

**ADDENDUM NO. 1
TO THE
CONTRACT DOCUMENTS**

**CATAWBA COUNTY – BLACKBURN MSW LANDFILL
UNIT 4 CONSTRUCTION
ADVANCE SITE WORK AND UTILITY RELOCATION PROJECT**

BID NO. 25-1019

BID PROPOSALS DUE – JUNE 26, 2025 AT 3:00 PM

ISSUED: June 10, 2025

To All Official Plan Holders:

The following revisions, additions, and clarifications are hereby made part of the Contract Documents for the above-referenced project and shall be taken into account in the preparation of all Bids and the execution of all Work. Bidders shall acknowledge receipt of the Addendum in the appropriate space on the Bid Form.

I. GENERAL

1. Notes from the Pre-Bid Meeting held on Thursday, June 5, 2025, at 10:00 AM are attached for reference.
2. Will the stockpile of topsoil have to be screened or amended to be used?

The stockpiled topsoil materials have not been processed to meet the requirements for Section 32 91 13, Part 3.2.D to provide a surface free of stones, sticks, or other material 3/8" or greater in any dimension. Per Section 01 22 00 – Measurement Payment, Part 1.5.M, the unit bid price for topsoil placement, indicates that topsoil materials shall be processed to meet project requirements.

3. The intent of Bid Items 9 - Soil Excavation is that the 30,000 CY of excavated soil materials would be utilized for structural fill or for "excavation to fill". Some of the materials excavated will include topsoil materials that would need to be segregated for re-use under Payment Item 13. Some other excavated materials may be deemed unsuitable for re-use and would be measured and paid under Item 5. The balance of the remaining structural fill quantities under Item 10, approximately 40,000 CY, shall be obtained from the designated on-site borrow areas within Unit 4.

See attached revised Bid Form to reflect this adjustment in description and quantities.

II. PROJECT MANUAL

Section 01 22 00

1. Revise Part 1.5.I to Read as Follows:

I. Item 9 – Soil Excavation to Fill:

This Work shall consist of furnishing all necessary materials, labor, equipment, and appurtenances necessary to excavate soil to achieve the subgrade elevations for perimeter berms and roadways, sediment basins and to haul and place as structural fill as shown on the Drawings and as specified in the Contract Documents. Payment for this bid item shall be made on a per cubic yard excavated

basis, wherein measurement will be made by survey. Payment for excavation and managing unsuitable soils or topsoil materials from the excavation areas shall be measured and paid under Items 5 and 13, respectively.

III. ATTACHMENTS

- A. Incorporate the enclosed Revised Bid Form.
- B. Incorporate the enclosed Attachment C – Boring Logs and Soil Data

IV. DRAWINGS

Sheet 03G-02

- 1. Revise Land Disturbance Sequence Note 4 to Read as Follows:
 - 4. INSTALL DIVERSION BERMES AND DITCHES NECESSARY TO DIVERT AS MUCH RUNOFF AS POSSIBLE WITHIN THE LIMITS OF DISTURBANCE TO THE SEDIMENT BASINS

Sheet 003C-01

- 1. The Drawing depicts the location for Contractor's Heavy Duty Equipment Entrance Location. This gate location should be utilized for all Contractor access to the project. See attached Annotation for location of Contractor Laydown Areas.

Sheet 03C-01

- 1. Add Callout Note to PZ-76AB near Sta 4+00 of Perimeter Road to Read as Follows:

PROTECT AND EXTEND PIEZOMETER TO 12" BELOW FINISHED GRAVEL ROAD GRADE, PROTECT WITH PRECAST ECCENTRIC CONE, FRAME AND COVER

