12/2009

TYPE OF HOE: Cat 160C LC

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
								0.0' - 20.0': **Poorly Graded Sand with Clay and Gravel** Brown, dark brown, slightly moist, very dense, with an estimated 5-15% medium plasticity fines, 40-50% fine to coarse sand, and 35-45% fine to coarse angular gravel.
A	GRAB				2			
					4			
B	GRAB				6			
					8			
					10	SP-SC		
C	GRAB				12			
					14			
D	GRAB				16			
					18			
					20			
E	GRAB							

Excavated in the Oxide Tailings. Bulk sample collected 0 - 20'.
N 4319328 E 308716 UTM NAD83

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Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-12 OX

DATE: 5/11/2010

TYPE OF HOE: John Deere 410 G

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
Bulk	BULK		6.8	6	0 – 10	SP-SC		0.0' - 10.0': **Poorly Graded Sand with Silty Clay and Gravel** Yellow, slightly moist, medium dense to dense, with an estimated 10% low plasticity fines, 50% fine to coarse sand, and 40% fine to medium angular gravel.
					10 – 14	SP-SC		10.0' - 14.0': **Poorly Graded Sand with Silty Clay and Gravel** Yellow, slightly moist, medium dense to dense, with an estimated 10% low plasticity fines, 60% fine to coarse sand, and 30% fine to medium angular gravel.

N 4319464 E 308253 UTM NAD83

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Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

BORING_LOG 0155211.GPJ BLKEAGLE.GDT 6/9/2010

TEST PIT LOG

TEST PIT NO.: TP-13 OX

DATE: 5/11/2010

TYPE OF HOE: John Deere 410 G

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
Bulk	BULK		6.9	11	2, 4, 6, 8, 10, 12, 14	SP-SC		0.0' - 14.0': **Poorly Graded Sand with Clay and Gravel** Yellow, slightly moist, medium dense to dense, with an estimated 10% medium plasticity fines, 50% fine to coarse sand, and 40% fine to medium angular gravel.
					16, 18, 20			

N 4319421 E 308223 UTM NAD83

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PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

TEST PIT LOG

TEST PIT NO.: TP-14 OX

DATE: 5/11/2010

TYPE OF HOE: John Deere 410 G

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
					2, 4, 6	SC-SM		0.0' - 6.5': **Silty, Clayey Sand with Gravel** Yellow, slightly moist, medium dense to dense, with an estimated 10% low plasticity fines, 50% fine to coarse sand, and 40% fine to medium angular gravel.
Bulk	BULK		7.5	6	8	SC		6.5' - 8.5': **Clayey Sand with Gravel** Yellow, slightly moist to dry, dense to very dense, with an estimated 20% medium plasticity fines, 50% fine to coarse sand, and 30% fine to medium angular gravel. Excavates with minor difficulty.
					10, 12, 14	SP-SC		8.5' - 14.5': **Poorly Graded Sand with Silty Clay and Gravel** Yellow, slightly moist, medium dense to dense, with an estimated 10% low plasticity fines, 50% fine to coarse sand, and 40% fine to medium angular gravel.
					16, 18, 20			

N 4319438 E 308199 UTM NAD83

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Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

TEST PIT LOG

TEST PIT NO.: TP-15 OX

DATE: 5/11/2010

TYPE OF HOE: John Deere 410 G

DEPTH TO GROUND WATER (ft): NE

LOGGED BY: SMM

GROUND ELEVATION (ft): NA

SAMPLE NO.	SAMPLE TYPE	PENETROMETER (tsf)	MOISTURE (%)	PLASTICITY INDEX	DEPTH (ft)	USCS SYMBOL	LITHOLOGY	DESCRIPTION
					2, 4	SP-SC		0.0' - 6.0': **Poorly Graded Sand with Silty Clay and Gravel** Yellow, slightly moist, medium dense to dense, with an estimated 10% low plasticity fines, 50% fine to coarse sand, and 40% fine to medium angular gravel. Occasional broken wood fragments.
Bulk	BULK		6.7	8	6	SC		6.0' - 7.5': **Clayey Sand with Gravel** Yellow, tan, slightly moist to dry, dense to very dense, with an estimated 20% medium plasticity fines, 50% fine to coarse sand, and 30% fine to medium angular gravel. Excavates with minor difficulty.
					8, 10, 12, 14	GP-GC		7.5' - 14.0': **Poorly Graded Gravel with Clay and Sand** Yellow, slightly moist, dense, with an estimated 10% low to medium plasticity fines, 40% fine to coarse sand, and 50% fine to medium angular gravel.
					16, 18, 20			

N 4319487 E 308218 UTM NAD83

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VLT Borrow Materials

Yerington, NV

PROJECT NO.: **0155-21-1**

PLATE: 2

SHEET 1 OF 1

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
FILL MATERIAL				— —	FILL MATERIAL, NON-NATIVE

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

EXPLORATION SAMPLE TERMINOLOGY

Sample Type	Sample Symbol	Sample Code
Auger Cuttings		Auger
Bulk (Grab) Sample		Grab
Modified California Sampler		MC
Shelby Tube		SH or ST
Standard Penetration Test		SPT
Split Spoon		SS
No Sample		

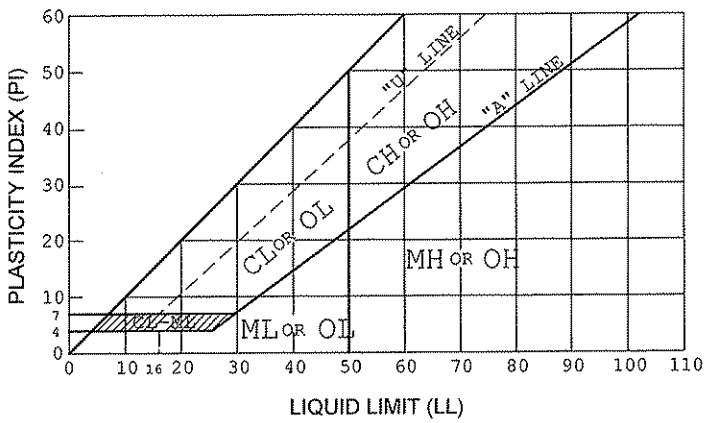
GRAIN SIZE TERMINOLOGY

Component of Sample	Size Range
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 2mm)
Sand	# 4 to #200 sieve (2mm to 0.074mm)
Silt or Clay	Passing #200 sieve (0.074mm)

RELATIVE DENSITY OF GRANULAR SOILS

N - Blows/ft	Relative Density
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
greater than 50	Very Dense

PLASTICITY CHART



FOR CLASSIFICATION OF FINE-GRAINED SOILS AND FINE-GRAINED FRACTION OF COARSE-GRAINED SOILS

CONSISTENCY OF COHESIVE SOILS

Unconfined Compressive Strength, psf	N - Blows/ft	Consistency
less than 500	0 - 1	Very Soft
500 - 1,000	2 - 4	Soft
1,000 - 2,000	5 - 8	Firm
2,000 - 4,000	9 - 15	Stiff
4,000 - 8,000	16 - 30	Very Stiff
8,000 - 16,000	31 - 60	Hard
greater than 16,000	greater than 60	Very Hard

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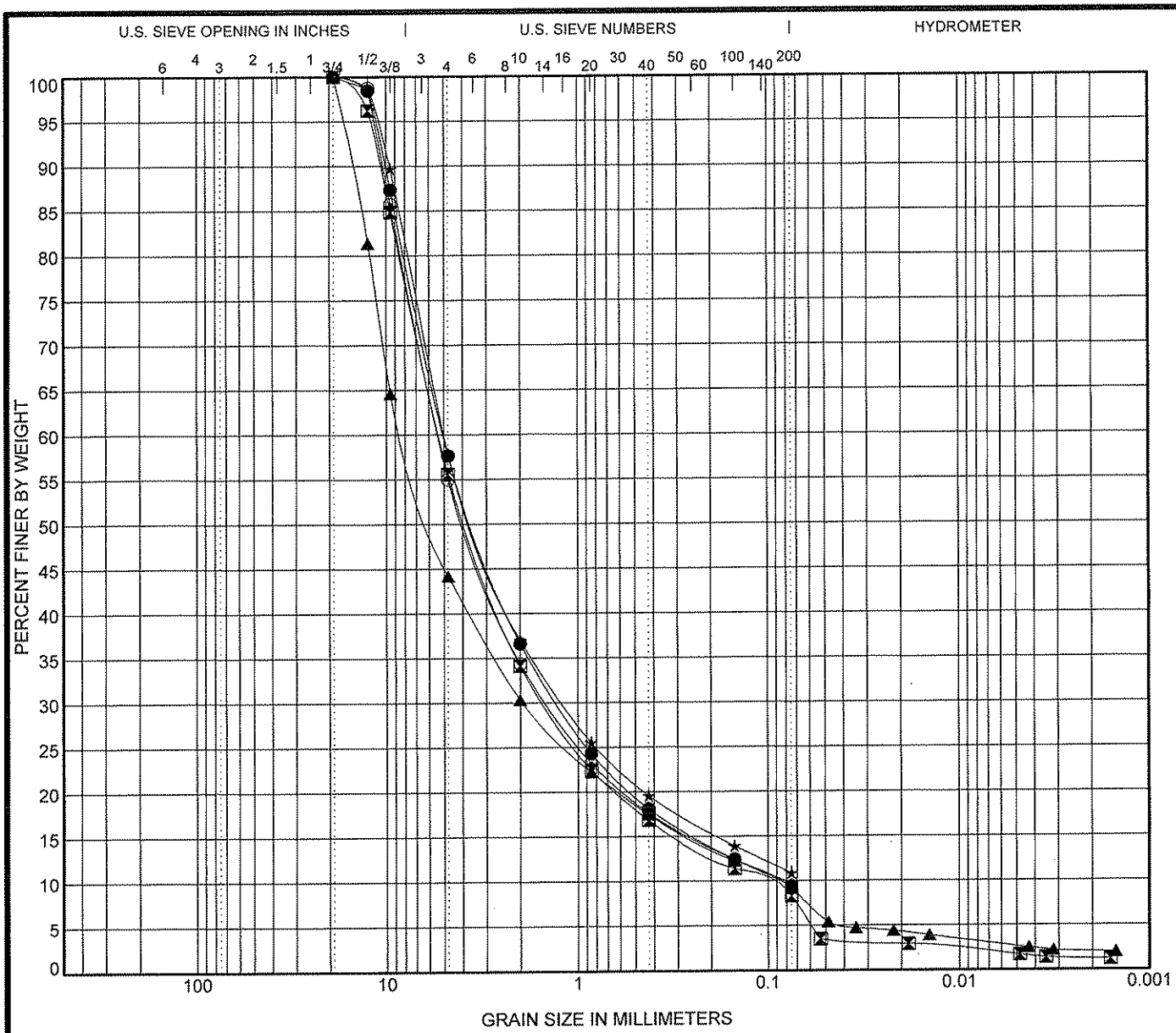
USCS Soil Classification Chart

