

Appendix T

Backfill Density Testing



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/04/19
Client:	Tantara Corporation	Report No.:	1
Job No.:	19-035	Inspector:	JJZ
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill
Source Area	Onsite Stockpile
Maximum Density	126.0 pcf
Optimum Moisture Content	11.3 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS				GAUGE INFORMATION:							
Density:	1854			Troxler Model No.:	3440						
Moisture:	683			Troxler Serial No.:	32534						
TEST NUMBER	1	2	3	4	5	6	7				
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12				
PERCENT COMPACTION (%)	85.0	94.1	95.9	95.5	94.6	96.8	101.7				
DRY DENSITY (pcf)	107.1	118.6	120.8	120.3	119.2	114.3	120.1				
PERCENT MOISTURE (%)	12.5	14.2	12.5	12.3	14.0	12.9	12.7				
Pass/Fail	NA	P	P	P	P	P	P				

LOCATION:

TEST NO. (from above)	Notes
1	Pit #2, In-place test for moisture content
2	Pit #5, Lift 1
3	Pit #5, Lift 1
4	Pit #5, Lift 2
5	Pit #5, Lift 2
6	Pit #2, Lift 1

TEST NO. (from above)	Notes
7	Pit #2, Lift 1

REMARKS:

SIGNED: Jesse Zientek

DATE: 6/4/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/05/19
Client:	Tantara Corporation	Report No.:	2
Job No.:	19-035	Inspector:	JJZ
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Crushed Concrete
Source Area	Onsite Stockpile
Maximum Density	118.1 pcf
Optimum Moisture Content	12.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density:	1854				Troxler Model No.:	3440						
Moisture:	683				Troxler Serial No.:	32534						
TEST NUMBER	1	2	3	4								
DEPTH OR ELEVATION (in.)	12	12	12	12								
PERCENT COMPACTION (%)	90.7	98.8	90.6	100.6								
DRY DENSITY (pcf)	107.1	116.6	107.0	118.8								
PERCENT MOISTURE (%)	12.0	10.2	12.0	9.8								
Pass/Fail	P	P	P	P								

LOCATION:

TEST NO. (from above)	Notes
1	Pit #6, Lift 1
2	Pit #6, Lift 1
3	Pit #6, Lift 2
4	Pit #6, Lift 2

TEST NO. (from above)	Notes

REMARKS:

SIGNED: Jesse Zientek

DATE: 6/5/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/06/19
Client:	Tantara Corporation	Report No.:	3
Job No.:	19-035	Inspector:	JJZ
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density:	1851					Troxler Model No.:	3440					
Moisture:	681					Troxler Serial No.:	32534					
TEST NUMBER	1	2	3	4	5	6	7	8	9	10		
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12	12	12		
PERCENT COMPACTION (%)	96.9	91.7	90.9	91.8	90.1	90.6	96.5	90.5	91.6	94.4		
DRY DENSITY (pcf)	122.1	115.5	114.5	115.7	113.5	114.2	121.5	114.0	116.8	120.5		
PERCENT MOISTURE (%)	11.2	13.3	16.6	17.6	15.3	13.8	12.9	16.7	14.8	13.0		
PROCTOR	1	1	1	1	1	1	1	1	2	2		
Pass/Fail	P	P	P	P	P	P	P	P	P	P		

LOCATION:

TEST NO. (from above)	Notes
1	Pit #2, Lift 4, Surrounding Fill
2	Pit #2, Lift 4, Surrounding Fill
3	Pit #5, Lift 5, Surrounding Fill
4	Pit #5, Lift 5, Surrounding Fill
5	Pit #2, Lift 5, Surrounding Fill
6	Pit #2, Lift 5, Surrounding Fill

TEST NO. (from above)	Notes
7	Pit #5, Lift 6, Surrounding Fill
8	Pit #5, Lift 6, Surrounding Fill
9	Pit #6, Lift 4, D&H Fill
10	Pit #6, Lift 4, D&H Fill

REMARKS:

SIGNED: Jesse Zientek

DATE: 6/6/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/10/19
Client:	Tantara Corporation	Report No.:	4
Job No.:	19-035	Inspector:	JJZ
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density: _____					Troxler Model No.: 3440							
Moisture: _____					Troxler Serial No.: 32534							
TEST NUMBER	1	2	3	4	5	6	7	8				
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12				
PERCENT COMPACTION (%)	94.5	94.8	91.5	91.7	91.9	90.7	92.7	94.5				
DRY DENSITY (pcf)	120.6	121.0	115.3	115.6	115.8	114.3	118.3	120.6				
PERCENT MOISTURE (%)	13.9	12.1	13.2	13.5	10.3	14.5	13.8	13.2				
PROCTOR	2	2	1	1	1	1	2	2				
Pass/Fail	P	P	P	P	P	P	P	P				