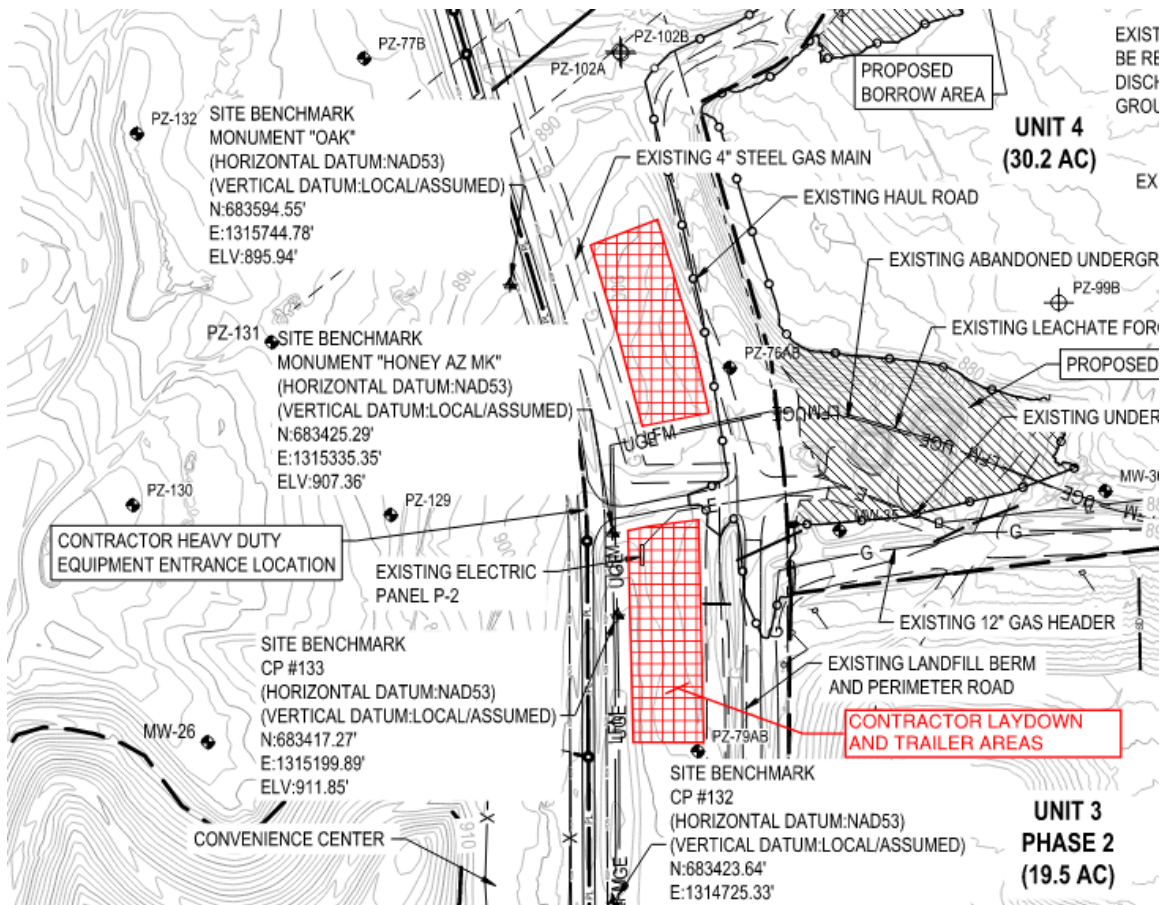
HDR Engineering, Inc.



Jeffrey S. Murray, PE, BCEE
Vice President, Sr. Project Manager

Attachments

Revised Bid Form
Attachment C – Boring Logs and Soil Data



BID FORM

FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

- 1.01 This Bid is submitted to: Catawba County 25 Government Drive, Newton, NC 28658.
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

- 2.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security;
 - B. List of Proposed Subcontractors;
 - C. List of Proposed Suppliers;
 - D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
 - E. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;
 - F. Required Bidder Qualification Statement with supporting data; and

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 *Lump Sum Bids*

- A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s), together with any unit prices indicated in Paragraph 3.02:

3.02 *Unit Price Bids*

- A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
General Administration					
1	Bonds, Mobilization and Insurance (5% max. of Total Work Items 2 - 30)	LS	1	\$	\$

2	General Conditions and Construction Quality Control	LS	1	\$	\$
3	Surveying and Control	LS	1	\$	\$
Earthwork					
4	Demolition of Existing Sediment Basin	LS	1	\$	\$
5	Unsuitable Soil Excavation	CY	1000	\$	\$
6	Unsuitable Soil Replacement	CY	250	\$	\$
7	Erosion and Sediment Control	LS	1	\$	\$
8	Sediment Basin Discharge Structures	LS	1	\$	\$
9	Soil Excavation to Fill	CY	30,000	\$	\$
10	Structural Fill	CY	40,000	\$	\$
11	Perimeter Gravel Roadway	SY	13,000	\$	\$
12	TRM Channel Lining	SY	12,000	\$	\$
13	Topsoil Placement	AC	3.5	\$	\$
14	Temporary Seeding and Mulching	AC	1.5	\$	\$
15	Permanent Seeding and Mulching	AC	3.5	\$	\$
Utilities					
16	Permanent 18" LFG Header and Valves	LF	2,300	\$	\$
17	Temporary 12" LFG Header and Valves	LF	1,000	\$	\$
18	3' Dia. Condensate Trap Pump Station	EA	1	\$	\$
19	Permanent 4"x8" Leachate Forcemain	LF	2,100	\$	\$
20	Temporary 3"x6" Leachate Forcemain	LF	1,800	\$	\$
21	4"x8" Condensate Forcemain	LF	300	\$	\$
22	6"x10" Leak Detection Pipe	LF	1,400	\$	\$
23	6' Dia. Leak Detection Manhole	EA	1	\$	\$
24	18" CPE Drainage Pipe	LF	510	\$	\$
25	24" CPE Drainage Pipe	LF	120	\$	\$
26	72" CPE Drainage Pipe	LF	160	\$	\$