Project: **VLT Borrow Materials**
Location: **Yerington, NV**
Project Number: **0155-21-1** Plate: 3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			USCS Classification	LL	PL	PI	Cc	Cu
●	TP-01 OX	0.0'	POORLY GRADED SAND with SILTY CLAY and GRAVEL (SP-SC)	27	20	7	3.70	58.51
⊠	TP-01 OX	5.0'	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)	28	16	12	3.79	48.17
▲	TP-02 OX	20.0'	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)	29	18	11	5.07	89.55
★	TP-03 OX	0.0'	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)	28	19	9	4.58	80.83
⊙	TP-03 OX	10.0'	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)	31	18	13	4.81	66.47

Specimen Identification			D100	D60	D30	D10	MC %	%Gravel	%Sand	%Silt	%Clay
●	TP-01 OX	0.0'	19	5.017	1.262	0.086	5.7	42.3	48.2	9.4	
⊠	TP-01 OX	5.0'	19	5.273	1.479	0.109	5.2	44.4	47.3	6.6	1.7
▲	TP-02 OX	20.0'	19	8.13	1.934	0.091	6.5	55.8	35.0	6.5	2.7
★	TP-03 OX	0.0'	19	4.981	1.186		6.4	42.2	46.9	10.9	
⊙	TP-03 OX	10.0'	19	5.318	1.431	0.08	6.8	45.0	45.2	9.8	

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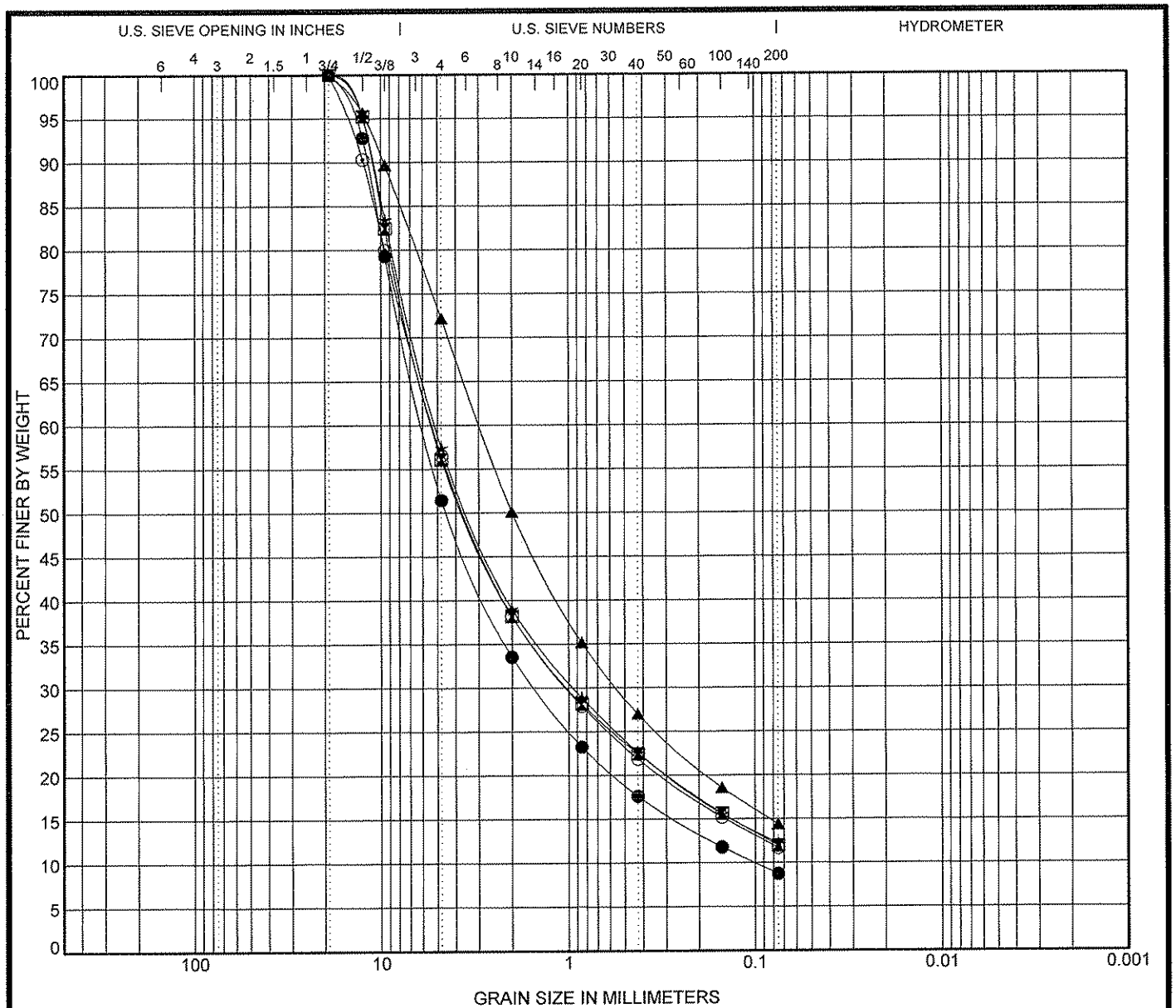
GRAIN SIZE DISTRIBUTION

Project: **VLT Borrow Materials**
Location: **Yerington, NV**
Project Number: **0155-21-1** Plate: 4a

US GRAIN SIZE2 0155211.GPJ US LAB.GDT 6/9/2010



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		USCS Classification	LL	PL	PI	Cc	Cu
●	TP-04 OX	15.0'	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)	28	20	8	3.77	58.75
⊠	TP-05 OX	0.0'	POORLY GRADED SAND with SILTY CLAY and GRAVEL (SP-SC)	27	20	7	3.64	101.88
▲	TP-06 OX	0.0'	CLAYEY SAND with GRAVEL (SC)	28	20	8		
★	TP-07 OX	10.0'	CLAYEY SAND with GRAVEL (SC)	29	19	10	3.62	107.54
⊙	TP-08 OX	5.0'	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)	31	19	12	3.62	98.46

	Specimen Identification		D100	D60	D30	D10	MC %	%Gravel	%Sand	%Silt	%Clay
●	TP-04 OX	15.0'	19	5.877	1.489	0.1	7.1	48.6	42.7	8.7	
⊠	TP-05 OX	0.0'	19	5.263	0.995		6.4	43.9	44.1	12.0	
▲	TP-06 OX	0.0'	19	2.95	0.549		4.2	27.8	57.8	14.4	
★	TP-07 OX	10.0'	19	5.09	0.934		5.7	42.6	45.2	12.2	
⊙	TP-08 OX	5.0'	19	5.263	1.009		5.8	43.5	44.8	11.7	

