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The embankment crest width was approximately 10 feet and the design Elevation was 1,058; however, these embankment features were modified as part of the recently completed White Tanks FRS No. 4 Phase I project.

3. SCOPE OF SERVICES

Ninyo & Moore's scope of services for this portion of the overall project generally included:

- Developing appropriate Work/Safety Plans for the supplemental explorations.
- Marking out the exploration locations in the field and notifying the District and Arizona Blue Stake of the locations prior to excavation.
- Drilling, logging, and sampling 30 small-diameter exploratory borings to depths up to about 20 feet below the existing ground surface (bgs). The boring logs are presented in Appendix A.
- Excavating, logging, and sampling 10 exploratory test pits to depths up to about 9 feet bgs. The test pit logs are also presented in Appendix A.
- Performing laboratory tests on selected samples obtained from the explorations to evaluate in-situ moisture content and dry density, grain-size distribution, Atterberg limits, consolidation (response-to-wetting) and Standard Proctor density. The results of the laboratory testing are presented on the logs in Appendix A and/or in Appendix B.
- Excavating three shrink-swell test pits within the flood pool area to depths ranging about 5 to 5.5 feet bgs, to better measure earthwork factors. The shrink-swell test pit logs are present in Appendix E.
- Measuring three ground loss test locations with in the flood pool area prior to clearing and grubbing, ripping, moisture conditioned, and compacting the exposed soils, to better measure earthwork factors. The ground loss test logs are also present in Appendix E.
- Preparing this addendum that presents the results and observations from the field explorations and geotechnical laboratory testing.

Following the completion of the test pit excavation, the test pits were backfilled with excavated spoils and compacted in 2 foot thick lifts.

Soil samples were obtained in these test pits by driving a California Modified split-spoon sampler approximately 12 inches into the soil at the bottom of the test pit excavation at selected depths using a 35-pound hammer falling approximately 30 inches, operated manually. Bulk samples were taken at selected depths and collected in large bags. The equipment and sampling methodology are described in detail in Appendix A.

Ninyo & Moore personnel logged the test pits in general accordance with the Unified Soil Classification System (USCS) and American Society for Testing and Materials (ASTM) D 2488 by observing excavation spoils and California Modified split-spoon samples. The ring samples were trimmed in the field, wrapped in plastic bags, and placed in moisture-tight cylindrical plastic containers. Descriptions of the soils encountered and other pertinent data are presented on the logs in Appendix A. The elevations indicated on the logs were estimated from recent topographic surveys that were conducted for this project.

4.2. Borings

Enviro-Drill, Inc. of Phoenix, Arizona was retained by Ninyo & Moore to drill 30 (denoted as B-101 through B-130), small-diameter soil borings at White Tanks FRS No. 4 from May 14, 2014 through May 16, 2014. The approximate locations of these borings are depicted on Figures 2 through 6. The soil borings were drilled with a CME-75 truck-mounted drill rig equipped with hollow-stem augers (HSAs). Following completion of drilling, the boreholes were backfilled with bentonite chips using a bottom-up technique.

Soil samples were obtained from these borings by driving a split-spoon sampler approximately 18 inches into the soil at the bottom of the borehole at selected depths using a 140-pound hammer falling approximately 30 inches, operated by an automatic trip hammer. California Modified split-spoon samplers were primarily used; however, Standard Penetration Test (SPT) split-spoon samplers were also used at the discretion of the field

4.4. Jet Index Testing

On March 14 and 15, 2012, represents of Ninyo & Moore and the District conducted jet index testing within the existing auxiliary spillway and within the limits of the planned widening. A total of eight tests were performed at four locations and were denoted as S1/TT1 through S4/TT4. At each location, one test was performed at the surface while the other was performed at a depth of approximately 4 feet bgs. This testing was performed in general accordance with ASTM D 5852. These tests were performed using equipment that is owned by the District. The results of the jet index testing are presented in Appendix D.

4.5. Shrink-Swell Testing

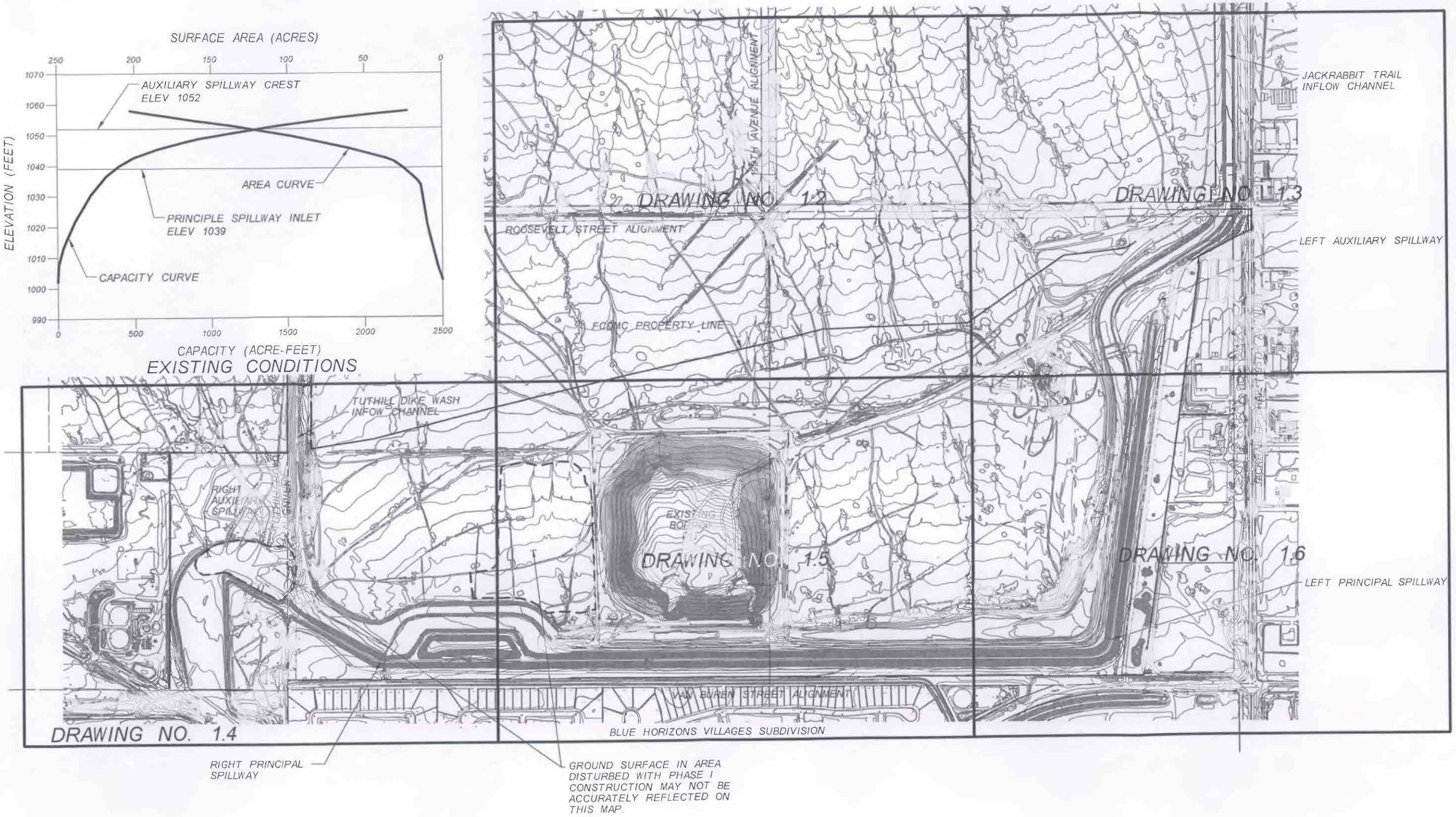
Sundt-Rummel Joint Venture of Phoenix, Arizona was retained by the District to excavate, moisture condition, and compact three shrink-swell test pits (denoted as SS-1 through SS-3), at White Tanks FRS No. 4 from May 27, 2014 through May 30, 2014. The approximate location of these shrink-swell test pits are depicted on Figures 4 and 5. The shrink-swell test pits were excavated with a Caterpillar 345C track hoe and compacted with a Caterpillar CP563E compactor.

Following the initial excavation to about 5 to 5.5 feet bgs, the test pit area (10 ft by 16 ft) was marked out with a grid and the surface area was surveyed using a Topcon laser and grade rod. The test pit area was then excavated down to about 7 to 7.5 bgs with the excavated material placed in a bedding box. The bottom of the deepest excavation (e.g. 7 to 7.5 bgs) was marked out with a grid and the surface was surveyed with the Topcon laser and grade rod. The excavated material in the bedding box was placed into the excavated zone in an 8-in loose lift and moisture conditioned within +/- 3 percent of optimum moisture content. The Caterpillar CP563E was then used to compact the soil to 90 to 100 percent of the maximum dry density. After each lift the moisture content and percent compaction was measured by Ninyo & Moore. This process was repeated until all material from the bedding box was placed and compacted back into the test pit. Once the final lift was compacted, the surface of the test pit was marked out with a grid and surveyed with the Topcon laser and

- One-dimensional consolidation presented in Appendix B; and
- Standard Proctor density and moisture content presented in Appendix B,

As indicated above, the results of the in-place moisture content and dry density testing are presented on the logs in Appendix A. A description of each laboratory test method and the remainder of the test results by Ninyo & Moore are presented in Appendix B.

EXISTING CONDITIONS



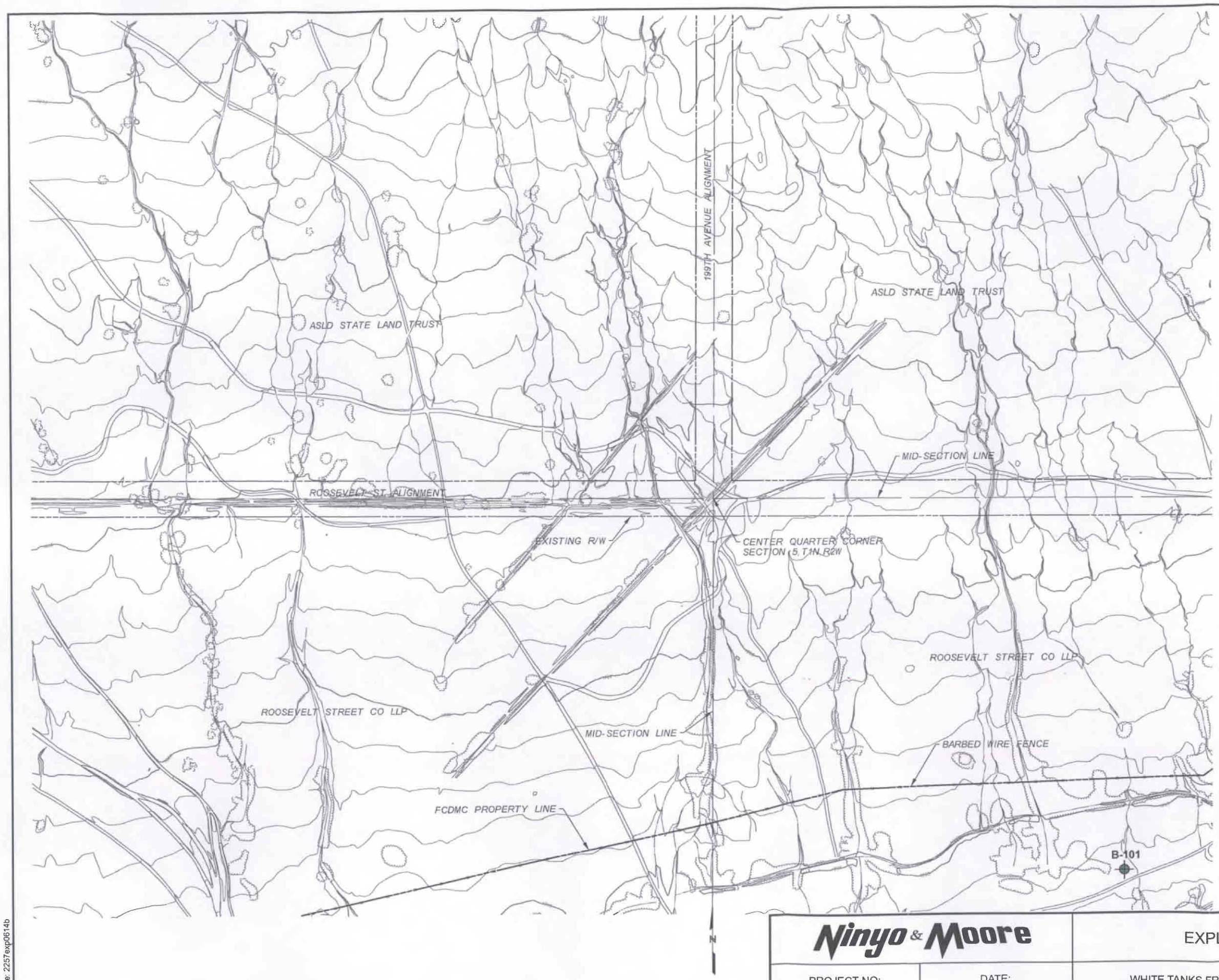
Source: Basemap supplied from Wood/Patel, 07/13.
Note: Dimensions, directions and locations are approximate.

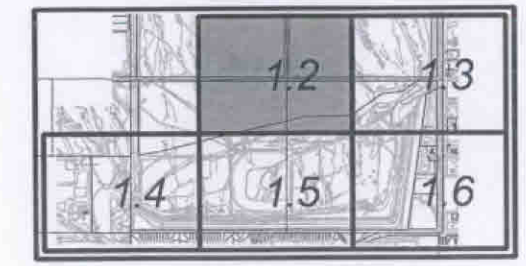
N

NTS

Ninyo & Moore	EXPLORATION LOCATIONS	FIGURE
PROJECT NO: 602257001 / DATE: 12/14	WHITE TANKS FRS No. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	1

file: 2257exp0614a





INDEX MAP

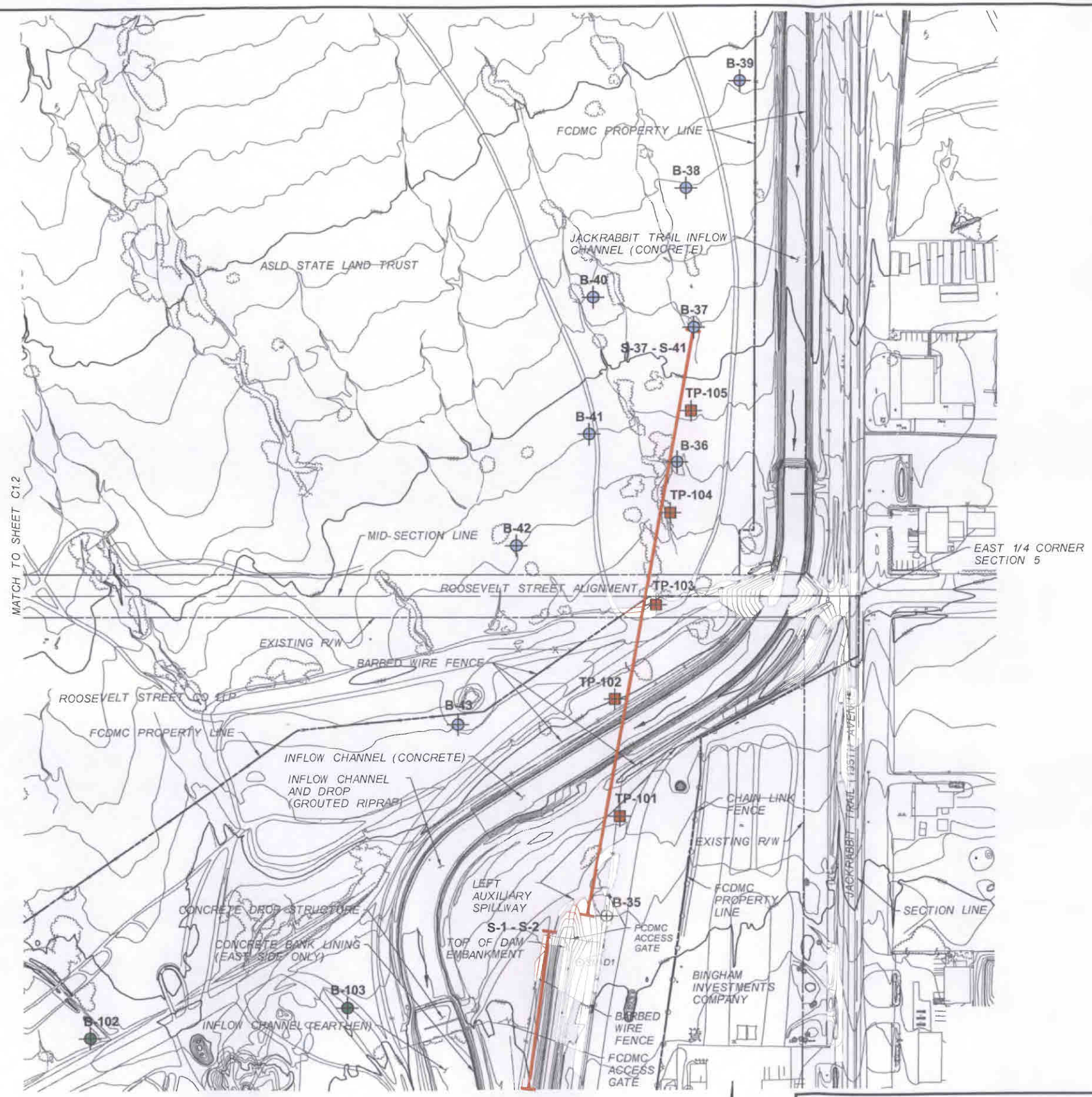
LEGEND

S-35	Seismic Refraction Line (AMEC, 2011)
B-127	Boring (Ninyo & Moore, 2014)
B-50	Boring (Ninyo & Moore, 2011)
TP-110	Test Pit (Ninyo & Moore, 2013)
SS-3	Test (SRJV, 2014)
GL-1	Test (SRJV, 2014)
S2/TT2	Jet Index Test (2012)

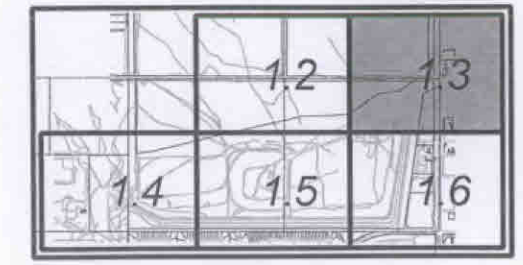
Source: Basemap supplied from Wood/Patel, 07/13.
Note: Dimensions, directions and locations are approximate.

Ninyo & Moore	EXPLORATION LOCATIONS	FIGURE
PROJECT NO: 602257001 / DATE: 12/14	WHITE TANKS FRS No. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	2

file: 2257exp0614b



Source: Basemap supplied from Wood/Patel, 07/13.
Note: Dimensions, directions and locations are approximate.



INDEX MAP

LEGEND

S-35	Seismic Refraction Line (AMEC, 2011)
B-127	Boring (Ninyo & Moore, 2014)
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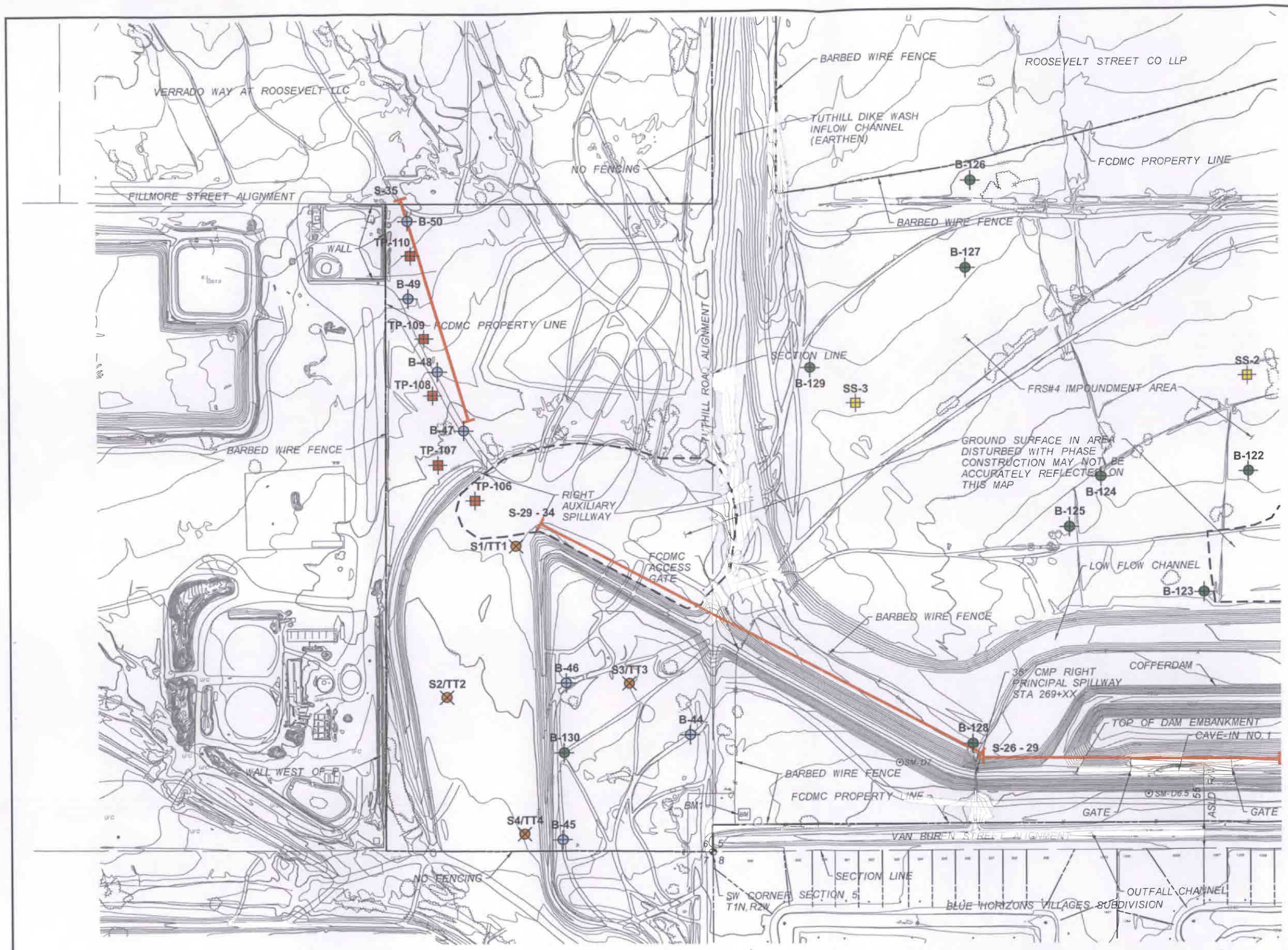
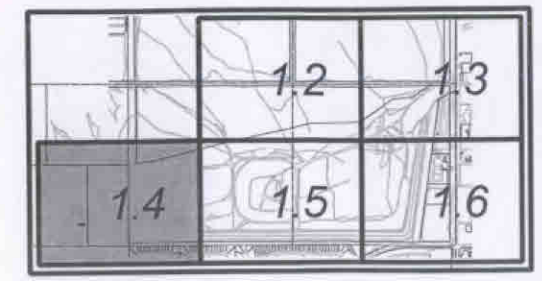
TP-110	Test Pit (Ninyo & Moore, 2013)
SS-3	Test (SRJV, 2014)
GL-1	Test (SRJV, 2014)
S2/TT2	Jet Index Test (2012)

Ninyo & Moore	EXPLORATION LOCATIONS	FIGURE
PROJECT NO: 602257001 / DATE: 12/14	WHITE TANKS FRS No. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	3

file: 2257exp0614c





INDEX MAP

LEGEND

S-35	Seismic Refraction Line (AMEC, 2011)
B-127	Boring (Ninyo & Moore, 2014)
B-50	Boring (Ninyo & Moore, 2011)
TP-110	Test Pit (Ninyo & Moore, 2013)
SS-3	Test (SRJV, 2014)
GL-1	Test (SRJV, 2014)
S2/TT2	Jet Index Test (2012)

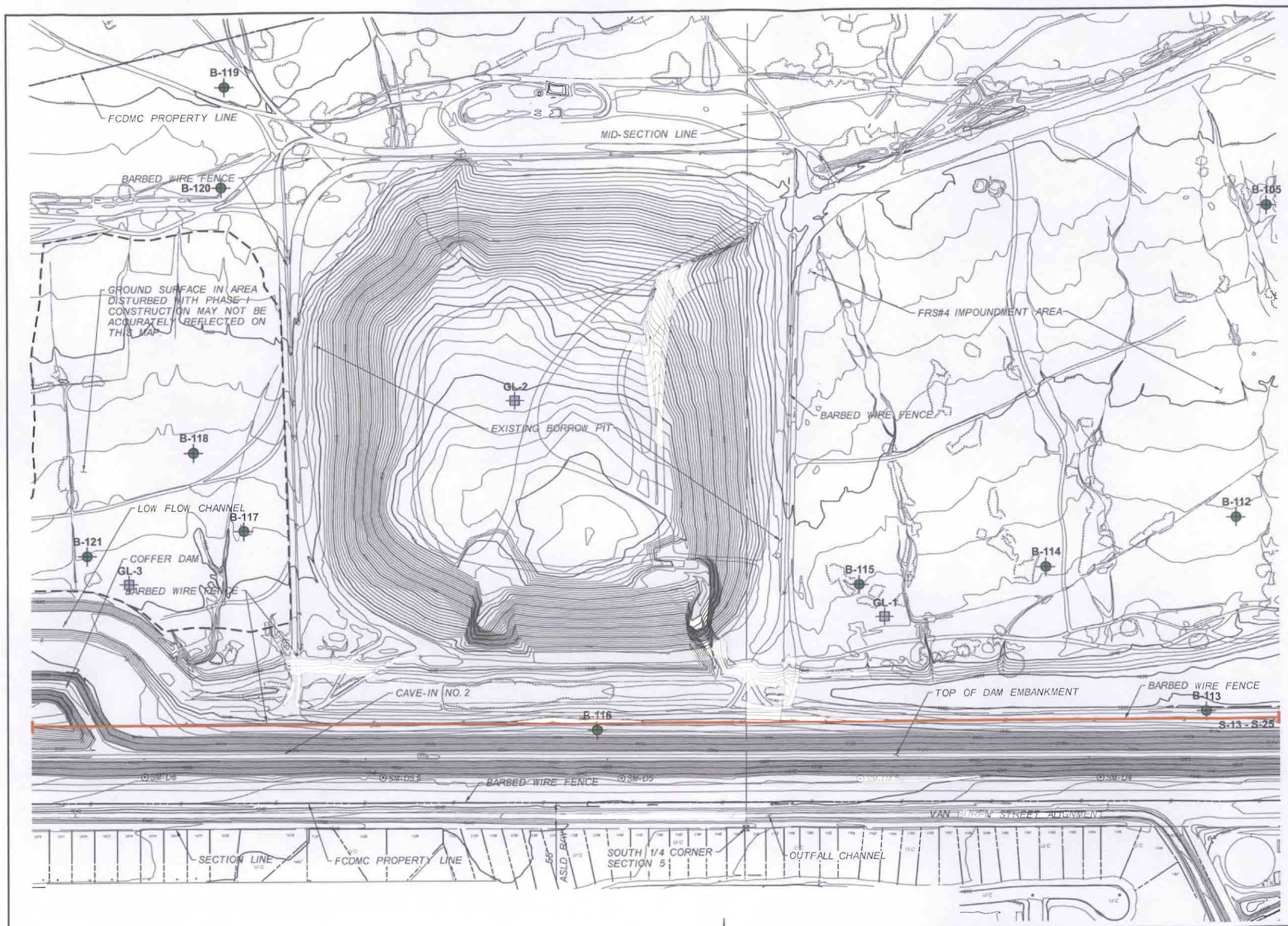
Source: Basemap supplied from Wood/Patel, 07/13.
Note: Dimensions, directions and locations are approximate.

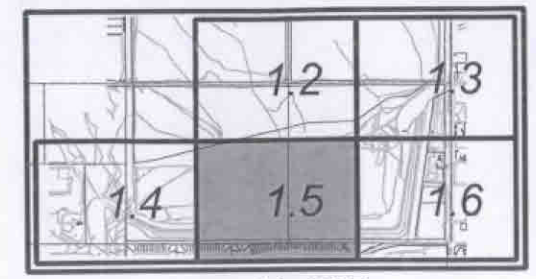
N

50 0 50 100
Scale in Feet

Ninyo & Moore	EXPLORATION LOCATIONS	FIGURE
PROJECT NO: 602257001 / DATE: 12/14	WHITE TANKS FRS No. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	4

file: 2257exp0614d





INDEX MAP

LEGEND

S-35	Seismic Refraction Line (AMEC, 2011)
B-127	Boring (Ninyo & Moore, 2014)
B-50	Boring (Ninyo & Moore, 2011)
TP-110	Test Pit (Ninyo & Moore, 2013)
SS-3	Test (SRJV, 2014)
GL-1	Test (SRJV, 2014)
S2/TT2	Jet Index Test (2012)

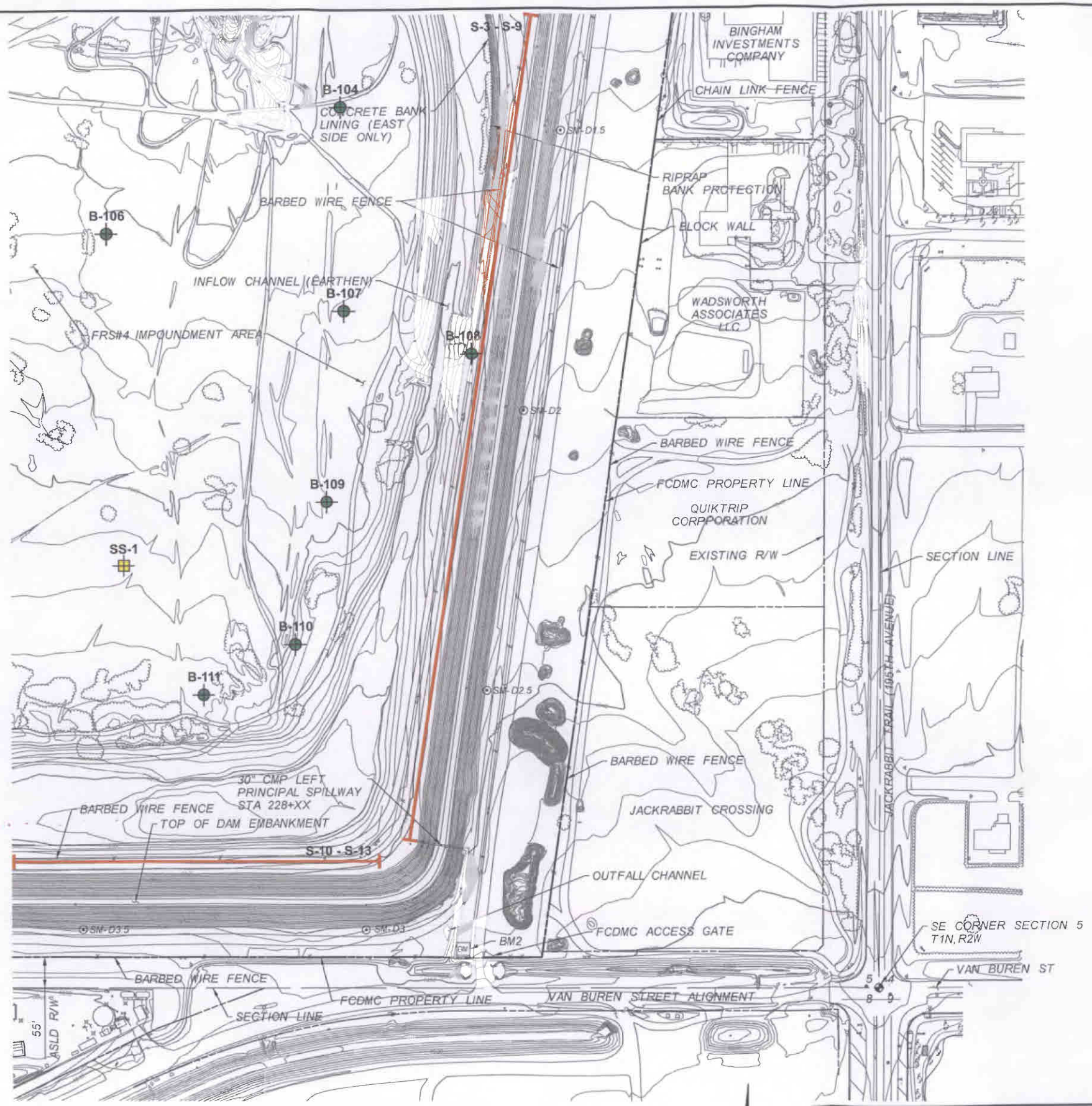
N

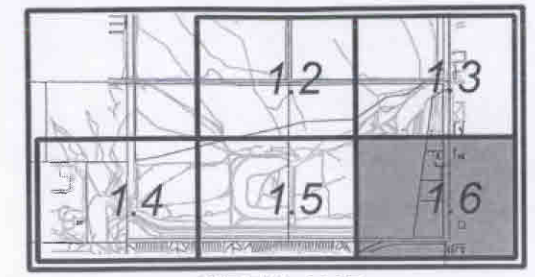
50 0 50 100
Scale in Feet

Source: Basemap supplied from Wood/Patel, 07/13.
Note: Dimensions, directions and locations are approximate.

Ninyo & Moore	EXPLORATION LOCATIONS	FIGURE
PROJECT NO: 602257001 / DATE: 12/14	WHITE TANKS FRS No. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	5

file: 2257exp0614e





INDEX MAP

LEGEND

S-35	Seismic Refraction Line (AMEC, 2011)
B-127	Boring (Ninyo & Moore, 2014)
B-50	Boring (Ninyo & Moore, 2011)
TP-110	Test Pit (Ninyo & Moore, 2013)
SS-3	Test (SRJV, 2014)
GL-1	Test (SRJV, 2014)
S2/TT2	Jet Index Test (2012)

Source: Basemap supplied from Wood/Patel, 07/13.
Note: Dimensions, directions and locations are approximate.

Ninyo & Moore		EXPLORATION LOCATIONS	FIGURE
PROJECT NO: 602257001	DATE: 12/14	WHITE TANKS FRS No. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	6

file: 2257exp0614f

Kinyo & Moore

TEST PIT LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT
BUCKEYE, ARIZONA

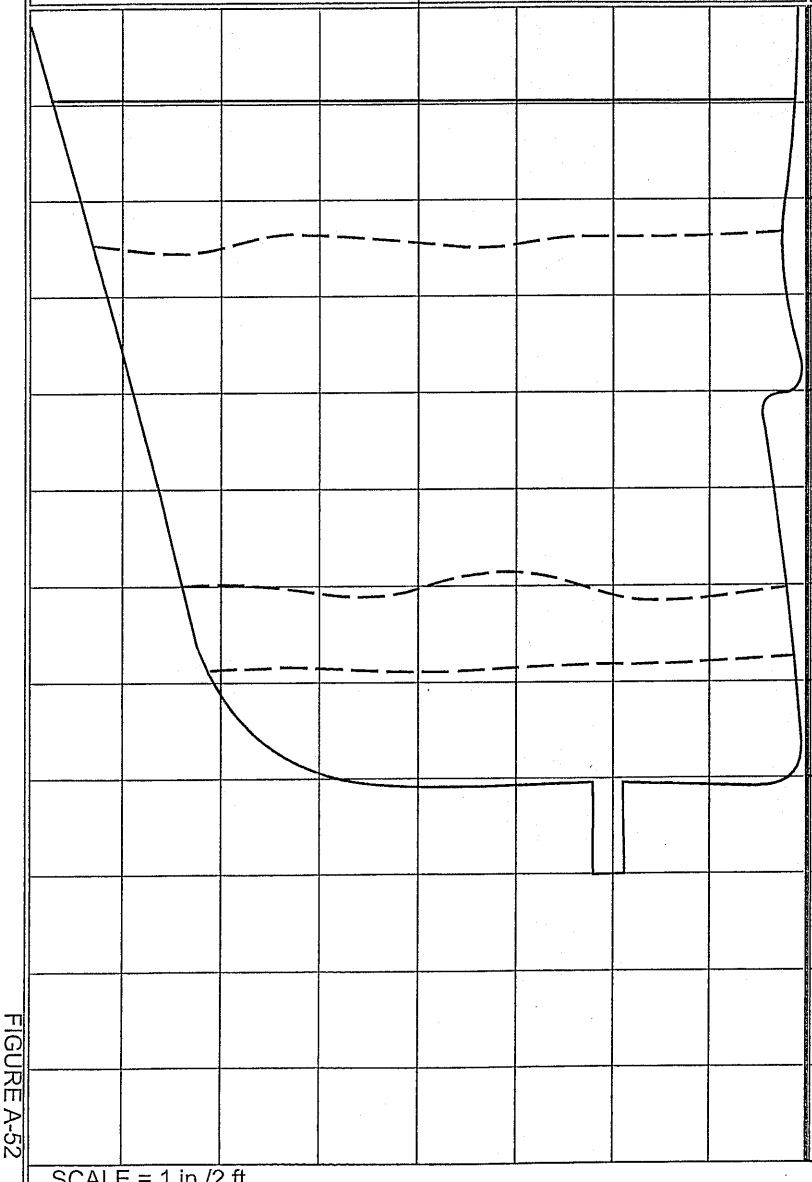
PROJECT NO.	DATE
602257001	12/14

DATE EXCAVATED 8/22/13 TEST PIT TP-106

GROUND ELEVATION 1,052'± (MSL) LOGGED BY MDE

METHOD OF EXCAVATION Case 580 Super M Backhoe

LOCATION South End of West Dam Extension



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SM	REWORKED ALLUVIUM: Brown, damp, loose to medium dense, silty SAND; trace gravel.
	■					SM	ALLUVIUM: Brown, damp, medium dense, silty SAND with gravel; cobbles and possible boulders; caliche filaments and grain coatings.
2						SC	Brown, damp, very dense, clayey SAND; trace to few gravel; moderately to strongly cemented; caliche.
4		■					
6						SM	Reddish brown, damp, dense, silty SAND with gravel; moderately cemented; caliche.
	■					SC	Light brown, damp, very dense, clayey SAND; trace gravel; moderately cemented; caliche.
8		■					
10							Total Depth = 9 feet. Groundwater not encountered during excavation. Backfilled on 8/22/13 shortly after completion of excavating.
12							Note: Groundwater, though not encountered at the time of excavating, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

SCALE = 1 in./2 ft.

FIGURE A-52

Jinyo & Moore

TEST PIT LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT
BUCKEYE, ARIZONA

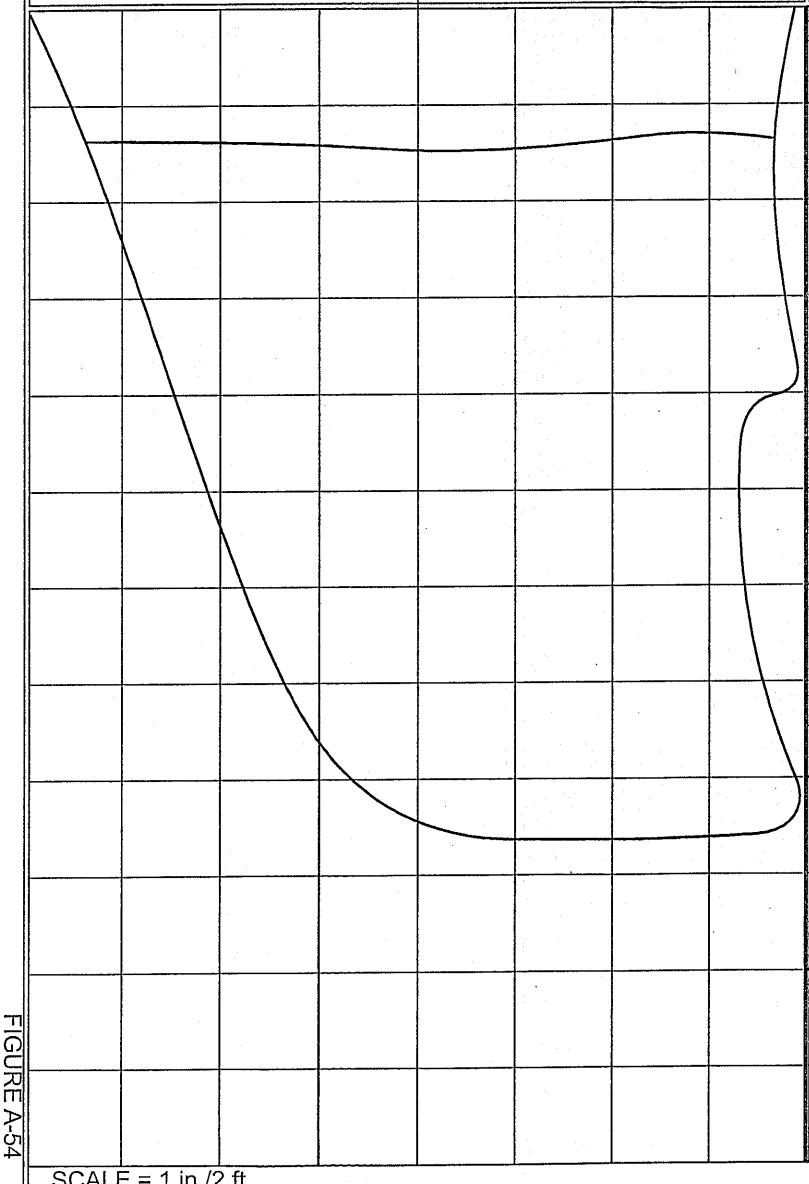
PROJECT NO.	DATE
602257001	12/14

DATE EXCAVATED 8/22/13 TEST PIT TP-108

GROUND ELEVATION 1,055'± (MSL) LOGGED BY MDE

METHOD OF EXCAVATION Case 580 Super M Backhoe

LOCATION Near Middle of West Dam Extension



SCALE = 1 in./2 ft.

DEPTH (FEET)	SAMPLES (Bulk / Driven / Sand Cone)	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0				SM	REWORKED ALLUVIUM: Brown, damp, medium dense to dense, silty SAND with gravel; weakly cemented by caliche; cobbles and possible boulders.
2	Bulk			SM	ALLUVIUM: Brown, damp, medium dense, silty SAND with gravel; weakly to moderately cemented by caliche scattered filaments and grain coatings.
				SC	Light brown, damp, dense, clayey SAND; trace gravel.
4	Driven				
6	Bulk				Increase in cementation by caliche; cobbles and possible boulders; thin occasional layers more than 3" thick of silty sand.
8	Bulk				
10					Total Depth = 8.5 feet. Groundwater not encountered during excavation. Backfilled on 8/22/13 shortly after completion of excavating. Note: Groundwater, though not encountered at the time of excavating, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
12					

FIGURE A-54

Jinyo & Moore

TEST PIT LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT
BUCKEYE, ARIZONA

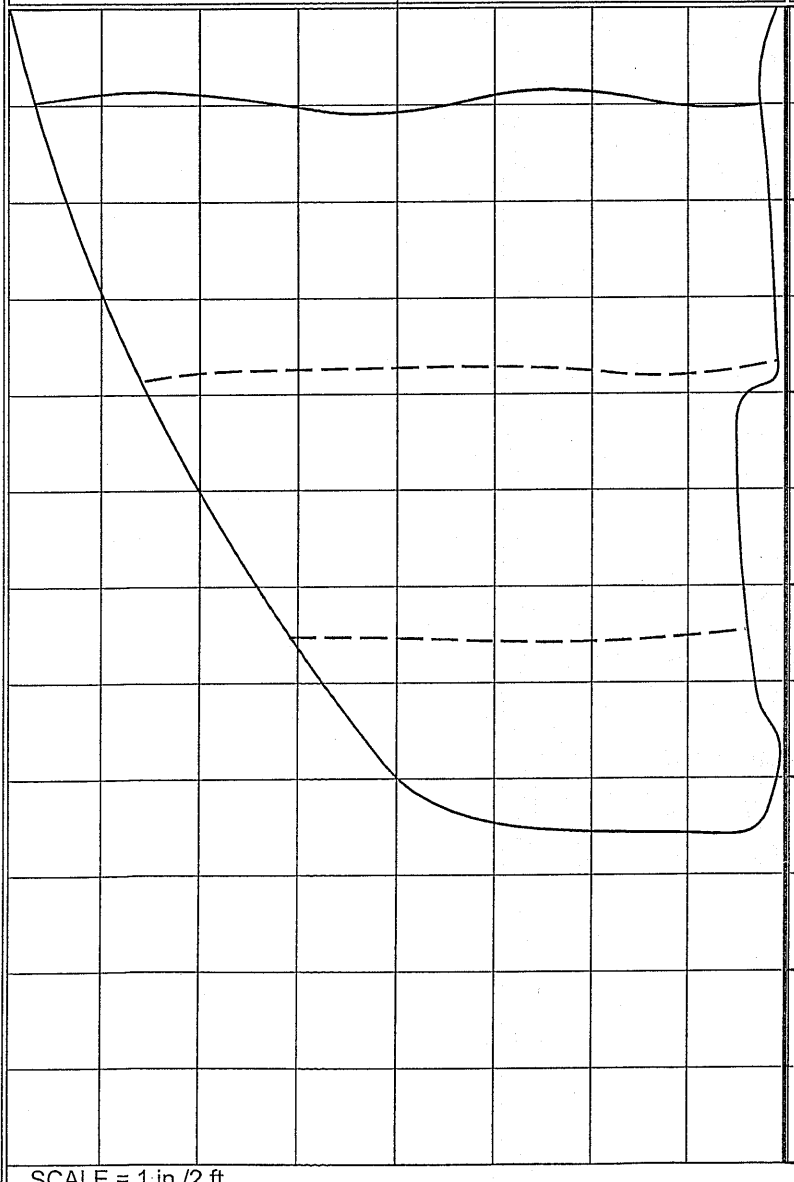
PROJECT NO.	DATE
602257001	12/14

DATE EXCAVATED 8/21/13 TEST PIT TP-110

GROUND ELEVATION 1,059'± (MSL) LOGGED BY MDE

METHOD OF EXCAVATION Case 580 Super M Backhoe

LOCATION Near North End of West Dam Extension



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SM	REWORKED ALLUVIUM: Brown, damp, medium dense, silty SAND; trace gravel.
2	■					SM	ALLUVIUM: Brown, damp, medium dense to dense, silty SAND; few gravel; scattered caliche filaments; weakly cemented.
4	■					SM	Light brown, damp, dense to very dense, silty SAND with gravel; moderately to strongly cemented by caliche.
6						SC	Light brown, damp, very dense, clayey SAND with gravel; strongly cemented by caliche.
8	■						Total Depth = 8.5 feet. Groundwater not encountered during excavation. Backfilled on 8/21/13 shortly after completion of excavating.
10							Note: Groundwater, though not encountered at the time of excavating, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
12							

SCALE = 1 in./2 ft.