27	8' Dia. Stormwater Manholes	EA	2	\$	\$
28	French Drain	LF	120	\$	\$
29	Underground Electrical Service	LS	1	\$	\$
30	Temporary Electrical Service	LS	1	\$	\$
31	Construction Contingency Allowance	LS	1	\$200,000	\$200,000
Total of All Lump Sum and Unit Price Bid Items					\$

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
2. the estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4—TIME OF COMPLETION

- 4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of days indicated in the Agreement.
- 4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder’s Representations*

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder’s (Contractor’s) safety precautions and programs.
 7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
 9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
 10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
 11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Bidder's Address for giving notices:

Bidder's Contact Person:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)



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WELL NUMBER MW-37

PAGE 1 OF 2

CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/26/24 00:00	COMPLETED	06/26/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dierich D-50	HOLE SIZE	8.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			

GROUND WATER LEVELS:
▼ AT END OF DRILLING 12.80 ft
▼ 8.5hrs AFTER DRILLING 12.91 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	4-6-7 (13)	ML		SANDY SILT, (ML) stiff, dry, red (2.5YR 4/6), fine sand, no plasticity, residuum, organics	
							Cement Grout
5	SS 2	100	4-3-4 (7)	ML		(ML) medium, moist	2" SCH 40 PVC
							Bentonite Seal
10	SS 3	100	4-7-3 (10)	ML		(ML) wet	
15	SS 4	67	3-3-2 (5)	SM		SILTY SAND, (SM) loose, wet, pale brown (10YR 6/3) and white (10YR 8/1), fine sand, poorly graded, saprolite, weathered gneiss	
							Sand Filter Pack
20	SS 5	33	4-3-3 (6)				0.010" Slotted 2" SCH 40 PVC Well Screen

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WELL NUMBER MW-37

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	44	0-3-4 (7)	SM		24.0 SILTY SAND, (SM) loose, wet, pale brown (10YR 6/3) and white (10YR 8/1), fine sand, poorly graded, saprolite, weathered gneiss (continued) (SM) dense	
30	SS 7	33	3-7-28 (35)	SM			
35	SS 8	100	50/1"	SM		34.0 SILTY SAND, (SM) very dense, blueish black (10B 2.5/1), fine sand, poorly graded, weathered amphibolite	
	SS 9		50/0"			37.0	

Refusal at 37.0 feet.
Bottom of borehole at 37.0 feet.

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GROUND WATER LEVELS:

 AT END OF DRILLING 21.36 ft

▼ 24.75hrs AFTER DRILLING 19.62 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	5-7-5 (12)	SM		0.5 SILTY SAND, (SM) medium dense, dry, pale brown (10YR 6/3), fine sand, poorly graded, residuum, organics SANDY SILT, (ML) stiff, dry, red (2.5YR 4/6), fine sand, no plasticity, residuum	
				ML			
	SS 2	100	6-4-4 (8)			3.0 (ML) medium, moist	
5				ML			
	SS 3	100	4-2-3 (5)			9.0	
10				SM		SILTY SAND, (SM) loose, moist, very pale brown (10YR 7/3), fine sand, poorly graded, saprolite, faint gneissic structure	
	SS 4	67	3-3-4 (7)			13.0 (SM) brownish yellow (10YR 6/6)	
15				SM			
	SS 5	0	2-1-2 (3)			18.0 No Recovery	
20							
						23.0	

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WELL NUMBER MW-38

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	44	3-5-8 (13)	SM		(SM) medium dense, wet, greenish gray (10BG 5/1), fine sand, poorly graded, saprolite, amphibolite structure	
30	SS 7	100	20-30-44 (74)			29.0 (SM) dense, pale brown (10YR 6/3) and white (10YR 8/1), gneissic structure, rig chatter began at 33 feet	
35	SS 8	100	30-20-48 (68)	SM		34.0 SILTY SAND, (SM) very dense, wet, blueish black (10B 2.5/1), fine sand, poorly graded, partially weathered rock, trace coarse sand, amphibolite structure	
40	SS 9	100	30-50/3"			42.5 Refusal at 42.5 feet. Bottom of borehole at 42.5 feet.	