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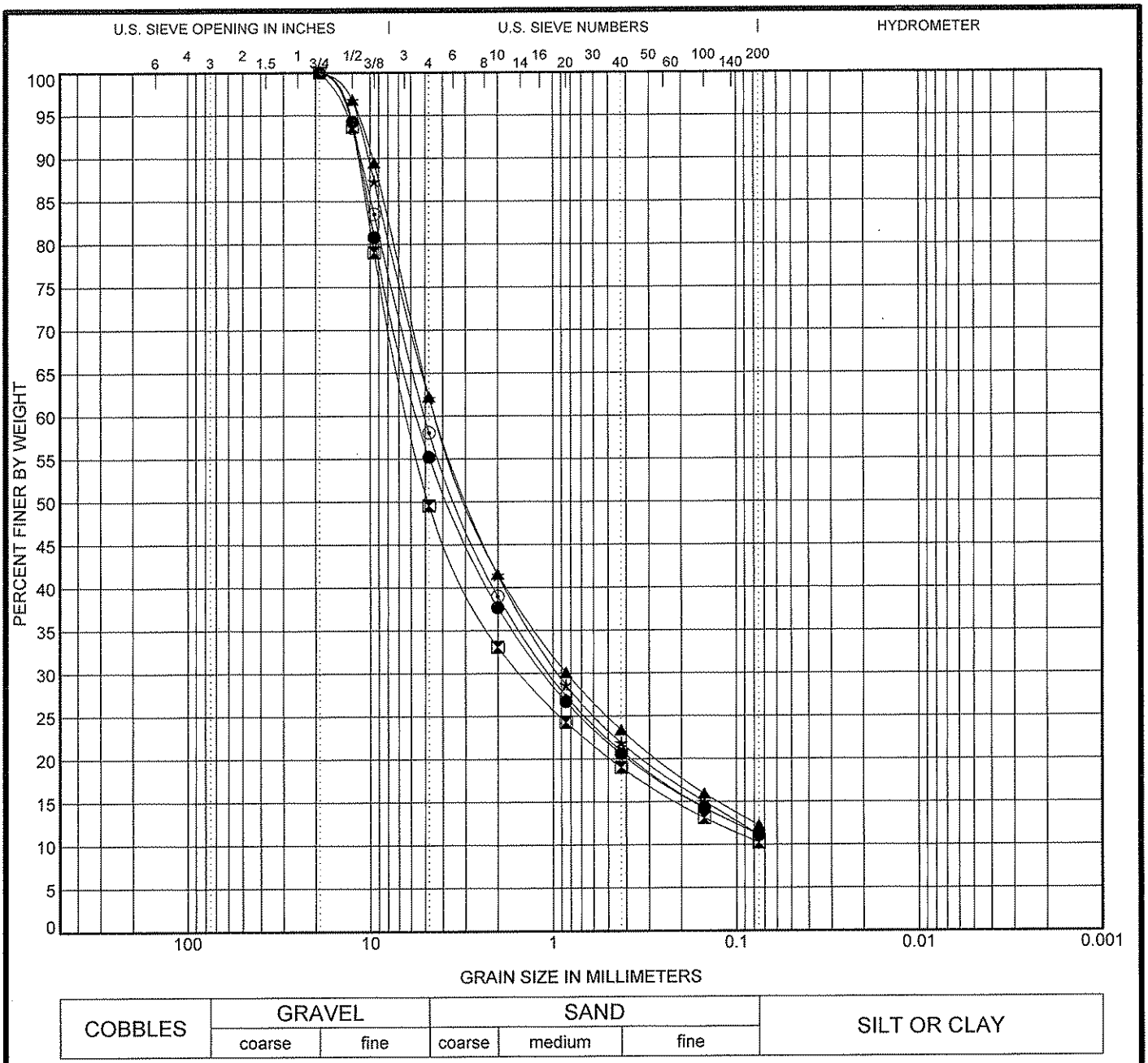
GRAIN SIZE DISTRIBUTION

Project: **VLT Borrow Materials**
Location: **Yerington, NV**
Project Number: **0155-21-1** Plate: 4b

US GRAIN SIZE2 0155211.GPJ US LAB.GDT 6/9/2010



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		USCS Classification	LL	PL	PI	Cc	Cu
●	TP-09 OX	0.0'	POORLY GRADED GRAVEL with SILTY CLAY and SAND (GP-GC)	28	22	6	3.88	94.00
⊠	TP-10 OX	15.0'	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)	28	16	12	5.13	85.89
▲	TP-11 OX	0.0'	CLAYEY SAND with GRAVEL (SC)	31	19	12	3.32	87.72
★	TP-12 OX	0.0'	POORLY GRADED SAND with SILTY CLAY and GRAVEL (SP-SC)	25	19	6	3.25	71.30
⊙	TP-13 OX	0.0'	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)	27	16	11	3.63	85.40

	Specimen Identification		D100	D60	D30	D10	MC %	%Gravel	%Sand	%Silt	%Clay
●	TP-09 OX	0.0'	19	5.408	1.099		4.6	44.8	44.0	11.2	
⊠	TP-10 OX	15.0'	19	6.072	1.484		6.9	50.4	39.3	10.2	
▲	TP-11 OX	0.0'	19	4.324	0.842		6.0	37.8	50.0	12.2	
★	TP-12 OX	0.0'	19	4.359	0.93		6.8	38.0	50.9	11.1	
⊙	TP-13 OX	0.0'	19	5.006	1.032		6.9	41.9	46.9	11.1	

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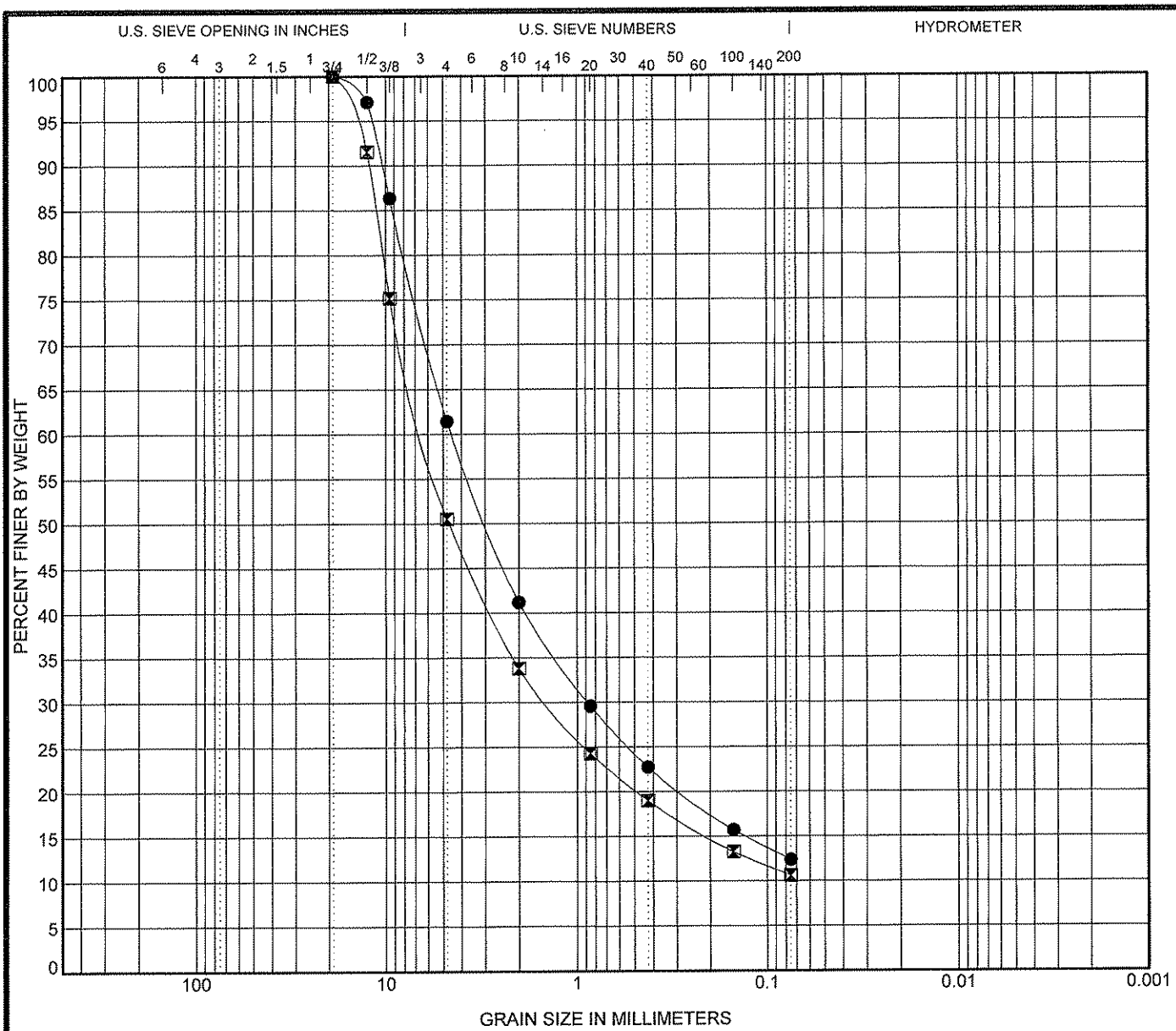
GRAIN SIZE DISTRIBUTION

Project: **VLT Borrow Materials**
Location: **Yerington, NV**
Project Number: **0155-21-1** Plate: 4c

US GRAIN SIZE2 0155211.GPJ US LAB.GDT 6/9/2010



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			USCS Classification	LL	PL	PI	Cc	Cu
●	TP-14 OX	0.0'	SILTY, CLAYEY SAND with GRAVEL (SC-SM)	26	20	6	3.77	97.79
⊠	TP-15 OX	0.0'	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)	25	17	8	5.13	97.28

Specimen Identification			D100	D60	D30	D10	MC %	%Gravel	%Sand	%Silt	%Clay
●	TP-14 OX	0.0'	19	4.465	0.877		7.5	38.6	49.1	12.4	
⊠	TP-15 OX	0.0'	19	6.2	1.423		6.7	49.5	39.9	10.6	