FIGURE A-56

Jinyo & Moore

TEST PIT LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT
BUCKEYE, ARIZONA

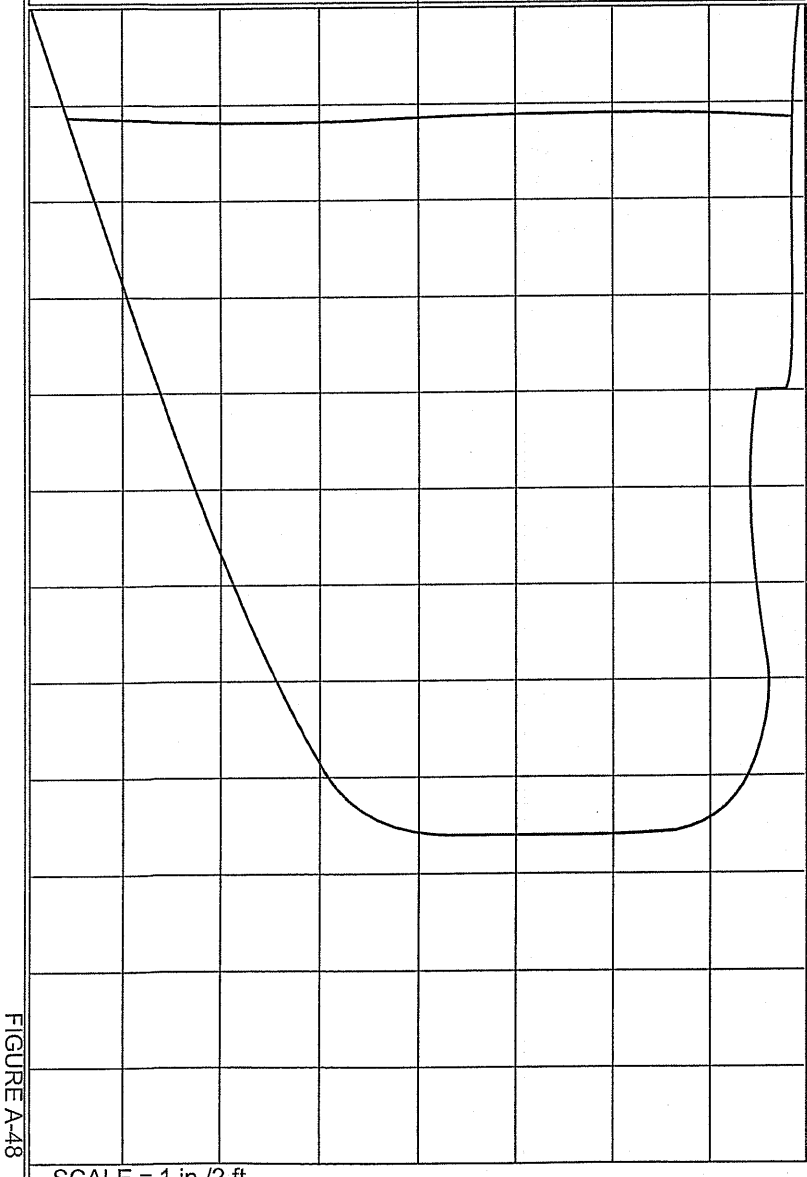
PROJECT NO.	DATE
602257001	12/14

DATE EXCAVATED 8/20/13 TEST PIT TP-102

GROUND ELEVATION 1,055'± (MSL) LOGGED BY MDE

METHOD OF EXCAVATION Case 580 Super M Backhoe

LOCATION Near Middle of East Dam Extension



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	REWORKED ALLUVIUM: Brown, damp, loose to medium dense, silty SAND; trace gravel.
2	■					SM	ALLUVIUM: Brown, damp, medium dense to dense, silty SAND; trace gravel; weakly cemented by caliche.
						SM	Light brown, damp, dense to very dense, silty SAND; trace to few gravel; moderately cemented by caliche; scattered caliche nodules up to 1/2" in diameter.
4		■				SC	Light brown, damp, very dense, clayey SAND; trace gravel; weakly to moderately cemented by caliche; caliche nodules up to 1/2" in diameter.
6	■						Increase in amount of disseminated caliche in soil matrix; moderately to strongly cemented.
8	■						Total Depth = 8.5 feet. Groundwater not encountered during excavation. Backfilled on 8/20/13 shortly after completion of excavating.
10							Note: Groundwater, though not encountered at the time of excavating, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
12							

SCALE = 1 in./2 ft.

FIGURE A-48

Kinyo & Moore

TEST PIT LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT
BUCKEYE, ARIZONA

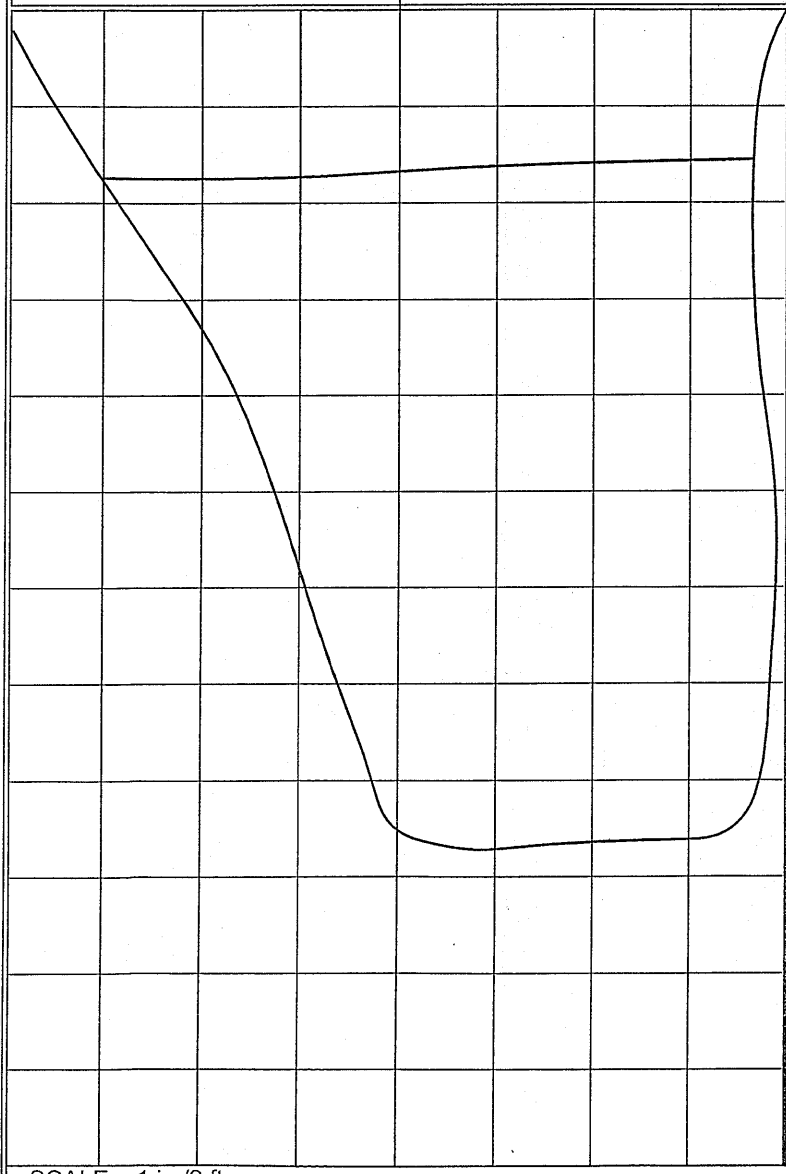
PROJECT NO.	DATE
602257001	12/14

DATE EXCAVATED 8/19/13 TEST PIT TP-104

GROUND ELEVATION 1,057'± (MSL) LOGGED BY MDE

METHOD OF EXCAVATION Case 580 Super M Backhoe

LOCATION Near North End of Planned East Dam Extension



SCALE = 1 in./2 ft.

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	REWORKED ALLUVIUM: Brown, damp, loose to medium dense, silty SAND; trace gravel.
2						SC	ALLUVIUM: Brown, damp, medium dense to dense, clayey SAND: trace gravel; weakly cemented.
						SC	Light brown, damp, dense, clayey SAND; trace gravel; weakly to moderately cemented.
4		■				SM	Light brown, damp, dense to very dense, silty SAND; trace to few gravel; moderately to strongly cemented by caliche; nodules up to 1/2" in diameter.
6	■					SC	Light brown, damp, very dense, clayey SAND; trace to few gravel; moderately to strongly cemented.
8		■					Total Depth = 8.5 feet. Groundwater not encountered during excavation. Backfilled on 8/19/13 shortly after completion of excavating.
10							Note: Groundwater, though not encountered at the time of excavating, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
12							

FIGURE A-50

DATE DRILLED 5/16/14 BORING NO. B-126

GROUND ELEVATION 1,055' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

TH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		■	85/11"	5.5	112.9		SM	ALLUVIUM: Brown, moist, very dense, silty SAND; trace clay; scattered caliche nodules.
		◥	56				SC	Brown, moist, very dense, clayey SAND; scattered caliche nodules.
		■	50/5"					
		◥	64					
10								
		■	50/3"					Moderately to strongly cemented.
		◥	67					
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/16/14 shortly after completion of drilling.
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30								

Ninyo & Moore

BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-42

DATE DRILLED 5/16/14 BORING NO. B-128

GROUND ELEVATION 1,045' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown, moist, medium dense, silty SAND.
		9					
		12	1.5	94.9			Loose.
		9					Medium dense.
		23					Trace gravel; scattered caliche nodules.
10							
		11					
		50/5"					Few clay and gravel.
20							Total Depth = 19.4 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/16/14 shortly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							
40							

Ninyo & Moore

BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-44

DATE DRILLED 5/16/14 BORING NO. B-130

GROUND ELEVATION 1,050' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		53					ALLUVIUM: Coarse gravel; possible cobbles.
		18				SC	Brown, moist, medium dense, clayey SAND; scattered caliche nodules.
		86/10"	5.5	100.3			Very dense.
10		60					
		50/5"				SM	Brown, moist, very dense, silty SAND; scattered caliche nodules.
		40				SC	Brown, moist, very dense, clayey SAND; scattered caliche nodules.
20							Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/16/14 shortly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-46

DATE DRILLED 5/16/14 BORING NO. B-120

GROUND ELEVATION 1,051' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown, moist, medium dense, silty SAND; trace gravel.
		9					
		24	3.1	104.0			
						SC	Brown, moist, medium dense, clayey SAND.
		44					Very dense; scattered caliche nodules.
		90/11"					
10							
		28					Dense; trace gravel.
		50/5"					Very dense.
20							Total Depth = 19.4 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/16/14 shortly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-36

DATE DRILLED 5/15/14 BORING NO. B-122

GROUND ELEVATION 1,047' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	ALLUVIUM: Brown, moist, very dense, clayey SAND; trace gravel; scattered caliche nodules.
			84/11"	3.3	112.9			
			26					Dense.
			45	3.1	114.7		SM	Brown, moist, dense, silty SAND; trace to few gravel.
			16				SC	Brown, moist, medium dense, clayey SAND: scattered caliche nodules.
10								
			31					
			51					
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/15/14 shortly after completion of drilling.
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30								

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-38

DATE DRILLED 5/16/14 BORING NO. B-124

GROUND ELEVATION 1,049' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	ALLUVIUM: Brown, moist, medium dense, clayey SAND; trace gravel.
			27					
			26					Dense.
			85/10"	5.8	104.4			Very dense; scattered caliche nodules; few gravel.
			51					
10								
			60					Dense.
			36					Very dense.
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/16/14 shortly after completion of drilling.
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30								
0								

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-40

DATE DRILLED 5/14/14 BORING NO. B-111

GROUND ELEVATION 1,042' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		27				SM	ALLUVIUM: Brown, moist, medium dense, silty SAND.
		38				SC	Brown, moist, very dense, clayey SAND; trace gravel; scattered caliche nodules.
		76	5.8	97.0			
10		41				SM	Brown, moist, very dense, silty SAND.
		55	5.7	95.5		SC	Brown, moist, dense, clayey SAND; scattered caliche nodules.
							Few gravel.
20		40					Very dense.
							Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/14/14 shortly after completion of drilling.
30							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-27

DATE DRILLED 5/16/14 BORING NO. B-113

GROUND ELEVATION 1,033' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	ALLUVIUM: Brown, moist, medium dense, clayey SAND.
		■	19					
		■	23	5.6	113.9			Trace gravel.
		■	21					Dense.
		■	50/5"					Very dense; few gravel.
10								
		■	36					Scattered caliche nodules.
		■	64	13.4	96.0			Dense.
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/16/14 shortly after completion of drilling.
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30								
40								

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-29

DATE DRILLED 5/15/14 BORING NO. B-115

GROUND ELEVATION 1,044' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	ALLUVIUM: Brown, moist, very dense, clayey SAND with gravel; scattered caliche nodules.
			48					
			50/5"	3.5	108.4			
			39					Trace gravel.
			80/11"					
10								
			41					
			98/8"				SM	Brown, moist, very dense, silty SAND; trace gravel.
20								Total Depth = 19.7 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/15/14 shortly after completion of drilling.
30								

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-31

DATE DRILLED 5/15/14 BORING NO. B-117

GROUND ELEVATION 1,046' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown, moist, loose to medium dense, silty SAND.
		7					
		20	3.2	116.8			Medium dense; trace to few gravel.
		26				SC	Brown, moist, dense, clayey SAND; trace gravel; scattered caliche nodules.
		88	6.0	114.6		SM	Brown, moist, very dense, silty SAND.
10							
		36				SC	Brown, moist, very dense, clayey SAND.
						SM	Brown, moist, very dense, silty SAND.
		81/11"					Trace to few gravel.
20							Total Depth = 19.9 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/15/14 shortly after completion of drilling.
30							
40							

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-33

DATE DRILLED 5/15/14 BORING NO. B-102

GROUND ELEVATION 1,055' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

TH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		34	3.8	109.5		SM	ALLUVIUM: Brown, damp, medium dense, silty SAND; trace gravel.
		28					Dense.
		86	4.3	106.7		SC	Brown, moist, very dense, clayey SAND; trace gravel; scattered caliche nodules.
10		78/11"					
		82/11"				SM	Brown, moist, very dense, silty SAND; scattered caliche nodules.
20		82					Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/15/14 shortly after completion of drilling.
30							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-18

DATE DRILLED 5/14/14 BORING NO. B-104

GROUND ELEVATION 1,049' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	ALLUVIUM: Brown, moist, dense, silty SAND; scattered caliche nodules.
			29					
			50/5"	4.2	102.4			Very dense.
			43					
			50/4"	5.6	99.1			
10								
			65				SC	Brown, moist, very dense, clayey SAND: scattered caliche nodules.
			50/5"				SM	Brown, moist, very dense, silty SAND; few gravel.
20								Total Depth = 19.4 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/14/14 shortly after completion of drilling.
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30								
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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-20

DATE DRILLED 5/14/14 BORING NO. B-106

GROUND ELEVATION 1,050' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

TH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown, moist, medium dense, silty SAND.
		14					
		33	3.0	103.0			
		25					Dense; trace gravel.
		83/11"	6.1	99.2			Very dense.
10						SC	Brown, moist, very dense, clayey SAND; scattered caliche nodules; trace gravel.
		23				SM	Brown, moist, dense, silty SAND; scattered caliche nodules.
		69					
20							Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/14/14 shortly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							
40							

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-22

DATE DRILLED 5/14/14 BORING NO. B-108

GROUND ELEVATION 1,045' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown, moist, medium dense to dense, silty SAND; few gravel.
		42					
		22					Dense.
		34	3.6	111.1			Medium dense.
		23				SC	Brown, moist, dense, clayey SAND; scattered caliche nodules.
10							
		50/3"					Very dense; trace to few gravel.
		48					
20							Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/14/14 shortly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-24

DATE DRILLED 5/14/14 BORING NO. B-110

GROUND ELEVATION 1,046' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0			24				SC-SM	ALLUVIUM: Brown, moist, dense, silty clayey SAND; trace gravel; scattered caliche nodules.
			70	1.8	117.9		SM	Brown, moist, very dense, silty SAND. Dense to very dense.
			30					
			60/11"	5.4	102.7		SC	Brown, moist, very dense, clayey SAND with gravel.
10			34					
			14	2.8	105.8		SM	Brown, moist, loose to medium dense, silty SAND; few gravel.
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled with bentonite on 5/14/14 shortly after completion of drilling.
30								

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

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WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-26

DATE DRILLED 9/7/11 BORING NO. B-40

GROUND ELEVATION 1,062' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	ALLUVIUM: Light brown (7.5YR, 6/4), damp, loose to medium dense, silty SAND; trace gravel; scattered caliche filaments and rootlets.
			41				SC	Light brown (7.5YR, 6/4), damp, medium dense, clayey SAND; trace gravel; scattered caliche filaments and nodules up to 1/2" in diameter.
			59					Dense; scattered pinhole-sized pore spaces.
			88					Very dense; moderately cemented; nodules are well integrated in soil matrix; strong reaction to HCl.
			37					Pink (7.5YR, 7/4); numerous caliche nodules.
			50/3"					Light brown (7.5YR, 6/4); moderate reaction to HCl; scattered caliche nodules.
10								
			38					Decrease in fines content. Strong reaction to HCl.
			83					Pink (7.5YR, 7/4); numerous caliche nodules and layers.
			60					
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled on 9/7/11 promptly after completion of drilling.
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30								

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-6

DATE DRILLED 9/7/11 BORING NO. B-42

GROUND ELEVATION 1,058' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SP-SM	ALLUVIUM: Light brown (7.5YR, 6/4), damp, loose, poorly graded SAND with silt; few gravel; scattered rootlets.
		24				SC	Pink (7.5YR, 7/4), damp, medium dense, clayey SAND; trace gravel; scattered caliche filaments and nodules up to 1/2" in diameter; scattered pinhole-sized pore spaces; strong reaction to HCl.
		67					Light brown (7.5YR, 6/4); dense; decrease in fines content.
		75					Very dense.
		67					Pink (7.5YR, 8/2); numerous caliche nodules; moderate cementation; increase in fines content.
10		50/3"					
						SM	Light brown (7.5YR, 6/4), damp, very dense, silty SAND; weak reaction to HCl; scattered caliche specks.
		36					
		88					Strong brown (7.5YR, 4/6).
						SC	Light brown (7.5YR, 6/4), damp, very dense, clayey SAND; trace gravel; scattered caliche nodules, filaments, and scattered pinhole-sized pore spaces; strong reaction to HCl.
		63					
20							Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled on 9/7/11 promptly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-8

DATE DRILLED 9/8/11 BORING NO. B-44

GROUND ELEVATION 1,048' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown (7.5YR, 5/4), damp, medium dense, silty SAND; trace gravel; scattered rootlets; moderate reaction to HCl.
		15					
		20					Scattererd caliche nodules.
		18	2.2	114.4			
		22					
		19					
10		24					Dense; increase in clay content.
						SC	Strong brown (7.5YR, 5/6), damp, dense, clayey SAND; scattered caliche filaments and nodules up to 1/2" in diameter.
		50/6"					Pink (7.5YR, 7/3); very dense; strong reaction to HCl; nodules up to 1" in diameter.
		50/5"					
		50/5"					
20		50					
							Total Depth = 21.5 feet. Groundwater not encountered during drilling. Backfilled on 9/8/11 promptly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-10

DATE DRILLED 9/8/11 BORING NO. B-46

GROUND ELEVATION 1,051' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Light brown (7.5YR, 6/4), damp, medium dense, silty SAND; trace gravel; scattered rootlets.
		19					
		20					Increase in clay content; scattered caliche filaments and nodules up to 1/4" in diameter.
		29	3.3	108.6			Decrease in clay content.
		59					Dense.
						SC	Pink (7.5YR, 7/3), damp, dense, clayey SAND; trace gravel; numerous caliche nodules up to 1/2" in diameter; strong reaction to HCl; moderately cemented.
		50/3"					Very dense.
10							
		50/4"					
						CL	Pink (7.5YR, 7/3), damp, hard, sandy CLAY; trace gravel; numerous caliche nodules up to 1/2" in diameter; strong reaction to HCl; moderately cemented.
		78/9"					
		50/5"					Light brown (7.5YR, 6/4).
		64					
20							Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled on 9/8/11 promptly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							
40							

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-12

DATE DRILLED 9/8/11 BORING NO. B-48

GROUND ELEVATION 1,056' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

TH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	ALLUVIUM: Light brown (7.5YR, 6/4), damp, medium dense, clayey SAND; trace gravel; scattered rootlets, pinhole-sized pore spaces, caliche filaments, and nodules.
		74/11"	2.0	122.4			Pinkish white (7.5YR, 8/2); very dense; numerous caliche nodules up to 1" in diameter; nodules well integrated in soil matrix; strong reaction to HCl;
		55					Brown (7.5YR, 5/4) to light brown (7.5YR, 6/4); dense; decrease in fines content; increase in gravel content; scattered caliche nodules up to 1" in diameter.
		50/5"					Pink (7.5YR, 7/4); increase in fines content; decrease in gravel content.
		72					Pink (7.5YR, 8/4); numerous caliche nodules.
10		50/6"					
		64					Light brown (7.5YR, 6/4); scattered caliche nodules.
		50/5"					
		65					
20							Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled on 9/8/11 promptly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							
40							

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-14

DATE DRILLED 9/7/11 BORING NO. B-50

GROUND ELEVATION 1,060' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown (7.5YR, 5/4), damp, loose to medium dense, silty SAND; few gravel; scattered rootlets; moderate reaction to HCl.
		67				SC	Light brown (7.5YR, 6/4), damp, dense, clayey SAND; few gravel; scattered pinhole-sized pore spaces, caliche filaments, and nodules up to 1/2" in diameter; moderately cemented; strong reaction to HCl.
		50/5"					
						SM	Pink (7.5YR, 7/4); very dense; numerous caliche nodules.
		99/11"				SC	Light brown (7.5YR, 6/4), damp, very dense, silty SAND with some gravel; scattered caliche nodules, and clods of weakly cemented sand; moderate reaction to HCl.
		49					Pink (7.5YR, 7/3), damp, very dense, clayey SAND; trace gravel; numerous caliche nodules; strong reaction to HCl.
10		50/5"					
		25					Dense.
		76/10"					Very dense.
		50/5"					
20		70					
							Total Depth = 21.5 feet. Groundwater not encountered during drilling. Backfilled on 9/7/11 promptly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-16

APPENDIX A

BORING AND TEST PIT LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer free-falling from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following methods.

The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the Kelly bar of the drill rig in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

The Split-Barrel Knocker Bar Sampler

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sampler was manually driven into the ground with a hammer weighing approximately 35 pounds. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

BORING LOG EXPLANATION SHEET

TH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0	■							Bulk sample.
		■						Modified split-barrel drive sampler.
		☒						No recovery with modified split-barrel drive sampler.
		▬						Sample retained by others.
		◥						Standard Penetration Test (SPT).
5		◺						No recovery with a SPT.
			XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
		◺						No recovery with Shelby tube sampler.
		▤						Continuous Push Sample.
				⚲				Seepage.
10				▽				Groundwater encountered during drilling.
				▼				Groundwater measured after drilling.
						▦	SM	MAJOR MATERIAL TYPE (SOIL): Solid line denotes unit change.
						▨	CL	Dashed line denotes material change.
15								Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface
20								The total depth line is a solid line that is drawn at the bottom of the boring.

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BORING LOG

Explanation of Boring Log Symbols

PROJECT NO.	DATE	FIGURE

Updated Nov. 2011

DATE DRILLED 9/6/11 BORING NO. B-35

GROUND ELEVATION 1,056' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

TH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	ALLUVIUM: Light brown (7.5YR, 6/4), damp, medium dense, clayey fine to coarse SAND; scattered caliche filaments; weakly cemented.
		41					
		25					
						CL	Pink (7.5YR, 7/4), damp, very stiff, sandy CLAY; scattered caliche filaments and nodules up to 1/2" in diameter; moderately cemented.
		91/11"	4.7	107.5		SC	Light brown (7.5YR, 6/4), damp, very dense, clayey fine SAND; scattered caliche filaments and nodules up to 1/4" in diameter; moderately cemented.
		43					Pink (7.5YR, 7/4).
10		94/9"					Numerous caliche nodules; scattered pinhole-sized pore spaces.
		42					
		69					Strong brown (7.5YR, 5/6); dense; decrease in fines at approximately 14.5 feet; trace gravel; moderately to strongly cemented.
						CL	Light brown (7.5YR, 6/4), damp, hard, CLAY; trace sand; moderately cemented.
		60					
						SC	Light brown (7.5YR, 6/4), damp, very dense, clayey SAND; scattered caliche filaments and pinhole-sized pore spaces.
		50/4"					
20							Total Depth = 19.8 feet. Groundwater not encountered during drilling. Backfilled on 9/6/11 promptly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							

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BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-1

DATE DRILLED 9/6/11 BORING NO. B-37

GROUND ELEVATION 1,061' ± MSL SHEET 1 OF 1

METHOD OF DRILLING CME-75, 6.5" Diameter Hollow-Stem Auger (Enviro-Drill, Inc.)

DRIVE WEIGHT 140 lbs. (Automatic) DROP 30"

SAMPLED BY TLC LOGGED BY TLC REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Light brown (7.5YR, 6/4), damp, loose to medium dense, silty SAND; scattered rootlets.
		51				SC	Light brown (7.5YR, 6/4), damp, dense to very dense, clayey SAND; trace gravel; scattered caliche nodules up to 1/4" in diameter; scattered caliche layers.
		87/10"	4.3	110.6			Pink (7.5YR, 7/4).
		61					Light brown (7.5YS, 6/4); scattered caliche filaments and pinhole-sized pore spaces.
		57					Pink (7.5YR, 7/3).
10		48					
		50					
		66					
						SP-SM	Brown (7.5YR, 5/4), damp, very dense, poorly graded SAND with silt.
		34					
20						CL	Light brown (7.5YR, 6/4), damp, hard, CLAY; scattered caliche nodules and filaments.
							Total Depth = 20 feet.
							Groundwater not encountered during drilling.
							Backfilled on 9/6/11 promptly after completion of drilling.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
30							
40							

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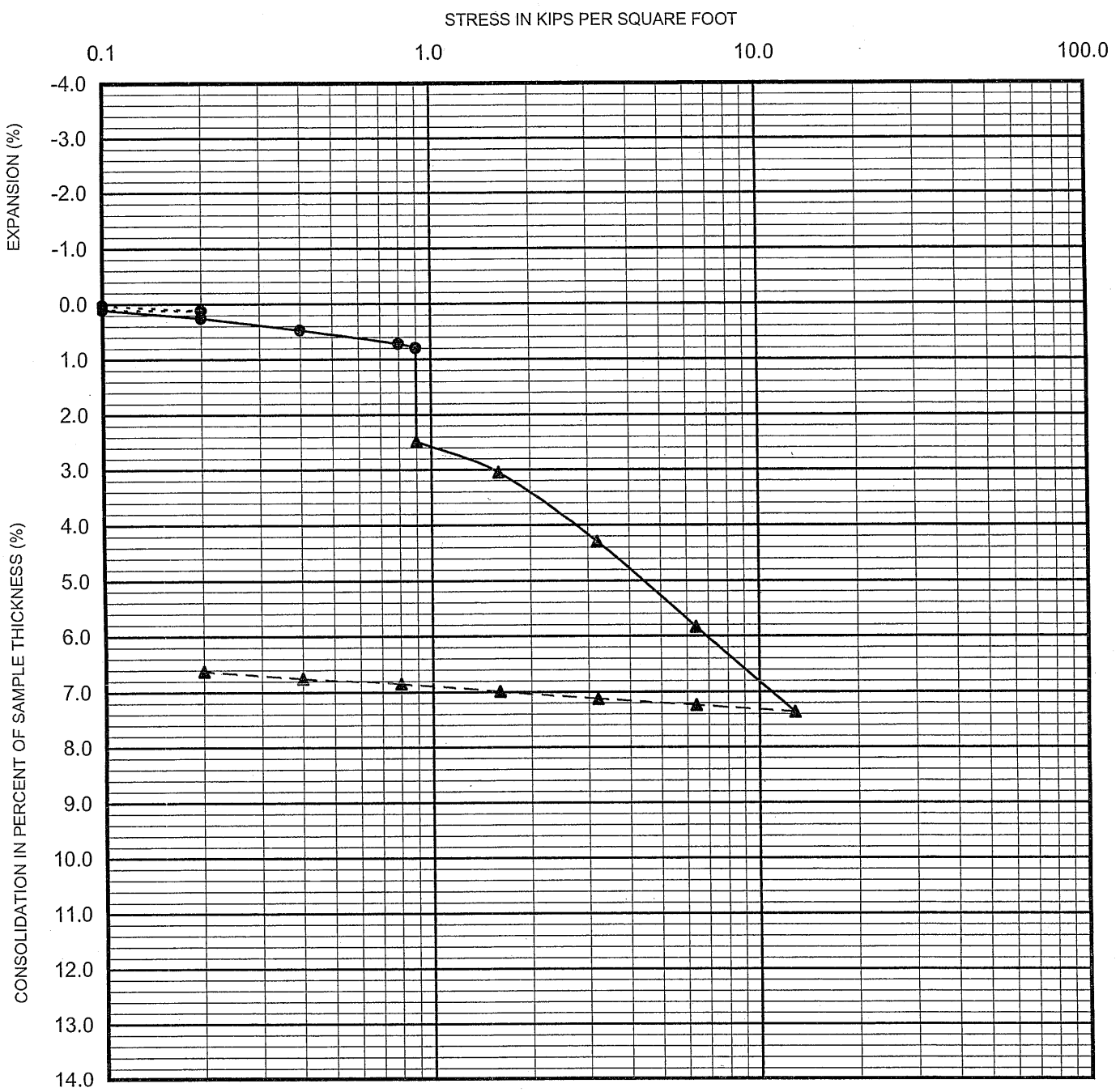
BORING LOG

WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II
BUCKEYE, ARIZONA

PROJECT NO.	DATE	FIGURE
602257001	12/14	A-3

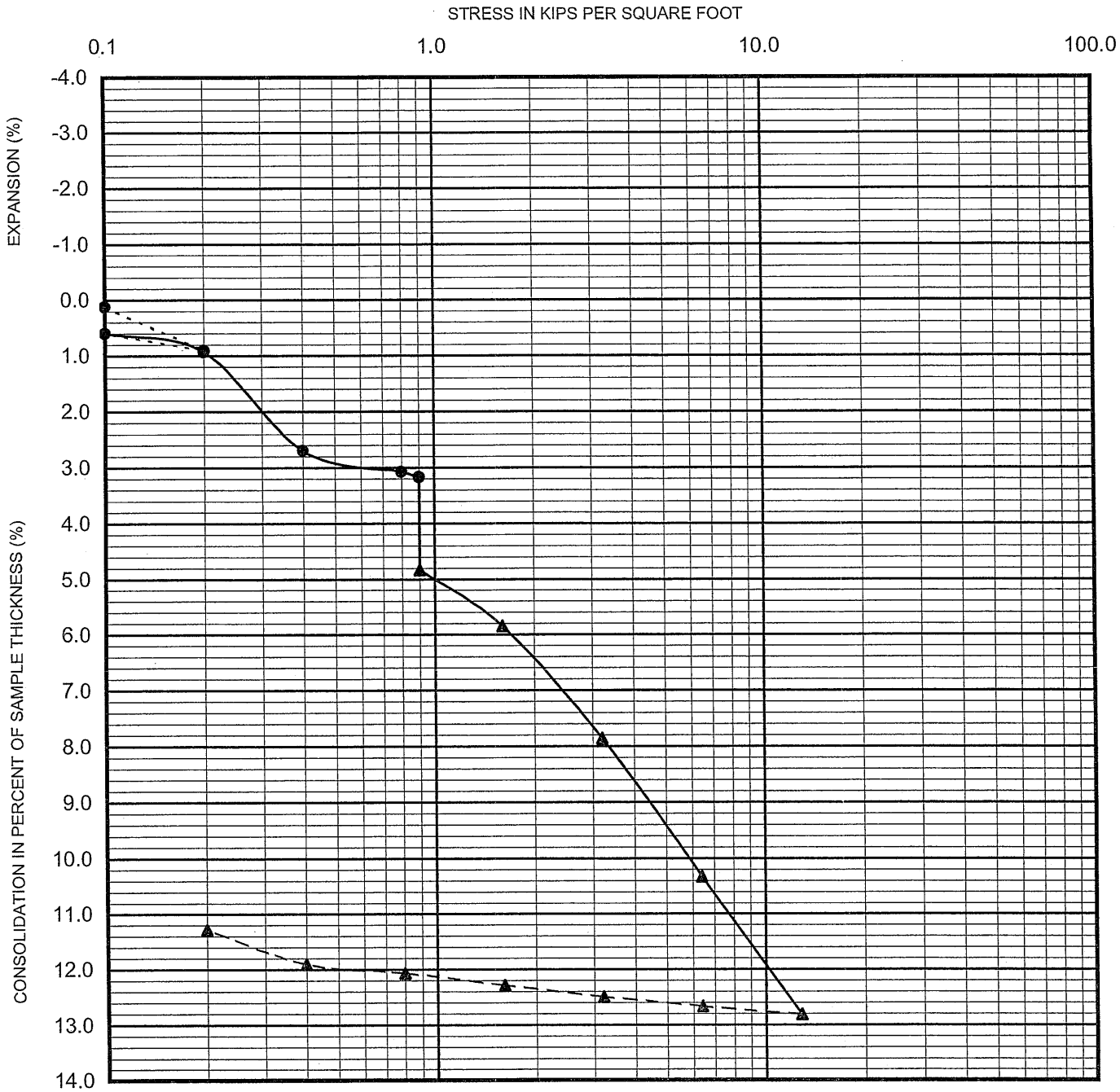


Seating Cycle		Sample Location	B-48
Loading Prior to Inundation		Depth (ft.)	2.5-4
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-66
602257001 / 12/14		

66 - CONSOLIDATION B-48@2.5-4

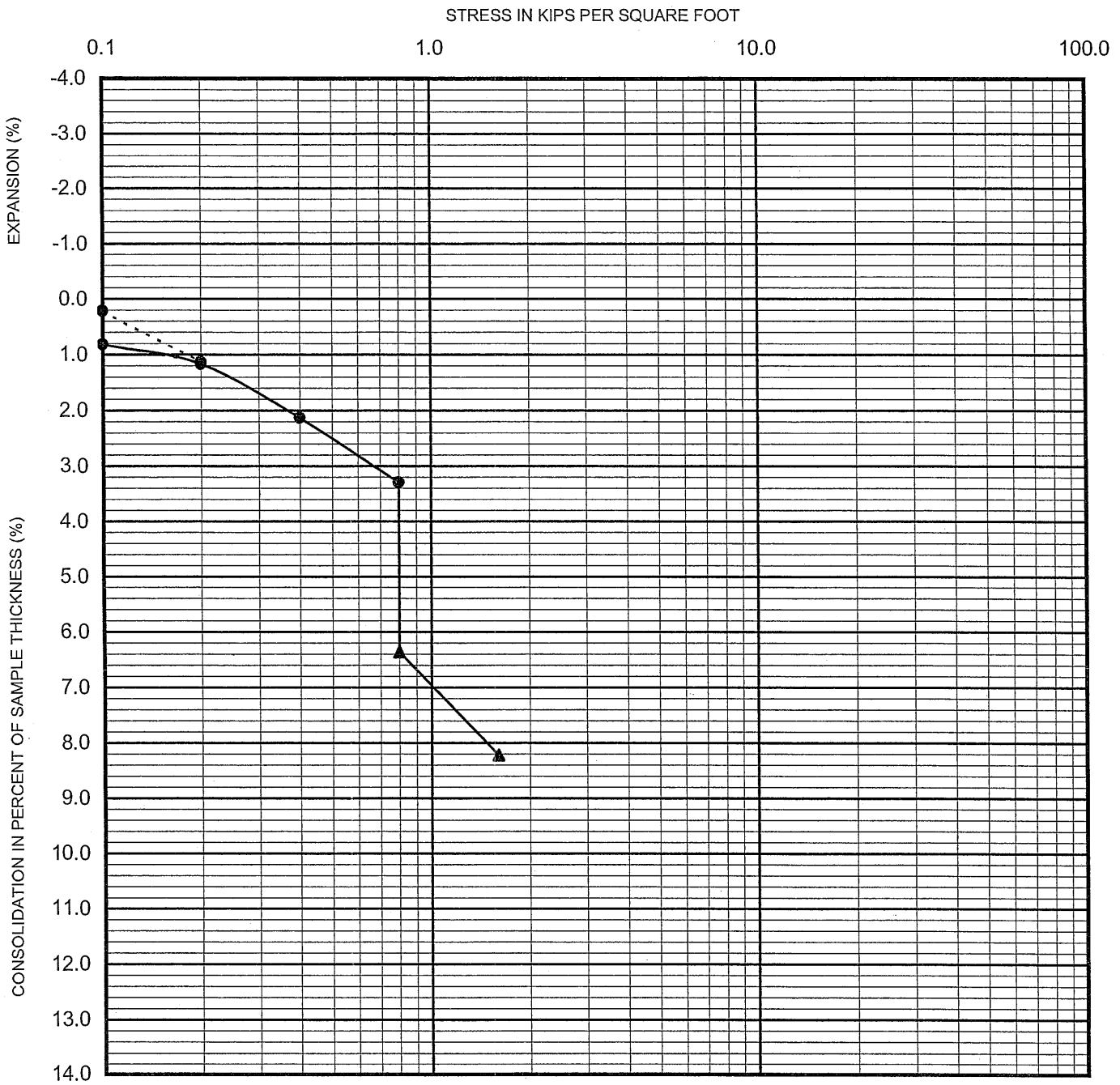


Seating Cycle		Sample Location	B-50
Loading Prior to Inundation		Depth (ft.)	2.5-3.4
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-68
602257001 / 12/14		

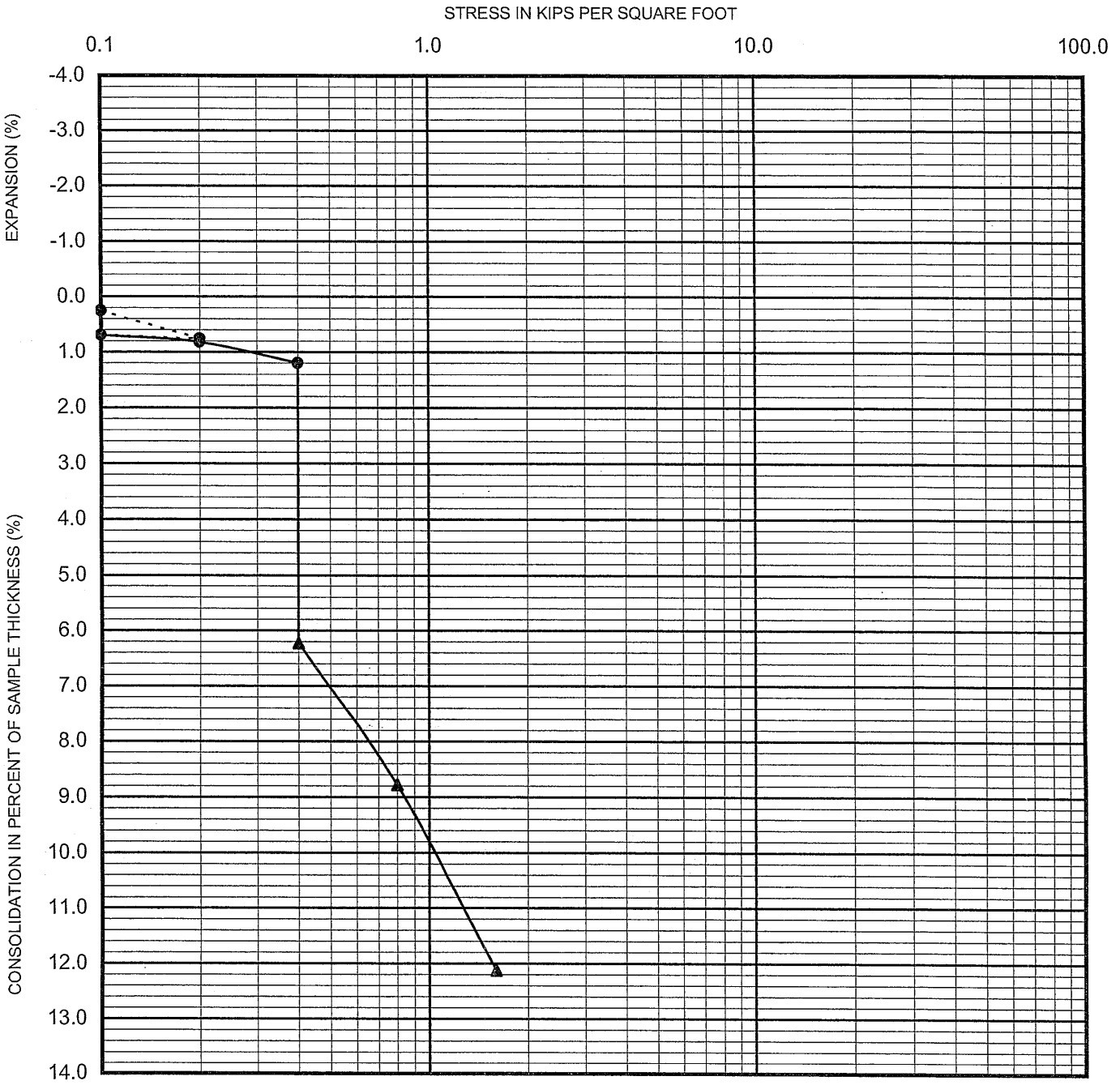
68 - CONSOLIDATION B-50@2.5-3.4



Seating Cycle		Sample Location	TP-101
Loading Prior to Inundation		Depth (ft.)	8-8.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

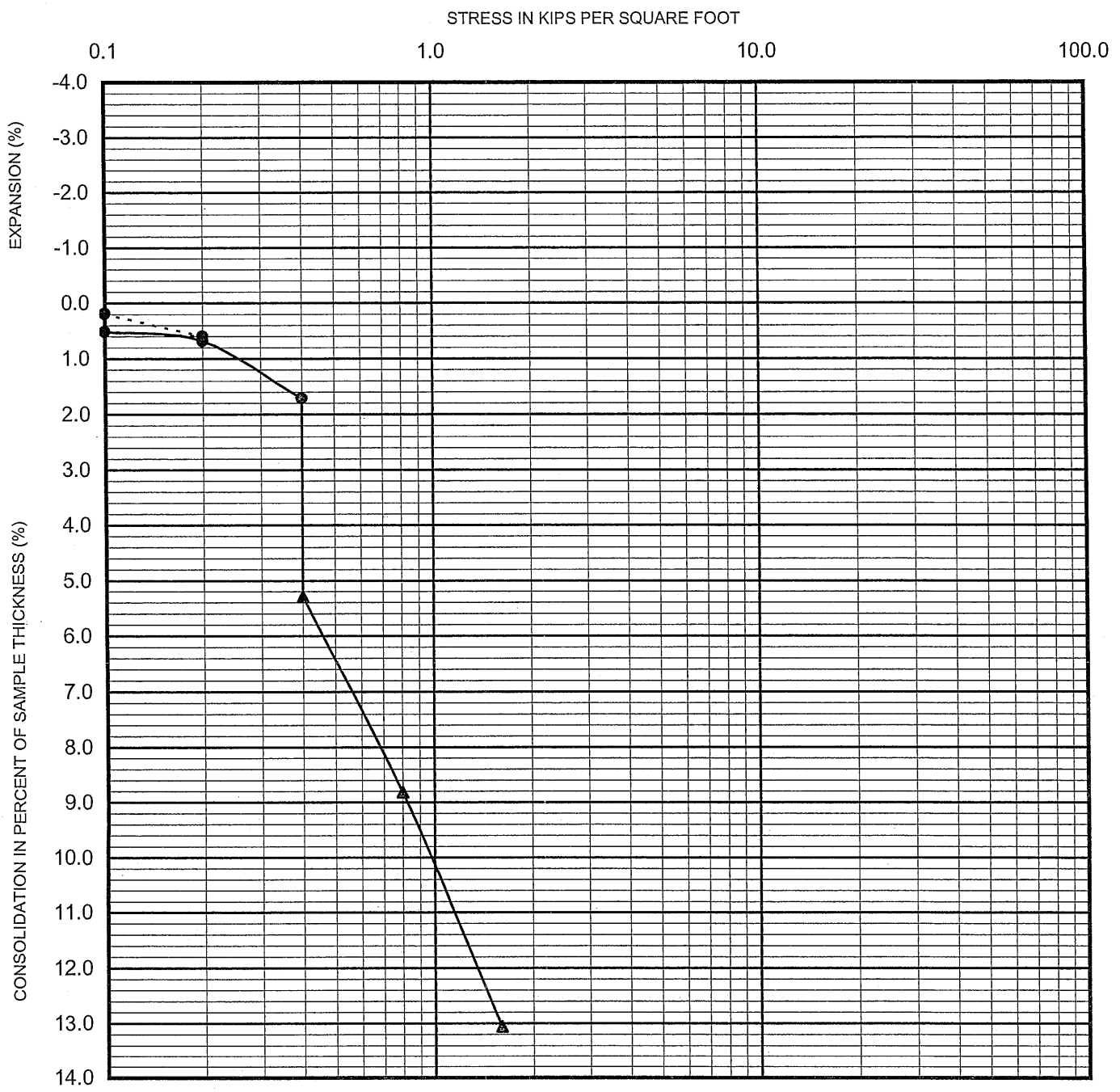
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-70