LOCATION:

TEST NO. (from above)	Notes
1	Pit #6, Lift 5, D&H Fill
2	Pit #6, Lift 5, D&H Fill
3	Pit #2, Lift 6, Surrounding Fill
4	Pit #2, Lift 6, Surrounding Fill
5	Pit #5, Lift 7, Surrounding Fill
6	Pit #5, Lift 7, Surrounding Fill

TEST NO. (from above)	Notes
7	Pit #6, Lift 6, D&H Fill
8	Pit #6, Lift 6, D&H Fill

REMARKS:

SIGNED: Jesse Zientek

DATE: 6/10/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/12/19
Client:	Tantara Corporation	Report No.:	5
Job No.:	19-035	Inspector:	JJZ
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS				GAUGE INFORMATION:								
Density: _____				Troxler Model No.: 3440								
Moisture: _____				Troxler Serial No.: 32534								
TEST NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12	12	12	12	12
PERCENT COMPACTION (%)	93.3	92.7	91.3	90.0	95.7	99.5	98.8	97.3	95.7	96.2	91.0	93.6
DRY DENSITY (pcf)	117.6	116.7	115.1	112.9	122.1	127.0	126.1	124.2	122.1	122.8	116.1	119.4
PERCENT MOISTURE (%)	13.6	13.9	16.5	15.8	12.1	11.8	11.8	10.3	12.7	12.9	14.2	10.7
PROCTOR	1	1	1	1	2	2	2	2	2	2	2	2
Pass/Fail	P	P	P	P	P	P	P	P	P	P	P	P

LOCATION:

TEST NO. (from above)	Notes
1	Pit #2, Lift 7, Surrounding Fill
2	Pit #2, Lift 7, Surrounding Fill
3	Pit #5, Lift 8, Surrounding Fill
4	Pit #5, Lift 8, Surrounding Fill
5	Pit #6, Lift 7, D&H Fill
6	Pit #6, Lift 7, D&H Fill

TEST NO. (from above)	Notes
7	Pit #2, Lift 7, D&H Fill
8	Pit #2, Lift 7, D&H Fill
9	Pit #6, Lift 8, D&H Fill
10	Pit #6, Lift 8, D&H Fill
11	Pit #5, Lift 9, D&H Fill
12	Pit #5, Lift 9, D&H Fill

REMARKS:

SIGNED: Jesse Zientek

DATE: 6/12/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/14/19
Client:	Tantara Corporation	Report No.:	6
Job No.:	19-035	Inspector:	CF
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	D&H Fill
Source Area	Onsite Stockpile
Maximum Density	127.6 pcf
Optimum Moisture Content	10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS							GAUGE INFORMATION:						
Density:	1837						Troxler Model No.:	3440					
Moisture:	675						Troxler Serial No.:	32534					
TEST NUMBER	1	2	3	4	5	6							
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12							
PERCENT COMPACTION (%)	91.4	98.0	95.1	96.9	91.6	90.1							
DRY DENSITY (pcf)	116.6	125.1	121.4	123.7	116.9	114.9							
PERCENT MOISTURE (%)	14.4	12.3	11.6	11.4	14.0	15.2							
Pass/Fail	P	P	P	P	P	P							

LOCATION:

TEST NO. (from above)	Notes
1	Pit #2, Lift 8
2	Pit #2, Lift 8
3	Pit #6, Lift 9
4	Pit #6, Lift 9
5	Pit #5, Lift 10
6	Pit #5, Lift 10

TEST NO. (from above)	Notes

REMARKS:

SIGNED: Christian Ferger

DATE: 6/14/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/19/19
Client:	Tantara Corporation	Report No.:	7
Job No.:	19-035	Inspector:	CF
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density:	1823					Troxler Model No.:	3440					
Moisture:	677					Troxler Serial No.:	32534					
TEST NUMBER	1	2	3	4	5	6	7	8				
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12				
PERCENT COMPACTION (%)	93.0	91.7	95.7	93.2	95.4	95.6	98.6	90.2				
DRY DENSITY (pcf)	117.1	115.5	122.1	119.0	121.7	121.9	125.8	115.1				
PERCENT MOISTURE (%)	14.6	14.2	11.7	13.4	12.3	12.6	10.3	13.1				
PROCTOR	1	1	2	2	2	2	2	2				
Pass/Fail	P	P	P	P	P	P	P	P				

LOCATION:

TEST NO. (from above)	Notes
1	Pit #5, Lift 11, Surrounding Fill
2	Pit #5, Lift 11, Surrounding Fill
3	Pit #6, Lift 10, D&H Fill
4	Pit #6, Lift 10, D&H Fill
5	Pit #6, Lift 11, D&H Fill
6	Pit #6, Lift 11, D&H Fill

TEST NO. (from above)	Notes
7	Pit #5, Lift 12, D&H Fill
8	Pit #5, Lift 12, D&H Fill

REMARKS:

SIGNED: Christian Ferger

DATE: 6/19/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/26/19
Client:	Tantara Corporation	Report No.:	8
Job No.:	19-035	Inspector:	CF
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density:	1828				Troxler Model No.:	3440						
Moisture:	672				Troxler Serial No.:	32534						
TEST NUMBER	1	2	3	4	5	6	7	8	9	10		
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12	12	12		
PERCENT COMPACTION (%)	93.9	90.5	97.5	97.7	98.3	91.4	94.2	97.6	97.8	97.0		
DRY DENSITY (pcf)	118.4	114.1	124.4	124.7	123.9	115.2	120.2	124.5	124.8	123.8		
PERCENT MOISTURE (%)	10.9	10.5	11.0	10.8	5.4	13.4	13.8	12.3	9.9	10.6		
PROCTOR	1	1	2	2	1	1	2	2	2	2		
Pass/Fail	P	P	P	P	P	P	P	P	P	P		

LOCATION:

TEST NO. (from above)	Notes
1	Pit #3, Lift 1, Surrounding Fill
2	Pit #3, Lift 1, Surrounding Fill
3	Pit #1, Lift 1, D&H Fill
4	Pit #1, Lift 1, D&H Fill
5	Pit #3, Lift 2, Surrounding Fill
6	Pit #3, Lift 2, Surrounding Fill

TEST NO. (from above)	Notes
7	Pit #4, Lift 1, D&H Fill
8	Pit #4, Lift 1, D&H Fill
9	Pit #1, Lift 2, D&H Fill
10	Pit #1, Lift 2, D&H Fill

REMARKS:

SIGNED: Christian Ferger

DATE: 6/26/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/27/19
Client:	Tantara Corporation	Report No.:	9
Job No.:	19-035	Inspector:	CF
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density:	1817				Troxler Model No.:	3440						
Moisture:	677				Troxler Serial No.:	32534						
TEST NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12	12	12	12	12
PERCENT COMPACTION (%)	97.2	93.5	99.3	101.0	90.8	91.6	97.8	101.7	96.7	96.8	94.5	93.9
DRY DENSITY (pcf)	124.0	119.3	126.8	128.9	114.4	115.5	124.8	129.7	123.4	123.5	119.0	118.3
PERCENT MOISTURE (%)	10.4	9.6	11.4	9.6	13.1	14.7	10.1	9.7	11.5	12.1	12.5	11.6
PROCTOR	2	2	2	2	1	1	2	2	2	2	1	1
Pass/Fail	P	P	P	P	P	P	P	P	P	P	P	P

LOCATION:

TEST NO. (from above)	Notes
1	Pit #3, Lift 3, D&H Fill
2	Pit #3, Lift 3, D&H Fill
3	Pit #4, Lift 2, D&H Fill
4	Pit #4, Lift 2, D&H Fill
5	Pit #1, Lift 3, Surrounding Fill
6	Pit #1, Lift 3, Surrounding Fill

TEST NO. (from above)	Notes
7	Pit #3, Lift 4, D&H Fill
8	Pit #3, Lift 4, D&H Fill
9	Pit #4, Lift 3, D&H Fill
10	Pit #4, Lift 3, D&H Fill
11	Pit #1, Lift 4, Surrounding Fill
12	Pit #1, Lift 4, Surrounding Fill

REMARKS:

SIGNED: Christian Ferger

DATE: 6/27/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	06/28/19
Client:	Tantara Corporation	Report No.:	10
Job No.:	19-035	Inspector:	JJZ
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density:	1817					Troxler Model No.:	3440					
Moisture:	676					Troxler Serial No.:	32534					
TEST NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12	12	12	12	12
PERCENT COMPACTION (%)	101.1	100.6	101.2	98.9	92.7	91.4	90.9	92.0	97.8	98.1	98.8	92.4
DRY DENSITY (pcf)	129.0	128.3	129.1	126.2	116.8	115.1	114.5	115.9	124.7	125.2	126.1	117.9
PERCENT MOISTURE (%)	9.3	11.1	9.7	11.2	14.6	13.7	15.3	14.4	11.4	10.1	10.4	13.6
PROCTOR	2	2	2	2	1	1	1	1	2	2	2	2
Pass/Fail	P	P	P	P	P	P	P	P	P	P	P	P