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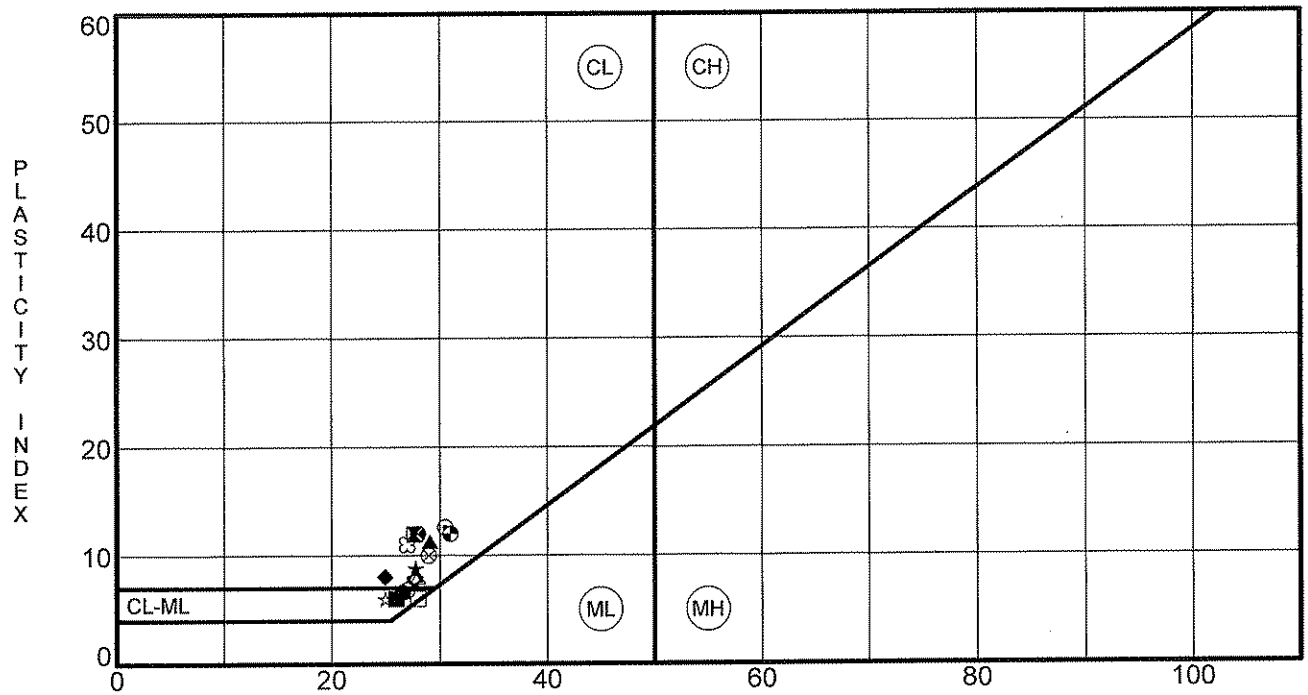
GRAIN SIZE DISTRIBUTION

Project: **VLT Borrow Materials**
Location: **Yerington, NV**
Project Number: **0155-21-1** Plate: 4d

US GRAIN SIZE2 0155211.GPJ US LAB.GDT 6/9/2010



Specimen Depth in Feet.

	Specimen Identification		LL	PL	PI	Fines	USCS Classification
●	TP-01 OX	0.0'	27	20	7	9	POORLY GRADED SAND with SILTY CLAY and GRAVEL (SP-SC)
⊠	TP-01 OX	5.0'	28	16	12	8	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)
▲	TP-02 OX	20.0'	29	18	11	9	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)
★	TP-03 OX	0.0'	28	19	9	11	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)
⊙	TP-03 OX	10.0'	31	18	13	10	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)
✿	TP-04 OX	15.0'	28	20	8	9	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)
○	TP-05 OX	0.0'	27	20	7	12	POORLY GRADED SAND with SILTY CLAY and GRAVEL (SP-SC)
△	TP-06 OX	0.0'	28	20	8	14	CLAYEY SAND with GRAVEL (SC)
⊗	TP-07 OX	10.0'	29	19	10	12	CLAYEY SAND with GRAVEL (SC)
⊕	TP-08 OX	5.0'	31	19	12	12	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)
□	TP-09 OX	0.0'	28	22	6	11	POORLY GRADED GRAVEL with SILTY CLAY and SAND (GP-GC)
◐	TP-10 OX	15.0'	28	16	12	10	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)
◕	TP-11 OX	0.0'	31	19	12	12	CLAYEY SAND with GRAVEL (SC)
☆	TP-12 OX	0.0'	25	19	6	11	POORLY GRADED SAND with SILTY CLAY and GRAVEL (SP-SC)
⊠	TP-13 OX	0.0'	27	16	11	11	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)
■	TP-14 OX	0.0'	26	20	6	12	SILTY, CLAYEY SAND with GRAVEL (SC-SM)
◆	TP-15 OX	0.0'	25	17	8	11	POORLY GRADED GRAVEL with CLAY and SAND (GP-GC)

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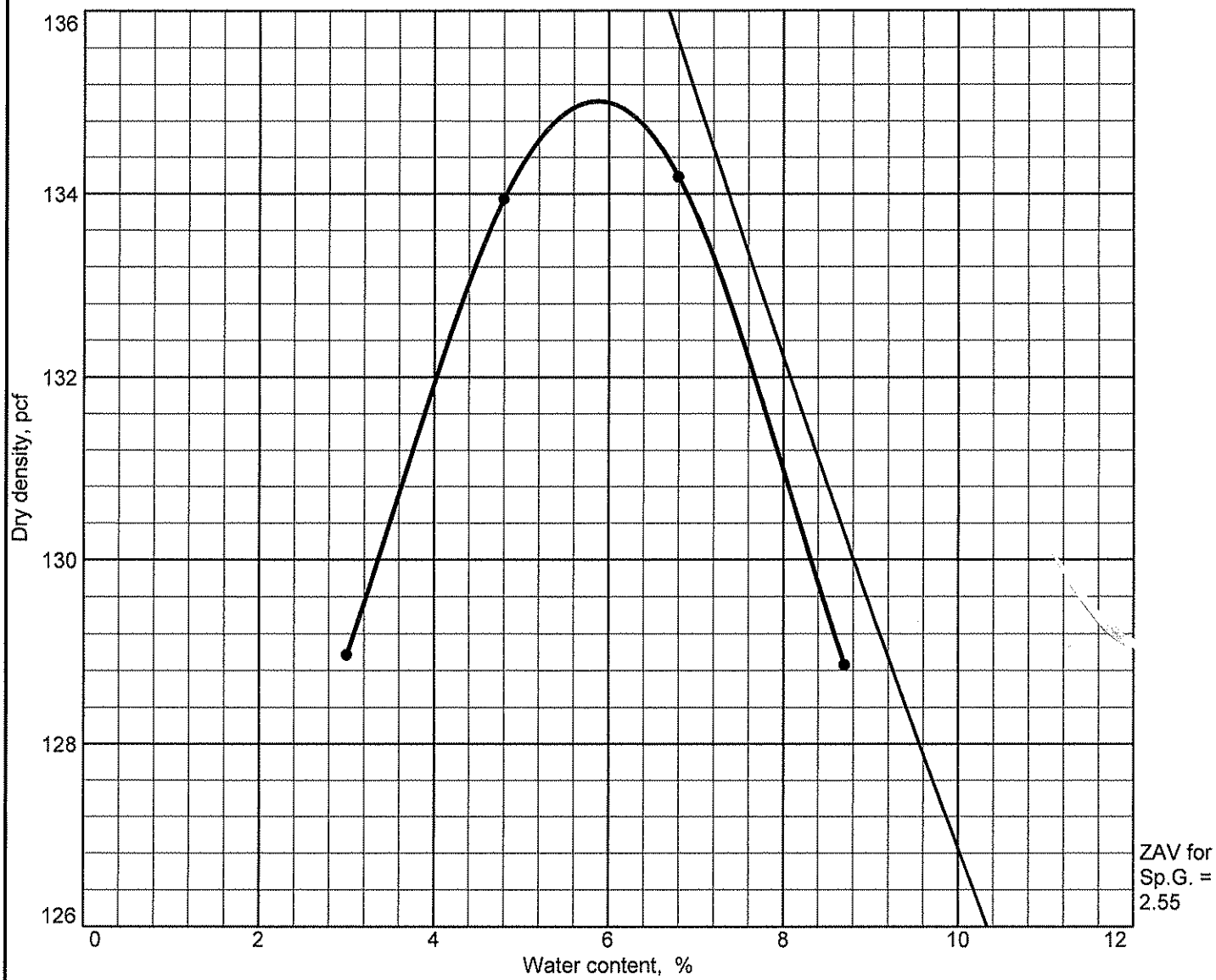
ATTERBERG LIMITS RESULTS

Project: **VLT Borrow Materials**
Location: **Yerington, NV**
Project Number: **0155-21-1** Plate: 4e

US ATTERBERG LIMITS 0155211.GPJ US LAB.GDT 6/9/2010

COMPACTION TEST REPORT



Test specification: ASTM D 1557-00 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0' - 20.0'	SP - SC		4.8		28	10	0.0	8.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 135.0 pcf Optimum moisture = 5.9 %	Poorly Graded Sand with Silty Clay and Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VTL Borrow Materials

● **Source:** TP-01 OX **Sample No.:** Bulk **Elev./Depth:** 0.0' - 20.0'