Seating Cycle		Sample Location	TP-103
Loading Prior to Inundation		Depth (ft.)	4-4.7
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

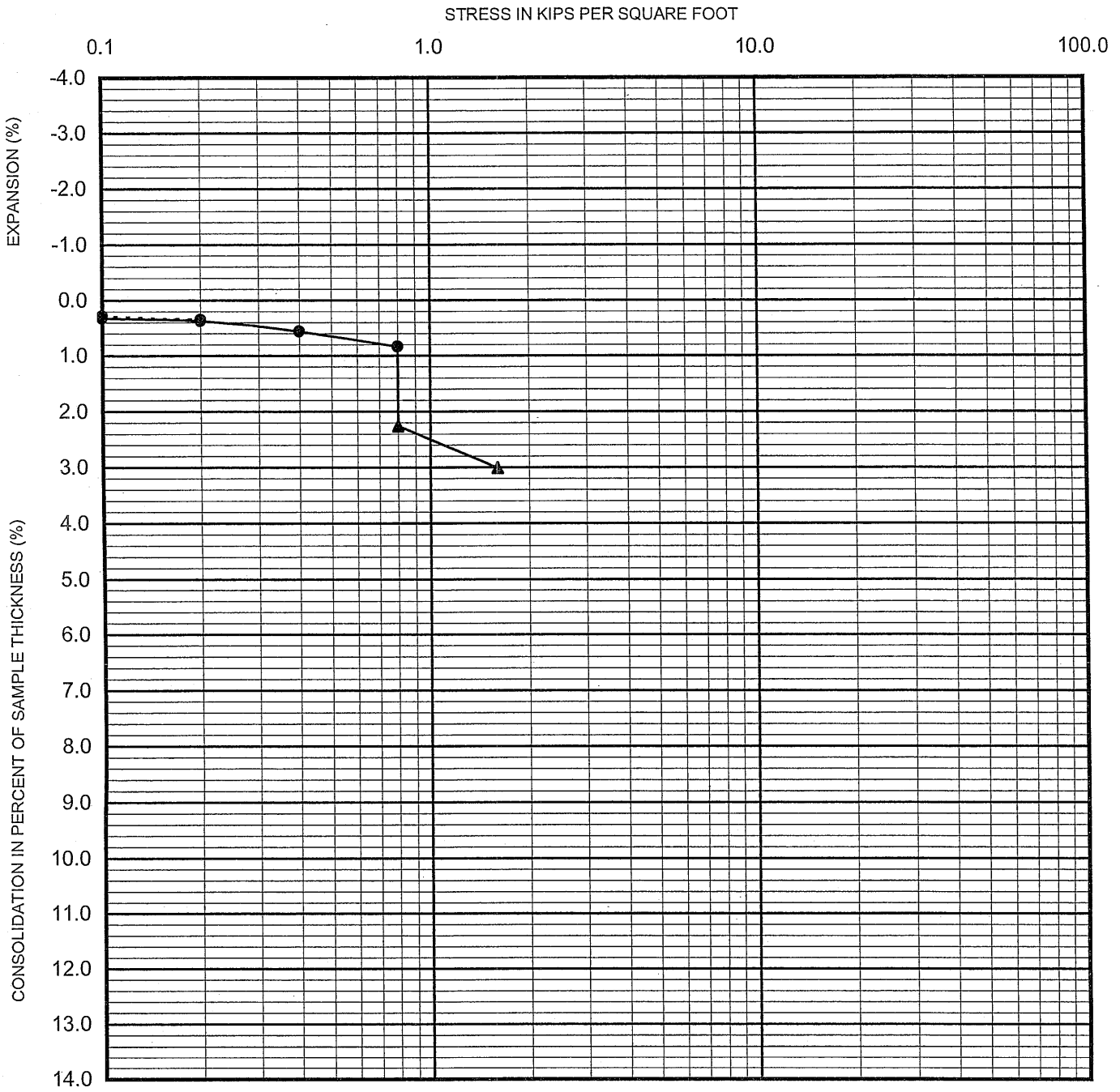
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-72
602257001 / 12/14		



Seating Cycle		Sample Location	TP-105
Loading Prior to Inundation		Depth (ft.)	2-3
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

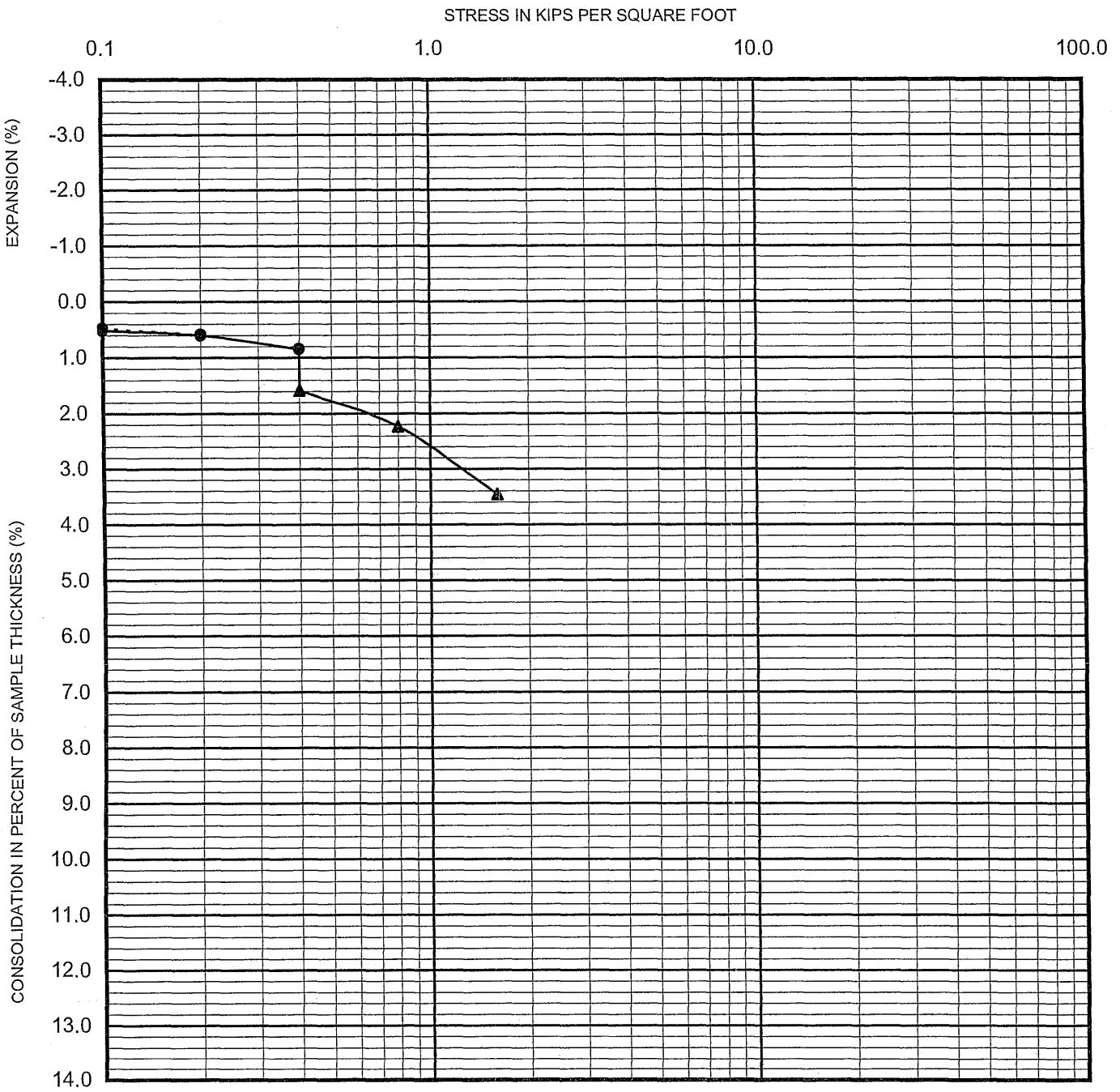
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-74
602257001 / 12/14		



Seating Cycle		Sample Location	TP-107
Loading Prior to Inundation		Depth (ft.)	3.5-4.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

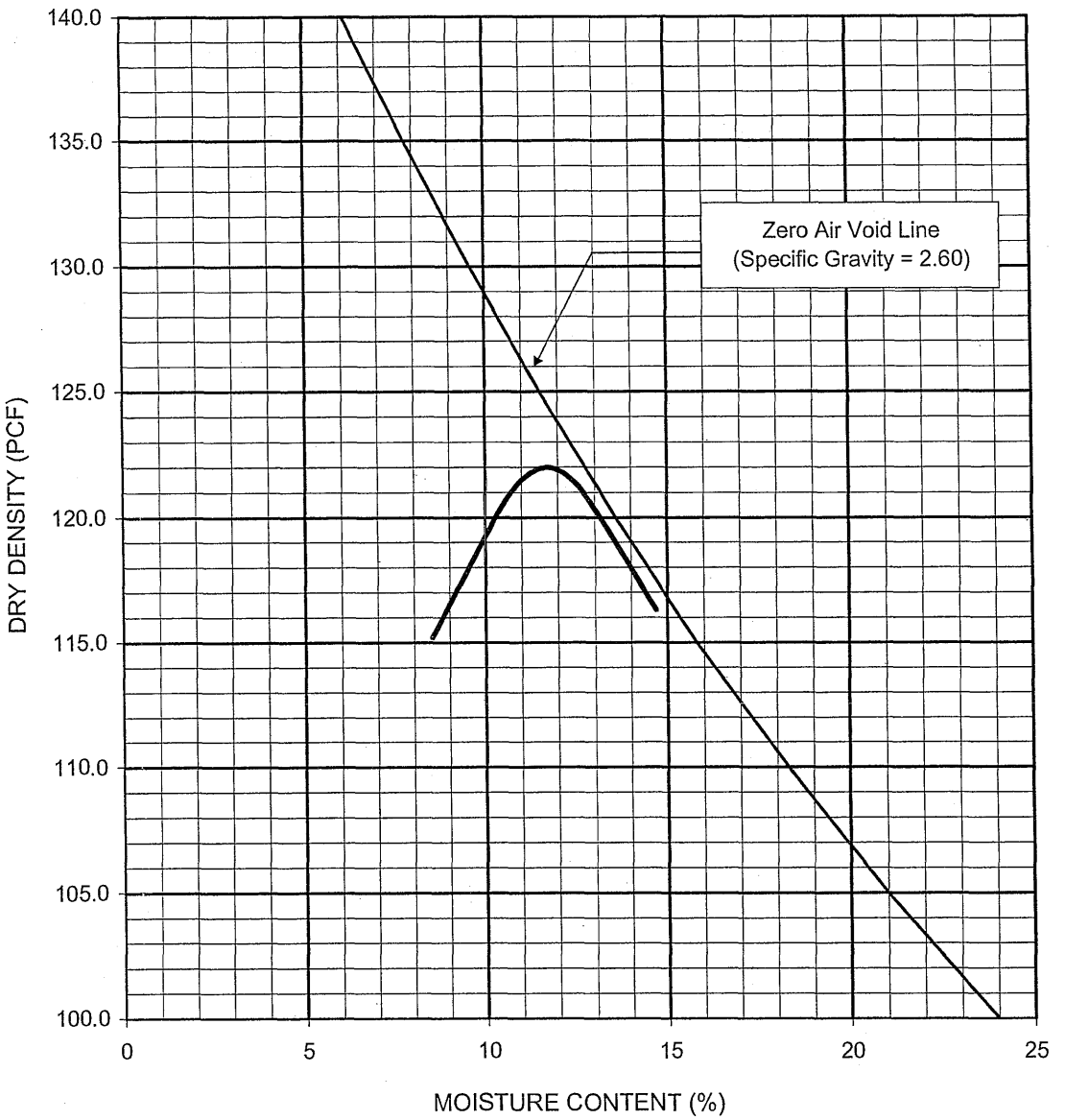
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-76
602257001 / 12/14		



Seating Cycle		Sample Location	TP-109
Loading Prior to Inundation		Depth (ft.)	4-4.9
Loading After Inundation		Soil Type	SM
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

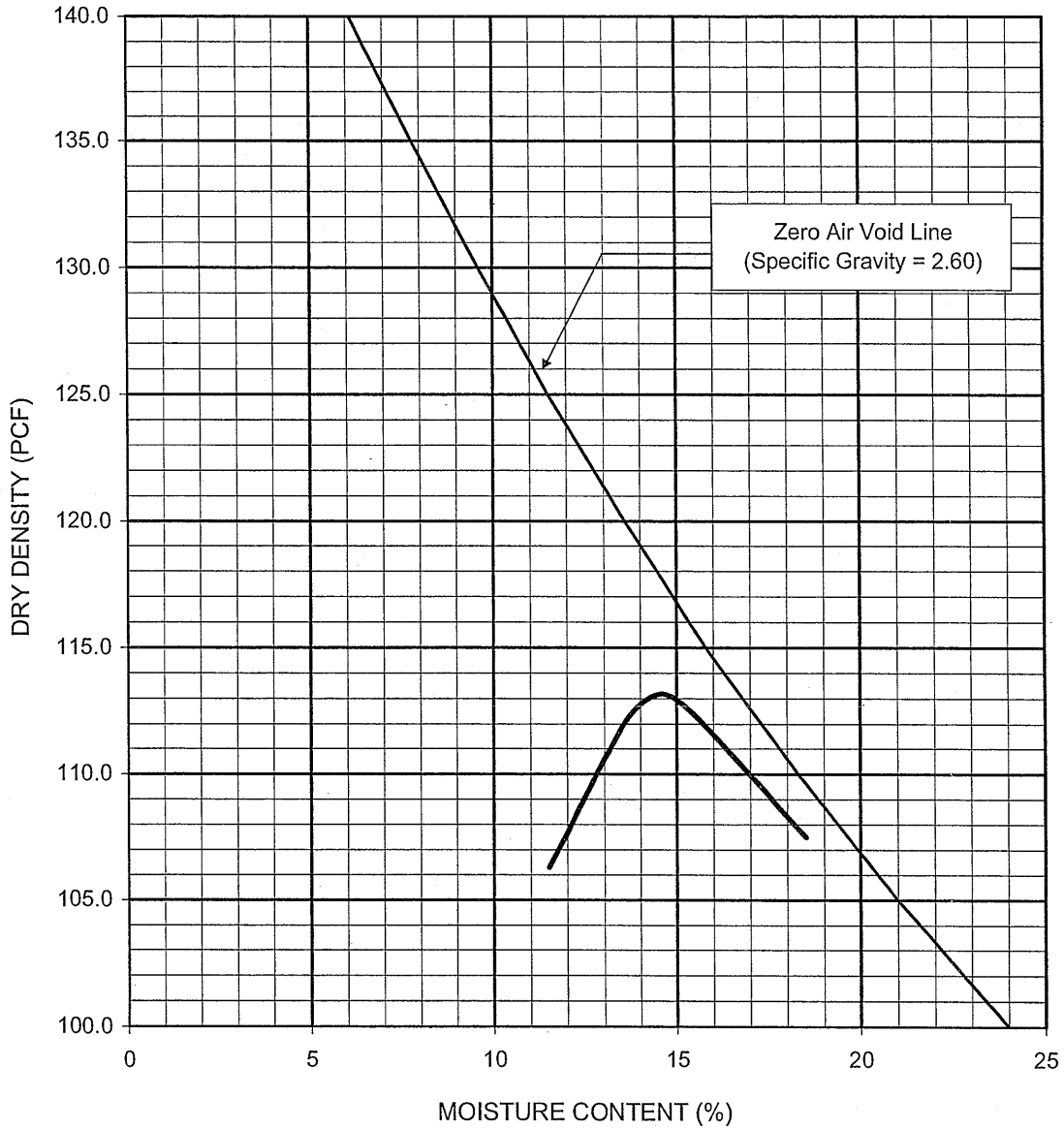
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-78
602257001 / 12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-103	0.0-5.0	SILTY SAND	122.0	11.7
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

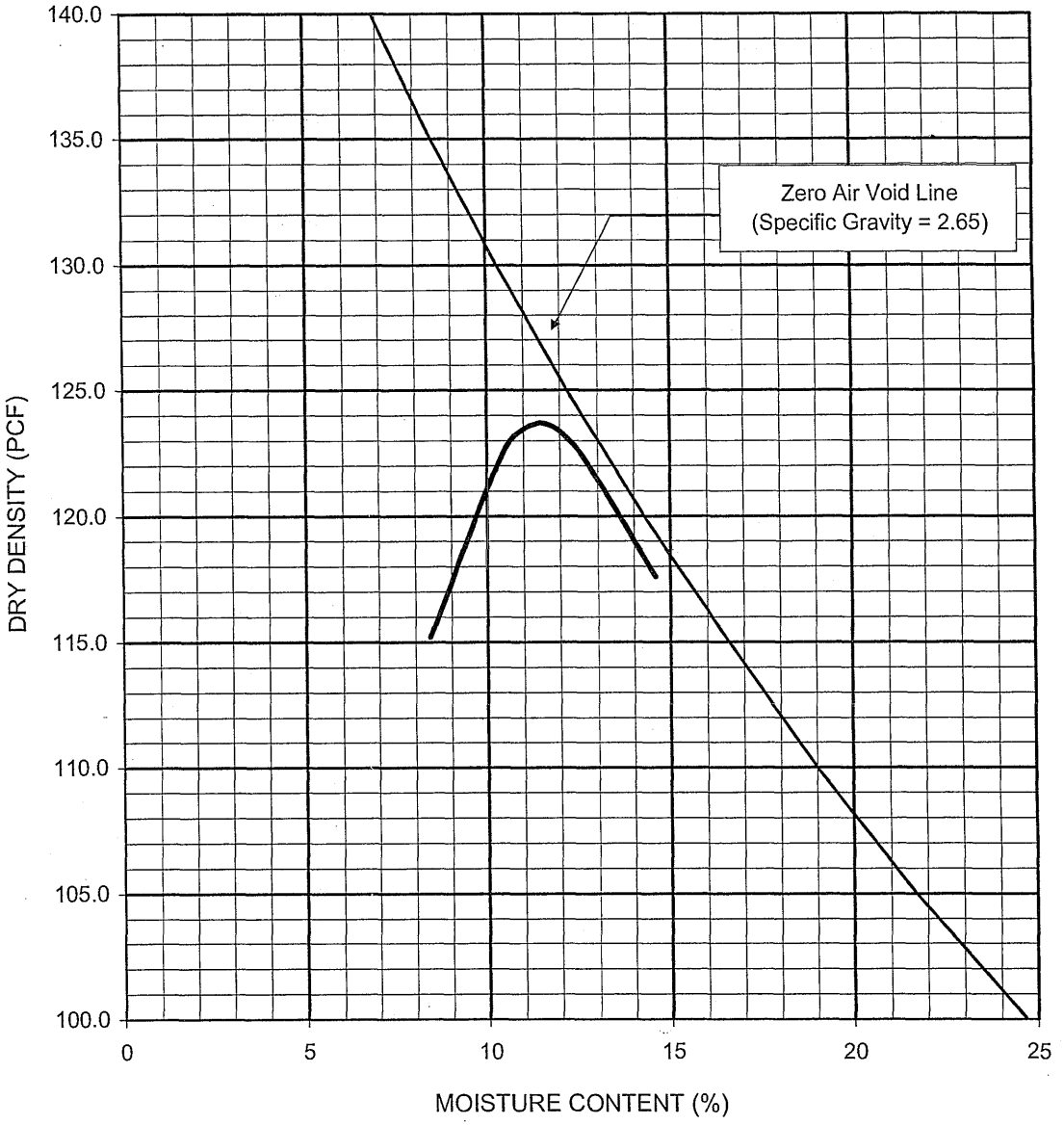
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-80
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-107	5.0-10.0	SILTY SAND	113.2	14.6
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

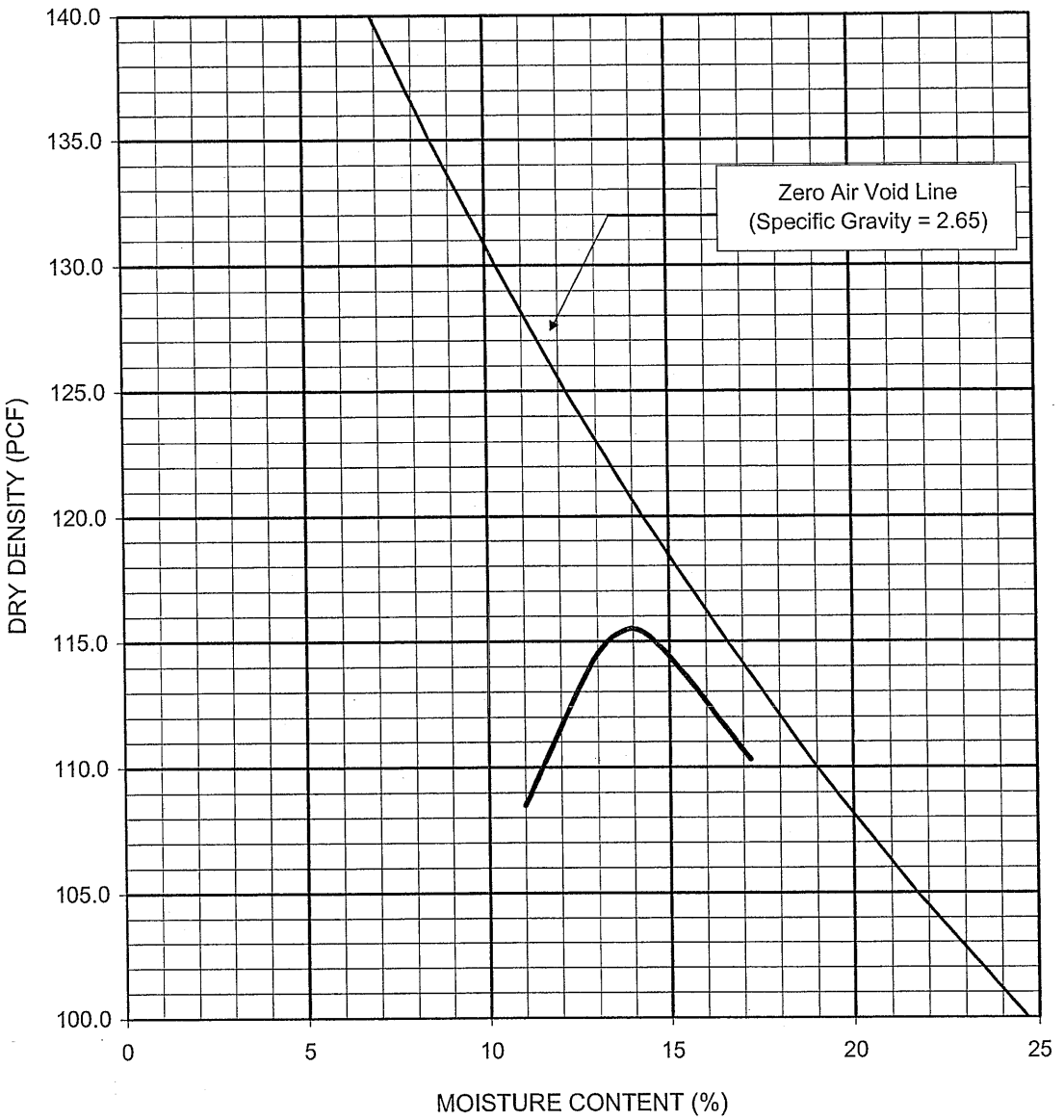
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-82
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-110	10.0-15.0	SILTY SAND WITH GRAVEL	123.7	11.5
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			129.0	9.5

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

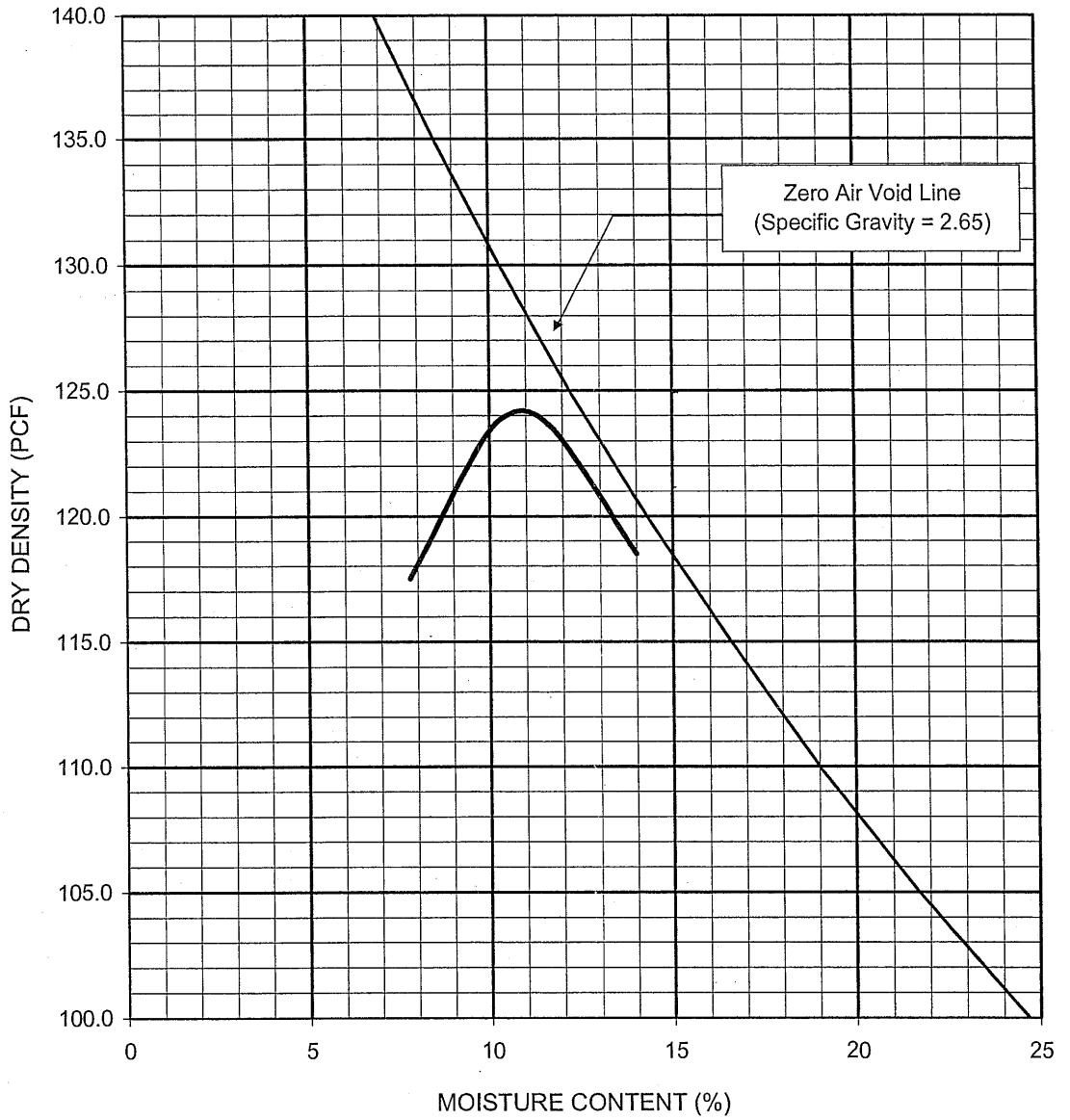
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-84
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-112	10.0-15.0	CLAYEY SAND WITH GRAVEL	115.5	14.0
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			121.5	11.5

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

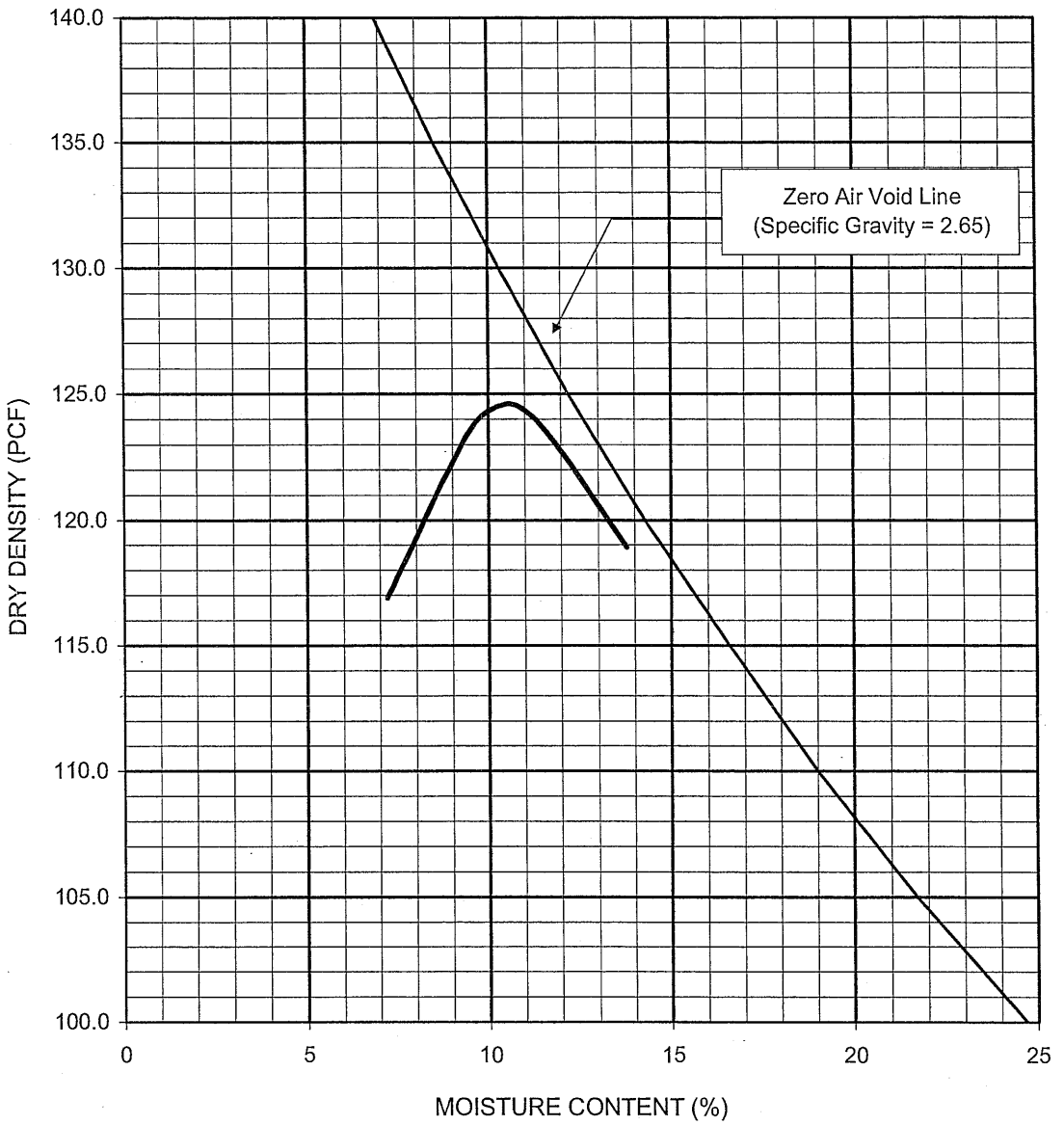
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-86
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-115	5.0-10.0	CLAYEY SAND	124.2	10.9
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

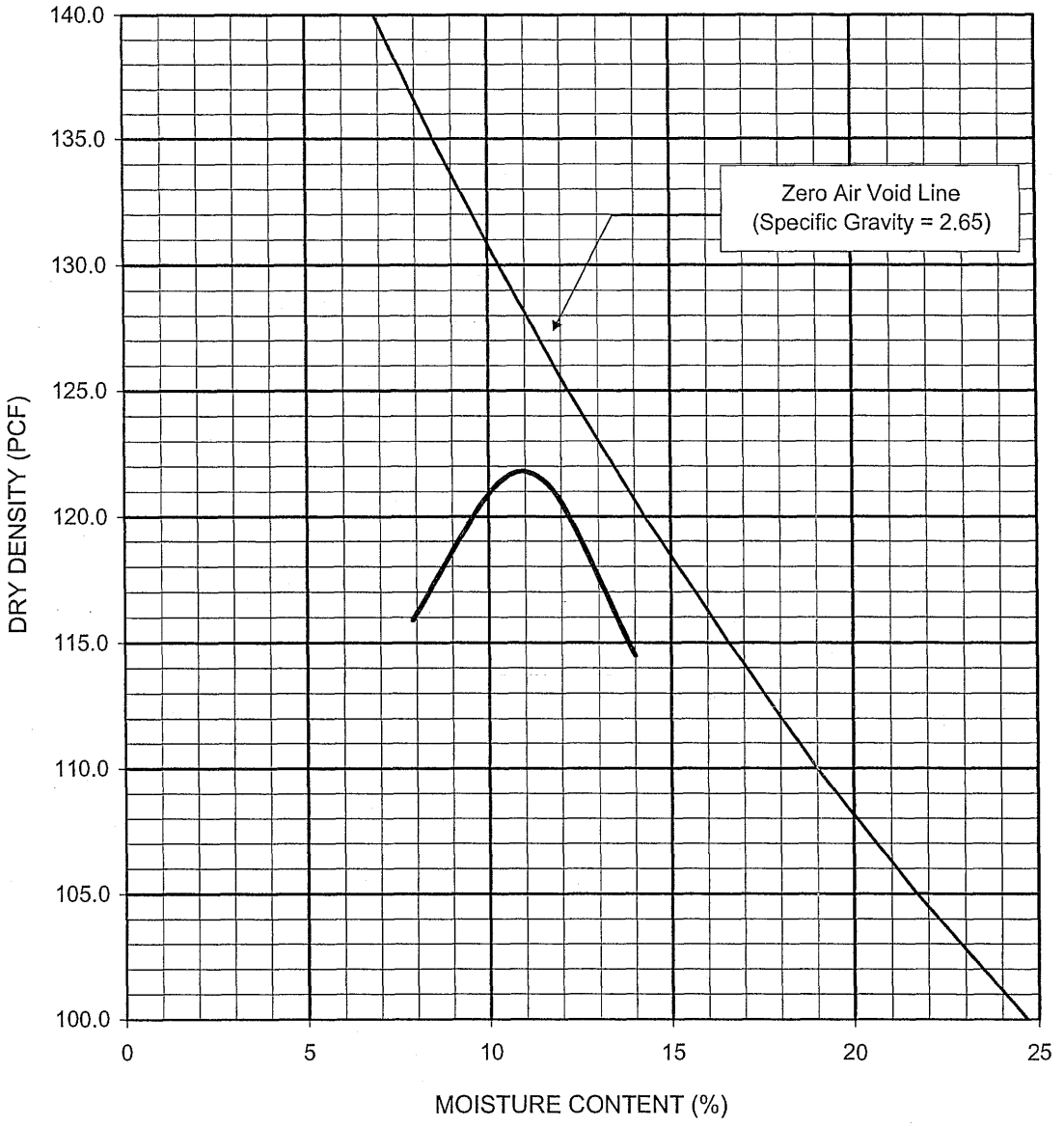
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-88
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-118	5.0-10.0	SILTY SAND	124.6	10.6
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			126.0	10.0

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

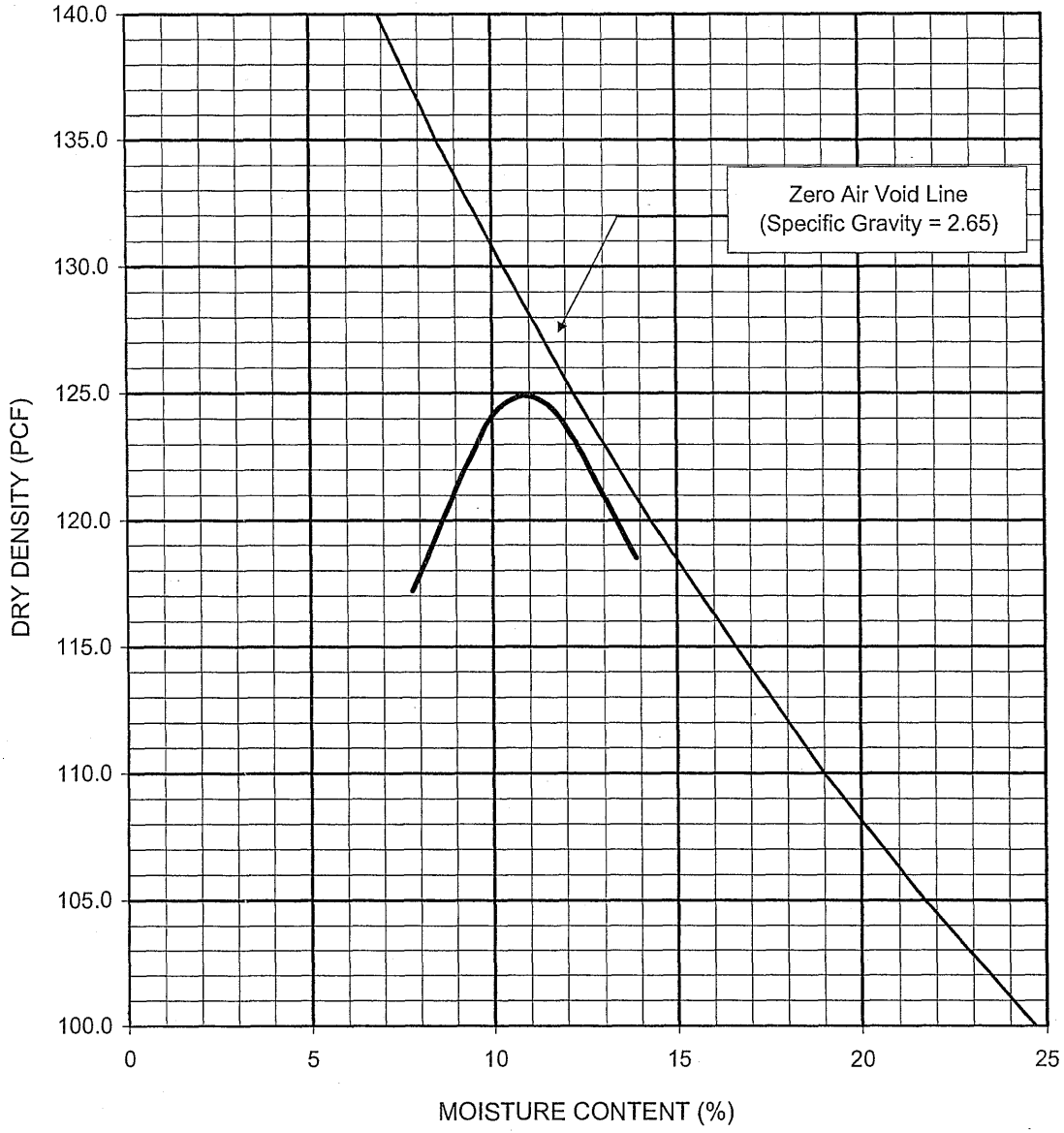
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-90
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-120	0.0-5.0	SILTY SAND	121.8	10.9
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			125.0	10.0

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

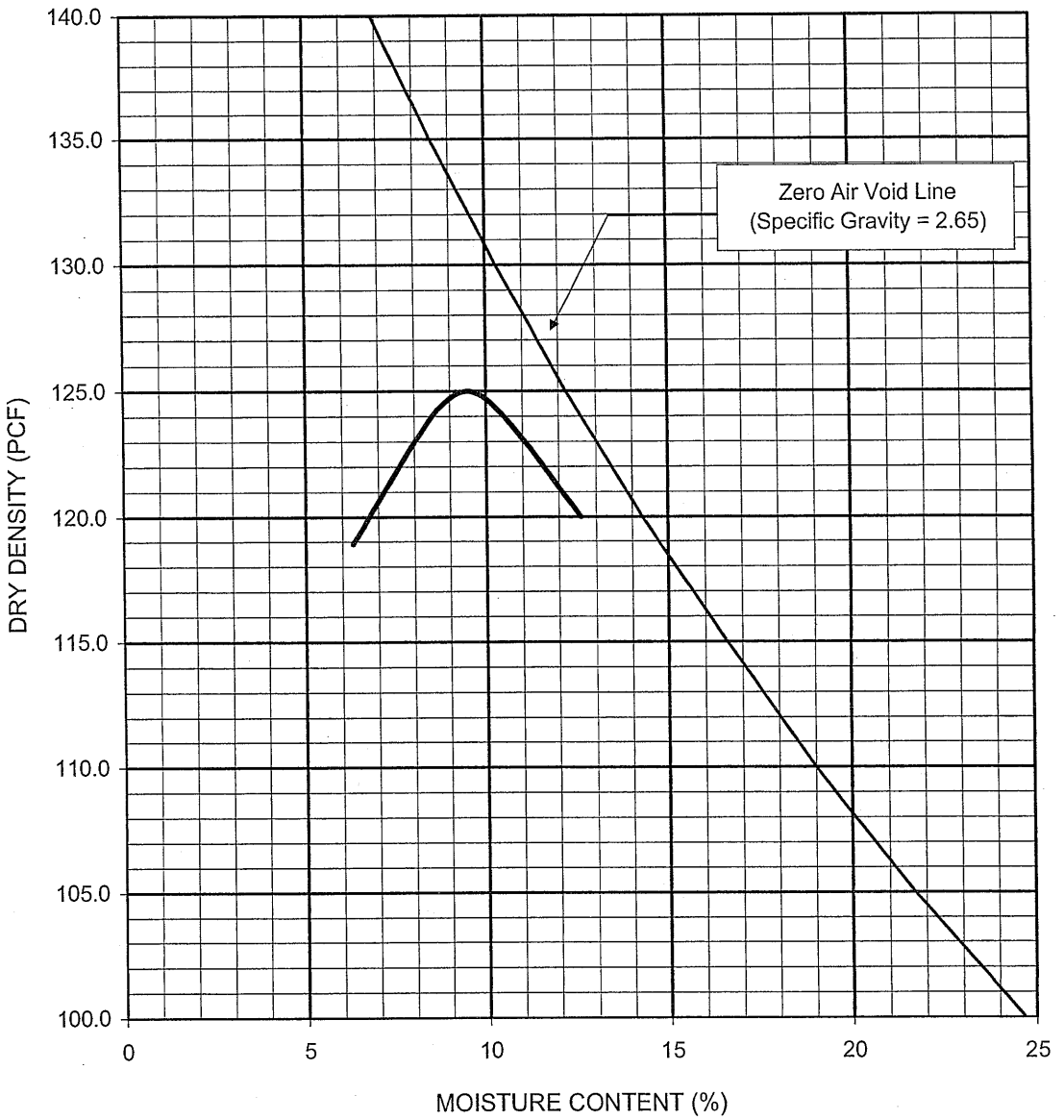
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-92
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-123	5.0-10.0	SILTY SAND	124.9	10.9
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			126.5	10.5