LOCATION:

TEST NO. (from above)	Notes
1	Pit #3, Lift 5, D&H Fill
2	Pit #3, Lift 5, D&H Fill
3	Pit #4, Lift 4, D&H Fill
4	Pit #4, Lift 4, D&H Fill
5	Pit #1, Lift 5, Surrounding Fill
6	Pit #1, Lift 5, Surrounding Fill

TEST NO. (from above)	Notes
7	Pit #1, Lift 6, Surrounding Fill
8	Pit #1, Lift 6, Surrounding Fill
9	Pit #4, Lift 5, D&H Fill
10	Pit #4, Lift 5, D&H Fill
11	Pit #3, Lift 6, D&H Fill
12	Pit #3, Lift 6, D&H Fill

REMARKS:

SIGNED: Jesse Zientek

DATE: 6/28/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	07/01/19
Client:	Tantara Corporation	Report No.:	11
Job No.:	19-035	Inspector:	CF
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	Surrounding Fill (1)/D&H Fill (2)
Source Area	Onsite/D&H Pit
Maximum Density	126.0/127.6 pcf
Optimum Moisture Content	11.3/10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS					GAUGE INFORMATION:							
Density:	1834					Troxler Model No.:	3440					
Moisture:	681					Troxler Serial No.:	32534					
TEST NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12	12	12	12	12	12	12
PERCENT COMPACTION (%)	95.2	91.6	94.9	91.0	89.8	90.6	97.2	96.5	90.9	94.3	91.9	93.5
DRY DENSITY (pcf)	121.4	116.8	121.2	116.1	113.1	114.2	124.0	123.1	115.9	120.4	117.3	119.3
PERCENT MOISTURE (%)	11.2	10.9	13.1	15.2	12.9	12.1	10.1	11.1	13.5	11.7	11.1	13.7
PROCTOR	2	2	2	2	1	1	2	2	2	2	2	2
Pass/Fail	P	P	P	P	P	P	P	P	P	P	P	P

LOCATION:

TEST NO. (from above)	Notes
1	Pit #3, Lift 7, D&H Fill
2	Pit #3, Lift 7, D&H Fill
3	Pit #4, Lift 6, D&H Fill
4	Pit #4, Lift 6, D&H Fill
5	Pit #1, Lift 7, Surrounding Fill
6	Pit #1, Lift 7, Surrounding Fill

TEST NO. (from above)	Notes
7	Pit #3, Lift 8, D&H Fill
8	Pit #3, Lift 8, D&H Fill
9	Pit #4, Lift 7, D&H Fill
10	Pit #4, Lift 7, D&H Fill
11	Pit #1, Lift 8, D&H Fill
12	Pit #1, Lift 8, D&H Fill

REMARKS:

SIGNED: Christian Ferger

DATE: 07/01/19



NUCLEAR DENSITOMETER FIELD LOG

Project:	Backfill Testing of Nike Missile Site, Willardshire Rd.	Date:	7/2/2019
Client:	Tantara Corporation	Report No.:	12
Job No.:	19-035	Inspector:	CF
Contractor:	Tantara Corporation	Page	1 of 1

PROCTOR DATA:

Type of Material	D&H Fill
Source Area	Onsite Stockpile
Maximum Density	127.6 pcf
Optimum Moisture Content	10.1 %

NUCLEAR DENSITOMETER RESULTS:

STANDARD COUNTS							GAUGE INFORMATION:						
Density:	1815						Troxler Model No.:	3440					
Moisture:	679						Troxler Serial No.:	32534					
TEST NUMBER	1	2	3	4	5	6							
DEPTH OR ELEVATION (in.)	12	12	12	12	12	12							
PERCENT COMPACTION (%)	99.6	101.9	97.2	98.8	102.0	98.9							
DRY DENSITY (pcf)	127.1	130.1	124.1	126.1	130.2	126.2							
PERCENT MOISTURE (%)	10.1	9.1	9.7	10.7	7.0	8.8							
Pass/Fail	P	P	P	P	P	P							

LOCATION:

TEST NO. (from above)	Notes
1	Pit #1, Lift 9
2	Pit #1, Lift 9
3	Pit #4, Lift 8
4	Pit #4, Lift 8
5	Pit #3, Lift 9
6	Pit #3, Lift 9

TEST NO. (from above)	Notes

REMARKS:

SIGNED: Christian Ferger

DATE: 07/02/19