Remarks:
Laboratory Number 1258

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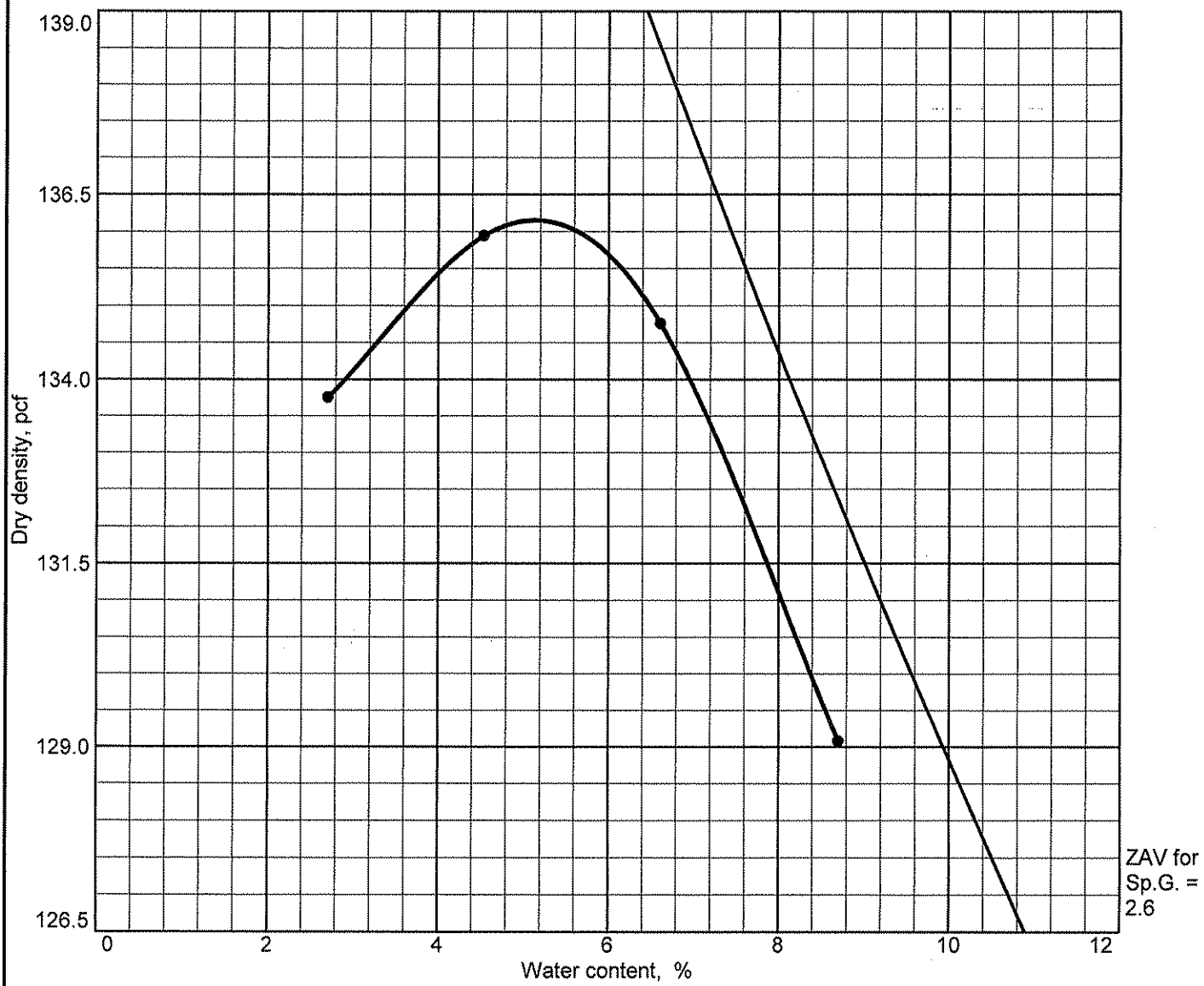
Plate 5a

COMPACTION TEST REPORT



Test specification: ASTM D 1557-00 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0' -20.0'	SP - SC				28	9	0.0	10.9

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 136.2 pcf Optimum moisture = 5.1 %	Poorly Graded Sand with Clay and Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VTL Borrow Materials

● **Source:** TP-03 OX **Sample No.:** Bulk **Elev./Depth:** 0.0' -20.0'

Remarks:
Laboratory Number 1273

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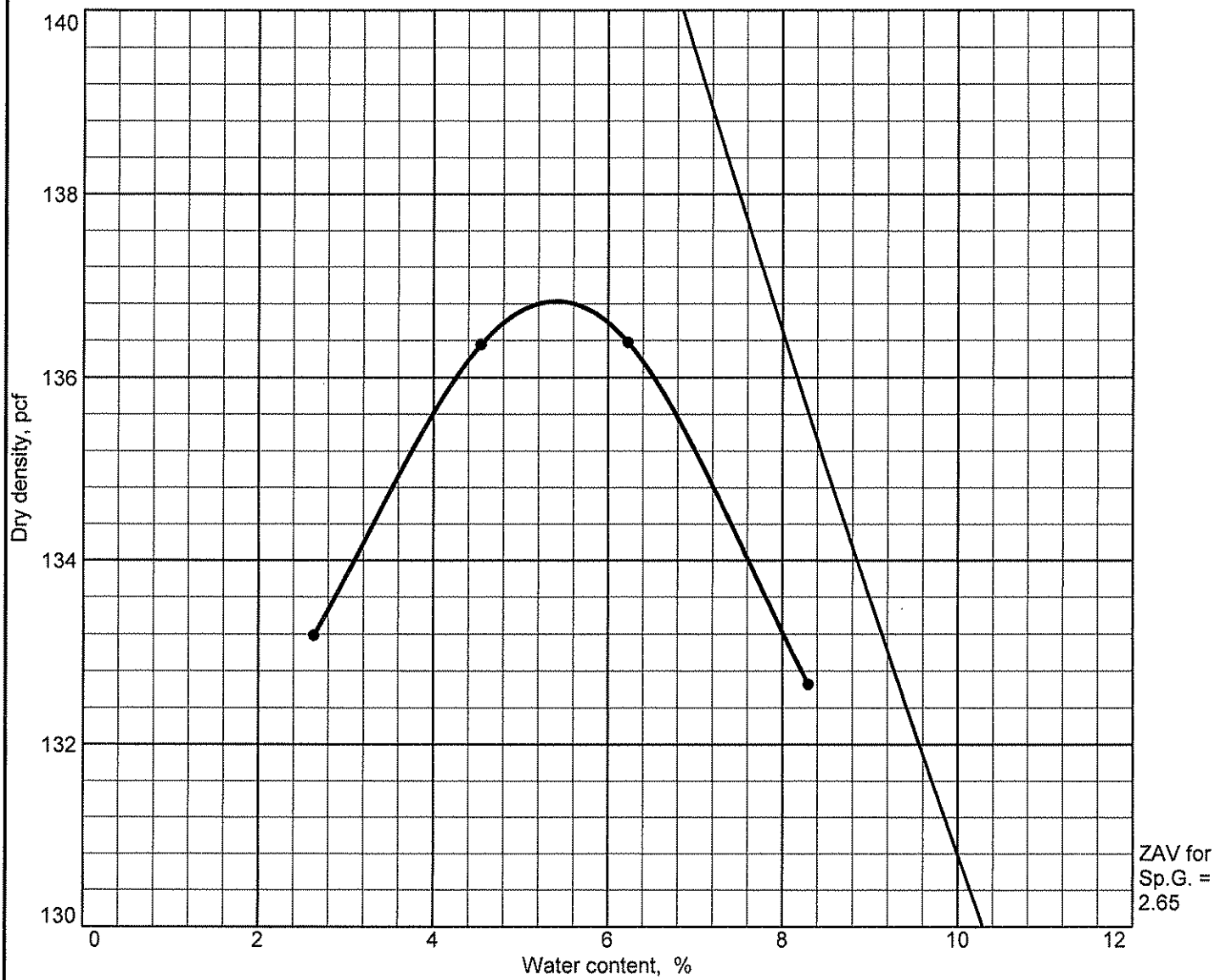
Plate 5b

COMPACTION TEST REPORT



Test specification: ASTM D 1557-00 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0 ' - 20.0'	SP - SC				27	7	0.0	12

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 136.8 pcf Optimum moisture = 5.4 %	Poorly Graded Sand with Silty Clay and Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VTL Borrow Materials

● **Source:** TP-05 OX **Sample No.:** Bulk **Elev./Depth:** 0.0 ' - 20.0'