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

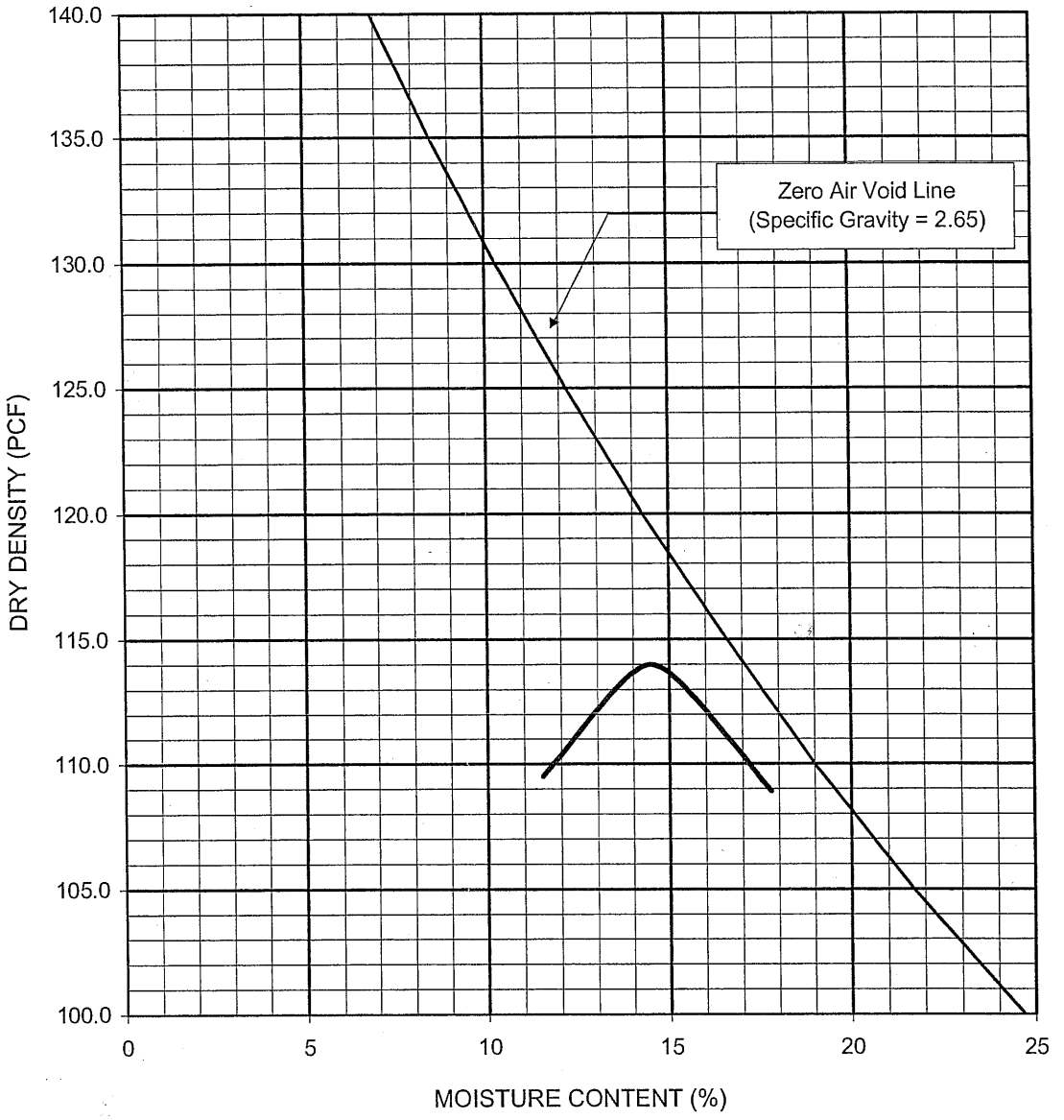
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-94
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-125	0.0-5.0	SILTY SAND	125.0	9.5
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

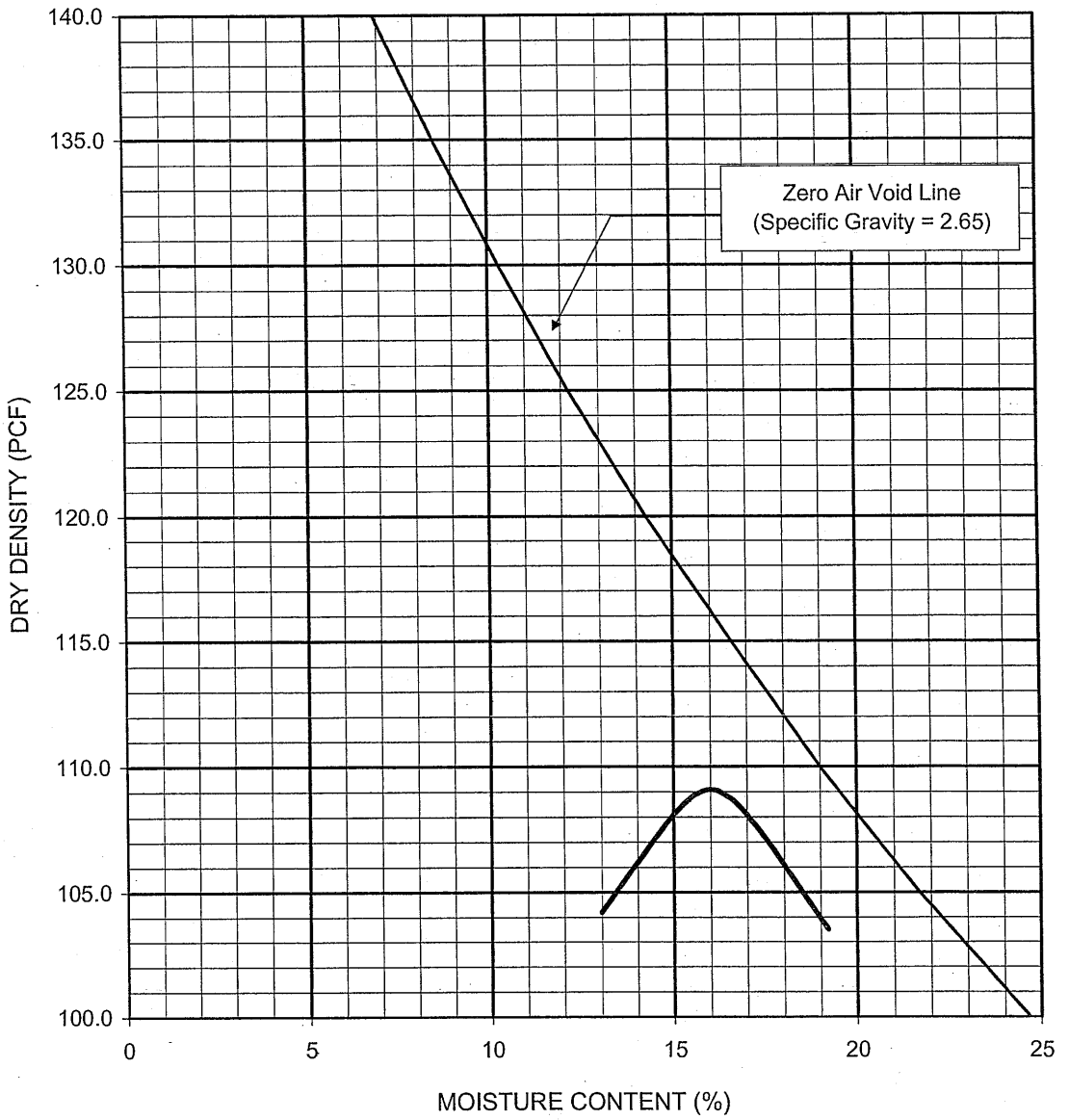
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-96
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
SS-1	5.0-7.0	SILTY SAND	114.0	14.5
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			117.0	13.5

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

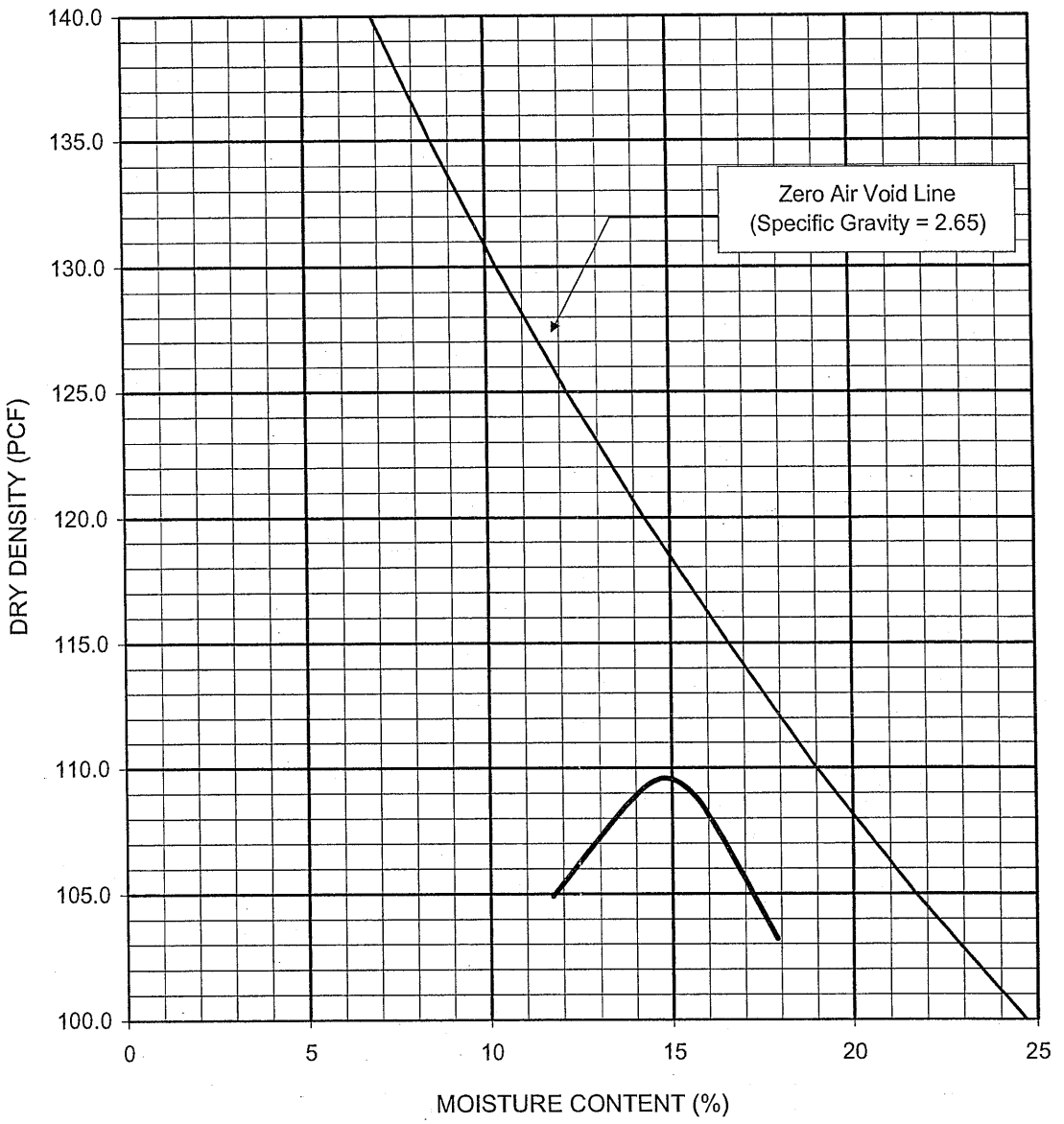
Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-98
602257001	12/14		



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
SS-3	5.0-7.0	SILTY SAND	109.1	16.0
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-100
602257001	12/14		

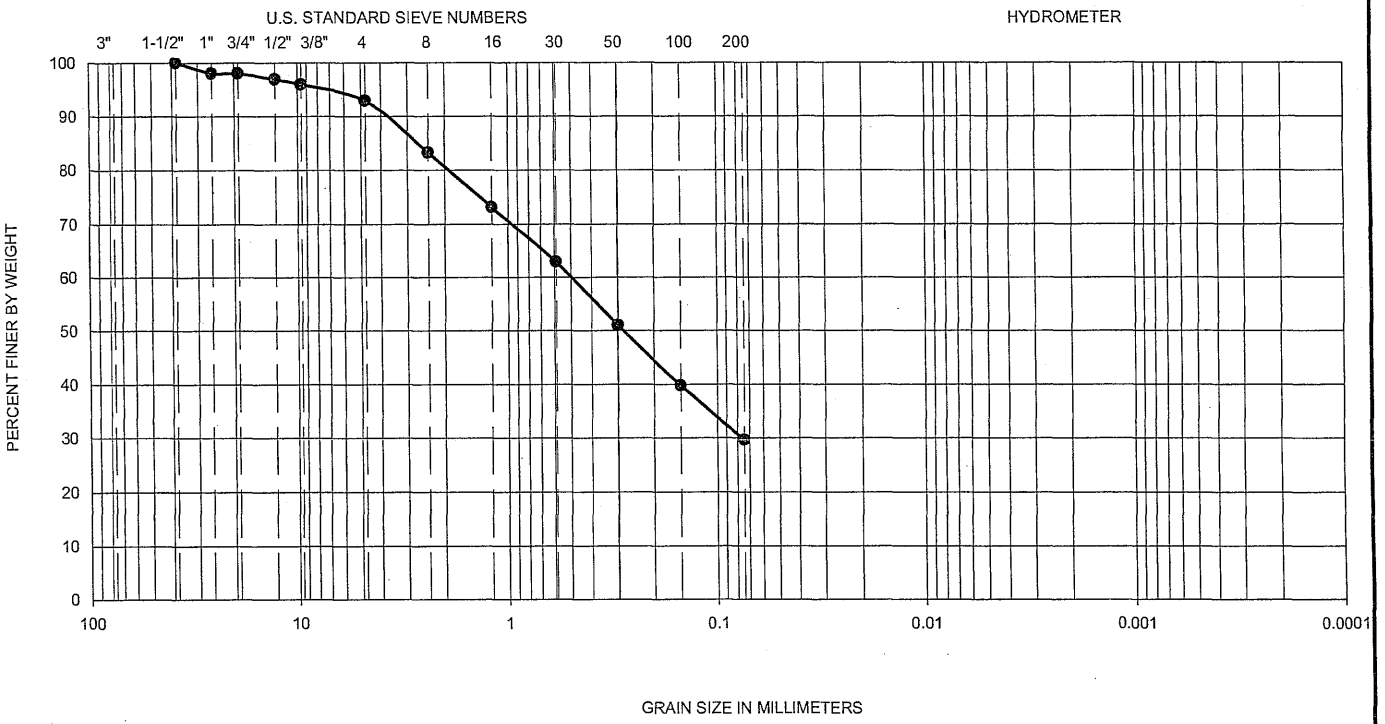


Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
GL-2	0.0-1.0	SANDY SILT	109.6	14.8
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718-87)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

Ninyo & Moore		PROCTOR DENSITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-102
602257001	12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



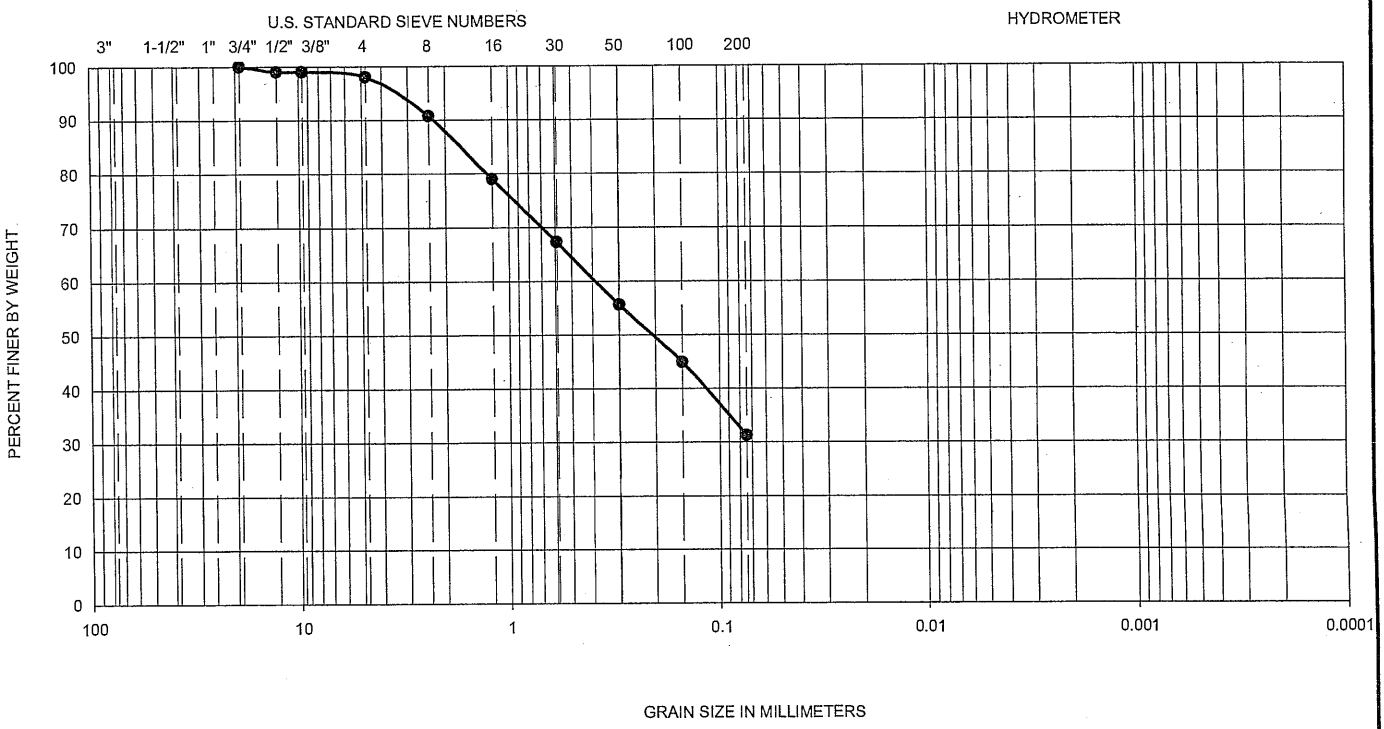
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	SS-1	5.0-7.0	--	--	NP	--	--	--	--	--	30	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-50
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	SS-3	5.0-7.0	--	--	NP	--	--	--	--	--	31	SM

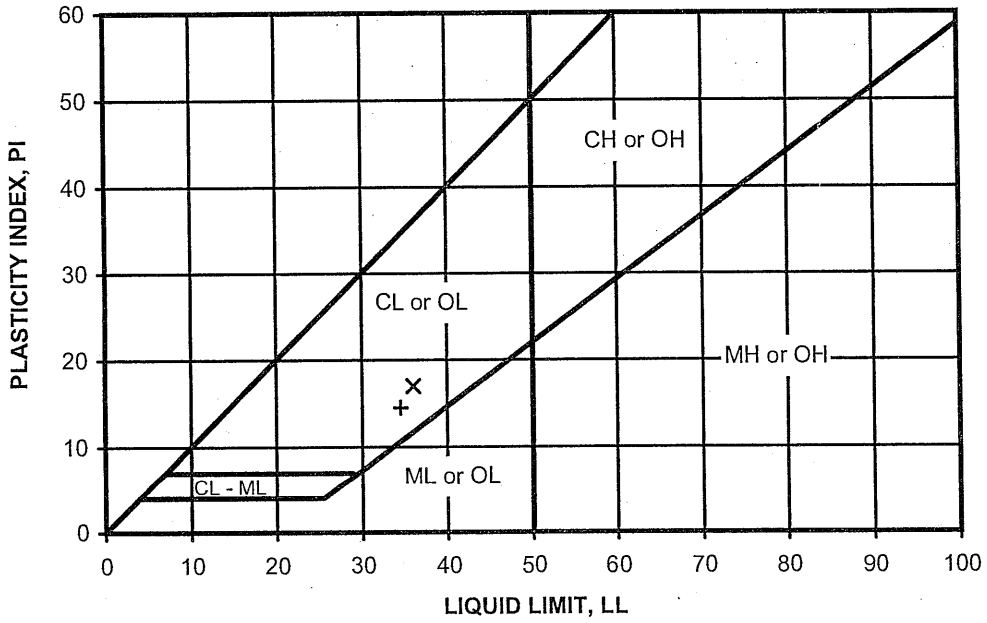
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-52
602257001 / 12/14		

SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-101	0.0-5.0	--	--	NP	ML	SM
■	B-103	0.0-5.0	--	--	NP	ML	SM
◆	B-105	0.0-5.0	--	--	NP	ML	SM
○	B-107	5.0-10.0	--	--	NP	ML	SM
□	B-109	10.0-15.0	--	--	NP	ML	SM
Δ	B-110	10.0-15.0	--	--	NP	ML	SM
X	B-111	15.0-20.0	36	19	17	CL	SC
+	B-112	10.0-15.0	35	20	15	CL	SC

NP - INDICATES NON-PLASTIC

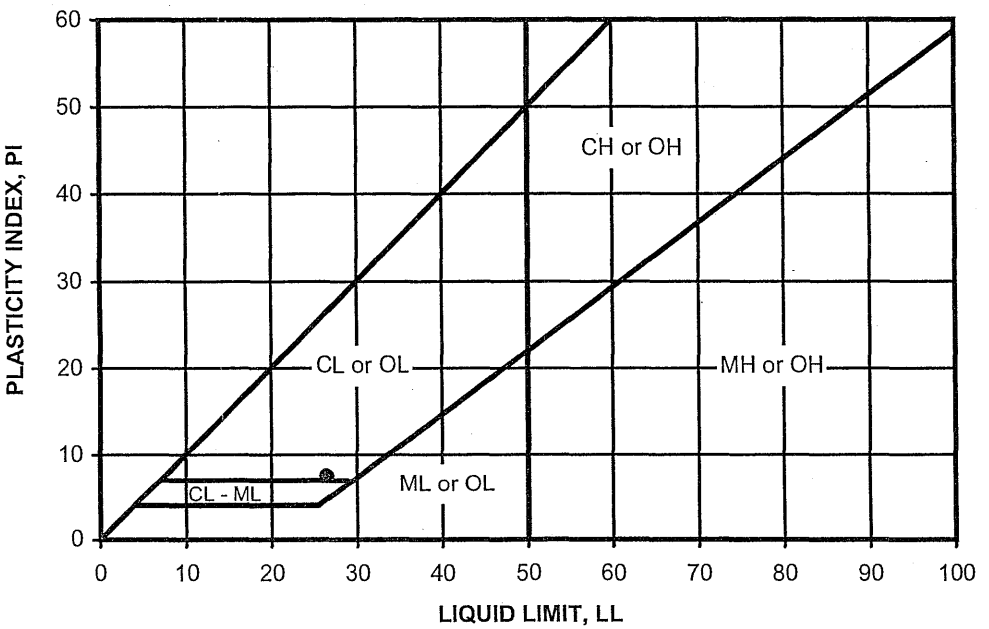


PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-54

SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-124	5.0-10.0	27	19	8	CL	SC
■	B-125	0.0-5.0	--	--	NP	ML	SM
◆	B-129	0.0-5.0	--	--	NP	ML	SM

NP - INDICATES NON-PLASTIC

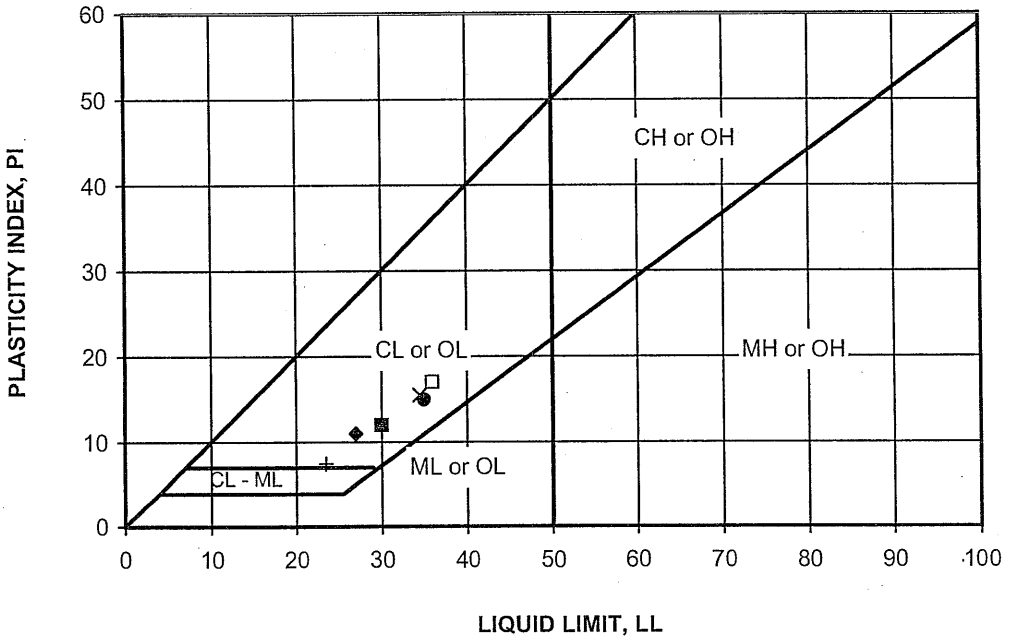


PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-56

SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-112	13.5-15.0	35	20	15	CL	SC
■	B-114	3.5-5.0	30	18	12	CL	SC
◆	B-115	1.0-2.5	27	16	11	CL	SC
○	B-117	1.0-2.5	--	--	NP	ML	SM
□	B-117	6.0-7.5	36	19	17	CL	SC
Δ	B-121	1.0-2.5	--	--	NP	ML	SM
X	B-121	6.0-7.5	35	19	16	CL	SC
+	B-123	1.0-2.5	24	16	8	CL	SC

NP - INDICATES NON-PLASTIC

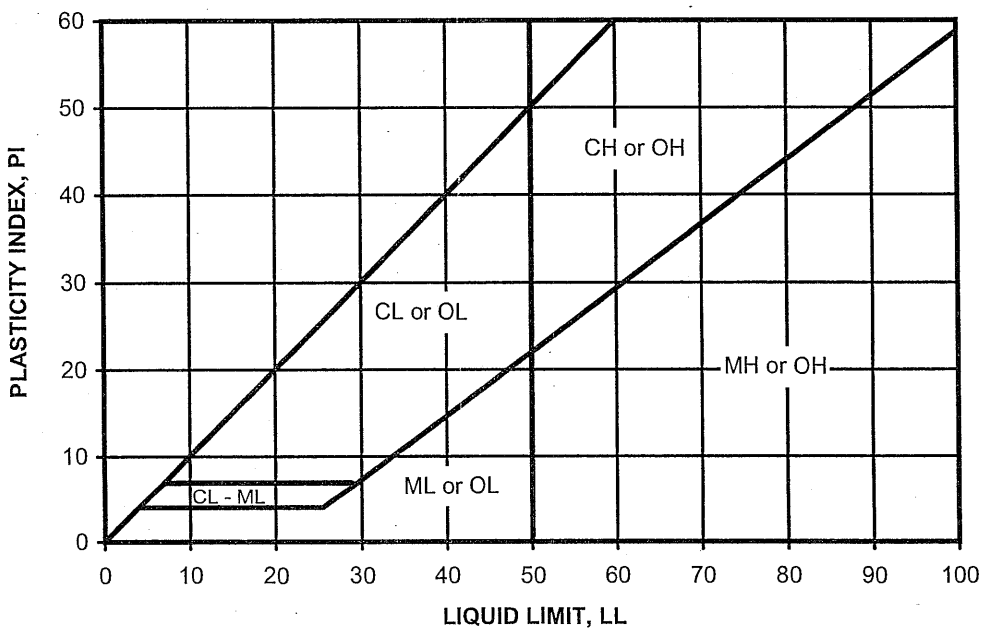


PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-58

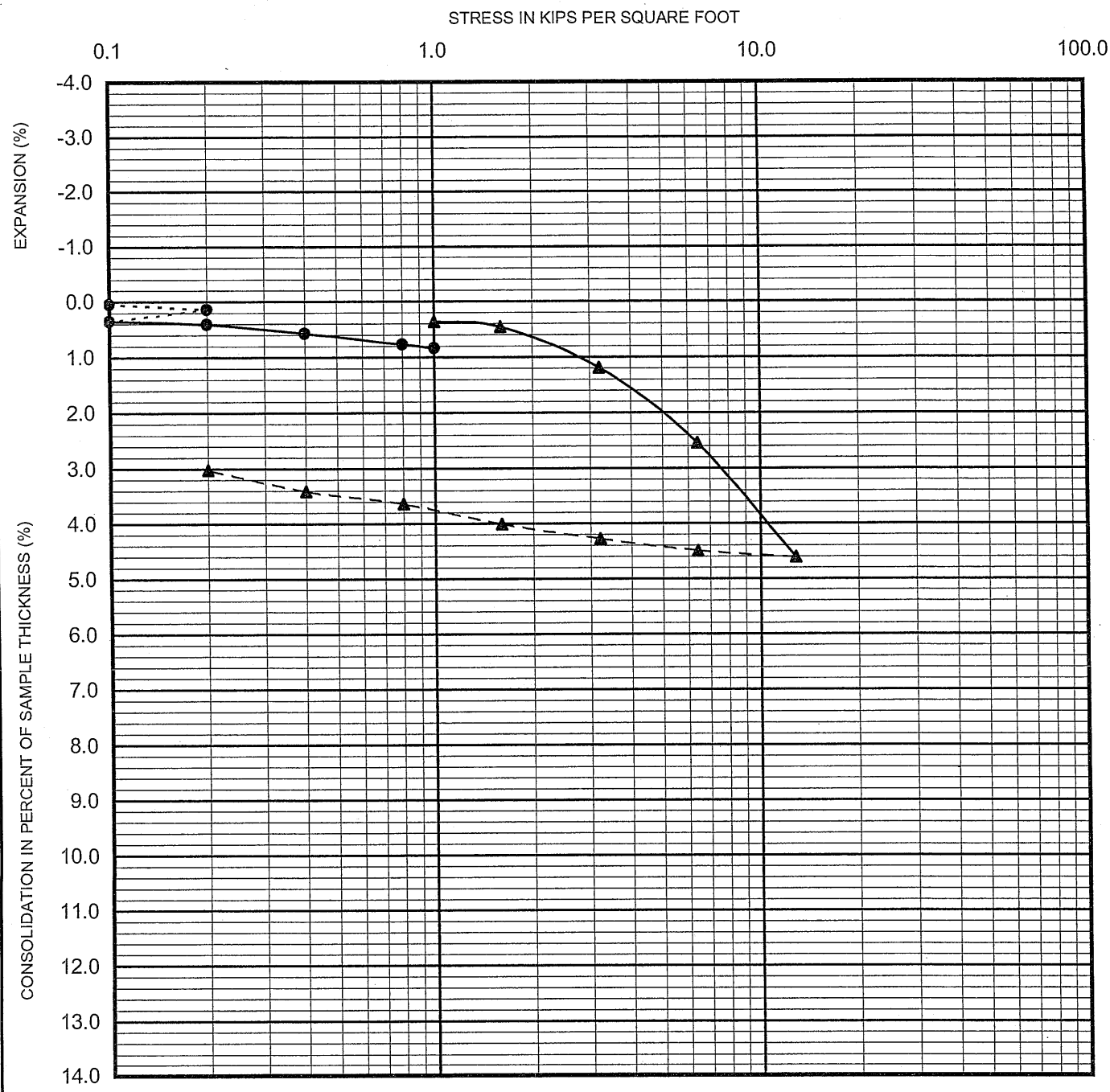
SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	SS-1	5.0-7.0	--	--	NP	ML	SM
■	SS-2	5.0-7.0	--	--	NP	ML	SM
◆	SS-3	5.0-7.0	--	--	NP	ML	SM
○	GL-1	0.0-1.0	--	--	NP	ML	SM
□	GL-2	0.0-1.0	--	--	NP	ML	ML
Δ	GL-3	0.0-1.0	--	--	NP	ML	ML

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-60

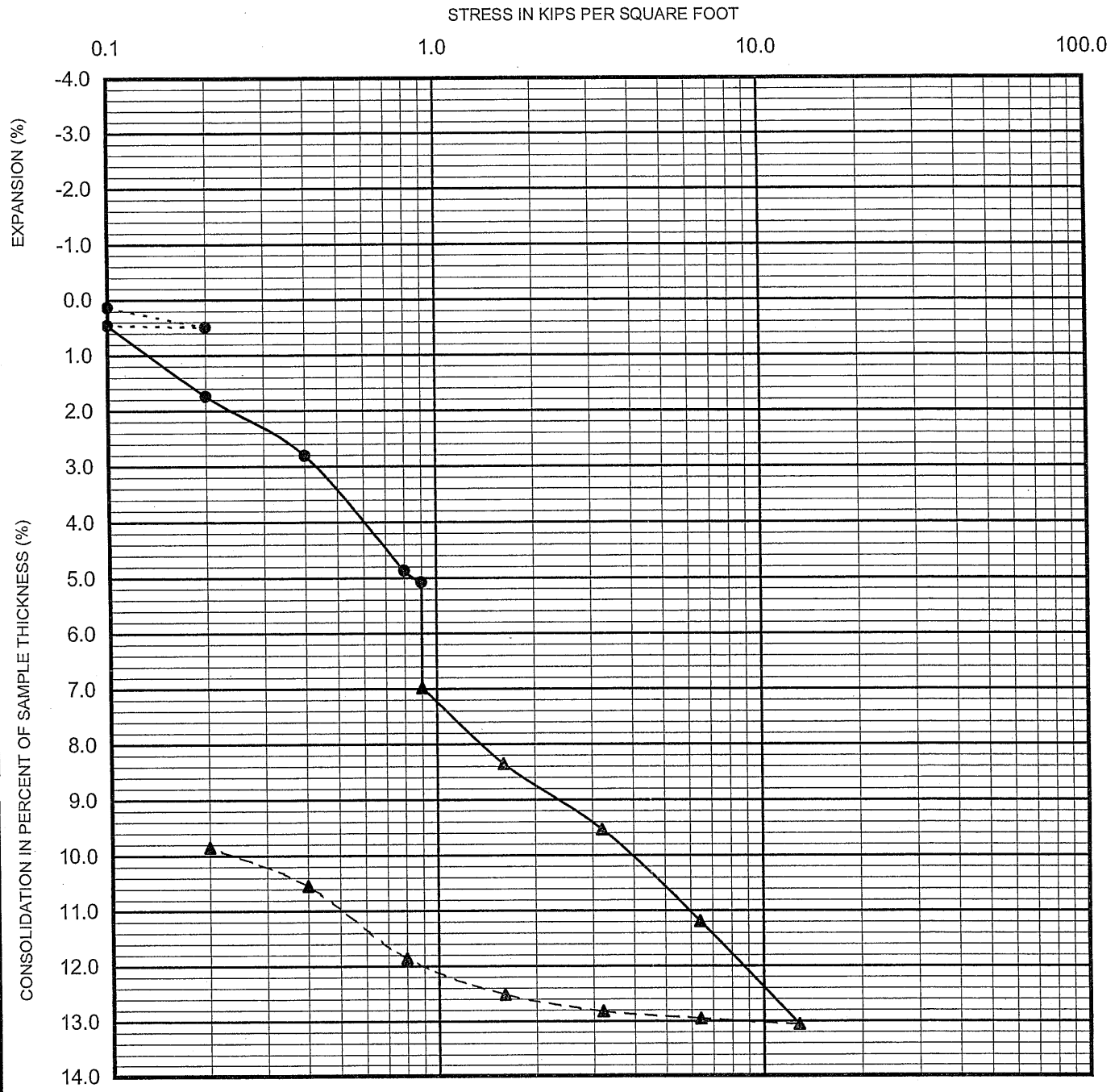


Seating Cycle		Sample Location	B-36
Loading Prior to Inundation		Depth (ft.)	4-5.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-62
602257001 / 12/14		

62 - CONSOLIDATION B-36@4-5.5



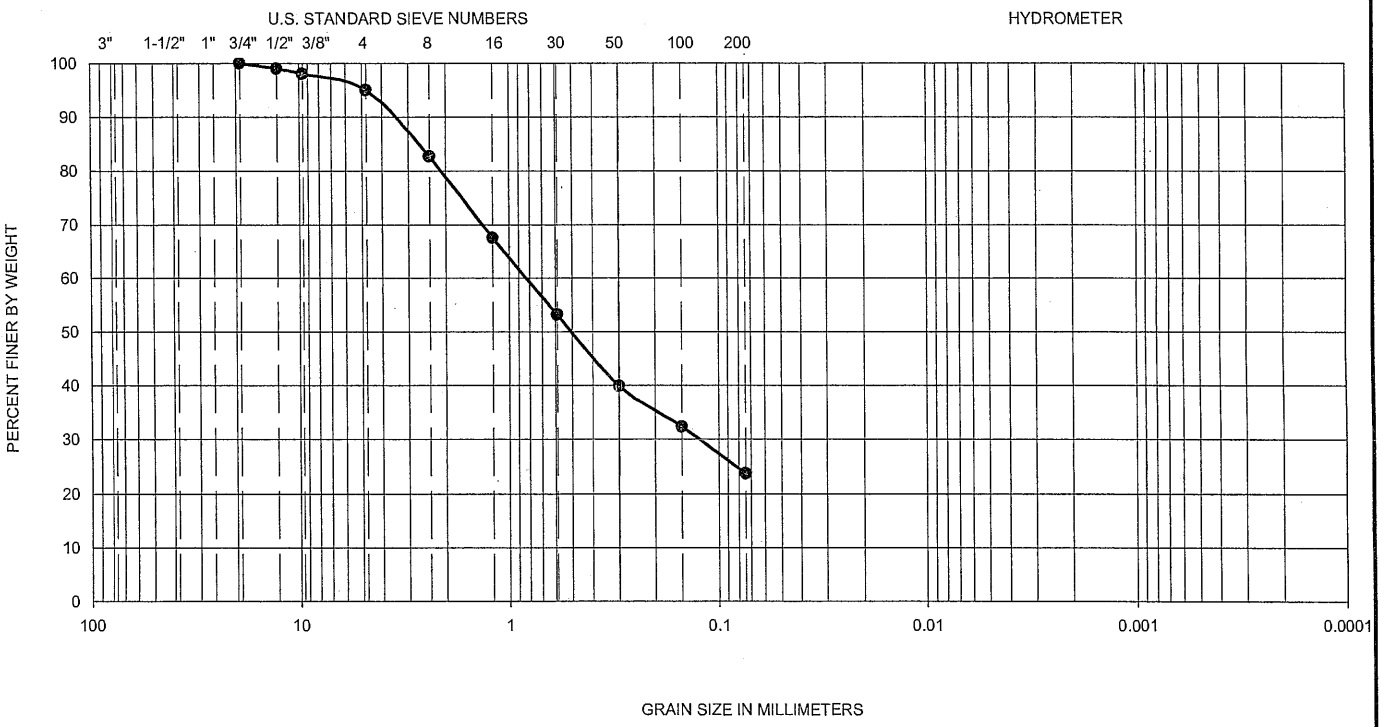
Seating Cycle		Sample Location	B-38
Loading Prior to Inundation		Depth (ft.)	2.5-3.4
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-64
602257001 / 12/14		

64 - CONSOLIDATION B-38@2.5-3.4

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



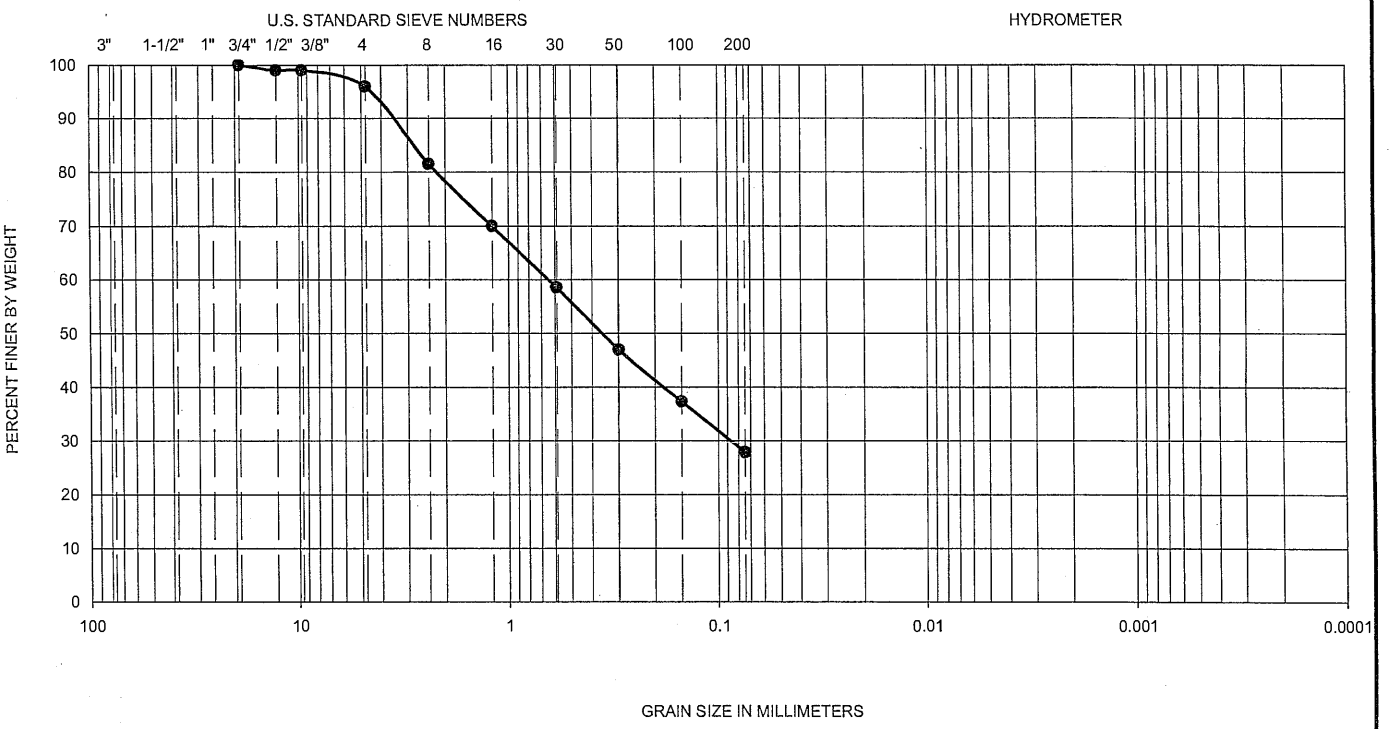
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-123	5.0-10.0	--	--	NP	--	--	--	--	--	24	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP-INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-43
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



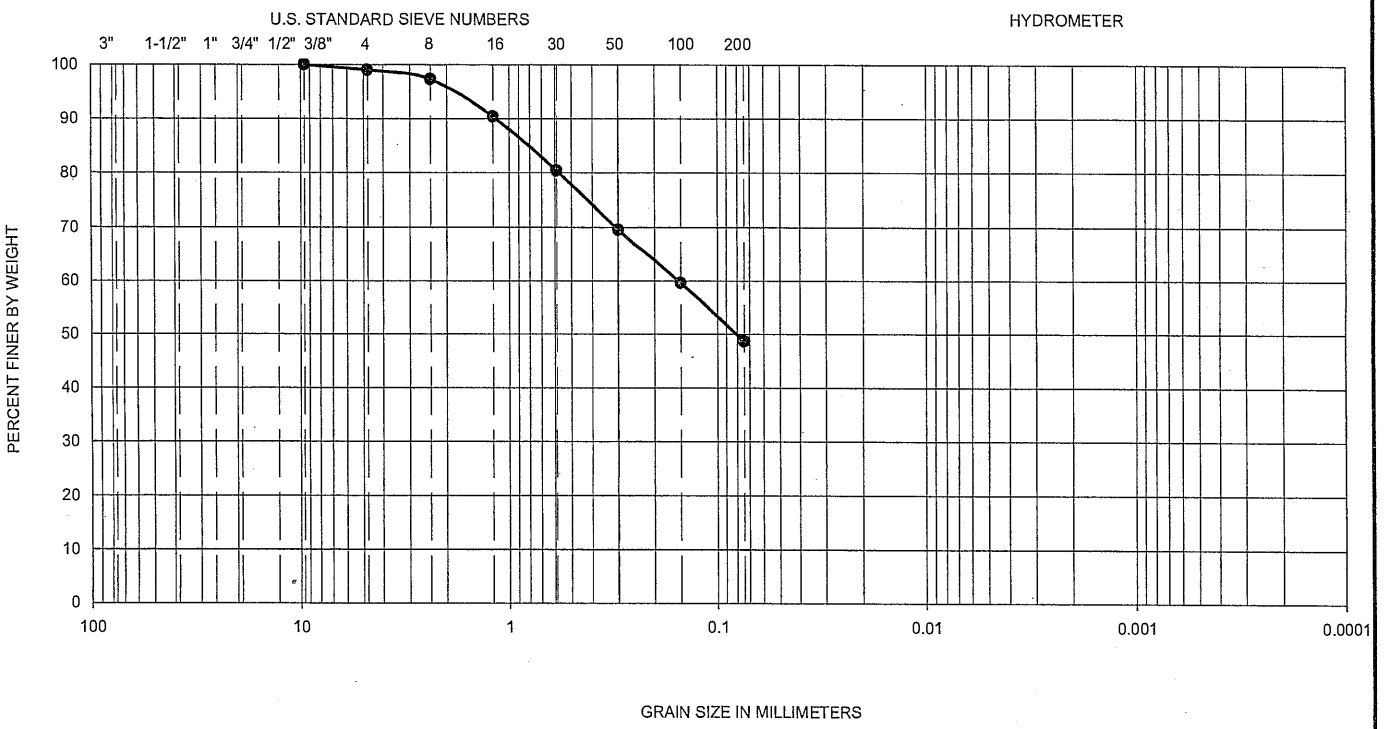
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-125	0.0-5.0	--	--	NP	--	--	--	--	--	28	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP-INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-45
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