Remarks:
Laboratory Number 1273

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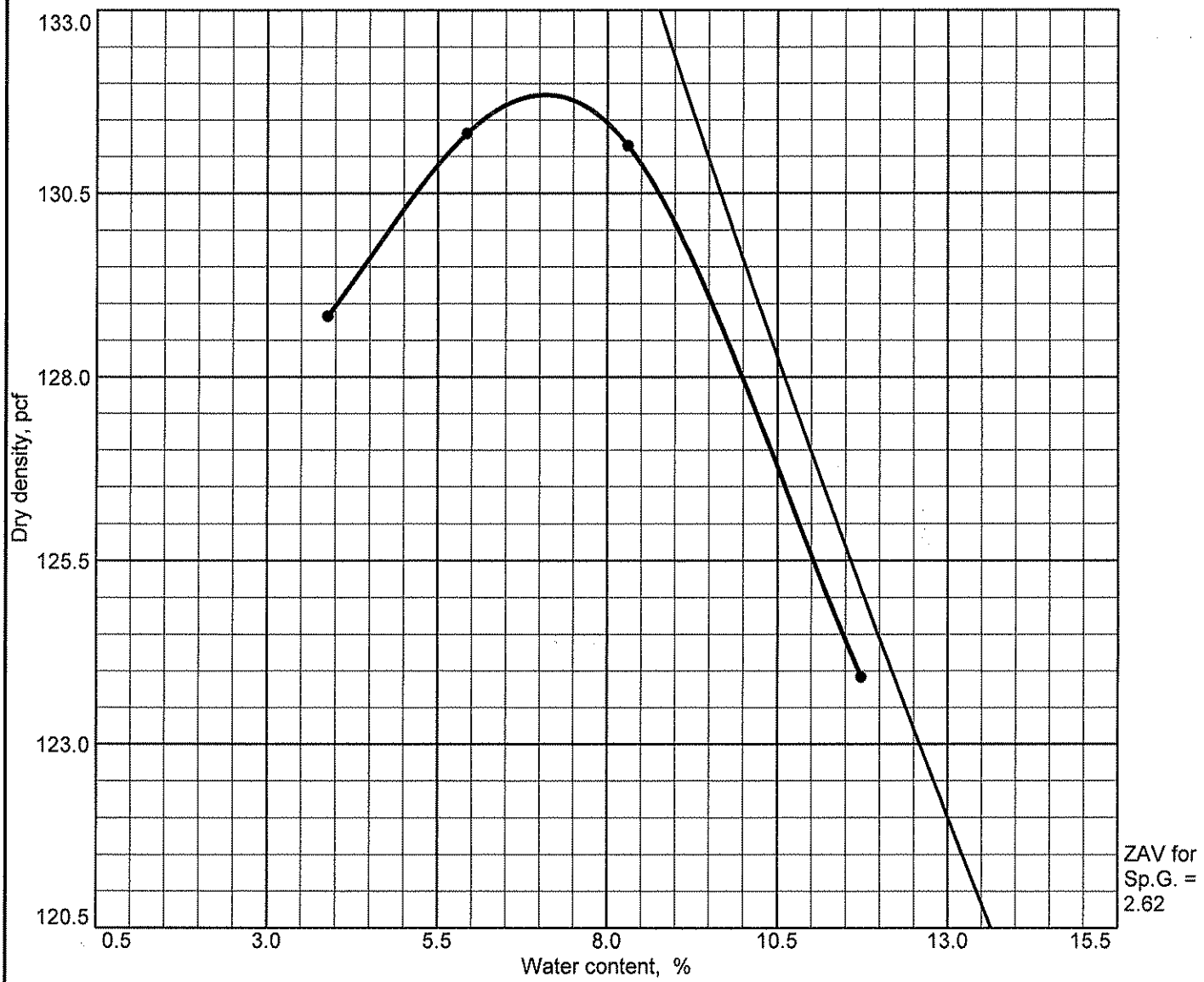
Plate 5c

COMPACTION TEST REPORT



Test specification: ASTM D 698-00a Method C Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% >	% < No.200
	USCS	AASHTO						
	SC		4.2		28	20	0.0	14.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 131.8 pcf Optimum moisture = 7.1 %	Clayey Sand with Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VTL Borrow Materials

● **Source:** TP-06 OX

Remarks:
Laboratory Number 1449

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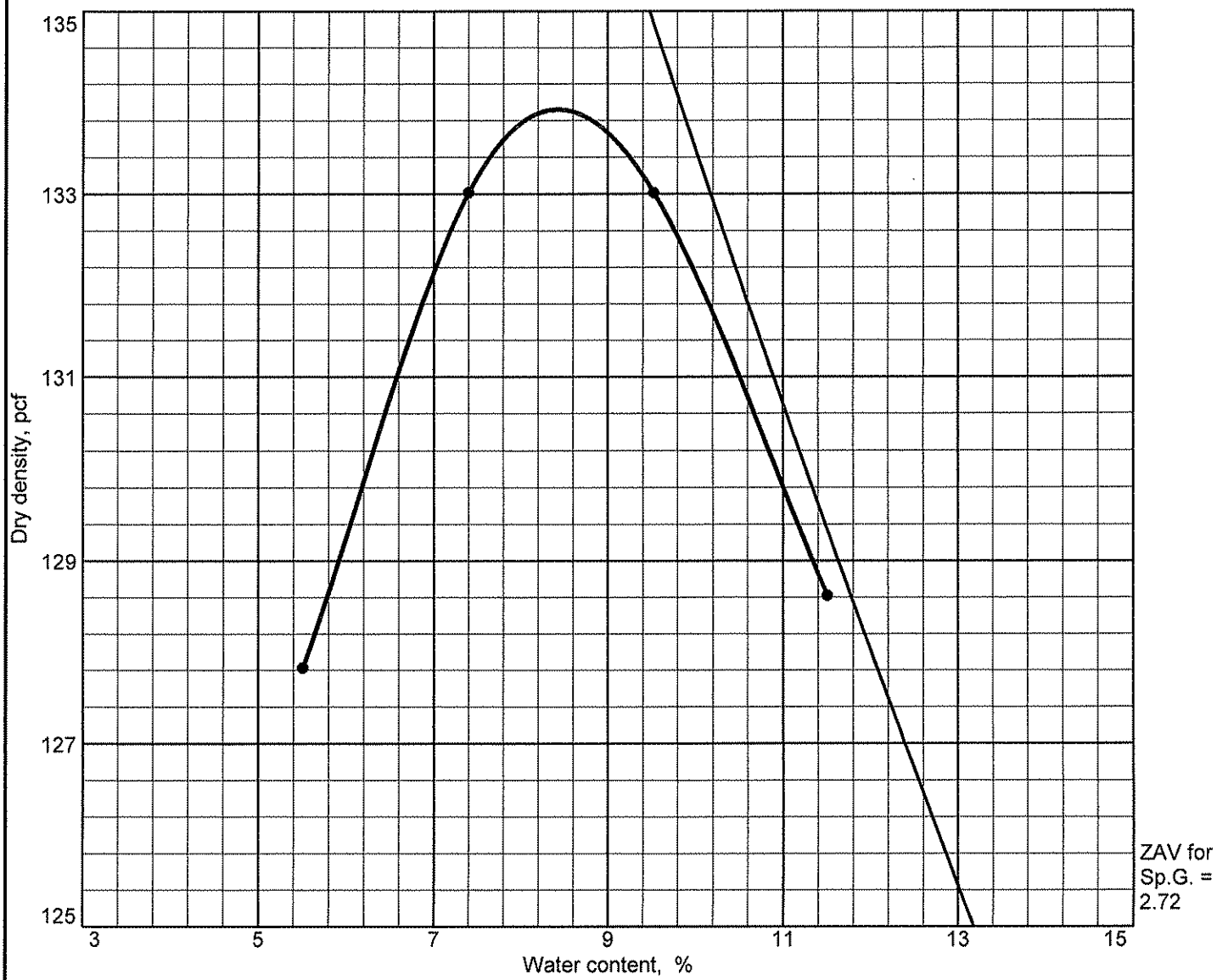
Reno, Nevada

Plate 5d

COMPACTION TEST REPORT



Test specification: ASTM D 1557-00 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0' - 20.0'	GP - GC		4.6		28	6	0.0	11.1

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 133.9 pcf Optimum moisture = 8.4 %	Poorly Graded Gravel with Silty Clay and Sand

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VTL Borrow Materials

● **Source:** TP-09 OX **Sample No.:** Bulk **Elev./Depth:** 0.0' - 20.0'

Remarks:
Laboratory Number 1449

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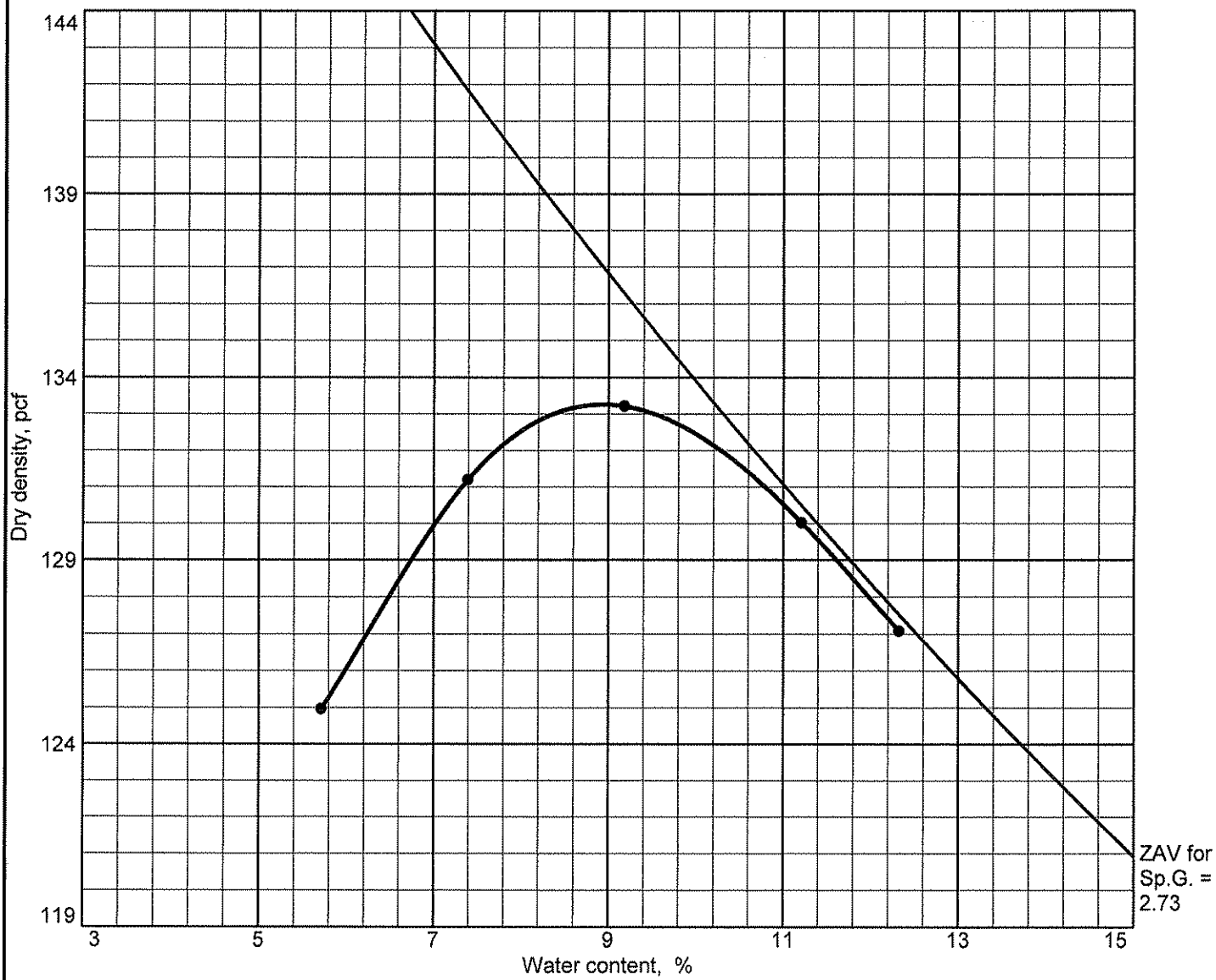
Reno, Nevada