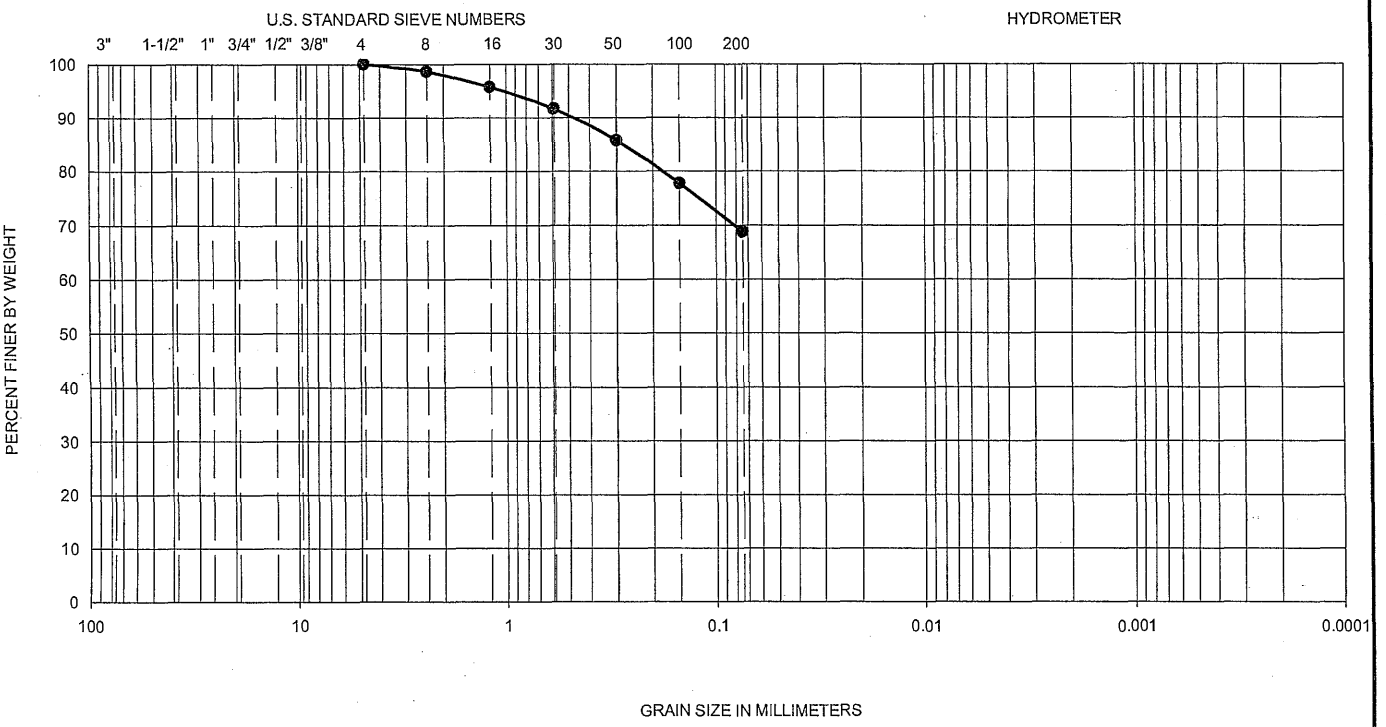
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	GL-1	0.0-1.0	--	--	NP	--	--	--	--	--	49	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-47
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



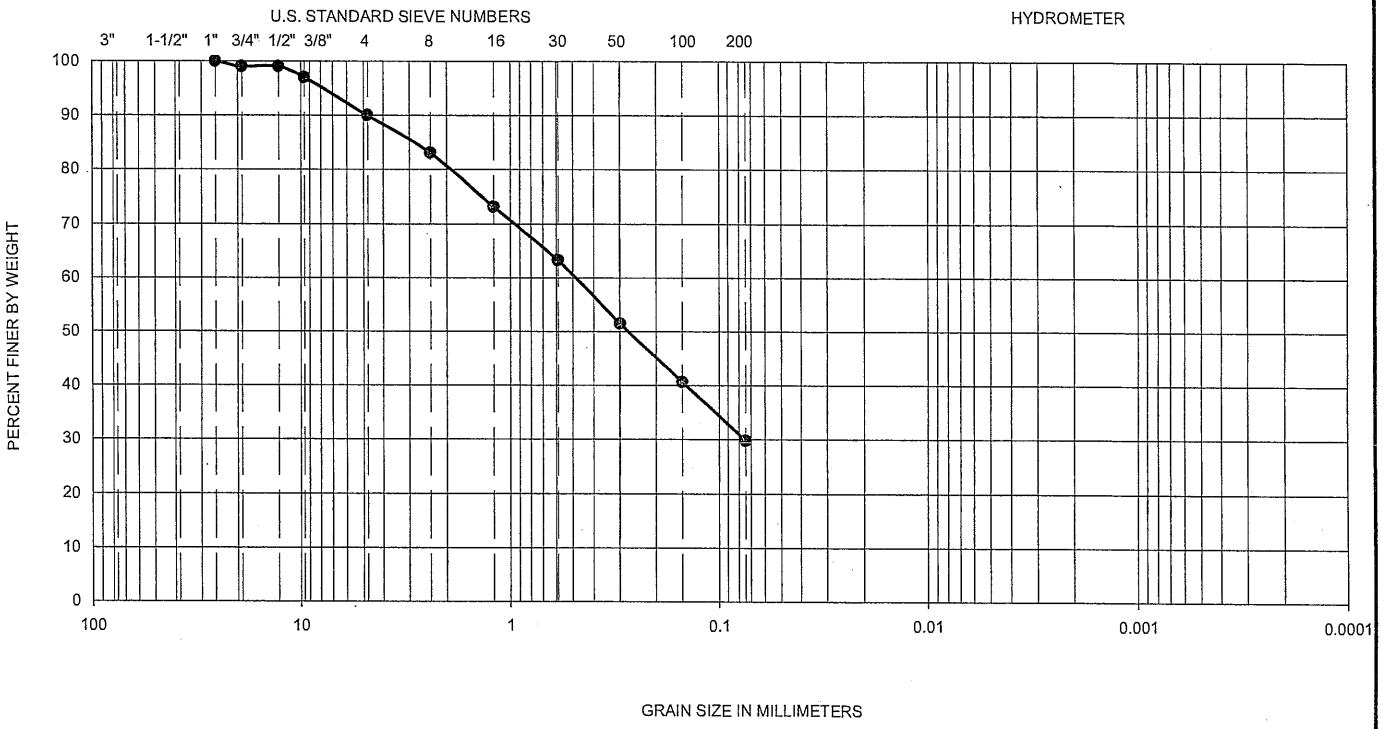
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	GL-3	0.0-1.0	--	--	NP	--	--	--	--	--	69	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-49
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay

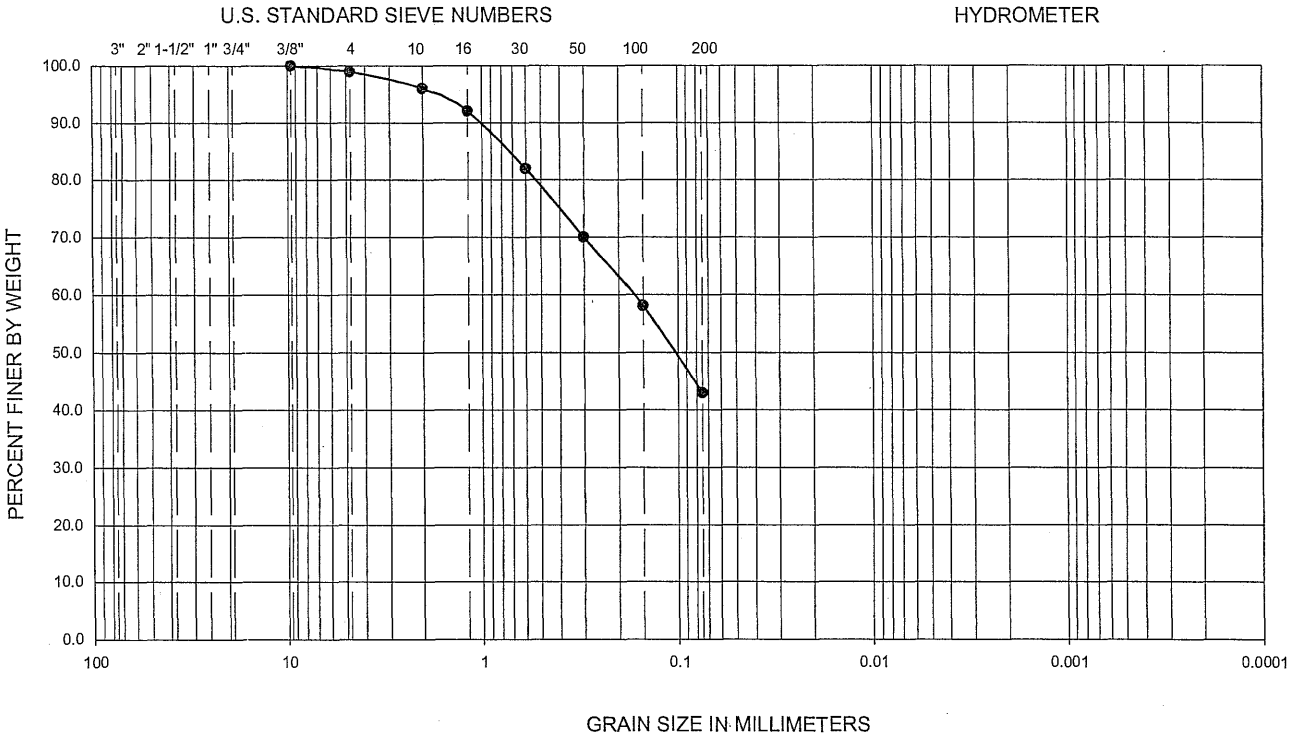


Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-111	15.0-20.0	36	19	17	--	--	--	--	--	30	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-23
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

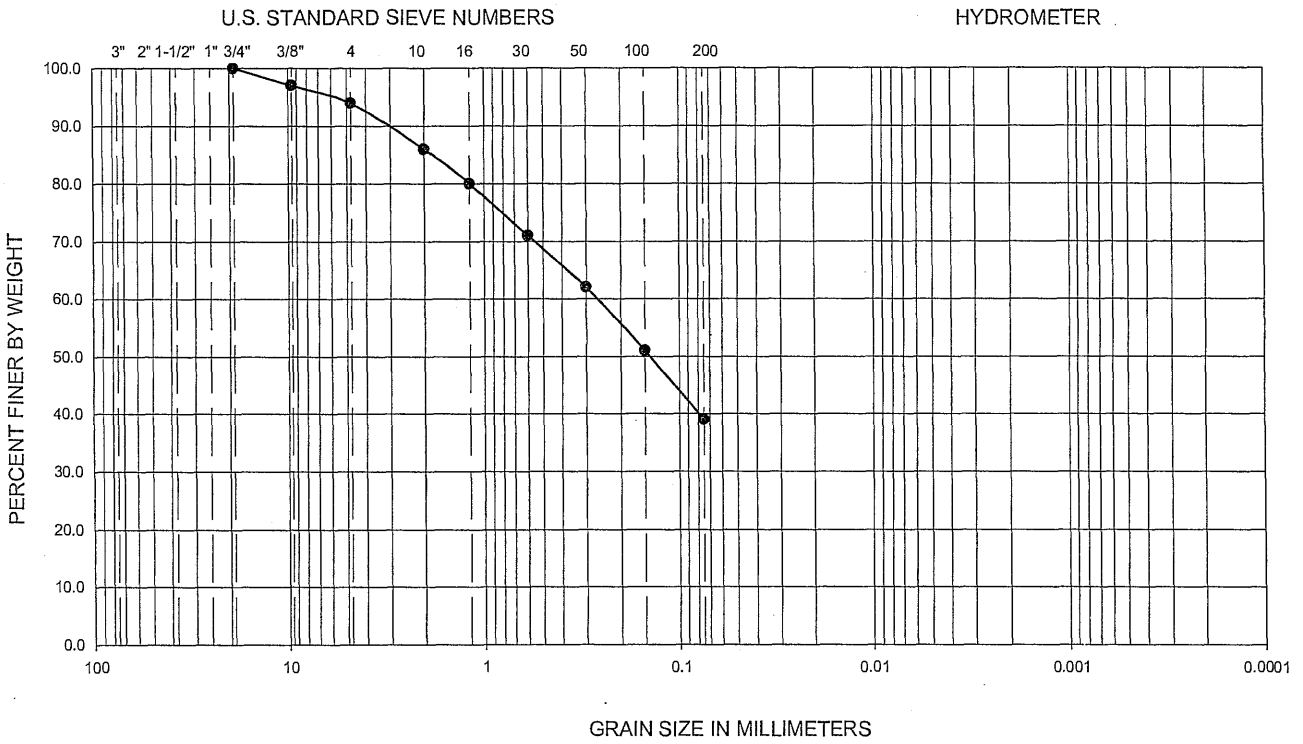


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-112	13.5-15.0	35	20	15	--	--	--	--	--	43	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-25
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

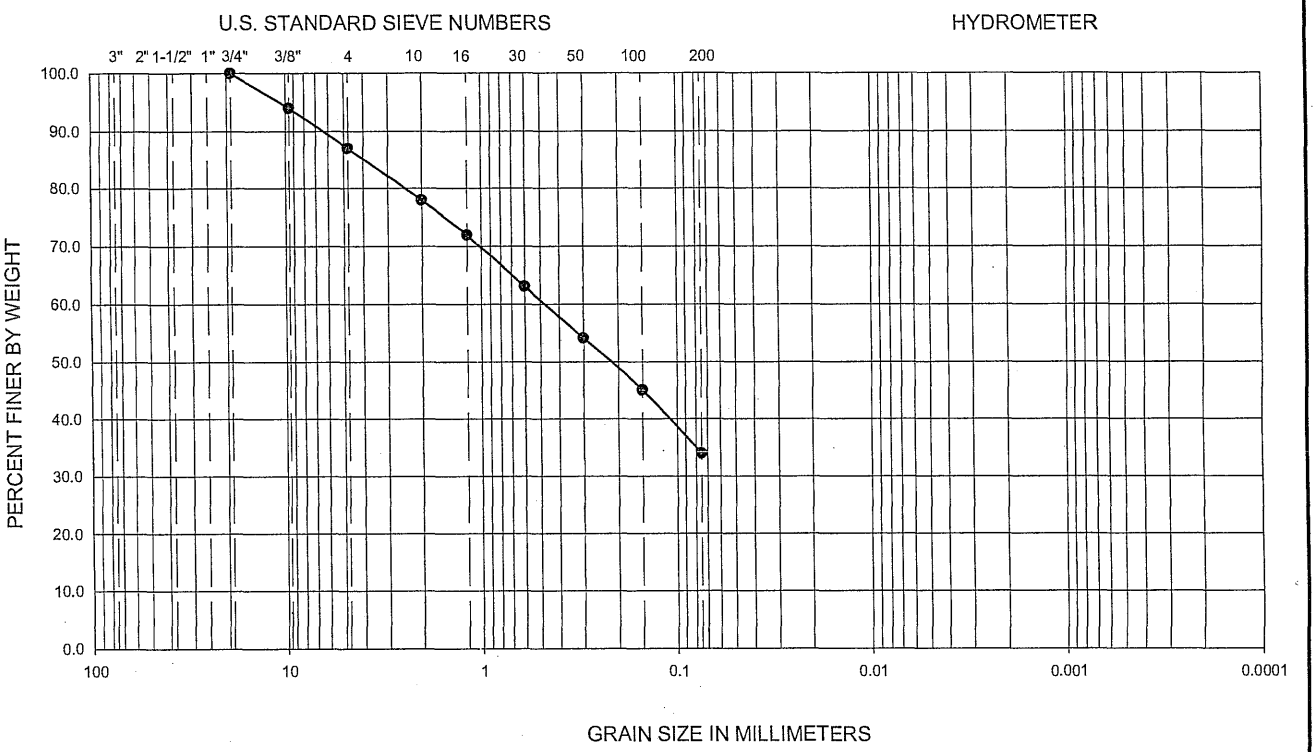


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-114	3.5-5.0	30	18	12	--	--	--	--	--	39	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-27
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

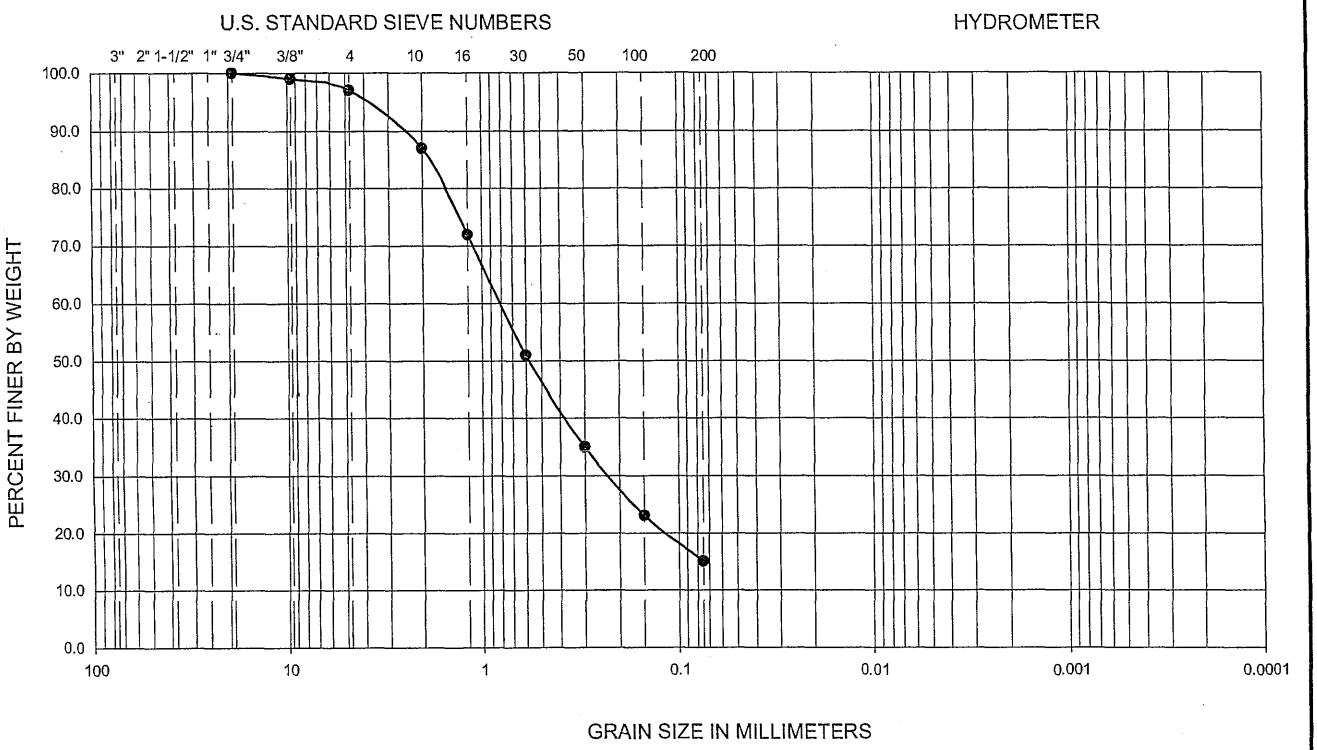


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-115	1.0-2.5	27	16	11	--	--	--	--	--	34	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-29

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



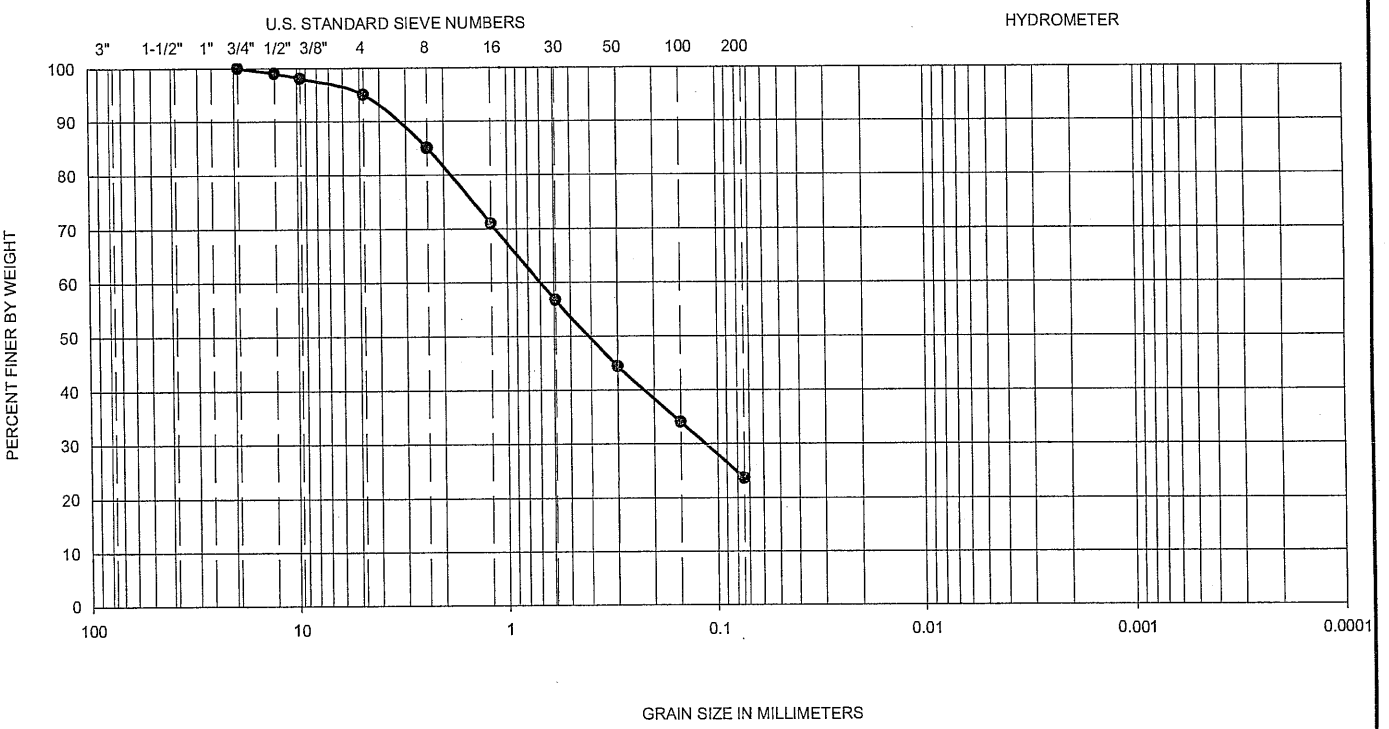
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-117	1.0-2.5	--	--	NP	--	--	--	--	--	15	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-31
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



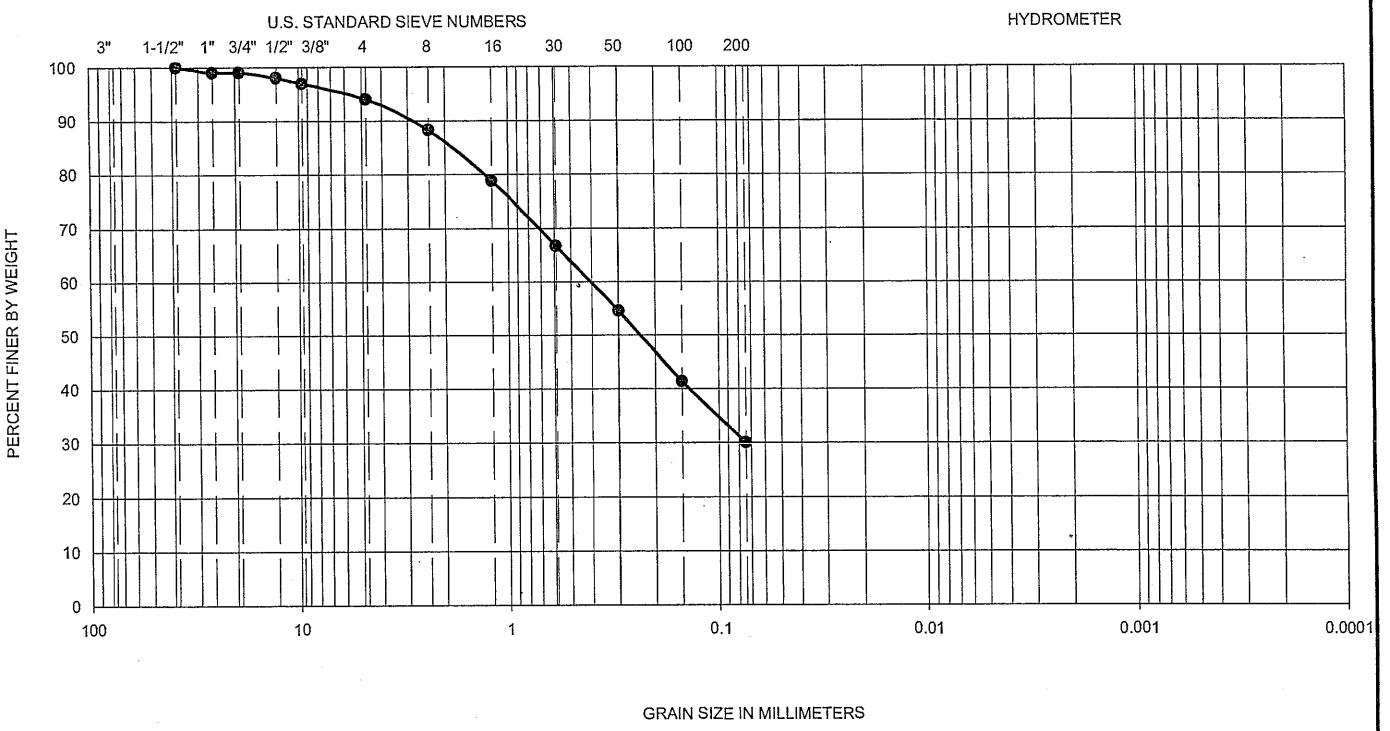
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-117	5.0-10.0	--	--	NP	--	--	--	--	--	24	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP-INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-33
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



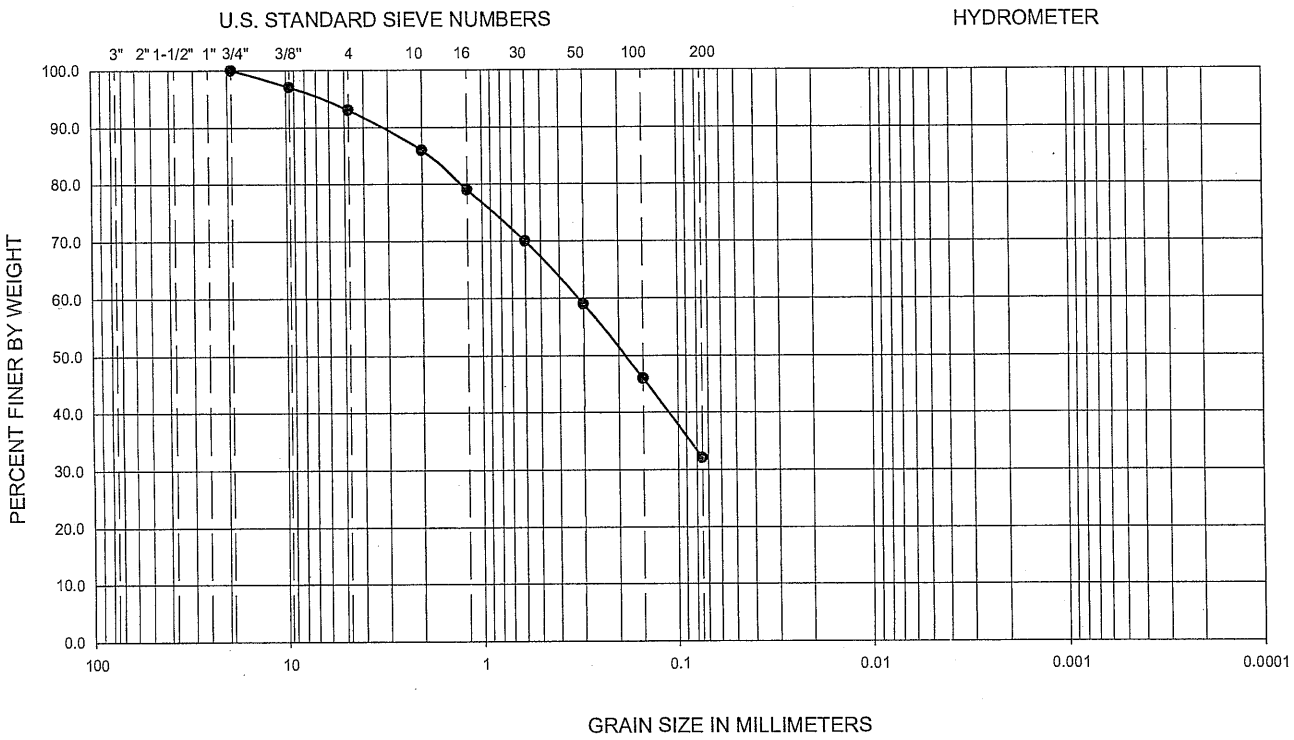
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-119	0.0-5.0	--	--	NP	--	--	--	--	--	30	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP-INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-35
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



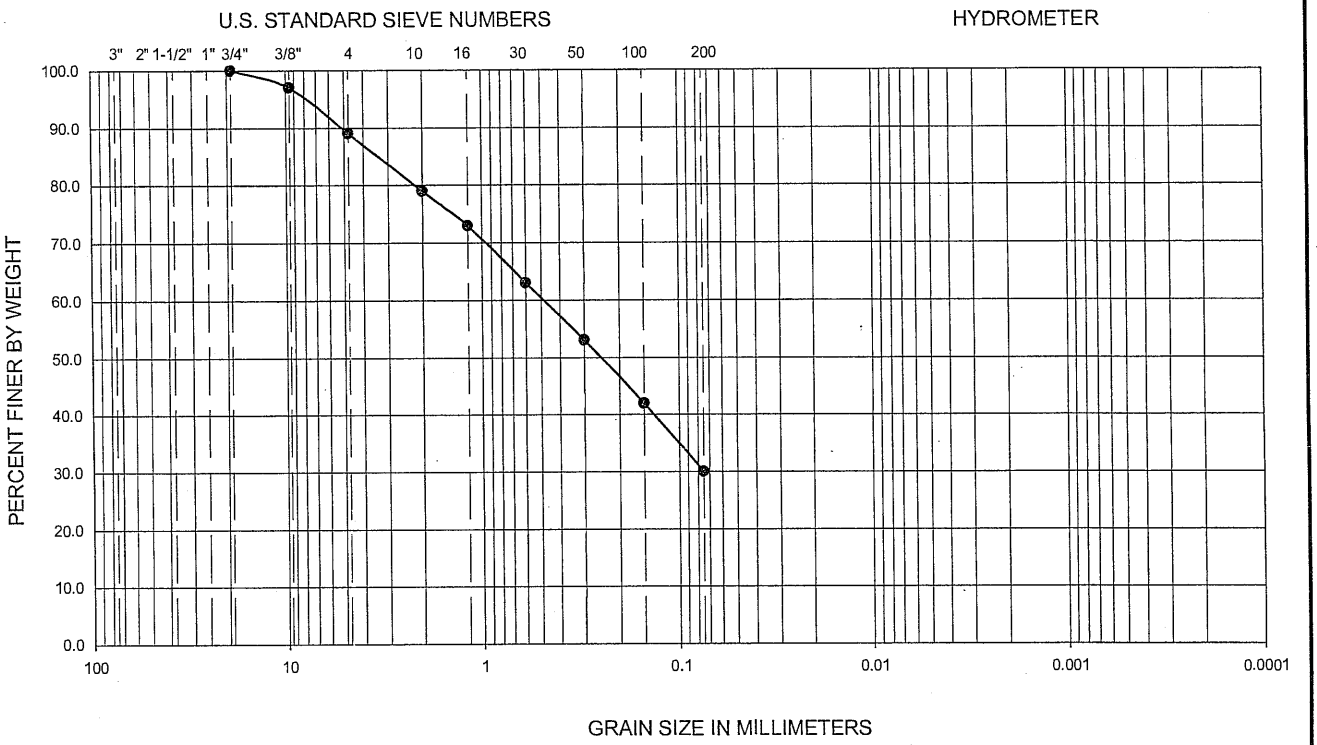
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-121	1.0-2.5	--	--	NP	--	--	--	--	--	32	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-37
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

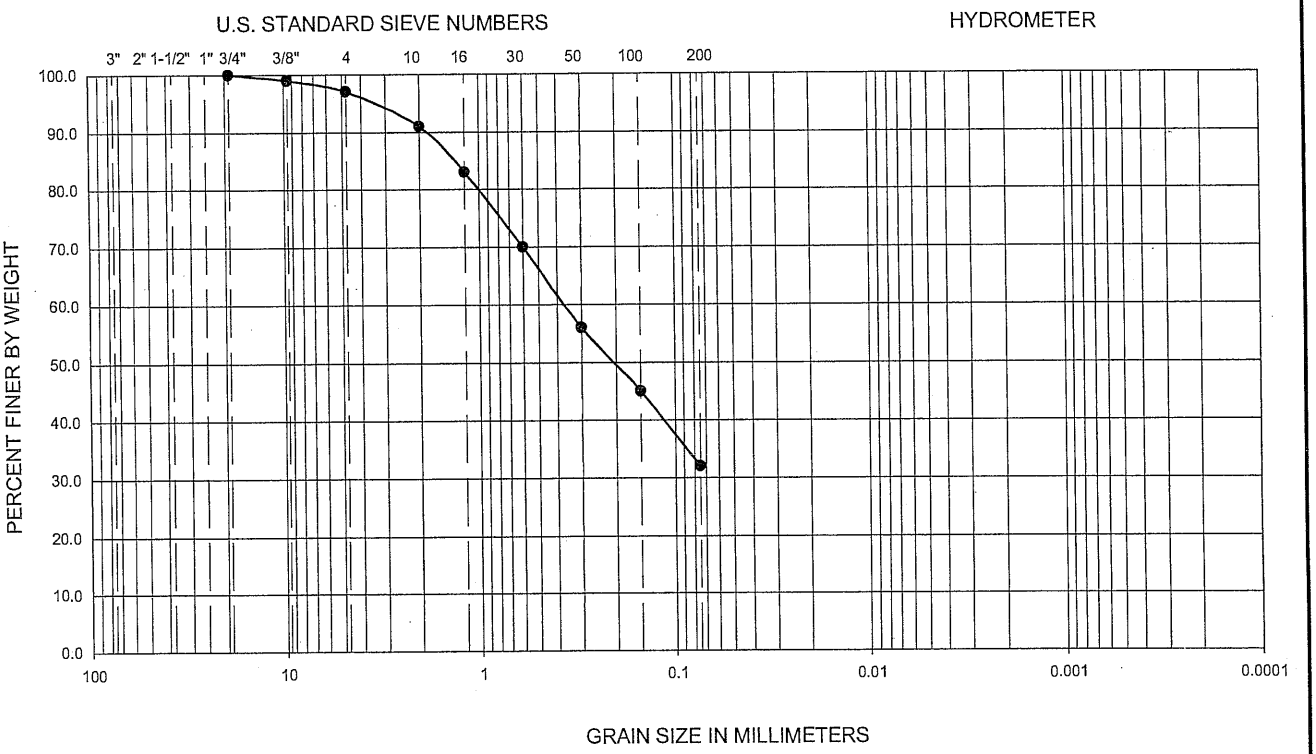


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-121	6.0-7.5	35	19	16	--	--	--	--	--	30	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-39

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

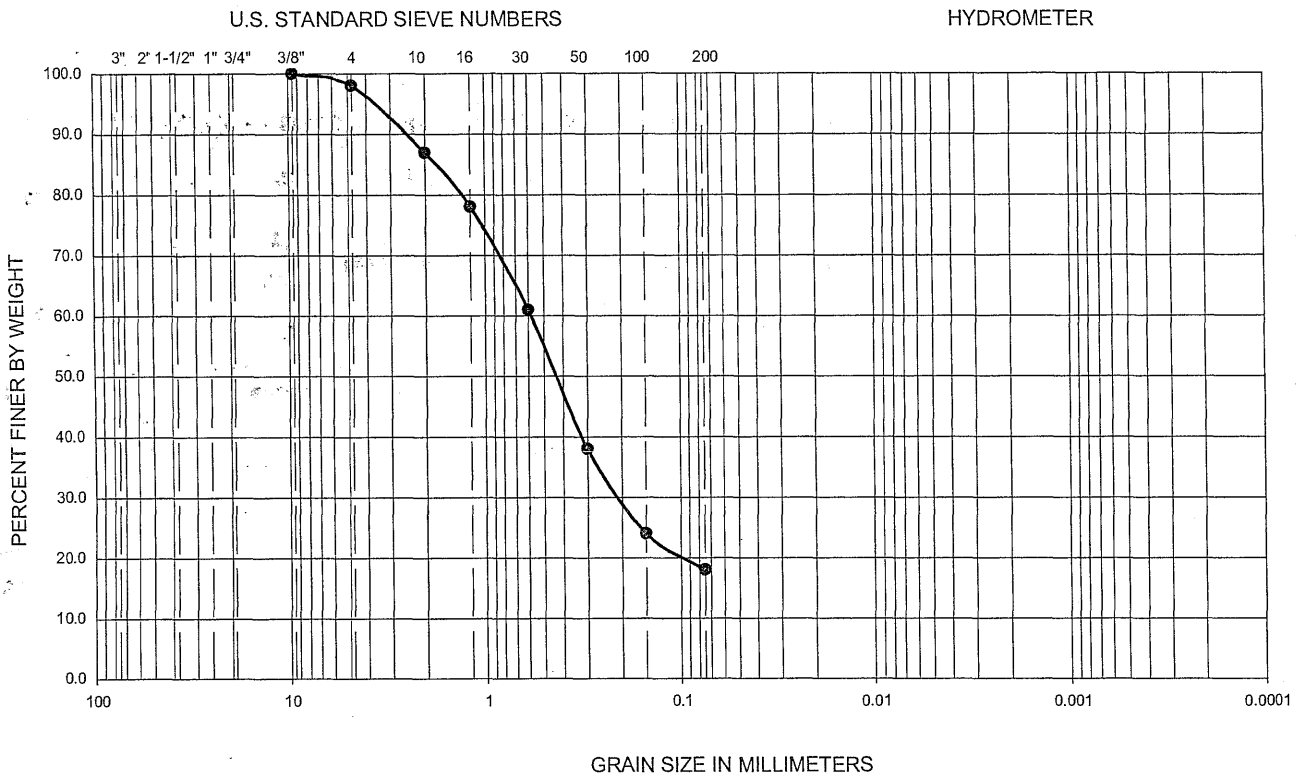


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-123	3.5-4.8	30	17	13	--	--	--	--	--	32	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-41
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

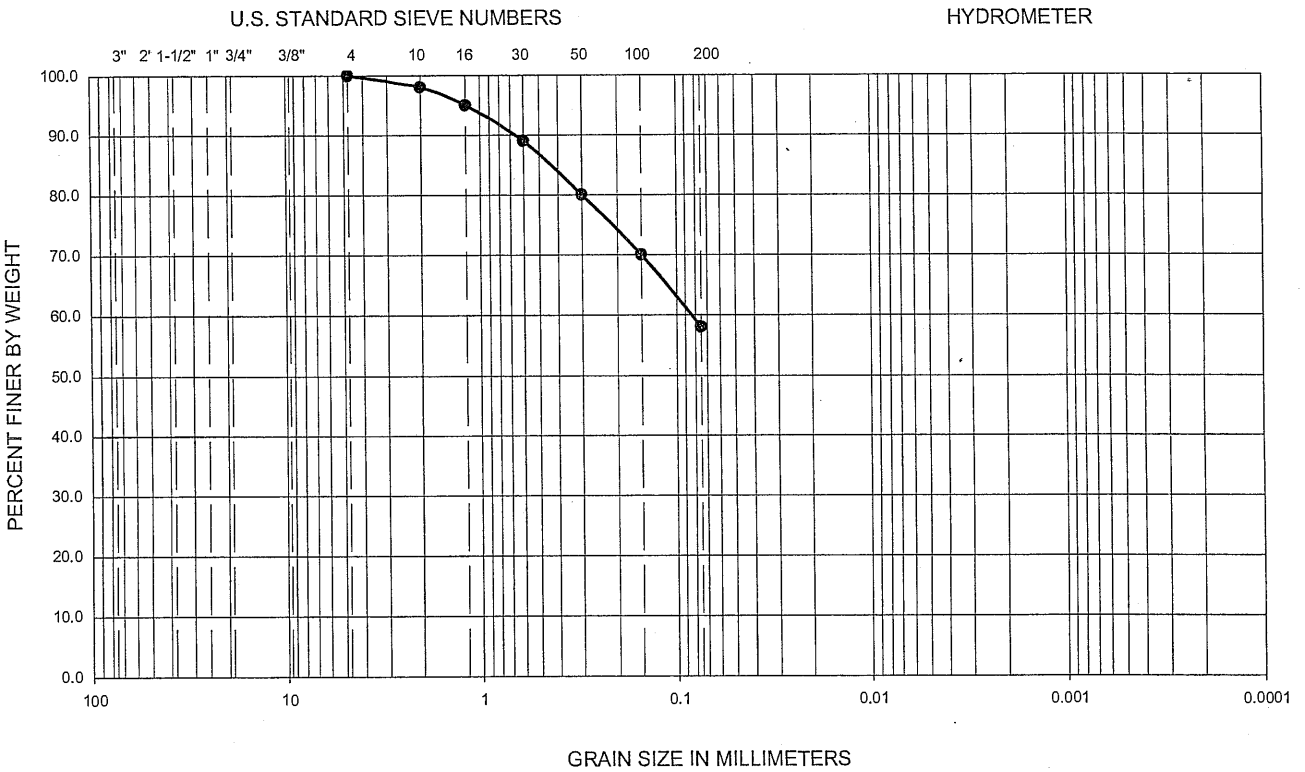


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-39	4-5.5	--	--	--	--	--	--	--	--	18	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-1
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

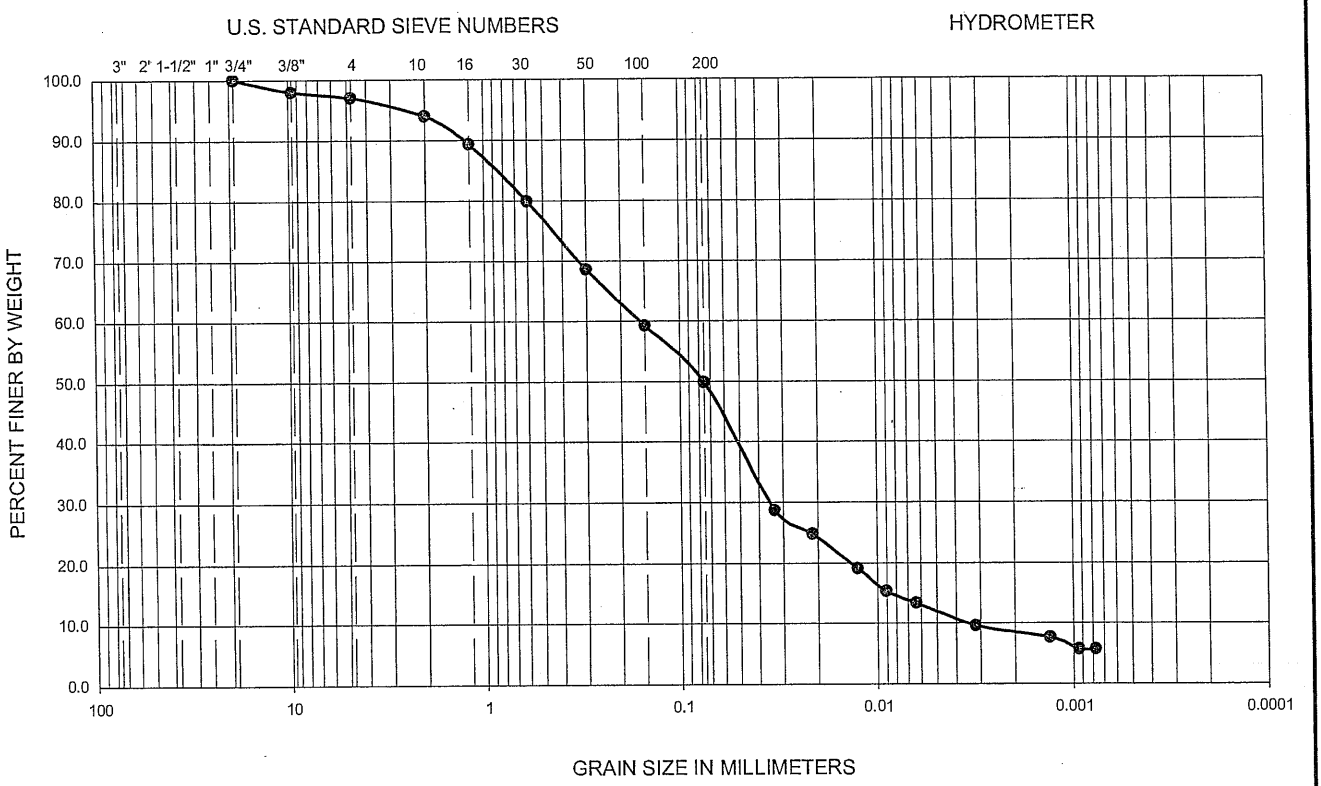


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-43	4-5.4	35	18	17	--	--	--	--	--	58	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-3
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



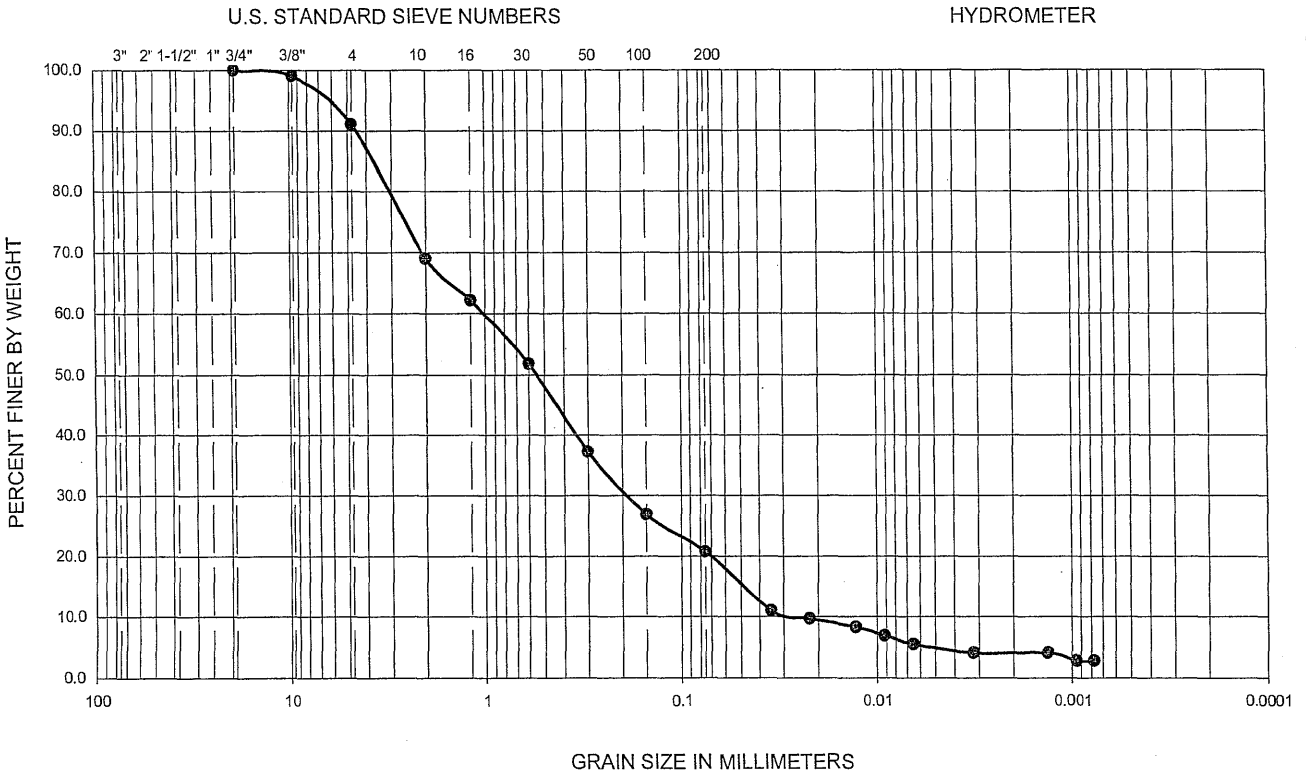
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-44	20-21.5	38	20	18	--	--	--	--	--	50	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-5
602257001 / 12/14		

05 - SIEVE+HYDRO B-44@20-21.5

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



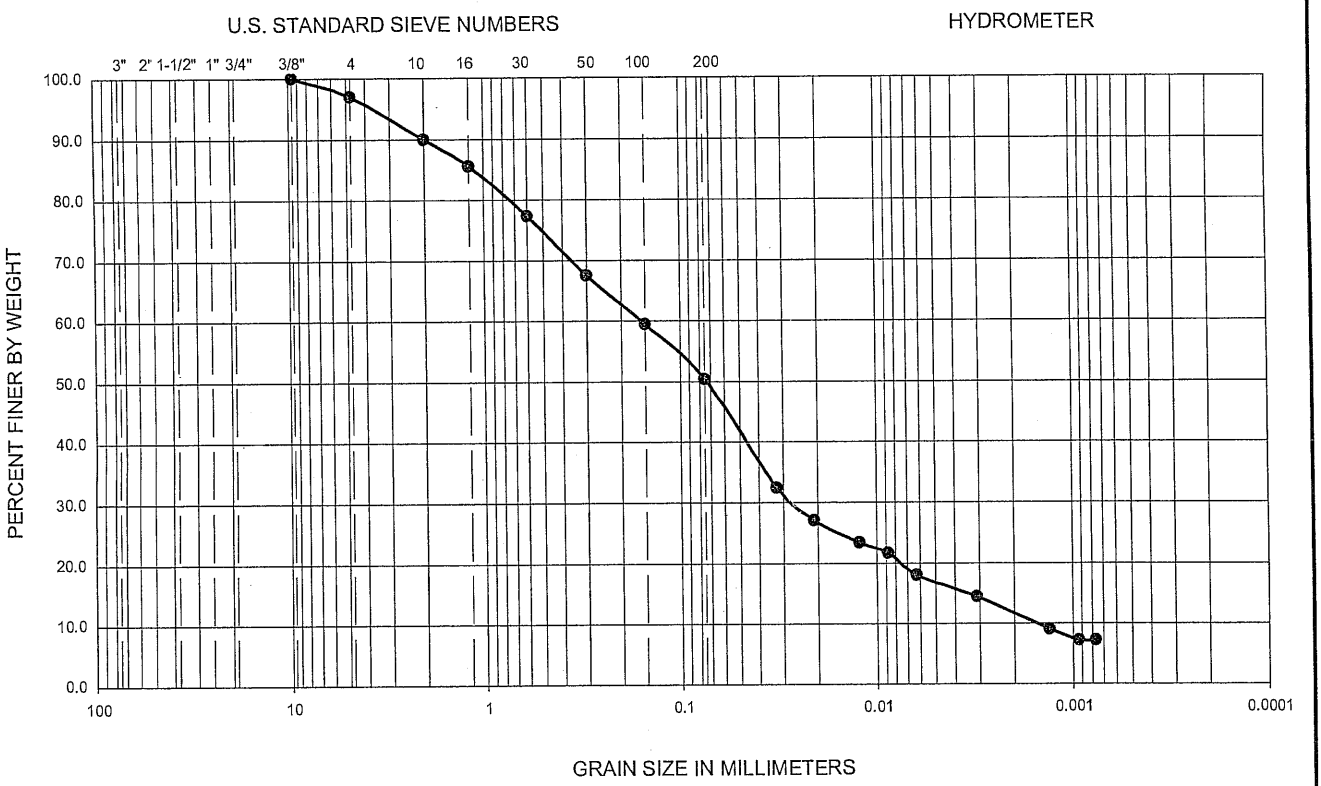
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-45	18.5-19.9	34	17	17	--	--	--	--	--	21	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-7
602257001 / 12/14		

07 - SIEVE+HYDRO B-45@18.5-19.9

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



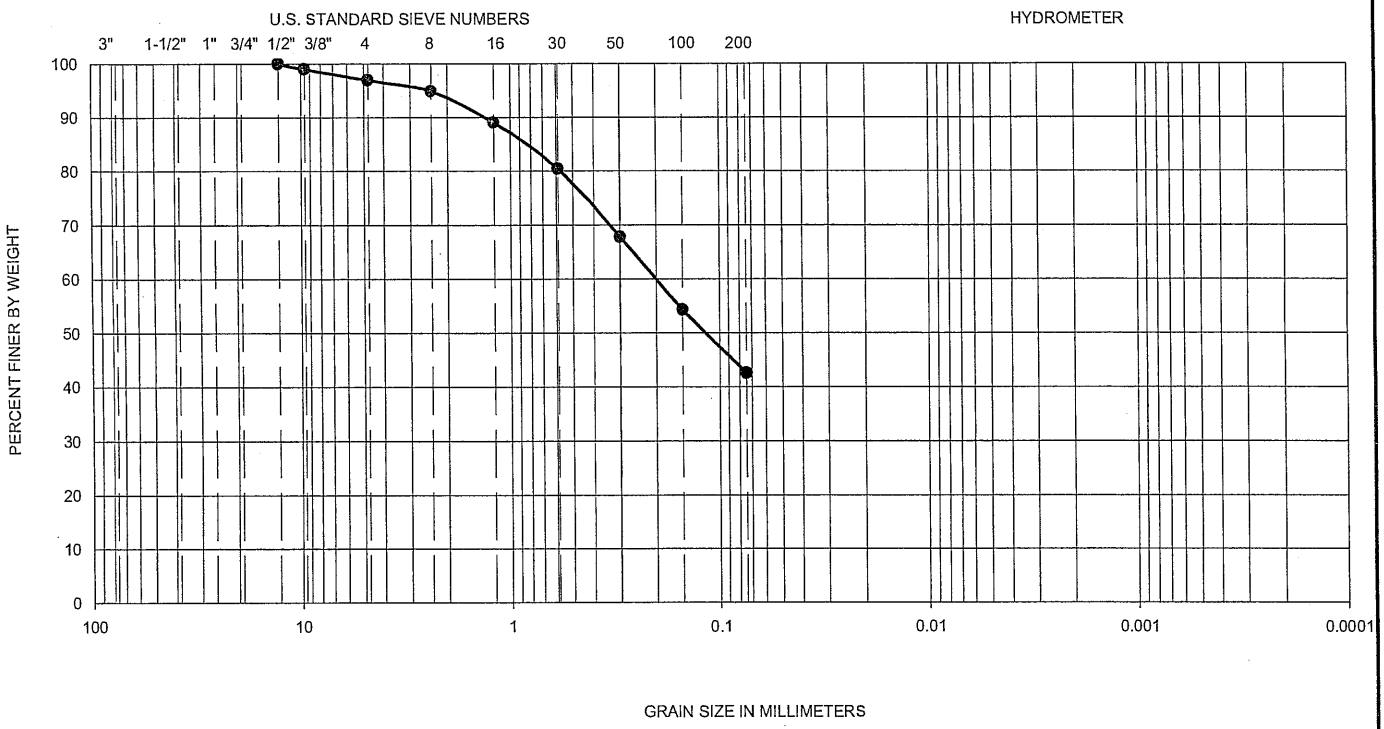
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-46	13.5-14.8	44	24	20	--	--	--	--	--	50	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-9
602257001 / 12/14		

09 - SIEVE+HYDRO B-46@13.5-14.8

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



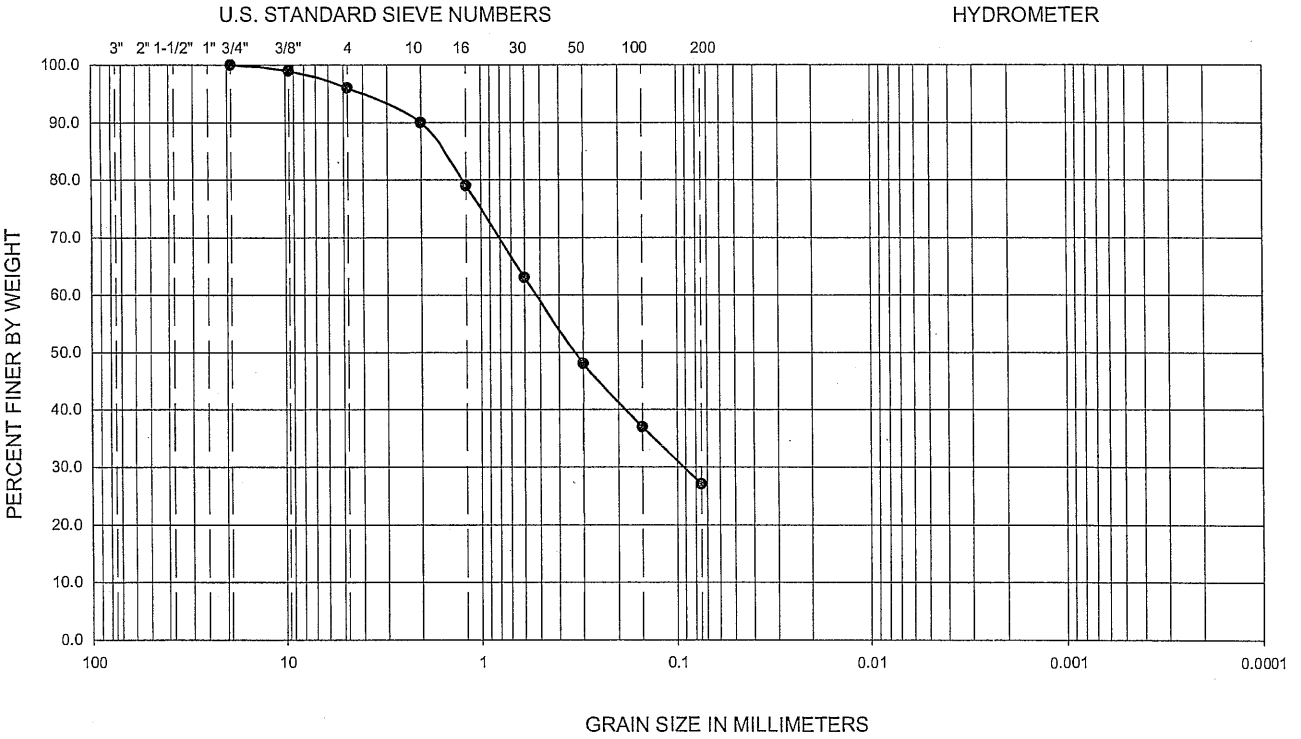
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-103	0.0-5.0	--	--	NP	--	--	--	--	--	43	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP-INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-11
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

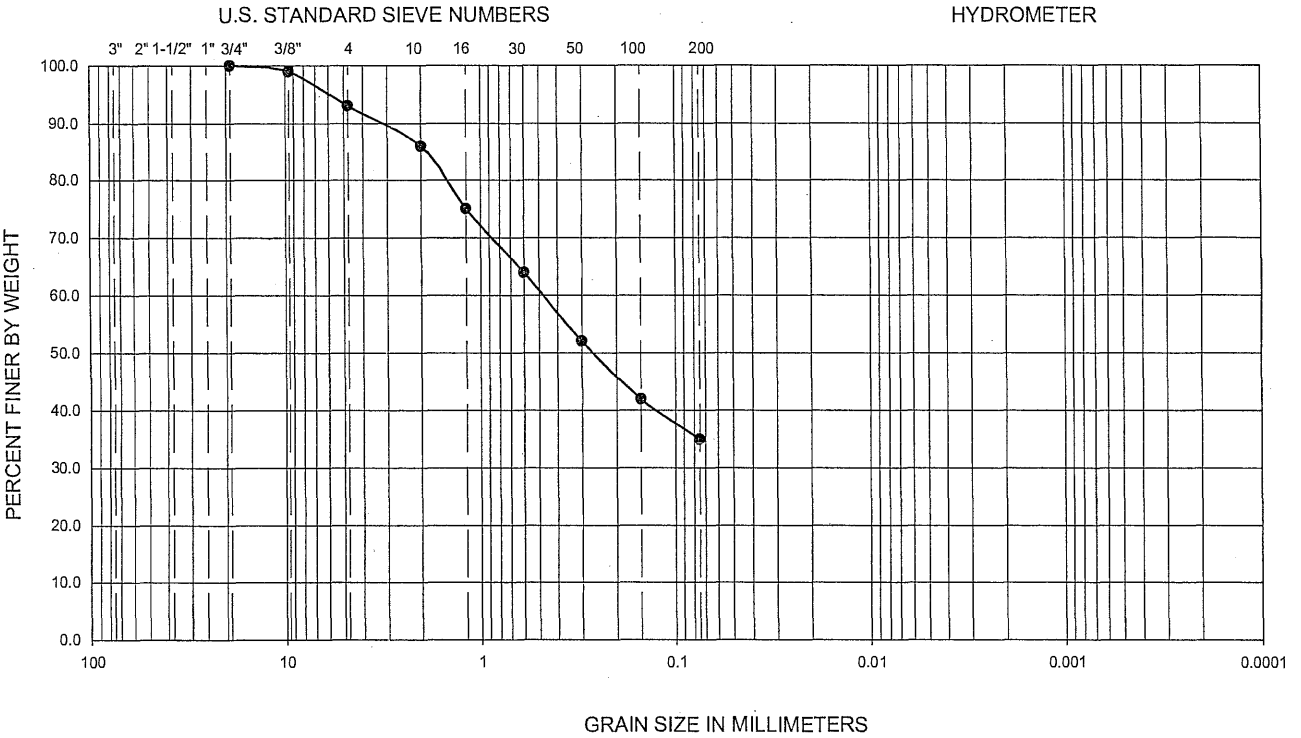


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-107	3.5-5.0	29	17	12	--	--	--	--	--	27	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-13

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



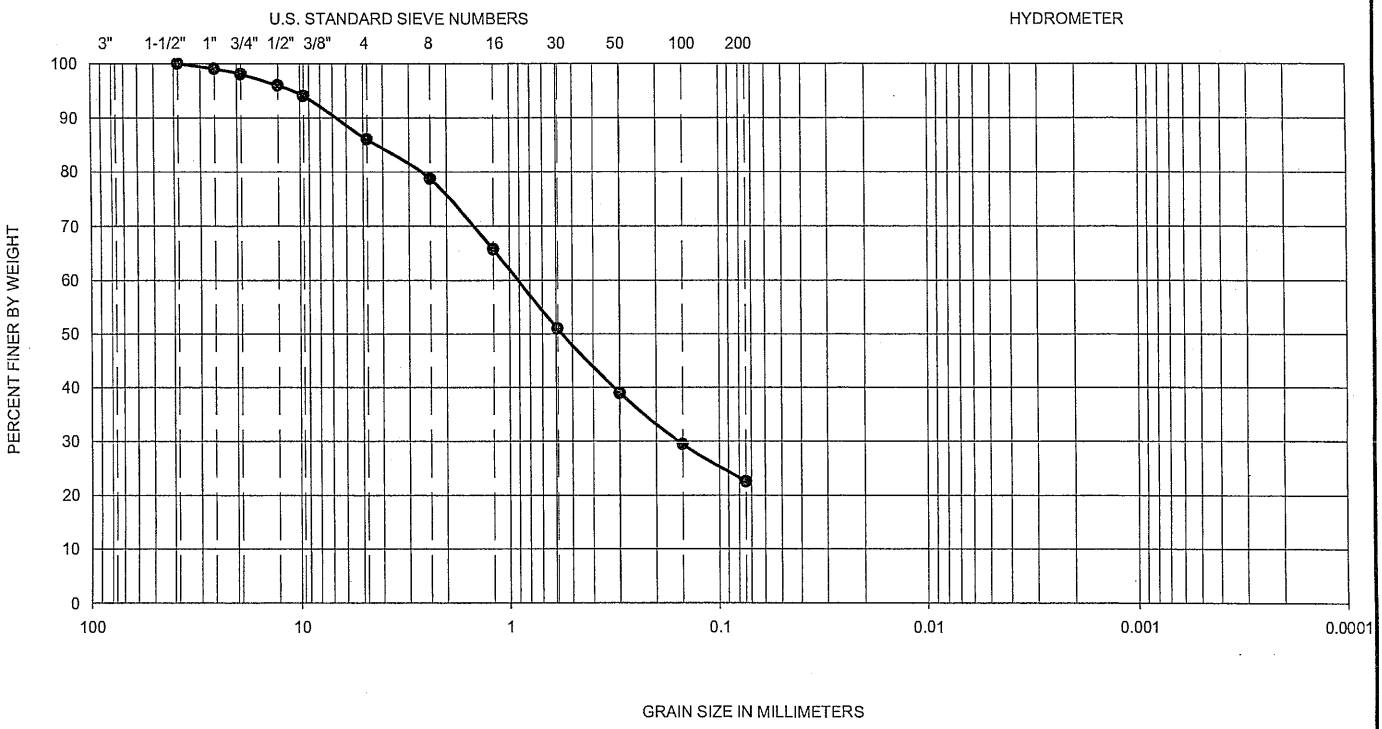
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-109	3.5-5.0	--	--	NP	--	--	--	--	--	35	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-15
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



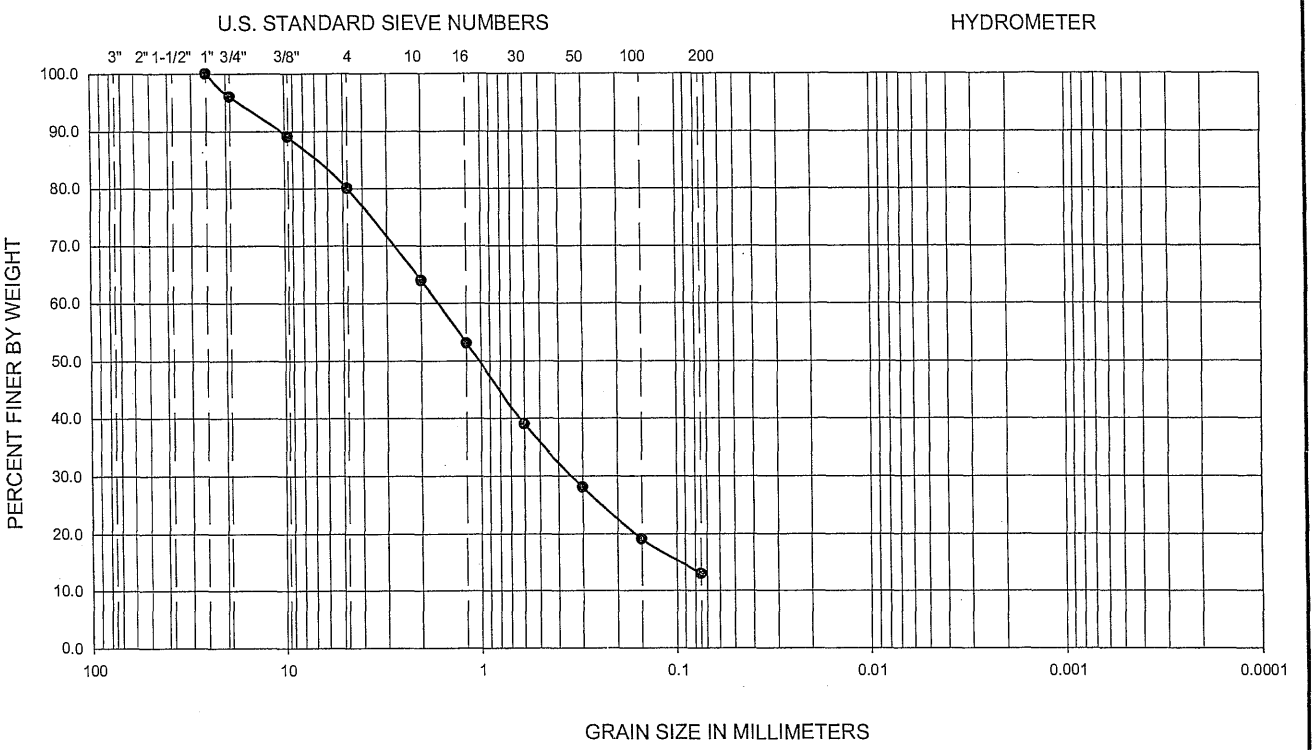
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-109	10.0-15.0	--	--	NP	--	--	--	--	--	22	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP-INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-17
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



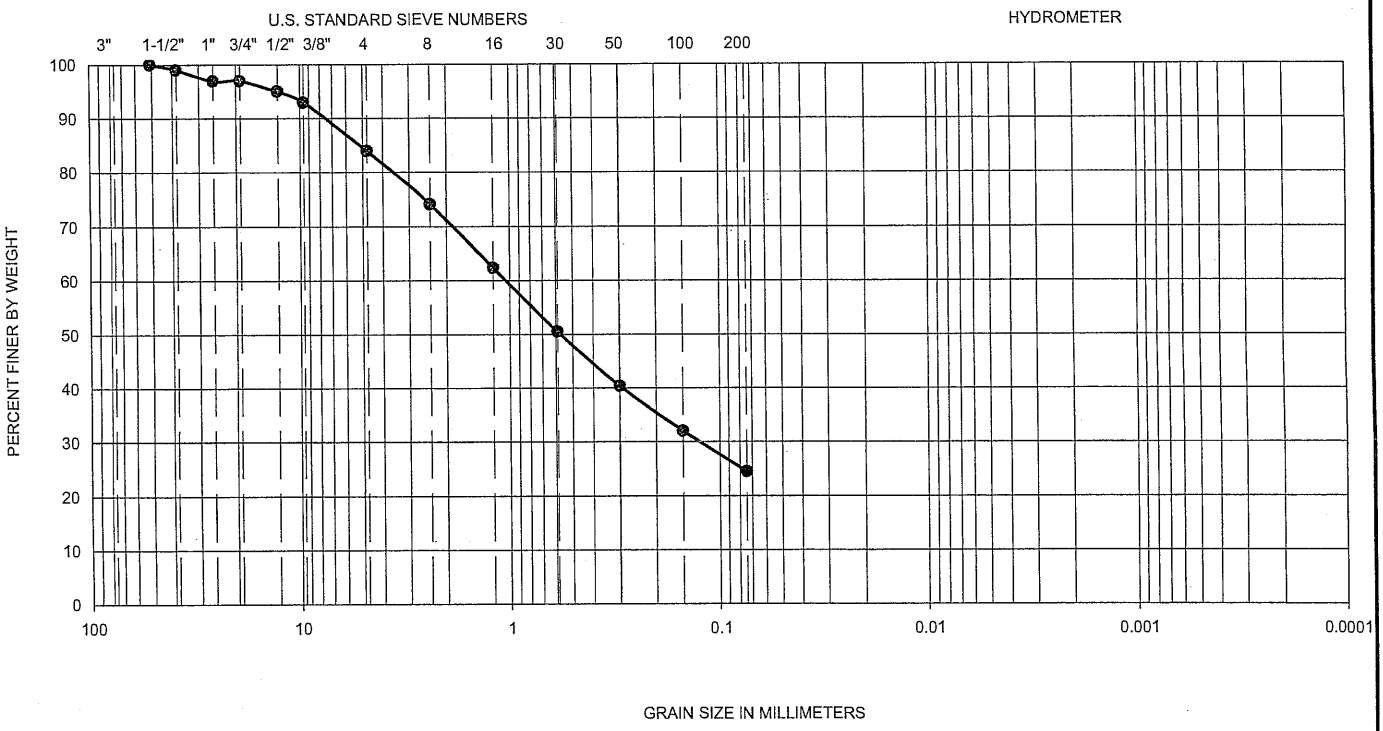
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-110	6.0-7.5	--	--	NP	--	--	--	--	--	13	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT BUCKEYE, ARIZONA	B-19
602257001 / 12/14		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-110	10.0-15.0	--	--	NP	--	--	--	--	--	24	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP-INDICATES NON-PLASTIC

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	B-21
602257001 / 12/14		

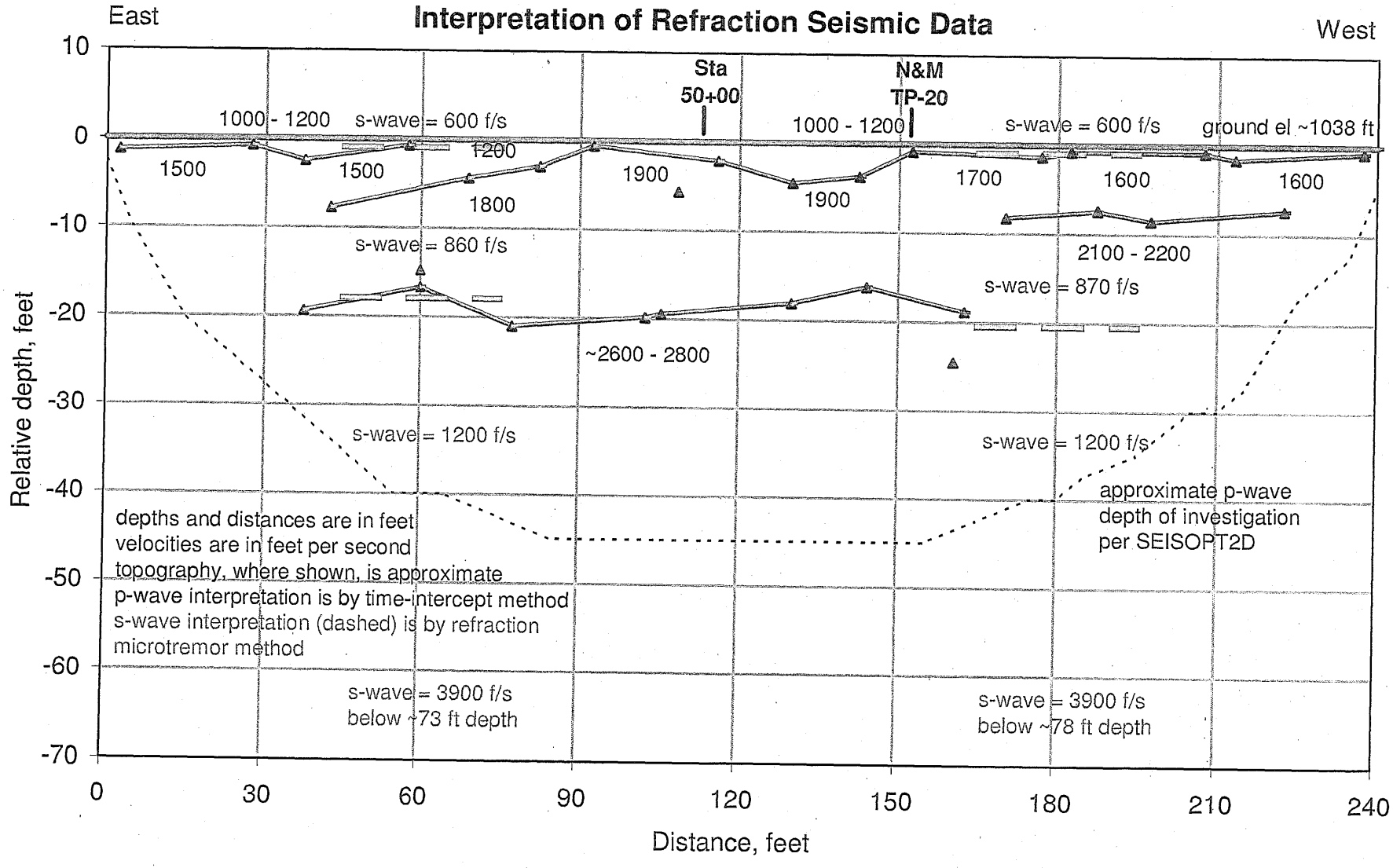

East
Interpretation of Refraction Seismic Data
West
Sta
50+00
N&M
TP-20
1000 - 1200
s-wave = 600 f/s
1000 - 1200
s-wave = 600 f/s
ground el ~1038 ft
1500
1500
1200
1800
1900
1900
1700
1600
1600
s-wave = 860 f/s
2100 - 2200
s-wave = 870 f/s
~2600 - 2800
s-wave = 1200 f/s
s-wave = 1200 f/s
approximate p-wave
depth of investigation
per SEISOPT2D
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 3900 f/s
below ~73 ft depth
s-wave = 3900 f/s
below ~78 ft depth
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-25

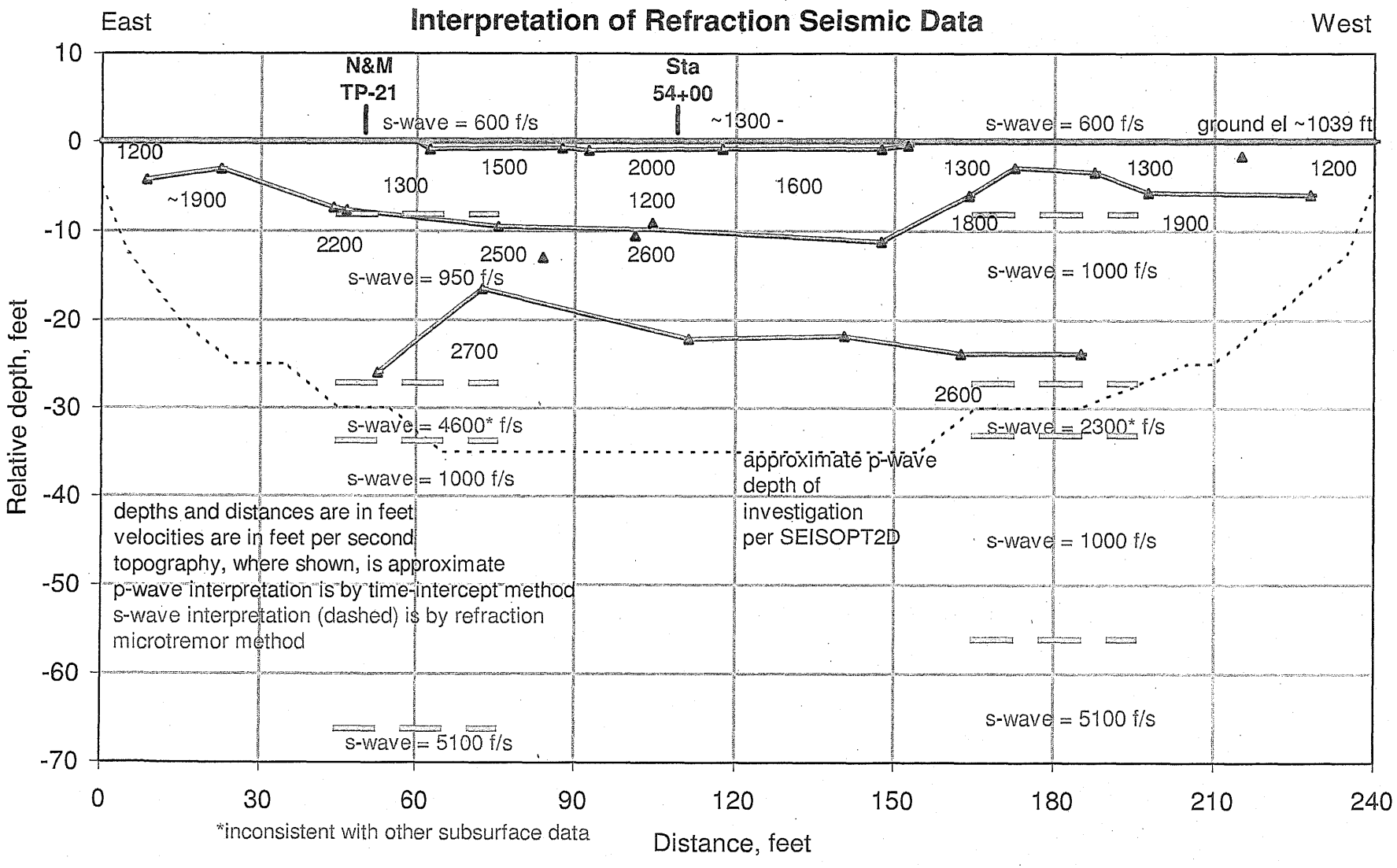

East
Interpretation of Refraction Seismic Data
West
N&M
TP-21
Sta
54+00
s-wave = 600 f/s
~1300 -
s-wave = 600 f/s
ground el ~1039 ft
1200
~1900
1300
1500
2000
1600
1300
1300
1200
1200
1800
1900
2200
2500
2600
s-wave = 950 f/s
s-wave = 1000 f/s
2700
2600
s-wave = 4600* f/s
s-wave = 2300* f/s
s-wave = 1000 f/s
approximate p-wave
depth of
investigation
per SEISOPT2D
s-wave = 1000 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 5100 f/s
s-wave = 5100 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
*inconsistent with other subsurface data
Distance, feet

Figure C-27

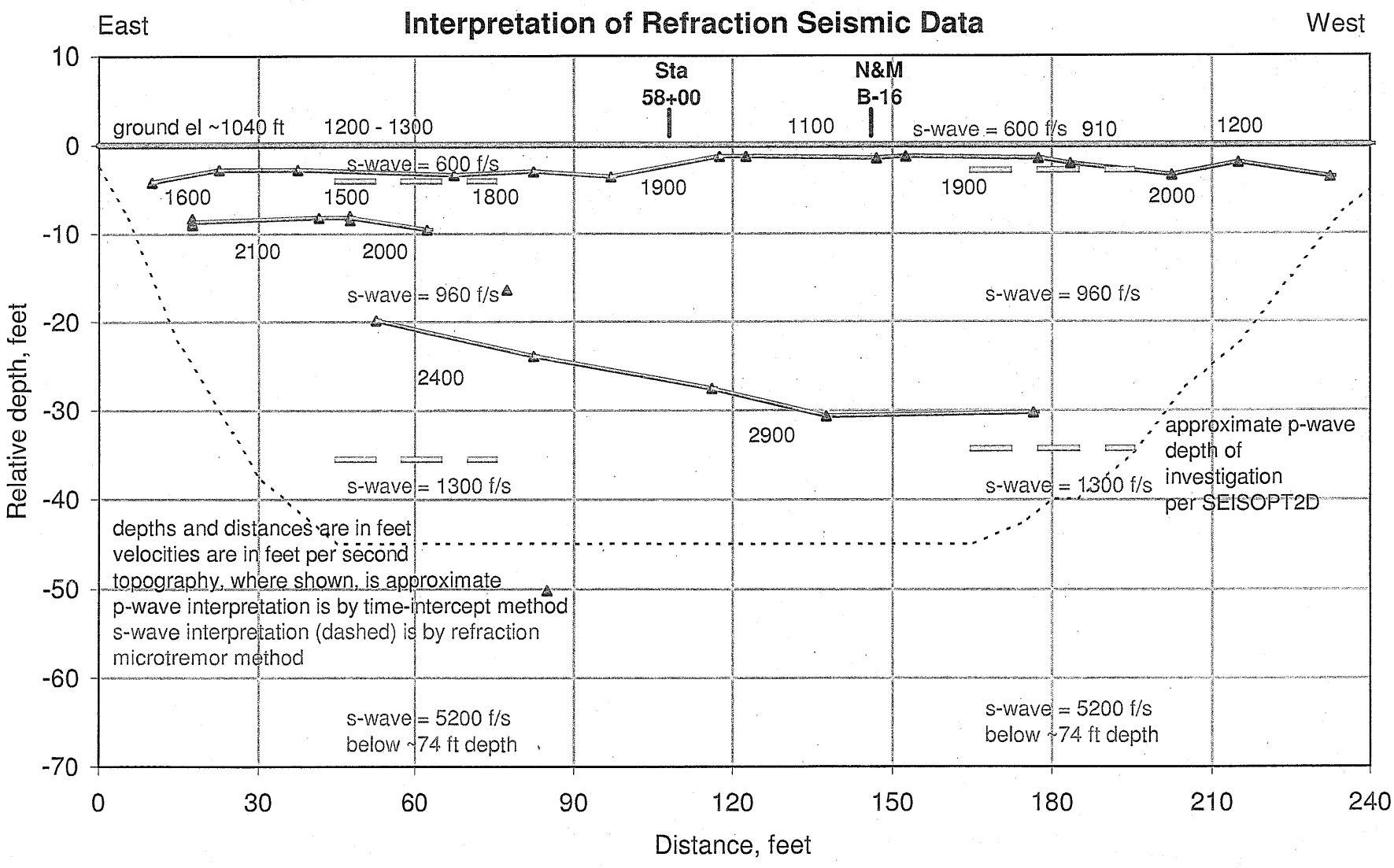

East
Interpretation of Refraction Seismic Data
West
Sta
58+00
N&M
B-16
ground el ~1040 ft
1200 - 1300
1100
s-wave = 600 f/s
910
1200
s-wave = 600 f/s
1600
1500
1800
1900
1900
2000
2100
2000
s-wave = 960 f/s
s-wave = 960 f/s
2400
2900
approximate p-wave
depth of
investigation
per SEISOPT2D
s-wave = 1300 f/s
s-wave = 1300 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 5200 f/s
below ~74 ft depth
s-wave = 5200 f/s
below ~74 ft depth
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-29

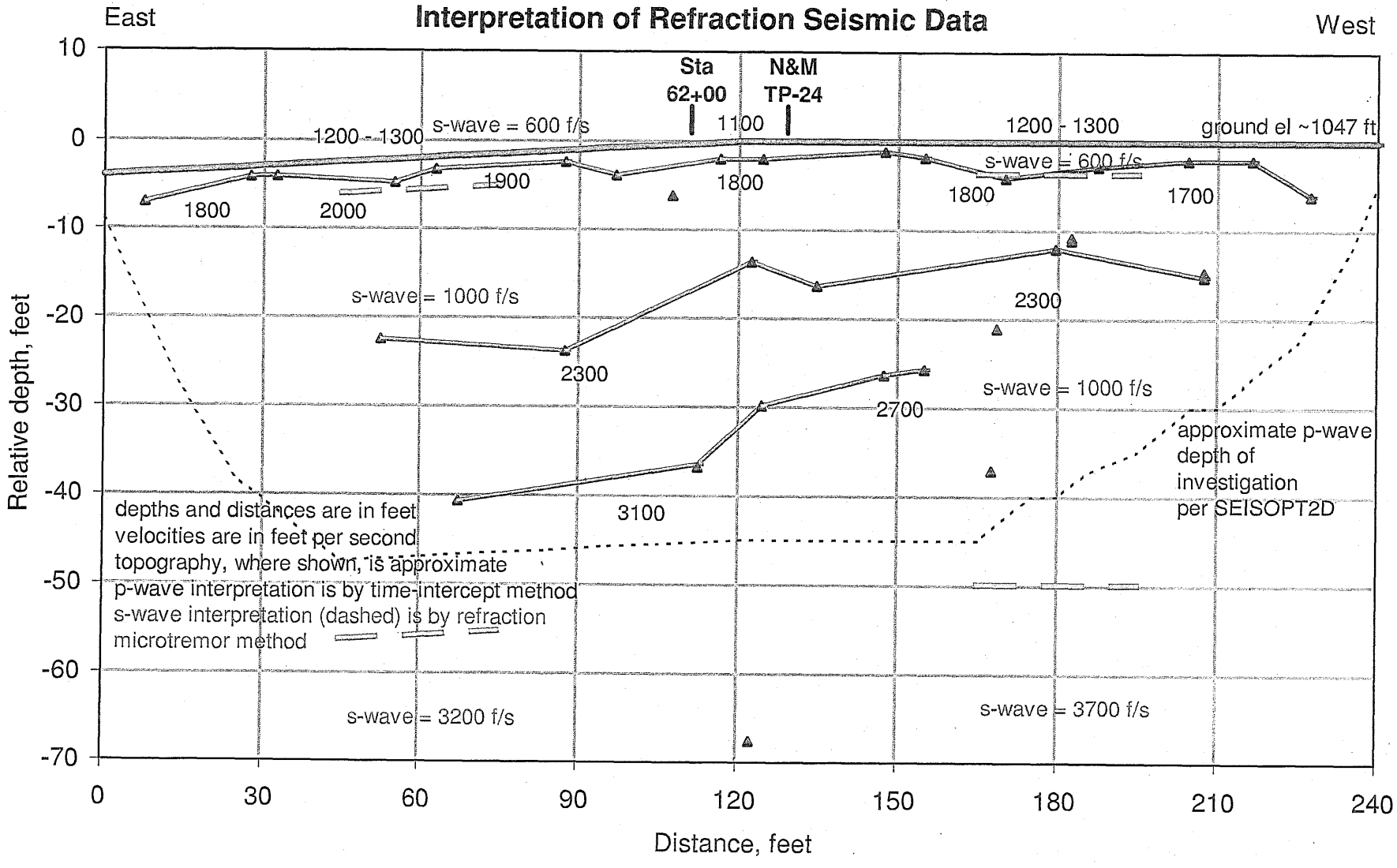

East
Interpretation of Refraction Seismic Data
West
Sta
62+00
N&M
TP-24
1200 - 1300
s-wave = 600 f/s
1100
1200 - 1300
ground el ~1047 ft
s-wave = 600 f/s
1900
1800
1800
1800
2000
1700
s-wave = 1000 f/s
2300
2300
s-wave = 1000 f/s
2700
approximate p-wave
depth of
investigation
per SEISOPT2D
3100
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 3200 f/s
s-wave = 3700 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-31