Plate 5e

COMPACTION TEST REPORT



Test specification: ASTM D 1557-00 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0' - 20.0'	SC		6.0		31	12	0.0	12.2

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 133.3 pcf Optimum moisture = 8.9 %	Clayey Sand with Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VTL Borrow Materials

● **Source:** TP-11 OX **Sample No.:** Bulk **Elev./Depth:** 0.0' - 20.0'

Remarks:
Laboratory Number 1449

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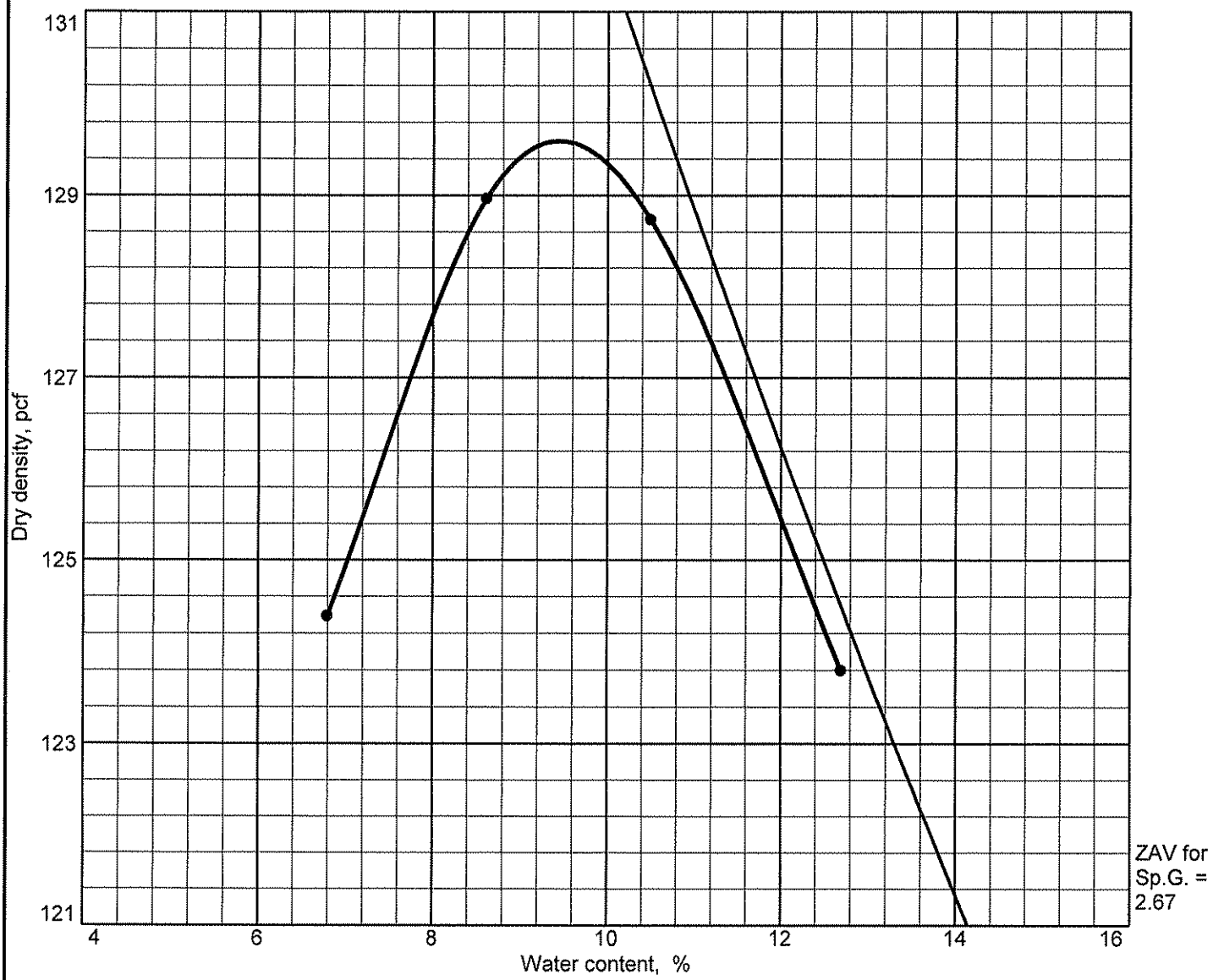
Plate 5f

COMPACTION TEST REPORT



Test specification: ASTM D 1557-91 Procedure C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0'	SP - SC		6.8		25	6	0.0	11.1

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 129.6 pcf Optimum moisture = 9.4 %	Poorly Graded Sand with Silty Clay and Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VLT Borrow Material

● **Source:** TP-12 OX **Sample No.:** Bulk **Elev./Depth:** 0.0'

Remarks:
Laboratory Number 1721

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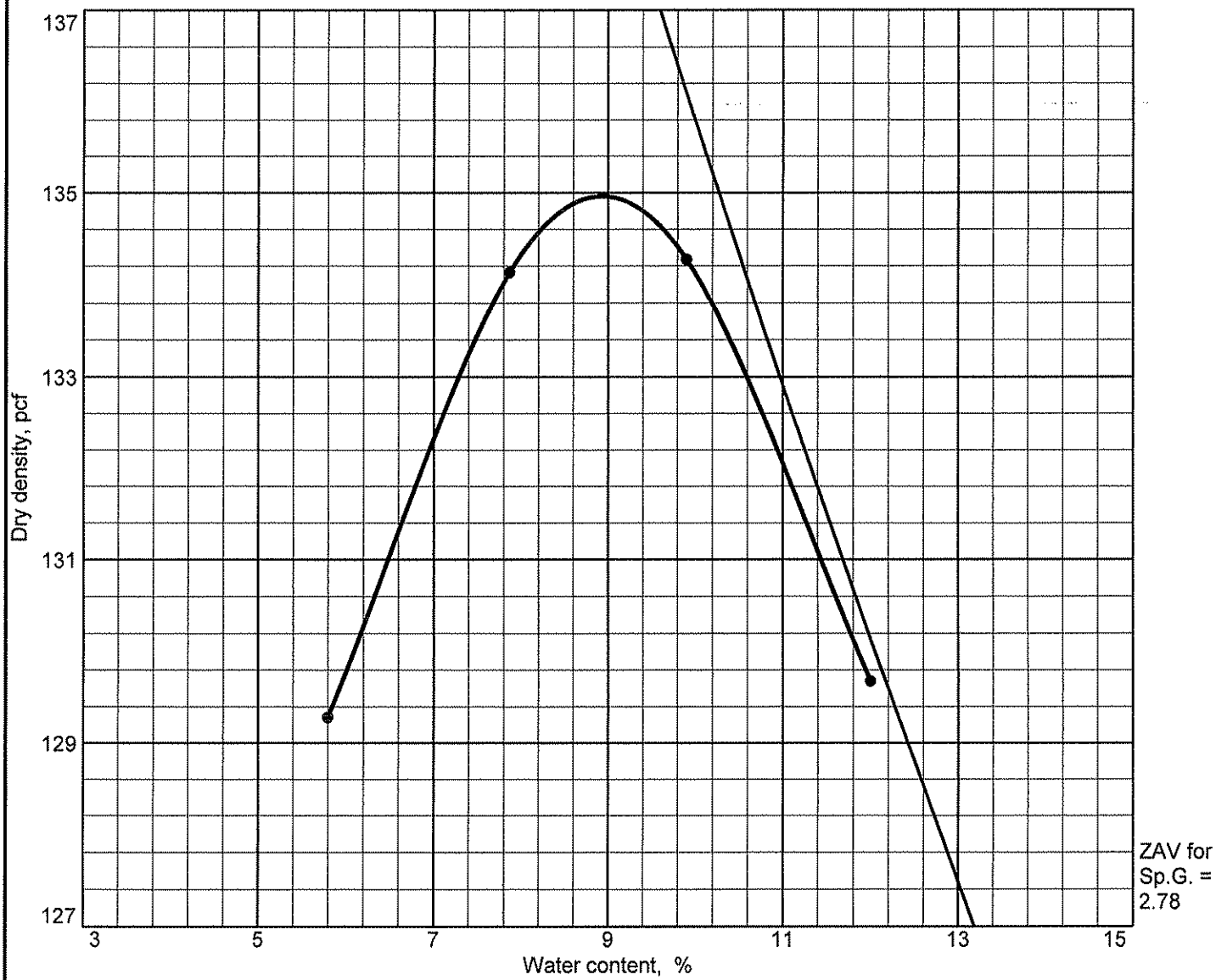
Plate 5g