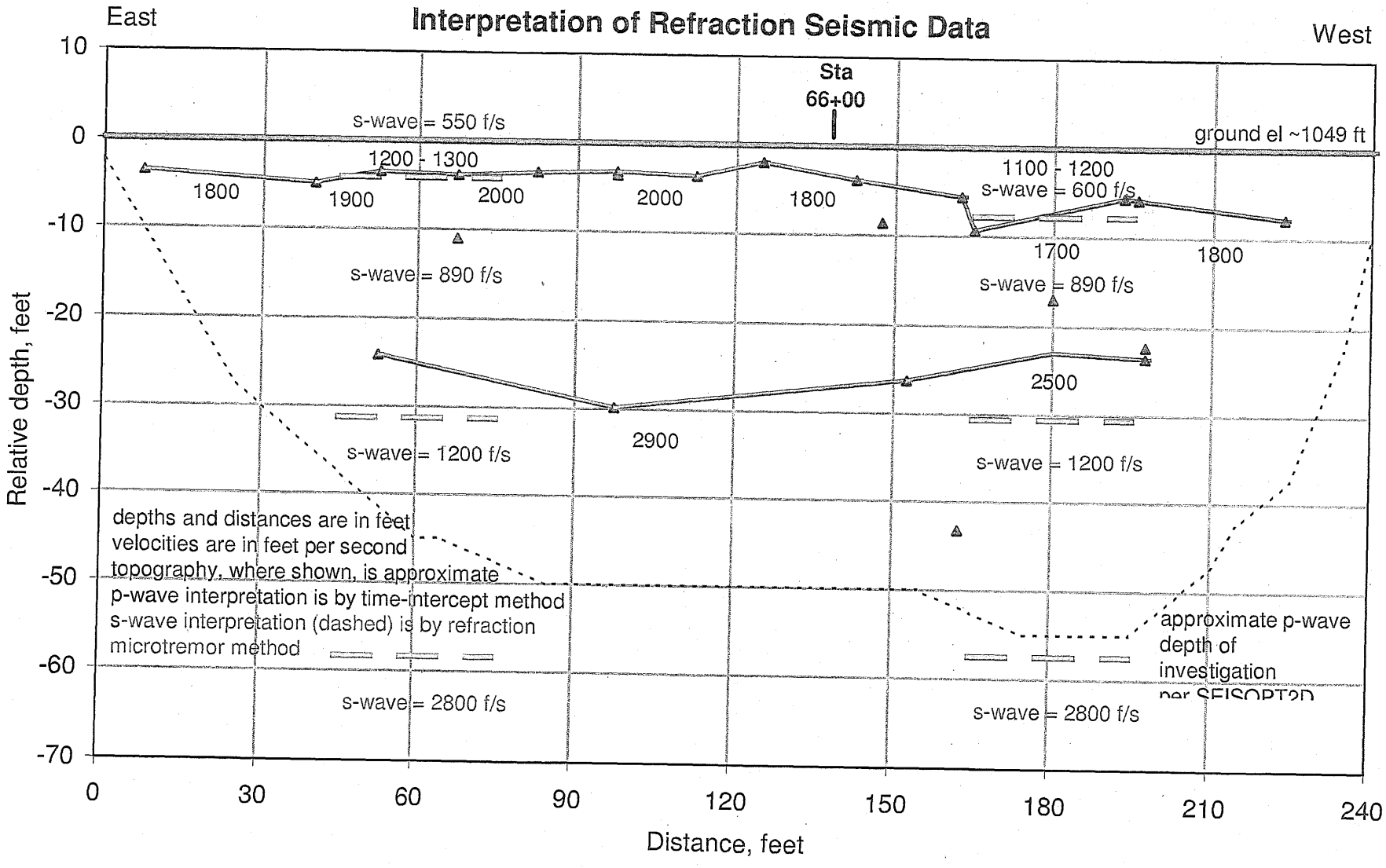

Interpretation of Refraction Seismic Data
East
West
Sta
66+00
ground el ~1049 ft
s-wave = 550 f/s
1200 - 1300
1800
1900
2000
2000
1800
1100 - 1200
s-wave = 600 f/s
1700
1800
s-wave = 890 f/s
s-wave = 890 f/s
2500
2900
s-wave = 1200 f/s
s-wave = 1200 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 2800 f/s
s-wave = 2800 f/s
approximate p-wave
depth of
investigation
per SEISOPT2D
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-33

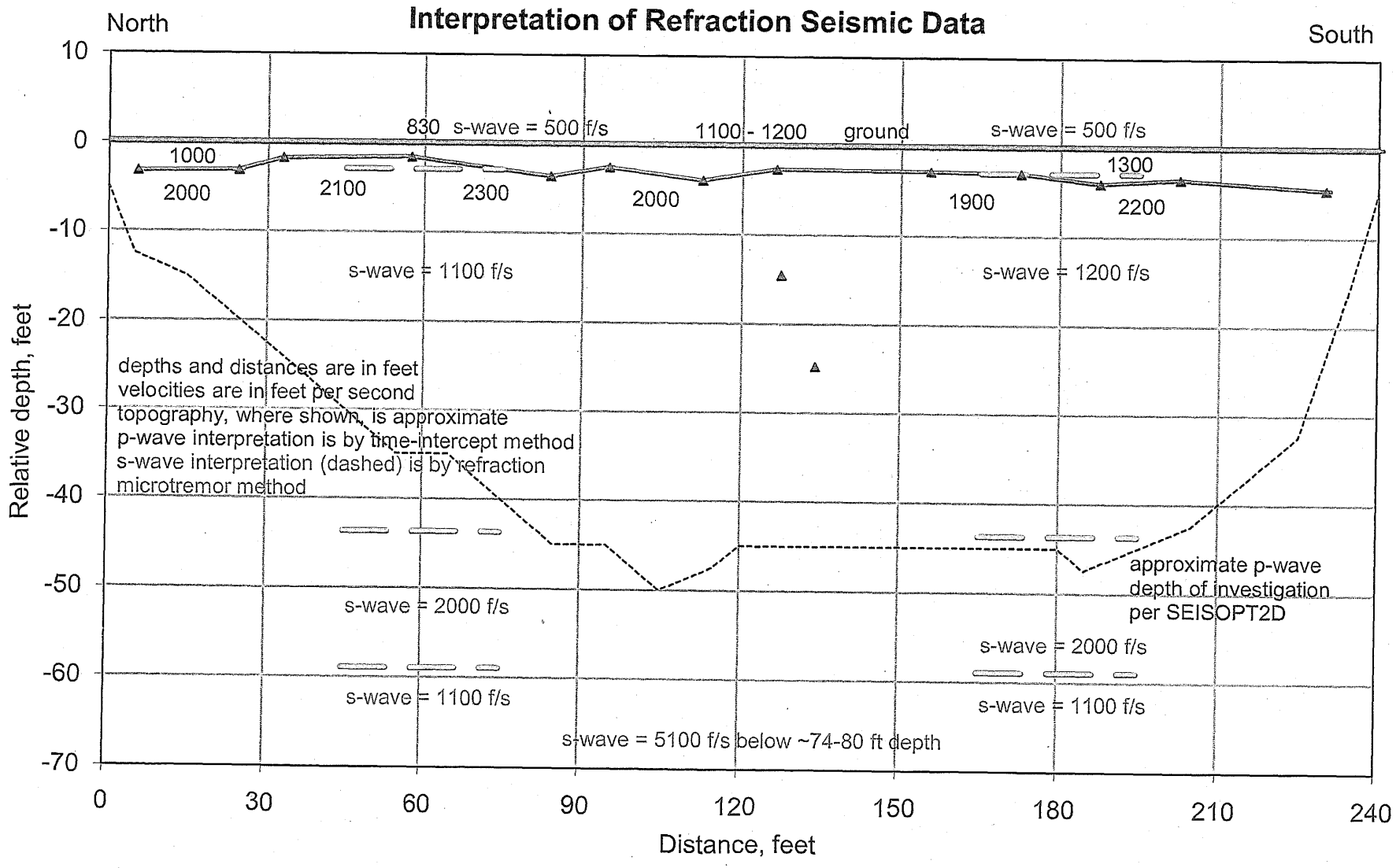

Interpretation of Refraction Seismic Data
North
South
830 s-wave = 500 f/s
1100 - 1200 ground
s-wave = 500 f/s
1000
2000
2100
2300
2000
1900
1300
2200
s-wave = 1100 f/s
s-wave = 1200 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
approximate p-wave
depth of investigation
per SEISOPT2D
s-wave = 2000 f/s
s-wave = 2000 f/s
s-wave = 1100 f/s
s-wave = 1100 f/s
s-wave = 5100 f/s below ~74-80 ft depth
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-35

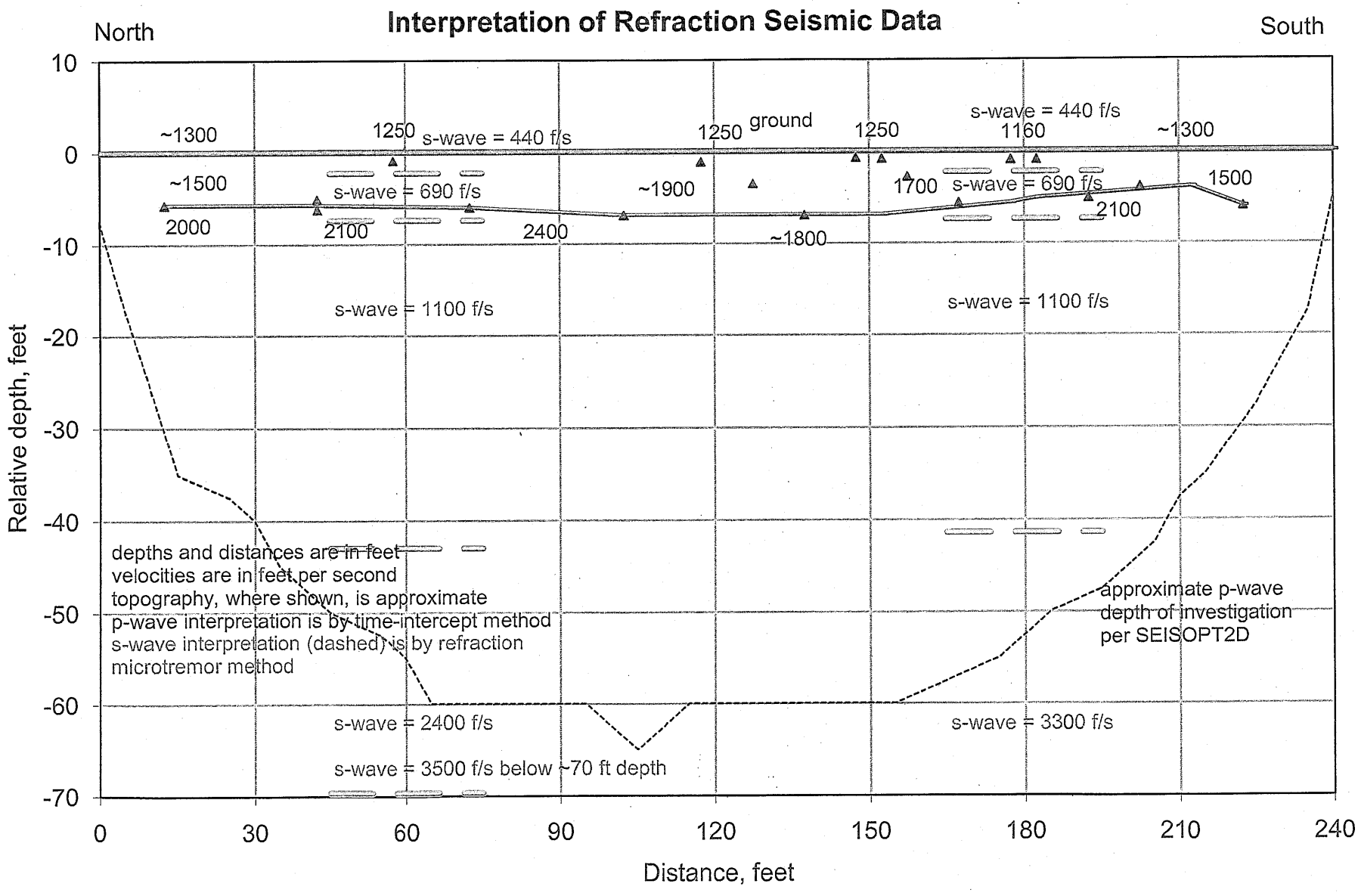

Interpretation of Refraction Seismic Data
North
South
~1300
1250
s-wave = 440 f/s
1250
ground
1250
s-wave = 440 f/s
1160
~1300
~1500
s-wave = 690 f/s
~1900
1700
s-wave = 690 f/s
1500
2000
2100
2400
~1800
2100
s-wave = 1100 f/s
s-wave = 1100 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
approximate p-wave
depth of investigation
per SEISOPT2D
s-wave = 2400 f/s
s-wave = 3300 f/s
s-wave = 3500 f/s below ~70 ft depth
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-37

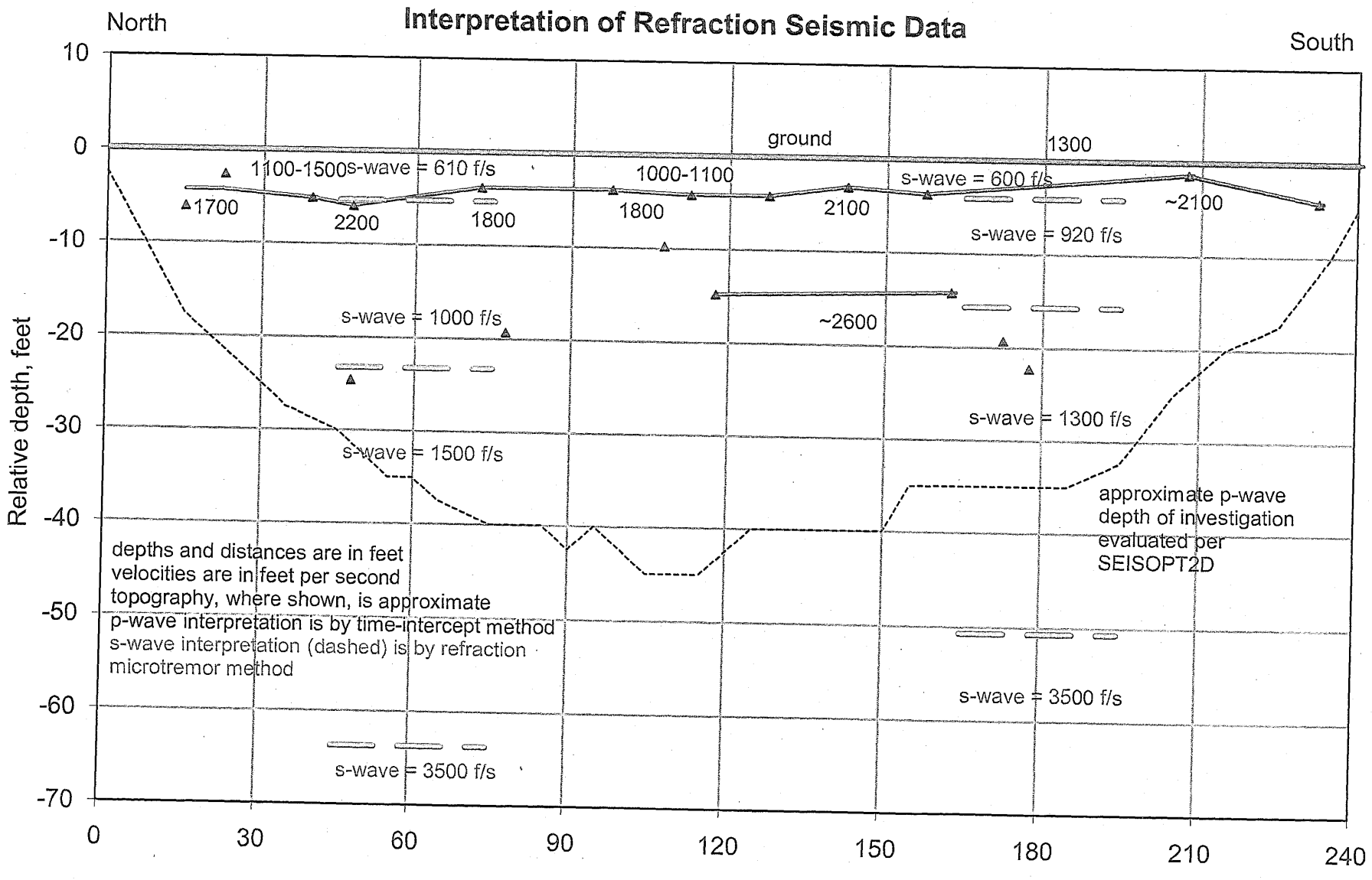

Interpretation of Refraction Seismic Data
North
South
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
ground
1300
1100-1500
s-wave = 610 f/s
1000-1100
s-wave = 600 f/s
1700
2200
1800
1800
2100
~2100
s-wave = 920 f/s
~2600
s-wave = 1000 f/s
s-wave = 1300 f/s
s-wave = 1500 f/s
approximate p-wave depth of investigation evaluated per SEISOPT2D
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction microtremor method
s-wave = 3500 f/s
s-wave = 3500 f/s

Figure C-39

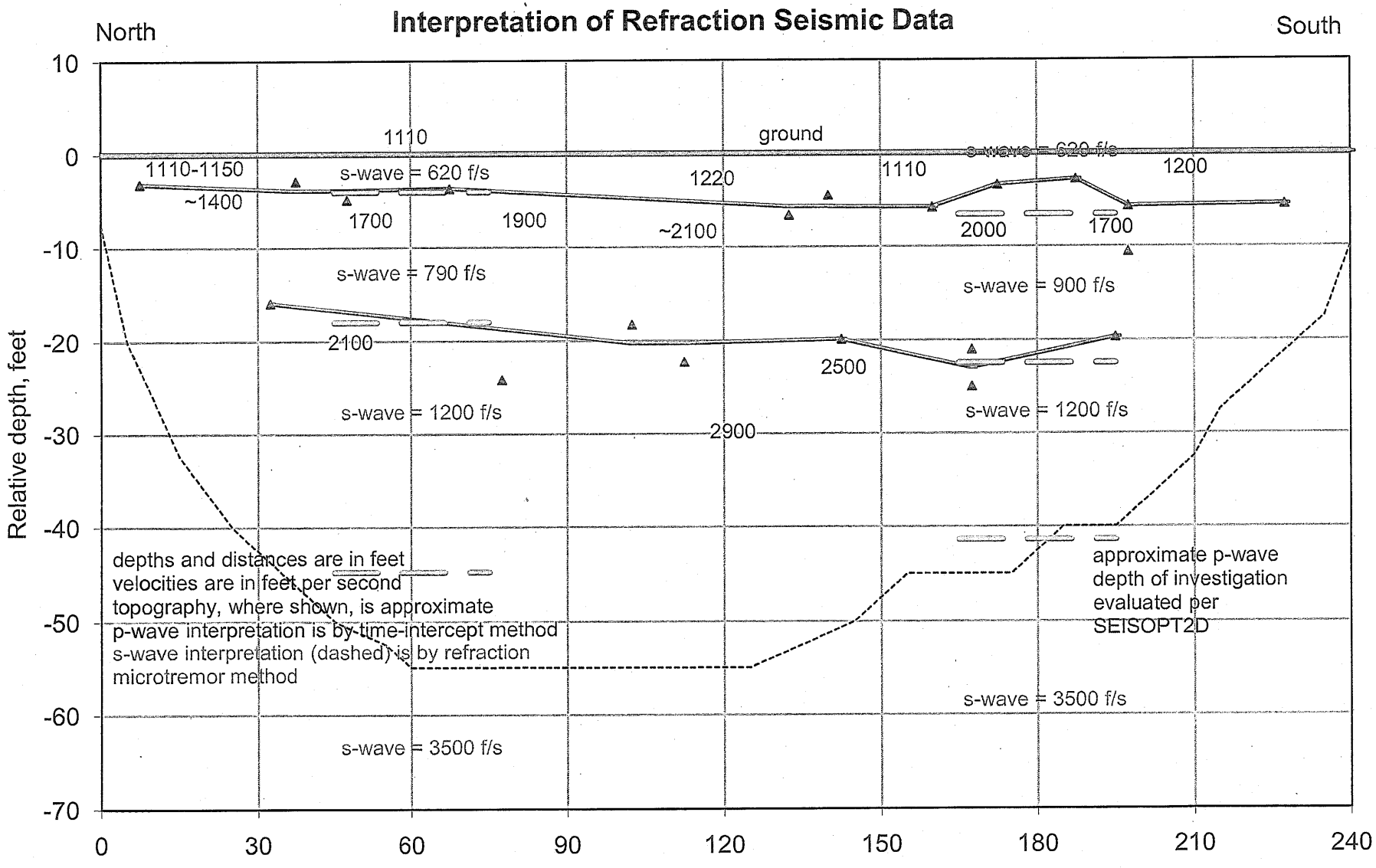

Interpretation of Refraction Seismic Data
North
South
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
1110
ground
s-wave = 620 f/s
1110-1150
s-wave = 620 f/s
1220
1110
1200
~1400
1700
1900
~2100
2000
1700
s-wave = 790 f/s
s-wave = 900 f/s
2100
2500
s-wave = 1200 f/s
s-wave = 1200 f/s
2900
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
approximate p-wave
depth of investigation
evaluated per
SEISOPT2D
s-wave = 3500 f/s
s-wave = 3500 f/s

Figure C-41

Seismic Refraction and Refraction
Microtremor Interpretation

Line 1

AMEC Job No. 09-117-01041

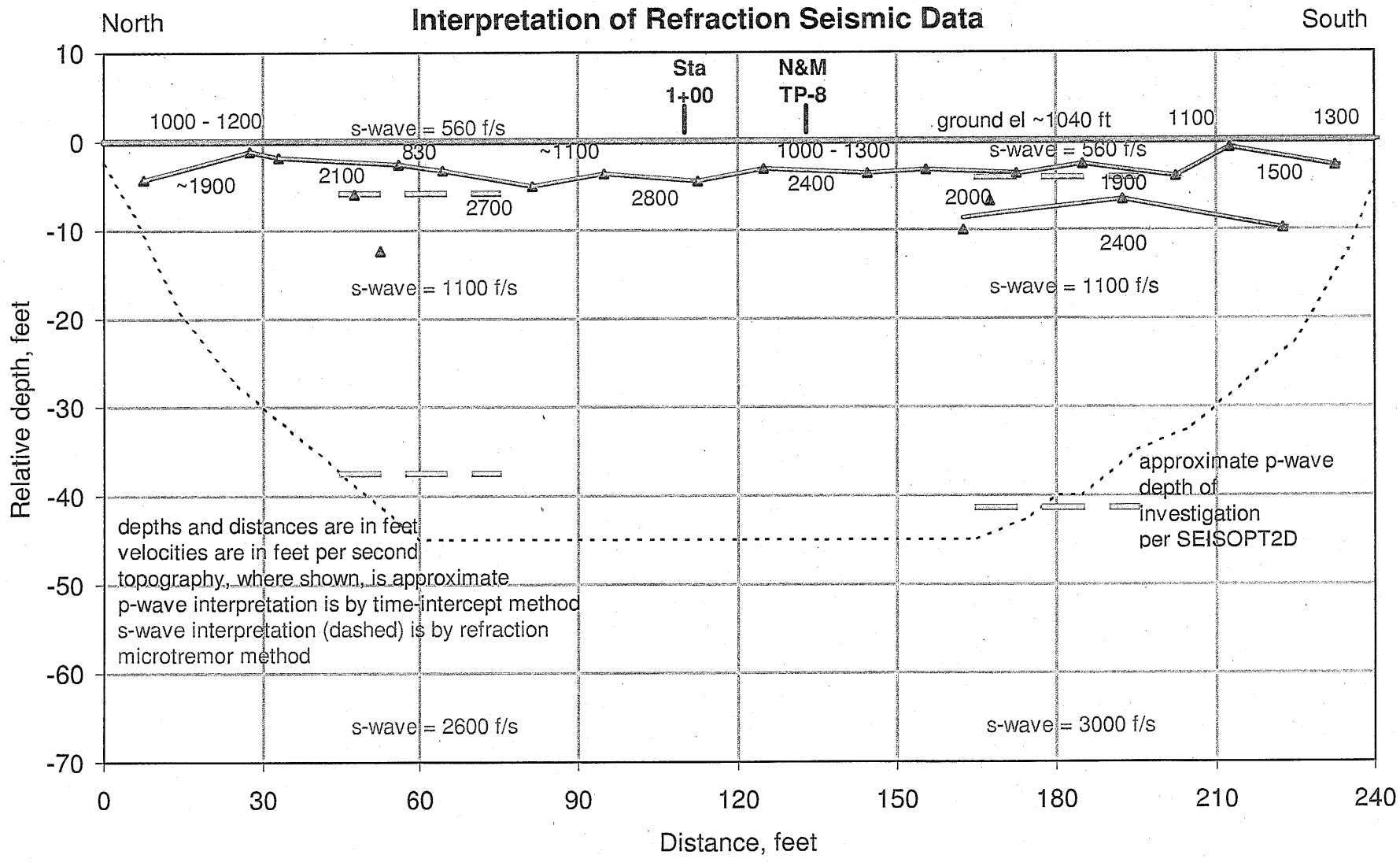


Figure C-1

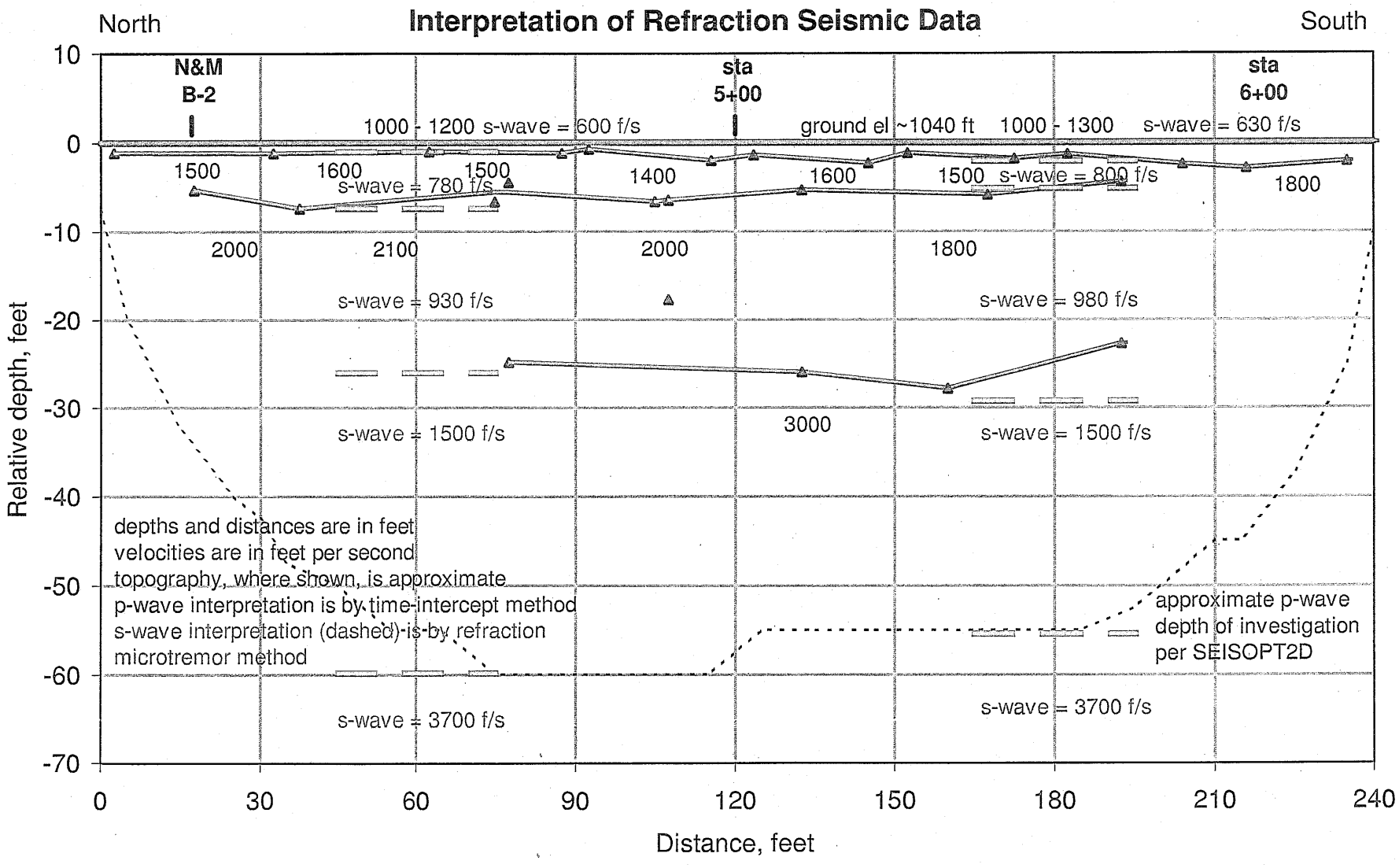

North
Interpretation of Refraction Seismic Data
South
N&M
B-2
sta
5+00
sta
6+00
1000 - 1200 s-wave = 600 f/s
ground el ~1040 ft
1000 - 1300
s-wave = 630 f/s
1500
1600
1500
s-wave = 780 f/s
1400
1600
1500
s-wave = 800 f/s
1800
2000
2100
2000
1800
s-wave = 930 f/s
s-wave = 980 f/s
s-wave = 1500 f/s
3000
s-wave = 1500 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
approximate p-wave
depth of investigation
per SEISOPT2D
s-wave = 3700 f/s
s-wave = 3700 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-3

Seismic Refraction and Refraction
Microtremor Interpretation

Line 5

AMEC Job No. 09-117-01041

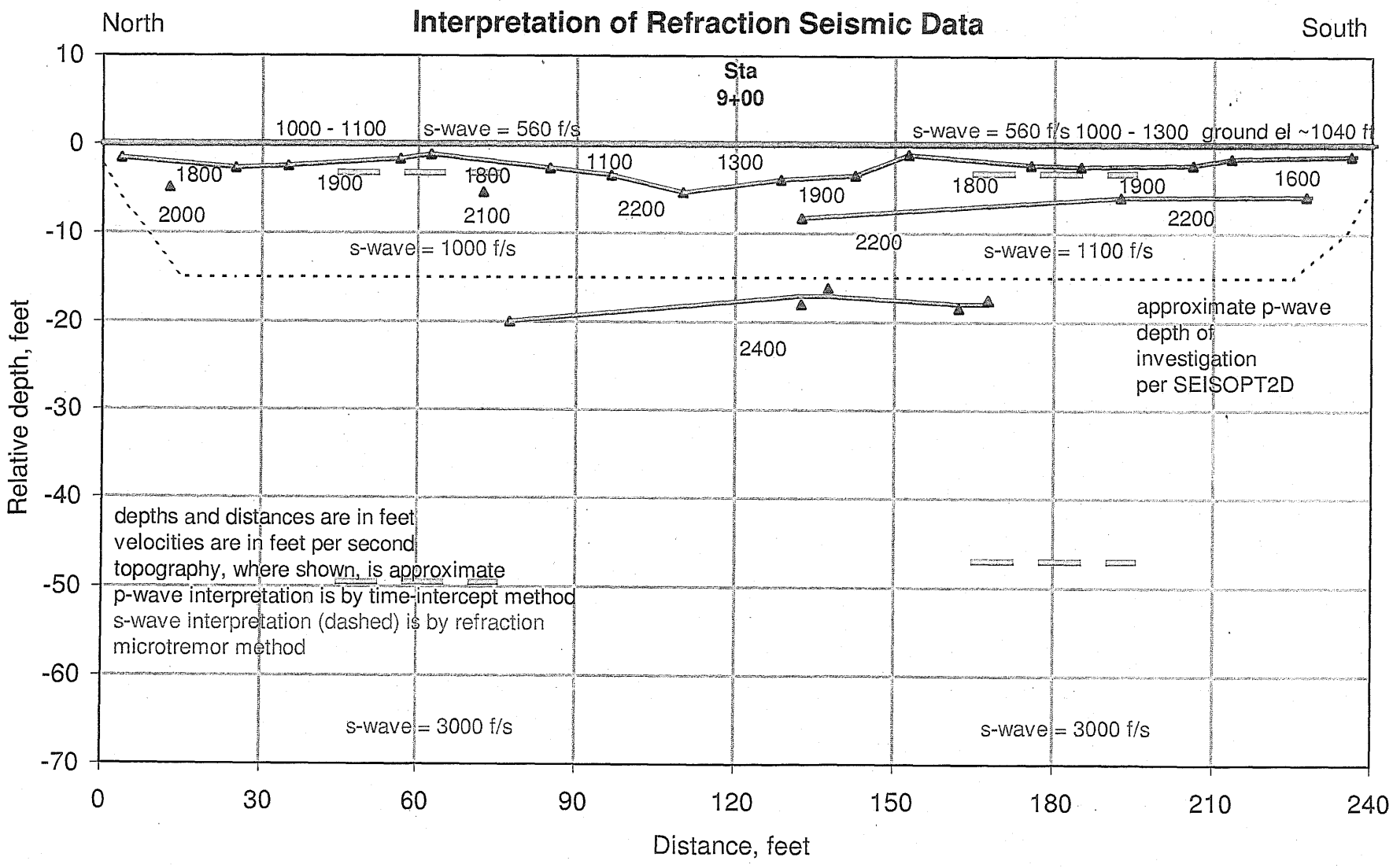
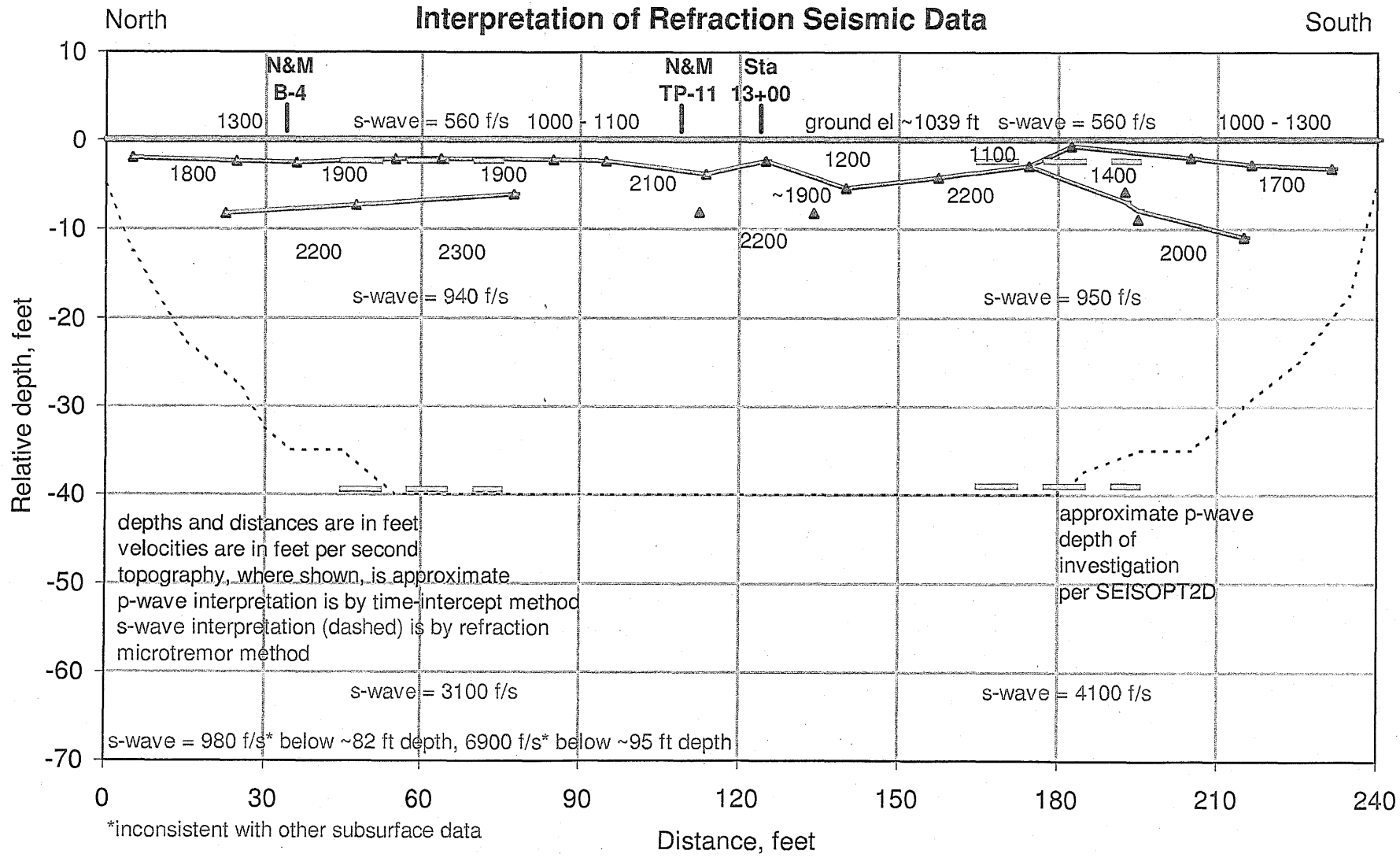


Figure C-5



*inconsistent with other subsurface data

Figure C-7

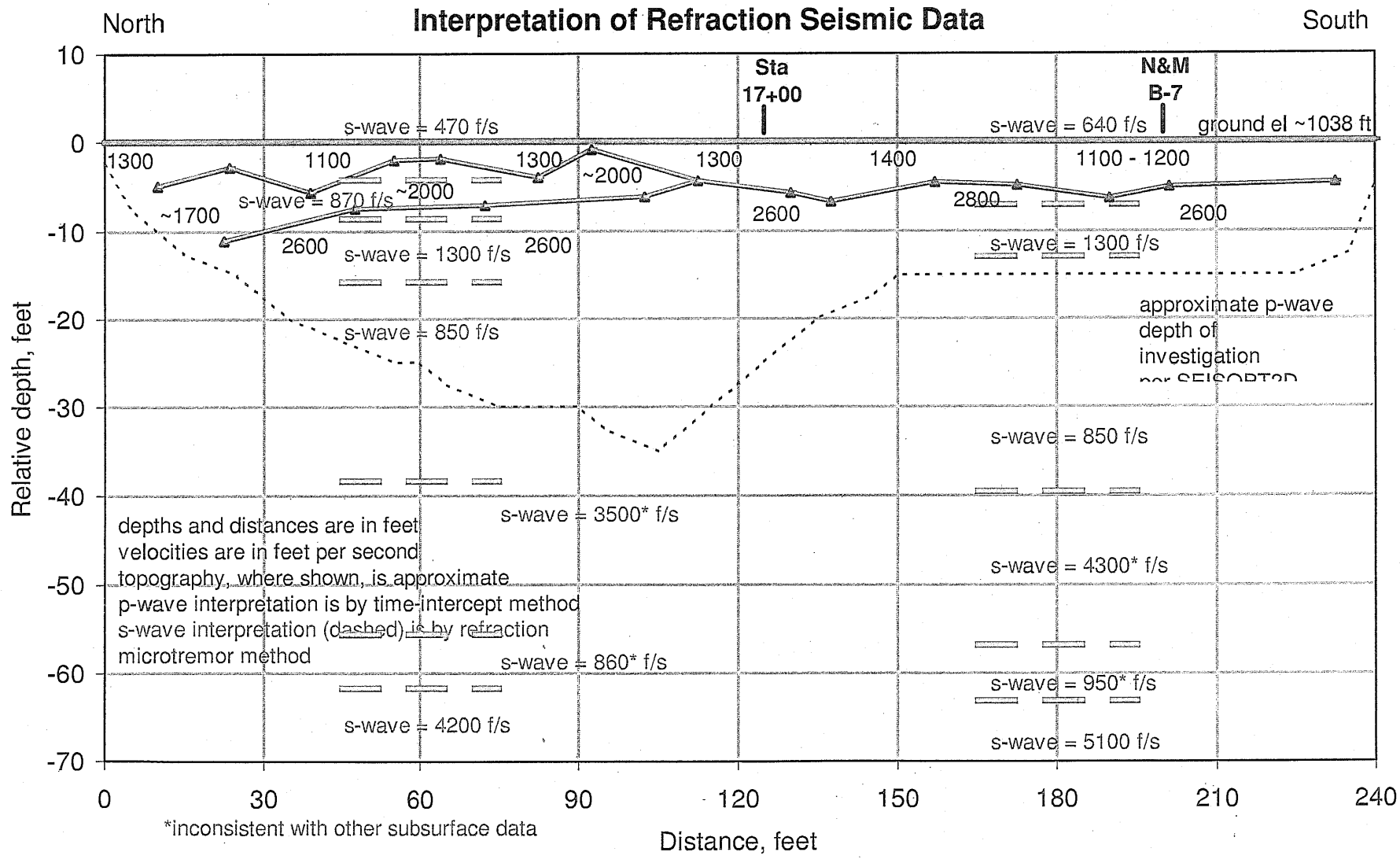

North
Interpretation of Refraction Seismic Data
South
Sta
17+00
N&M
B-7
s-wave = 470 f/s
s-wave = 640 f/s
ground el ~1038 ft
1300
1100
1300
~2000
1300
1400
1100 - 1200
~1700
s-wave = 870 f/s
~2000
2600
2800
2600
2600
2600
s-wave = 1300 f/s
s-wave = 1300 f/s
approximate p-wave
depth of
investigation
s-wave = 850 f/s
s-wave = 850 f/s
s-wave = 3500* f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 4300* f/s
s-wave = 860* f/s
s-wave = 950* f/s
s-wave = 4200 f/s
s-wave = 5100 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
*inconsistent with other subsurface data
Distance, feet

Figure C-9

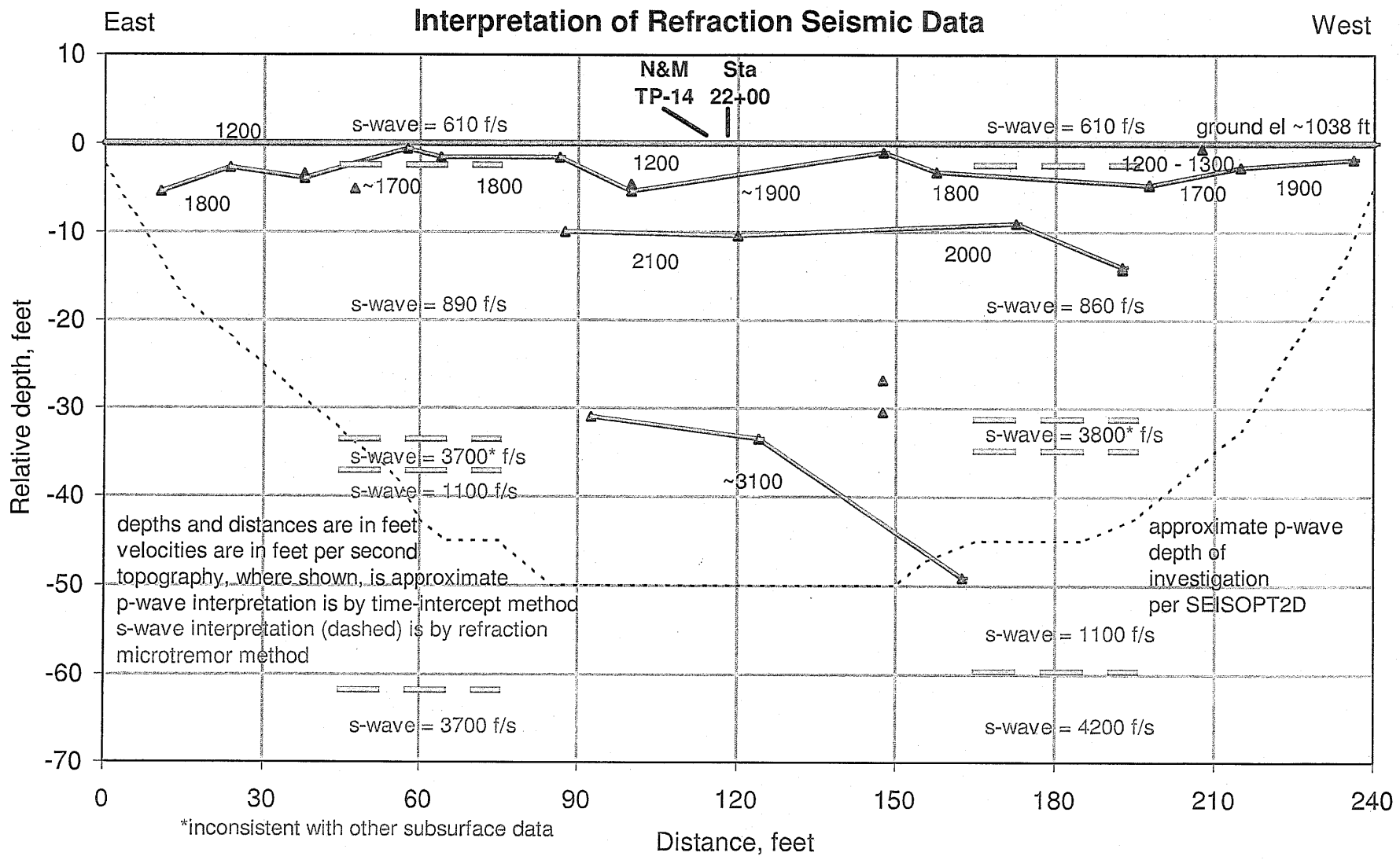

East
Interpretation of Refraction Seismic Data
West
N&M Sta
TP-14 22+00
1200
s-wave = 610 f/s
s-wave = 610 f/s
ground el ~1038 ft
1200
1200 - 1300
1800
~1700
1800
~1900
1800
1700
1900
2100
2000
s-wave = 890 f/s
s-wave = 860 f/s
s-wave = 3800* f/s
s-wave = 3700* f/s
s-wave = 1100 f/s
~3100
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
approximate p-wave
depth of
investigation
per SEISOPT2D
s-wave = 1100 f/s
s-wave = 3700 f/s
s-wave = 4200 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
*inconsistent with other subsurface data
Distance, feet

Figure C-11

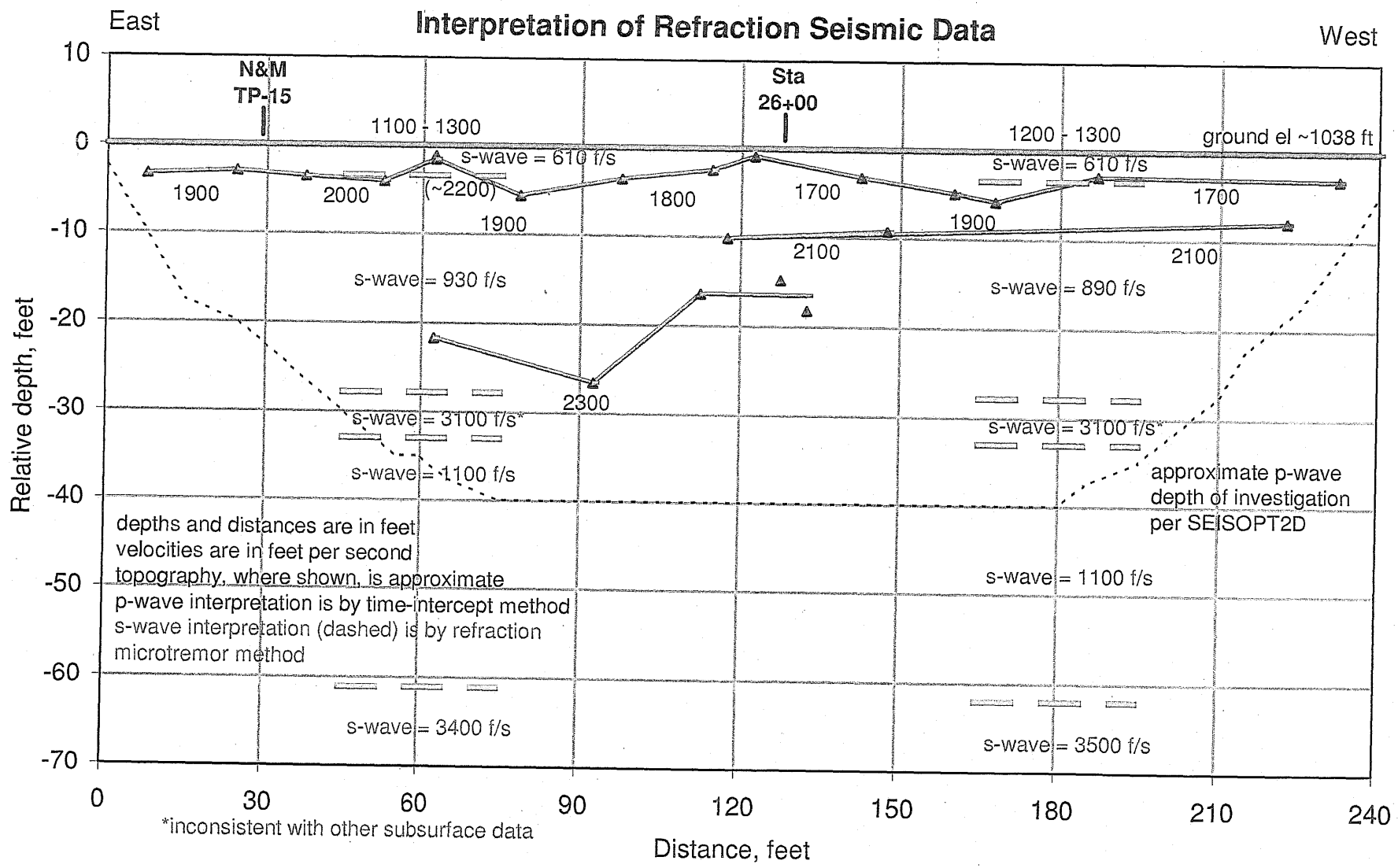

East
Interpretation of Refraction Seismic Data
West
N&M
TP-15
Sta
26+00
1100 - 1300
1200 - 1300
ground el ~1038 ft
s-wave = 610 f/s
s-wave = 610 f/s
1900
2000
(~2200)
1900
1800
1700
1900
1700
2100
2100
s-wave = 930 f/s
s-wave = 890 f/s
2300
s-wave = 3100 f/s*
s-wave = 3100 f/s*
s-wave = 1100 f/s
approximate p-wave
depth of investigation
per SEISOPT2D
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 1100 f/s
s-wave = 3400 f/s
s-wave = 3500 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
*inconsistent with other subsurface data
Distance, feet

Figure C-13

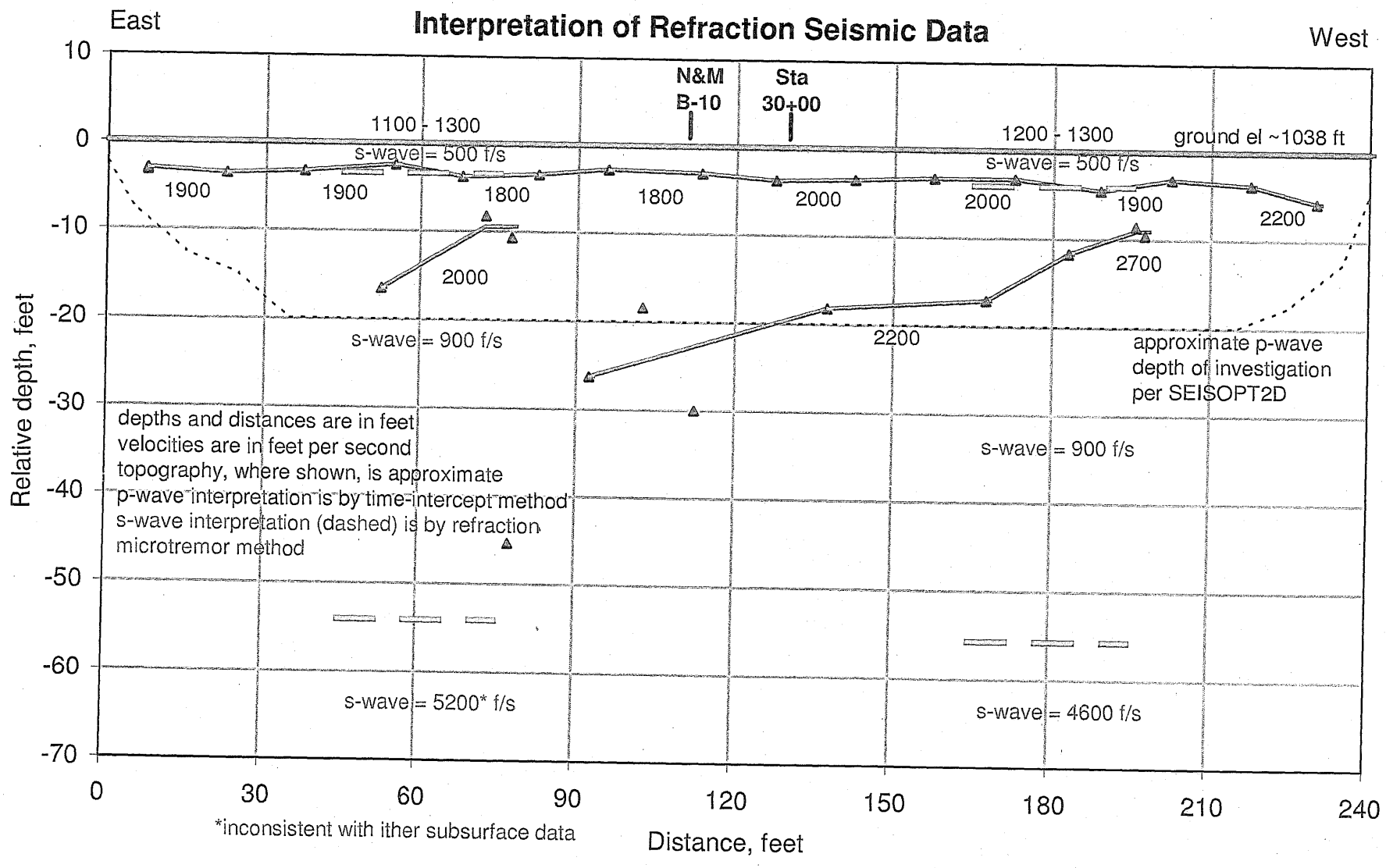

Interpretation of Refraction Seismic Data
East
West
N&M
B-10
Sta
30+00
1100 - 1300
s-wave = 500 f/s
1200 - 1300
s-wave = 500 f/s
ground el ~1038 ft
1900
1900
1800
1800
2000
2000
1900
2200
2000
2700
2200
s-wave = 900 f/s
approximate p-wave
depth of investigation
per SEISOPT2D
s-wave = 900 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 5200* f/s
s-wave = 4600 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
*inconsistent with ither subsurface data
Distance, feet

Figure C-15

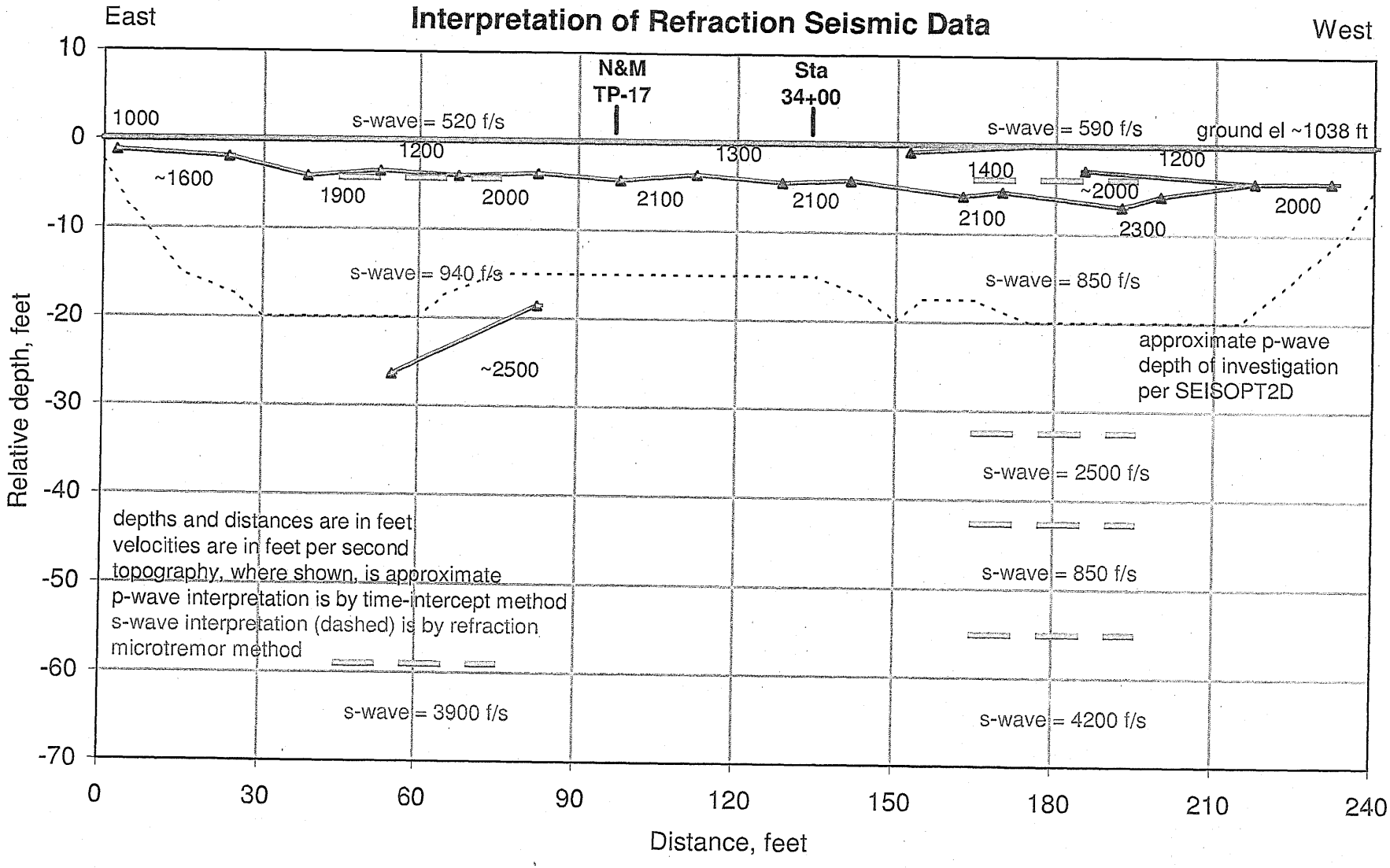

East
Interpretation of Refraction Seismic Data
West
N&M
TP-17
Sta
34+00
1000
s-wave = 520 f/s
s-wave = 590 f/s
ground el ~1038 ft
~1600
1200
1900
2000
1300
2100
2100
1400
2100
~2000
2300
1200
2000
s-wave = 940 f/s
s-wave = 850 f/s
~2500
approximate p-wave
depth of investigation
per SEISOPT2D
s-wave = 2500 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 850 f/s
s-wave = 3900 f/s
s-wave = 4200 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-17

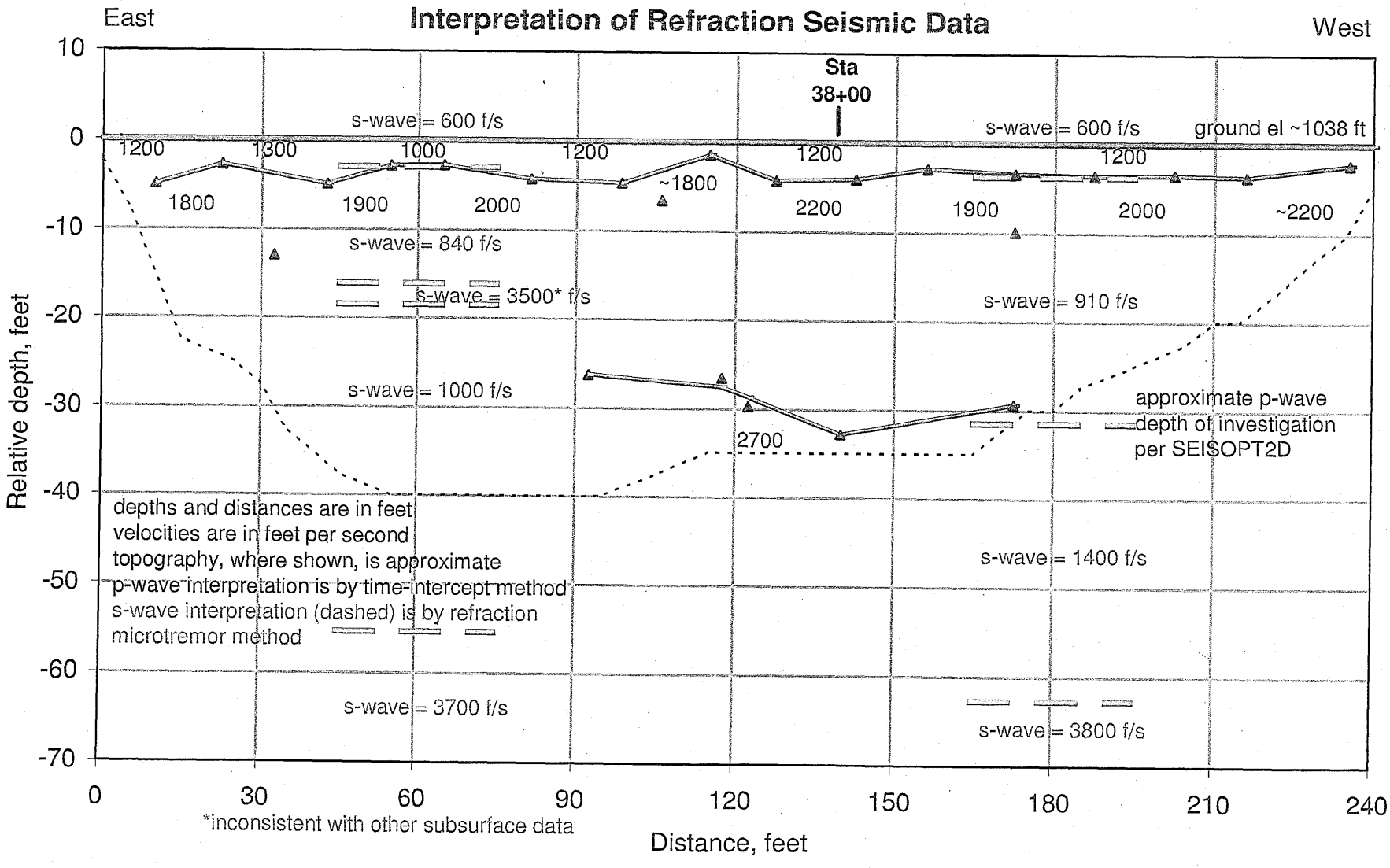

East
Interpretation of Refraction Seismic Data
West
Sta
38+00
s-wave = 600 f/s
s-wave = 600 f/s
ground el ~1038 ft
1200
1300
1000
1200
1200
1200
1800
1900
2000
~1800
2200
1900
2000
~2200
s-wave = 840 f/s
s-wave = 3500* f/s
s-wave = 910 f/s
s-wave = 1000 f/s
2700
approximate p-wave
depth of investigation
per SEISOPT2D
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 1400 f/s
s-wave = 3700 f/s
s-wave = 3800 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
*inconsistent with other subsurface data
Distance, feet

Figure C-19

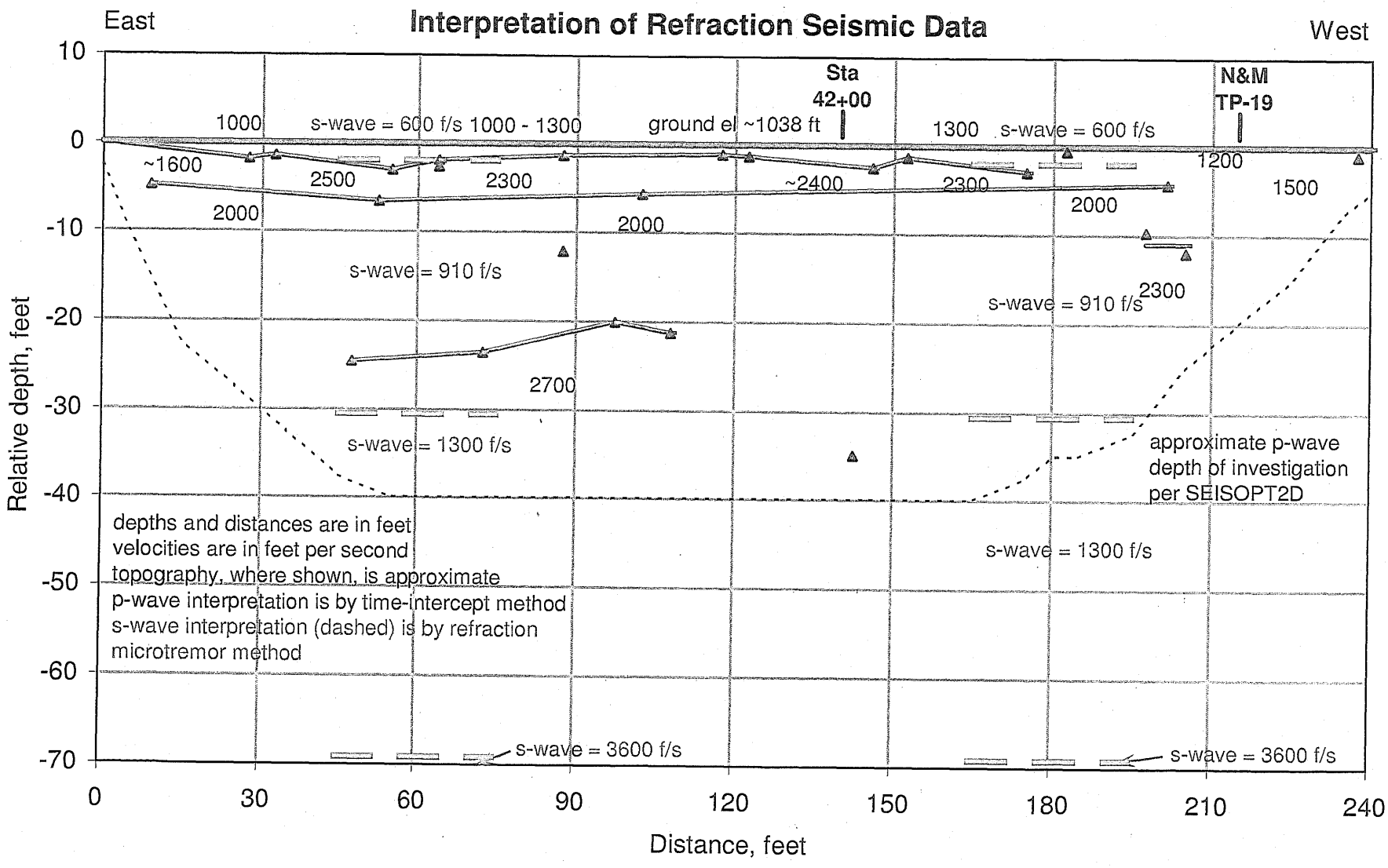

East
Interpretation of Refraction Seismic Data
West
Sta
42+00
N&M
TP-19
1000
s-wave = 600 f/s 1000 - 1300
ground el ~1038 ft
1300
s-wave = 600 f/s
~1600
2500
2300
~2400
2300
1200
1500
2000
2000
2000
s-wave = 910 f/s
s-wave = 910 f/s
2300
2700
s-wave = 1300 f/s
approximate p-wave
depth of investigation
per SEISOPT2D
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 1300 f/s
s-wave = 3600 f/s
s-wave = 3600 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-21

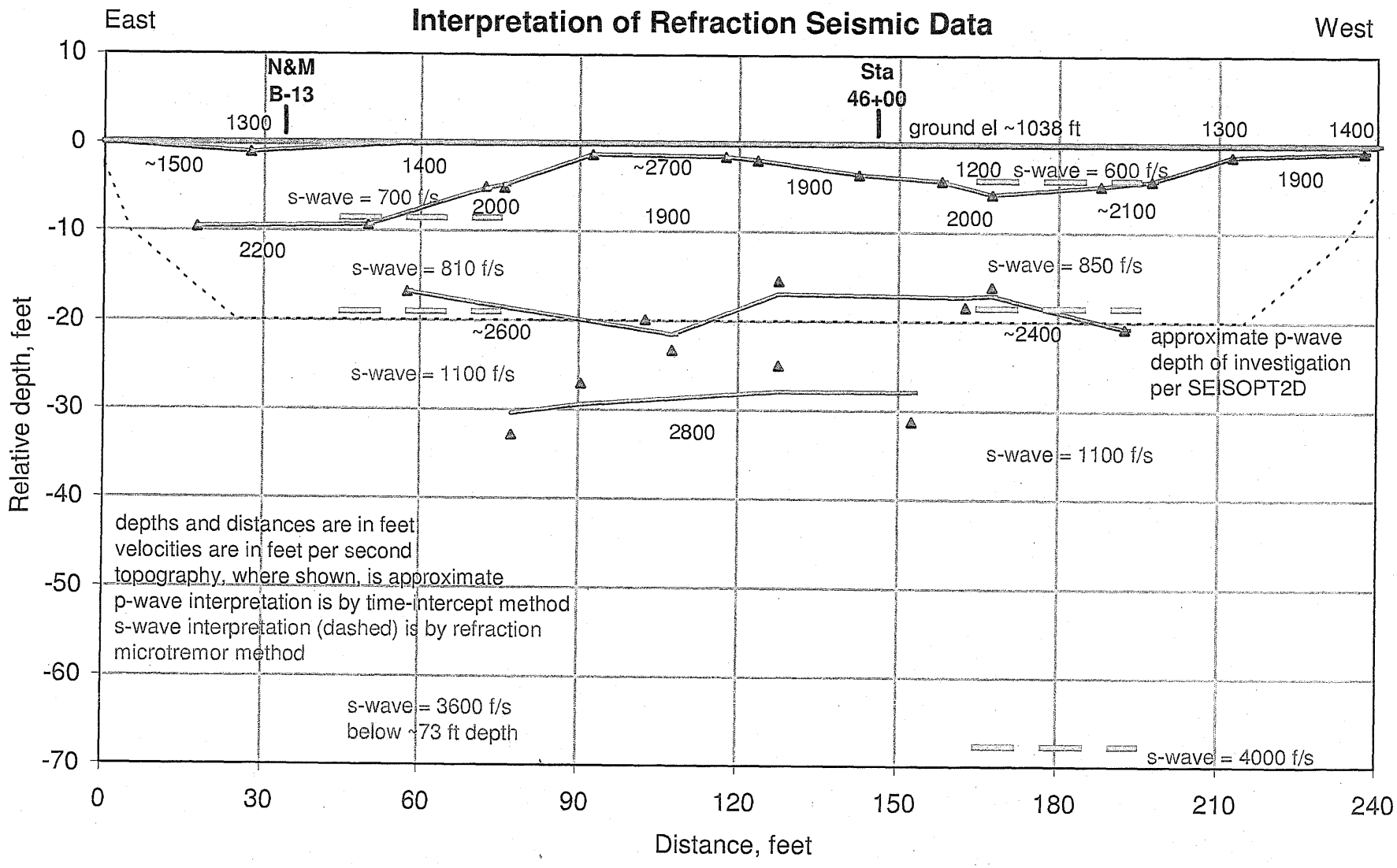

East
Interpretation of Refraction Seismic Data
West
N&M
B-13
Sta
46+00
ground el ~1038 ft
1300
~1500
1400
s-wave = 700 f/s
2000
~2700
1900
1200
s-wave = 600 f/s
1300
1400
1900
2200
1900
2000
~2100
s-wave = 810 f/s
s-wave = 850 f/s
~2600
~2400
approximate p-wave
depth of investigation
per SEISOPT2D
s-wave = 1100 f/s
2800
s-wave = 1100 f/s
depths and distances are in feet
velocities are in feet per second
topography, where shown, is approximate
p-wave interpretation is by time-intercept method
s-wave interpretation (dashed) is by refraction
microtremor method
s-wave = 3600 f/s
below ~73 ft depth
s-wave = 4000 f/s
Relative depth, feet
10
0
-10
-20
-30
-40
-50
-60
-70
0
30
60
90
120
150
180
210
240
Distance, feet

Figure C-23

STREAM BED JET DATA

DATE 3/20/2012

JET TEST LOCATION S-1

OPERATOR Albert Minero

ZERO POINT GAGE READING _____ (gate closed, value not needed) TEST # 2

PRELIMINARY HEAD SETTING 58

PT GAGE RDG @ NOZZLE 1.043

NOZZLE DIAMETER (IN) 0.25

NOZZLE HEIGHT (FT) 0.165

SCOUR DEPTH READINGS			
TIME (MIN)	DIFF TIME (MIN)	PT GAGE READING (FT)	MAXIMUM DEPTH OF SCOUR (FT)
0	0	0.878	0.000
0.5	0.5	0.853	0.025
1	0.5	0.840	0.038
2	1	0.838	0.040
4	2	0.828	0.050
6	2	0.827	0.051
10	4	0.822	0.056
20	10	0.817	0.061
30	10	0.810	0.068

HEAD SETTING	
TIME (MIN)	HEAD (IN)
0	36.50
10	36.50
20	36.50
30	36.50
40	36.50
50	36.50
60	36.50
70	36.50
80	36.50
90	36.50
100	36.50
110	36.50

COMMENTS _____

Figure D-1

STREAM BED JET DATA

DATE 3/20/2012

JET TEST LOCATION S-2

OPERATOR Curtis Cope

ZERO POINT GAGE READING (gate closed, value not needed) TEST # 3

PRELIMINARY HEAD SETTING 58

PT GAGE RDG @ NOZZLE 1.044

NOZZLE DIAMETER (IN) 0.25

NOZZLE HEIGHT (FT) 0.219

SCOUR DEPTH READINGS			
TIME (MIN)	DIFF TIME (MIN)	PT GAGE READING (FT)	MAXIMUM DEPTH OF SCOUR (FT)
0	0	0.825	0.000
0.5	0.5	0.760	0.065
1	0.5	0.727	0.098
2	1	0.710	0.115
4	2	0.697	0.128
6	2	0.692	0.133
10	4	0.687	0.138
20	10	0.687	0.138
30	10	0.620	0.205

HEAD SETTING	
TIME (MIN)	HEAD (IN)
0	36.50
10	36.50
20	36.50
30	36.50
40	36.50
50	36.50
60	36.50
70	36.50
80	36.50
90	36.50
100	36.50
110	36.50

COMMENTS

Figure D-3

STREAM BED JET DATA

DATE 3/20/2012

JET TEST
LOCATION S-3

OPERATOR Curtis Cope

ZERO POINT GAGE READING (gate closed, value not needed) TEST # 1

PRELIMINARY HEAD SETTING 58

PT GAGE RDG @ NOZZLE 1.043

NOZZLE DIAMETER (IN) 0.25

NOZZLE HEIGHT (FT) 0.176

SCOUR DEPTH READINGS			
TIME (MIN)	DIFF TIME (MIN)	PT GAGE READING (FT)	MAXIMUM DEPTH OF SCOUR (FT)
0	0	0.867	0.000
0.5	0.5	0.778	0.089
1	0.5	0.766	0.101
2	1	0.758	0.109
4	2	0.752	0.115
6	2	0.745	0.122
10	4	0.741	0.126
20	10	0.735	0.132
30	10	0.731	0.136

HEAD SETTING	
TIME (MIN)	HEAD (IN)
0	36.50
10	36.50
20	36.50
30	36.50
40	36.50
50	36.50
60	36.50
70	36.50
80	36.50
90	36.50
100	36.50
110	36.50

COMMENTS

Figure D-5

STREAM BED JET DATA

DATE 3/20/2012

JET TEST LOCATION S-4

OPERATOR Curtis Cope

ZERO POINT GAGE READING (gate closed, value not needed) TEST # 4

PRELIMINARY HEAD SETTING 58

PT GAGE RDG @ NOZZLE 1.042

NOZZLE DIAMETER (IN) 0.25

NOZZLE HEIGHT (FT) 0.178

SCOUR DEPTH READINGS			
TIME (MIN)	DIFF TIME (MIN)	PT GAGE READING (FT)	MAXIMUM DEPTH OF SCOUR (FT)
0	0	0.864	0.000
0.5	0.5	0.832	0.032
1	0.5	0.824	0.040
2	1	0.808	0.056
4	2	0.791	0.073
6	2	0.777	0.087
10	4	0.770	0.094
20	10	0.760	0.104
30	10	0.741	0.123

HEAD SETTING	
TIME (MIN)	HEAD (IN)
0	36.50
10	36.50
20	36.50
30	36.50
40	36.50
50	36.50
60	36.50
70	36.50
80	36.50
90	36.50
100	36.50
110	36.50

COMMENTS

Figure D-7

APPENDIX E

SHRINK/SWELL AND GROUND LOSS TESTING RESULTS

Shirnk Swell Test # 2

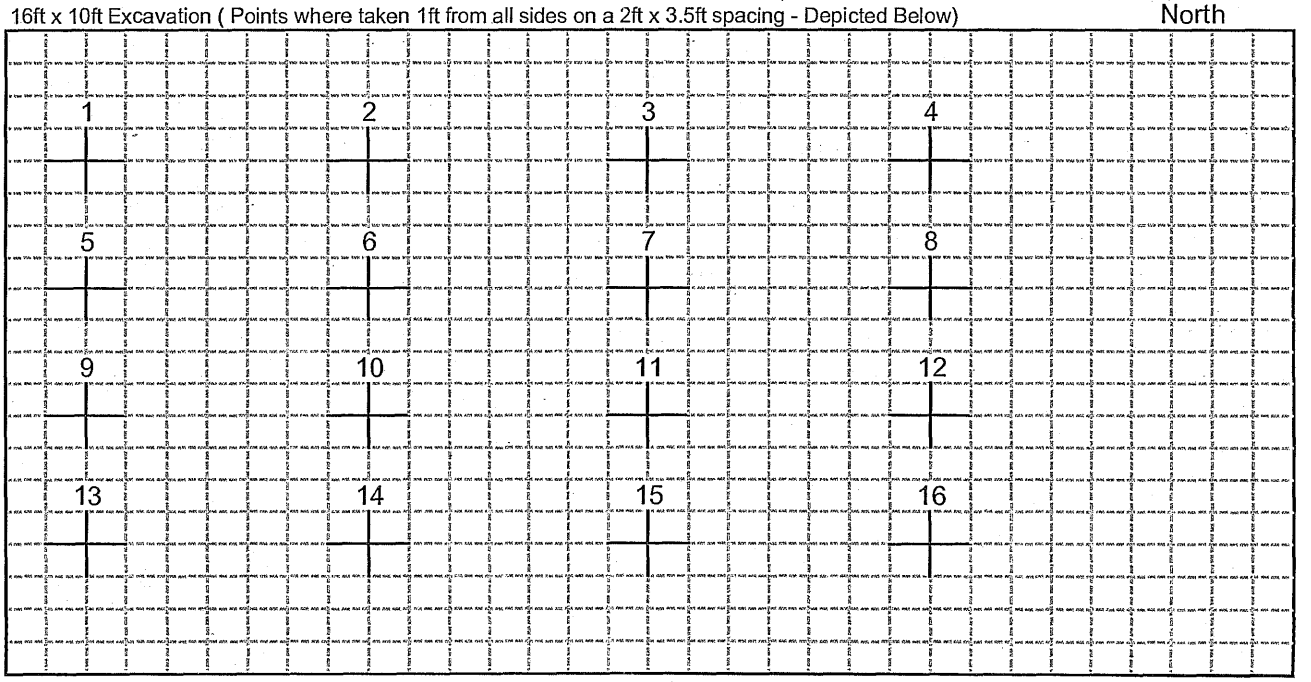
Point Number	Top Before Excavation	Bottom of Excavation	Top After Compaction	Excavation Thickness (ft)	Surface Difference (ft)	Compacted Thickness (ft)	Shrinkage
1	4.85	7.15	4.60	2.30	-0.25	2.05	-10.9%
2	4.82	7.00	4.70	2.18	-0.12	2.06	-5.5%
3	4.90	7.10	4.75	2.20	-0.15	2.05	-6.8%
4	4.92	7.10	5.00	2.18	0.08	2.26	3.7%
5	4.85	7.15	4.50	2.30	-0.35	1.95	-15.2%
6	4.85	7.10	4.60	2.25	-0.25	2.00	-11.1%
7	4.90	7.11	4.75	2.21	-0.15	2.06	-6.8%
8	4.72	7.10	4.92	2.38	0.20	2.58	8.4%
9	4.85	7.10	4.50	2.25	-0.35	1.90	-15.6%
10	4.85	7.05	4.60	2.20	-0.25	1.95	-11.4%
11	4.75	7.15	4.62	2.40	-0.13	2.27	-5.4%
12	4.80	6.95	4.90	2.15	0.10	2.25	4.7%
13	4.70	7.10	4.33	2.40	-0.37	2.03	-15.4%
14	4.85	7.10	4.58	2.25	-0.27	1.98	-12.0%
15	4.80	6.90	4.62	2.10	-0.18	1.92	-8.6%
16	4.72	6.95	4.88	2.23	0.16	2.39	7.2%
			Average	**2.25**	**-0.14**	**2.11**	**-6.30%**

Volume of Soil Excavated (cubic feet)	359.8	ft^3
Volume of Soil Compacted (cubic feet)	337.0	ft^3
Volumetric Shrinkage	**-6.34**	**%**

Compaction Ranged from 90% to 102% of the Standard Proctor Result (NDT Test located on Figure E-7)

16ft x 10ft Excavation (Points where taken 1ft from all sides on a 2ft x 3.5ft spacing - Depicted Below)

North



Ninyo & Moore	Shirnk-Swell Test Results	FIGURE
PROJECT NO. 602257001 / DATE 12/14	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	E-2

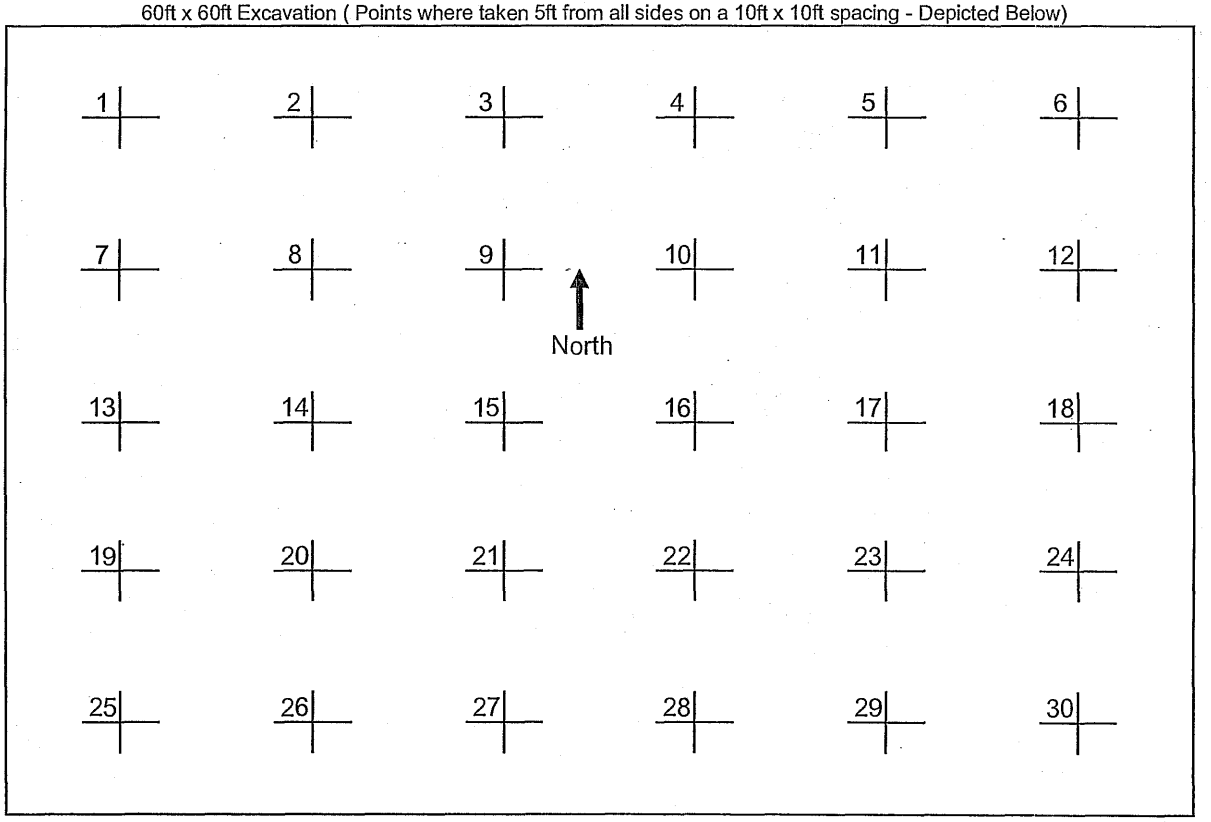
Ground Loss Test #1

Point Number	Orignial Ground	New Compacted Ground	Compacted Thickness (ft)	Point Number	Orignial Ground	New Compacted Ground	Compacted Thickness (ft)
1	0.40	1.05	-0.65	16	1.03	0.95	0.08
2	0.85	0.70	0.15	17	0.73	1.15	-0.42
3	0.60	0.90	-0.30	18	0.93	1.15	-0.22
4	0.56	0.95	-0.39	19	0.90	1.15	-0.25
5	0.56	0.85	-0.29	20	0.86	1.25	-0.39
6	0.95	0.95	0.00	21	0.96	1.20	-0.24
7	0.80	0.80	0.00	22	1.05	1.15	-0.10
8	0.54	0.90	-0.36	23	1.00	1.30	-0.30
9	0.57	1.10	-0.53	24	1.05	1.10	-0.05
10	0.77	1.00	-0.23	25	0.93	1.10	-0.17
11	0.84	1.20	-0.36	26	0.97	1.10	-0.13
12	1.03	1.10	-0.07	27	0.97	1.10	-0.13
13	0.75	1.15	-0.40	28	1.05	1.25	-0.20
14	0.73	1.05	-0.32	29	1.09	1.25	-0.16
15	0.90	1.30	-0.40	30	1.20	1.25	-0.05

Maximum Ground Loss	-0.65	ft
Maximum Ground Swell	0.15	ft
Averaged Ground Loss	**-0.23**	**ft**

Compaction Ranged from 93% to 104% of the Standard Proctor Result (NDT Test located on Figure E-7)

60ft x 60ft Excavation (Points where taken 5ft from all sides on a 10ft x 10ft spacing - Depicted Below)



Ninyo & Moore	Ground Loss Test Results	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	E-4
602257001 / 12/14		

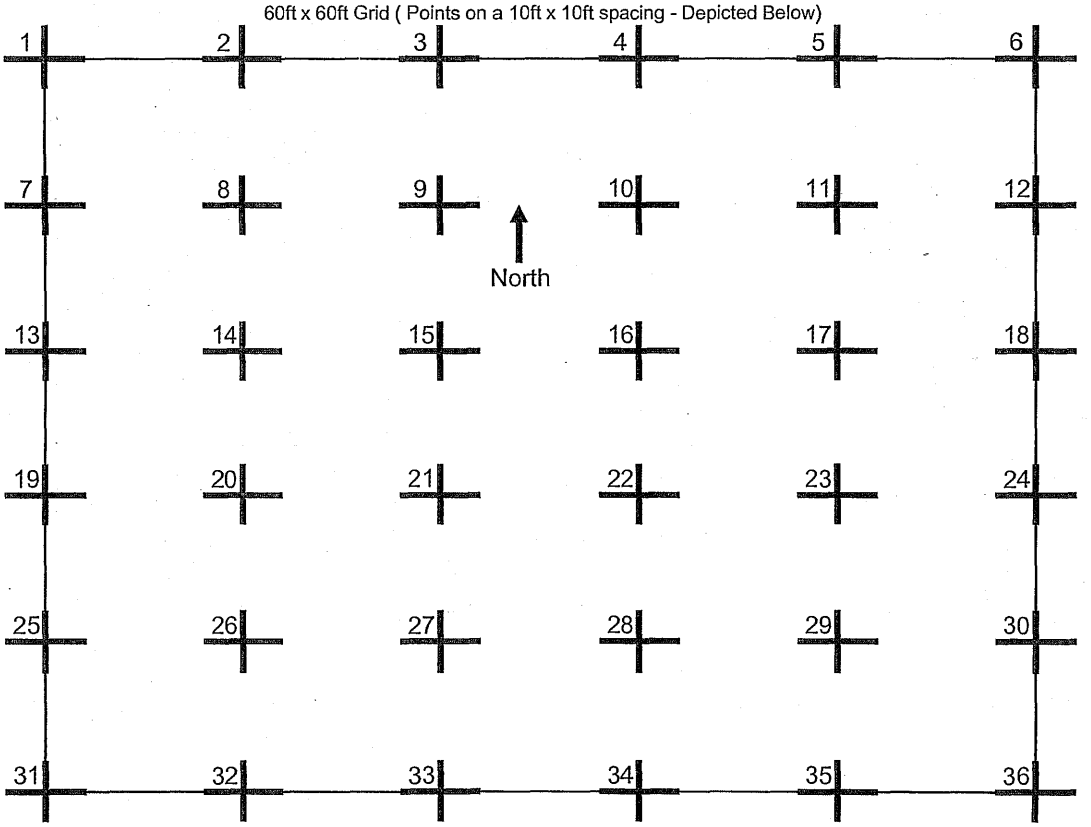
Ground Loss Test #3

Point Number	Orignial Ground	New Compacted Ground	Compacted Thickness (ft)	Point Number	Orignial Ground	New Compacted Ground	Compacted Thickness (ft)
1	0.50	0.55	-0.05	19	0.75	0.78	-0.03
2	0.50	0.60	-0.10	20	0.90	1.04	-0.14
3	0.50	0.55	-0.05	21	1.17	0.98	0.19
4	0.65	0.79	-0.14	22	0.90	1.00	-0.10
5	0.75	0.80	-0.05	23	0.92	1.20	-0.28
6	0.60	0.75	-0.15	24	0.98	1.14	-0.16
7	0.50	0.59	-0.09	25	0.88	0.88	0.00
8	0.70	0.67	0.03	26	1.00	1.05	-0.05
9	0.60	0.74	-0.14	27	1.15	1.10	0.05
10	0.77	0.95	-0.18	28	0.85	1.13	-0.28
11	0.85	1.04	-0.19	29	1.00	1.08	-0.08
12	0.80	1.13	-0.33	30	0.95	1.04	-0.09
13	0.65	0.75	-0.10	31	0.95	1.03	-0.08
14	0.87	0.90	-0.03	32	1.05	1.10	-0.05
15	0.92	0.94	-0.02	33	1.15	1.25	-0.10
16	0.75	1.10	-0.35	34	1.20	1.06	0.14
17	0.81	1.07	-0.26	35	1.00	1.18	-0.18
18	1.10	1.07	0.03	36	1.00	1.14	-0.14

Maximum Ground Loss	-0.35	ft
Maximum Ground Swell	0.19	ft
Averaged Ground Loss	**-0.10**	**ft**

Compaction Ranged from 90% to 93% of the Standard Proctor Result (NDT Test located on Figure E-7)

60ft x 60ft Grid (Points on a 10ft x 10ft spacing - Depicted Below)



Ninyo & Moore	Ground Loss Test Results	FIGURE
PROJECT NO. / DATE	WHITE TANKS FRS NO. 4 REHABILITATION PROJECT, PHASE II BUCKEYE, ARIZONA	E-6
602257001 / 12/14		