COMPACTION TEST REPORT



Test specification: ASTM D 1557-91 Procedure C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0'	SP - SC		6.9		27	16	0.0	11.1

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 135.0 pcf Optimum moisture = 8.9 %	Poorly Graded Sand with Clay and Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VLT Borrow Material

● **Source:** TP-13 OX **Sample No.:** Bulk **Elev./Depth:** 0.0'

Remarks:
Laboratory Number 1721

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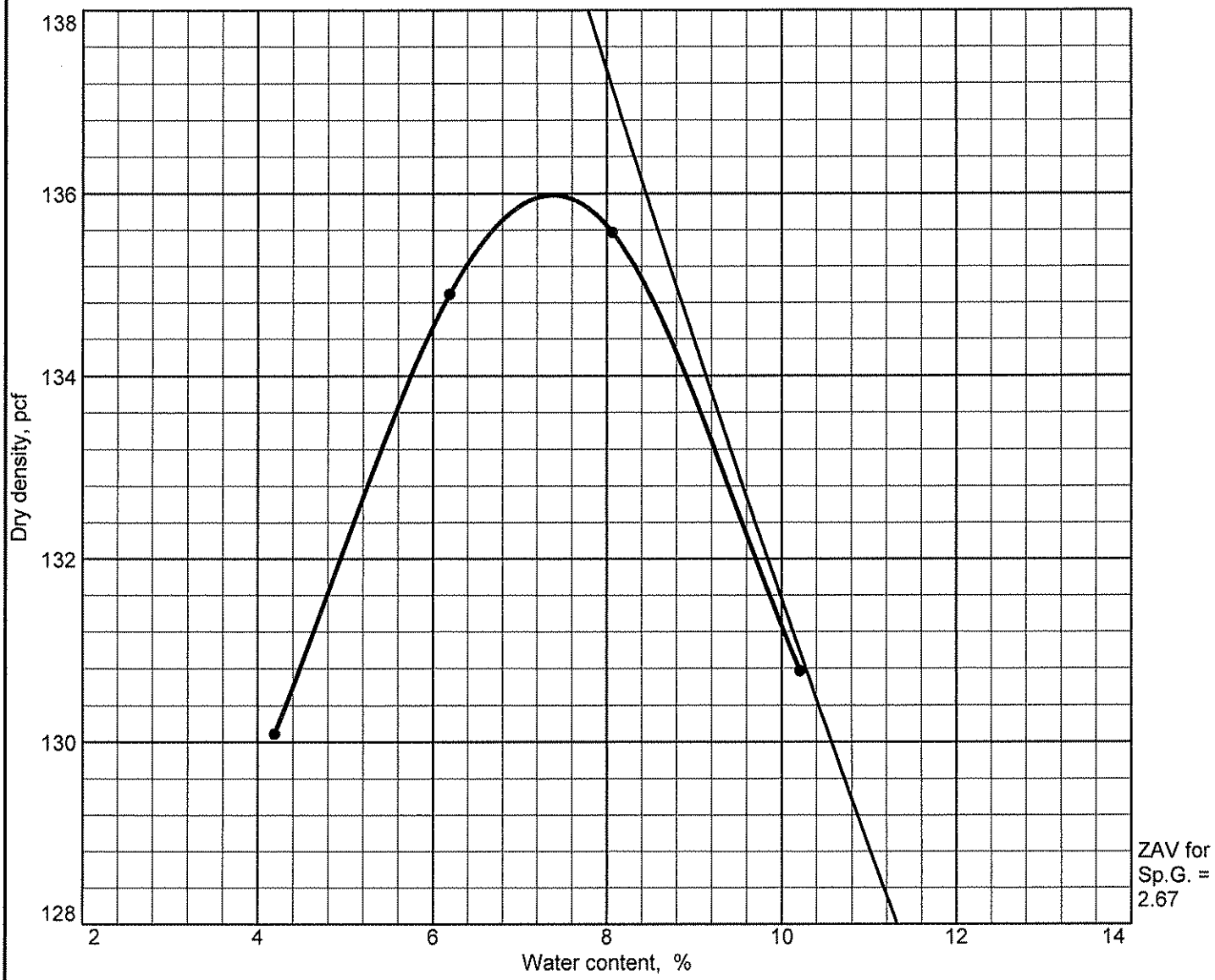
Plate 5h

COMPACTION TEST REPORT



Test specification: ASTM D 1557-91 Procedure C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0'	SC - SM		7.5		26	20	0.0	12.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 136.0 pcf Optimum moisture = 7.4 %	Silty, Clayey Sand with Gravel

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VLT Borrow Material

● **Source:** TP-14 OX **Sample No.:** Bulk **Elev./Depth:** 0.0'

Remarks:
Laboratory Number 1721

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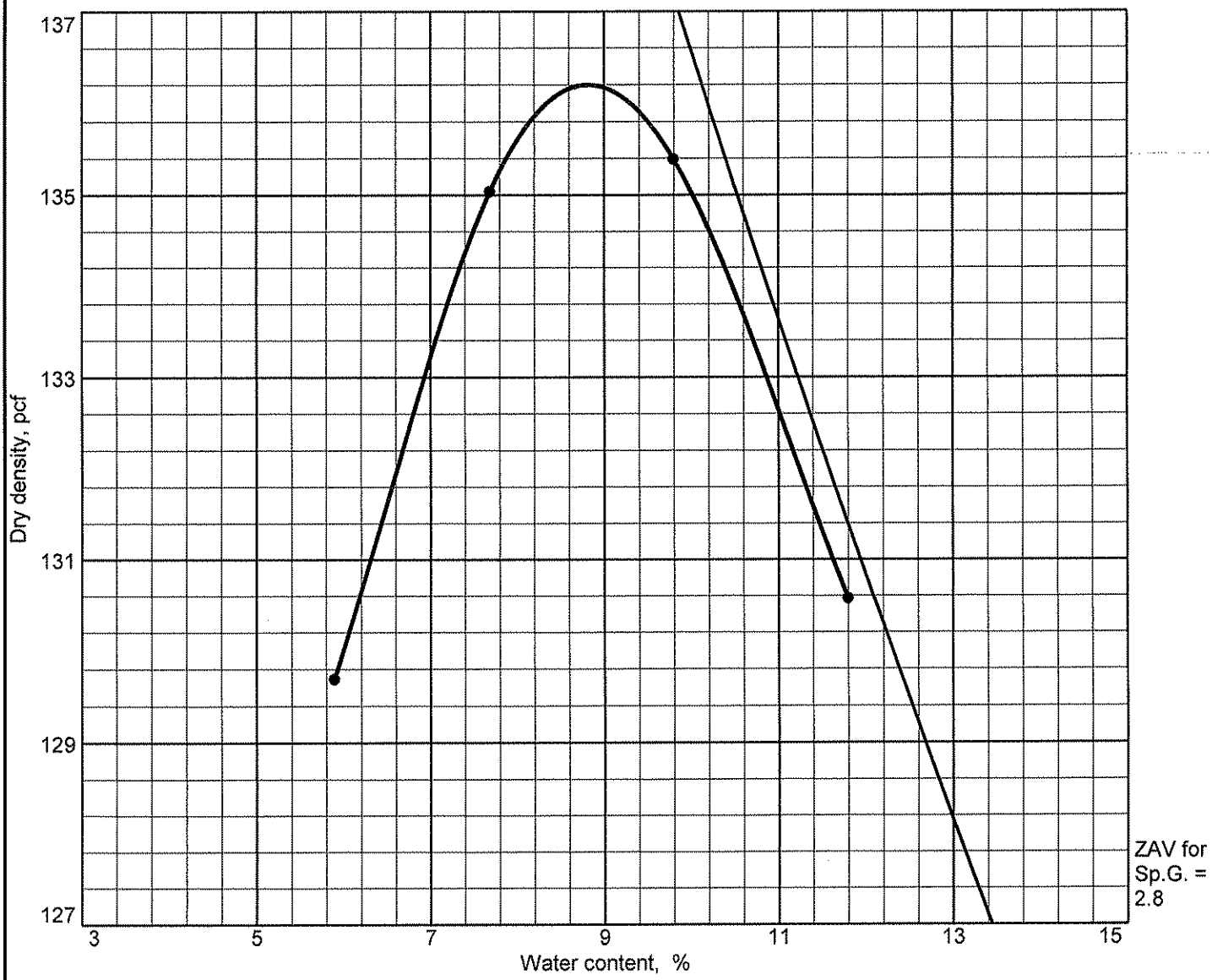
Plate 5i

COMPACTION TEST REPORT



Test specification: ASTM D 1557-91 Procedure C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0'	GP - GC		6.7		24	8	0.0	10.6

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 136.2 pcf Optimum moisture = 8.8 %	Poorly Graded Gravel with Clay and Sand

Project No. 0155-21-1 **Client:** Brown and Caldwell
Project: VLT Borrow Material

● **Source:** TP-15 OX **Sample No.:** Bulk **Elev./Depth:** 0.0'

Remarks:
Laboratory Number 1721

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Plate 5j