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WELL NUMBER MW-39A

PAGE 1 OF 1

CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/28/24 00:00	COMPLETED	06/28/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D 50	HOLE SIZE	4.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES	GROUND WATER LEVELS: ▼ AT END OF DRILLING --- Dry 26hrs AFTER DRILLING 11.00 ft		

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	8-6-7 (13)	CL		SANDY CLAY, (CL) dry, yellowish red (5YR 5/6), fine sand, no plasticity, residuum, organics	
5	SS 2	100	6-3-4 (7)	SC		CLAYEY SAND, (SC) moist, yellowish red (5YR 5/6), fine sand, poorly graded, residuum, slightly micaceous	
10	SS 3	100	2-5-11/3"	SM		SILTY SAND, (SM) moist to wet, dark yellowish brown (10YR 4/4) and very pale brown (10YR 7/3), fine sand, poorly graded, saprolite, few coarse sand, trace fine feldspar and amphibolite gravel	
15	SS 4	100	6-32-50/0"	SM		(SM) wet, and blueish black (10B 2.5/1), micaceous, some coarse, dry, gneiss gravel collected at 15 feet	
	SS 5		50/0"				

Refusal at 15.0 feet.
Bottom of borehole at 15.0 feet.

Cement Grout
Bentonite Seal
2" SCH 40
PVC
Sand Filter
Pack
0.010" Slotted
2" SCH 40
PVC Well
Screen



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WELL NUMBER MW-40

PAGE 1 OF 2

CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	07/02/24 00:00	COMPLETED	07/02/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
		HOLE SIZE	8.25 inches
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50	NORTHING	
		EASTING	
LOGGED BY	B.Weiserbs	CHECKED BY	Z. Hector
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING 24.10 ft	
		▼ 25.5hrs AFTER DRILLING 24.20 ft	

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	8-5-5 (10)	ML		SANDY SILT, (ML) stiff, dry, red (2.5YR 5/8), fine sand, no plasticity, residuum, trace fine amphibolite gravel, manganese oxide, organics	
5	SS 2	100	10-4-5 (9)	ML		(ML) no gravel	
10	SS 3	100	4-2-2 (4)	ML		(ML) soft, moist	
15	SS 4	100	2-3-3 (6)	ML		(ML) medium, moist to wet, with yellowish red (5YR 5/6), micaceous mottled	
20	SS 5	100	2-3-3 (6)	ML		(ML) soft to medium, moist to wet	
25							

← Cement Grout

← 2" SCH 40
PVC

← Bentonite Seal



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WELL NUMBER MW-40

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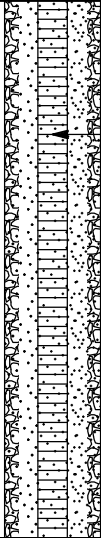
CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25							
	SS 6	100	2-2-2 (4)	ML		(ML) soft to medium, moist to wet (<i>continued</i>)	 <p>Sand Filter Pack 0.010" Slotted 2" SCH 40 PVC Well Screen</p>
30	SS 7	100	0-3-3 (6)				
35	SS 8	67	5-17-23 (40)	SM		SILTY SAND, (SM) dense, wet, strong brown (7.5YR 4/6), fine sand, poorly graded, saprolite, micaceous, faint amphibolite structure	
40	SS 9	67	5-12-26 (38)			(SM) and very dark gray (7.5YR 3/1), slightly micaceous, amphibolite structure	
45	SS 10	0	50/1"			No Recovery	

Refusal at 45.5 feet.
Bottom of borehole at 45.5 feet.



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WELL NUMBER MW-41

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/12/24 00:00	COMPLETED	06/14/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	4 1/4" Hollow Stem Auger/ Geoprobe 7822DT	HOLE SIZE	8.25 inches
LOGGED BY	C. Gruenberg	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING	26.20 ft
		▼ 79hrs AFTER DRILLING	23.90 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	28	3-3-6 (9)	CL		SANDY CLAY, (CL) stiff, dry, red (2.5YR 4/8), fine to medium sand, low plasticity, residuum	
5	SS 2	94	2-2-4 (6)	ML		SANDY SILT, (ML) medium to very soft, dry, red (2.5YR 4/8), fine to medium gravel, low plasticity, residuum, micaceous	
10	SS 3	156	1-1-1 (2)	ML		(ML) moist	
15	SS 4	72	2-2-3 (5)	SM		SILTY SAND, (SM) loose, moist, light gray (7.5YR 7/1) and white (10YR 8/1), fine to coarse sand, well graded, residuum, trace fine gravel	
20	SS 5	100	2-4-6 (10)	ML		SANDY SILT, (ML) stiff, dry, red (2.5YR 4/8), fine to medium sand, no plasticity, residuum, micaceous	
				SM		SILTY SAND, (SM) loose, moist, light gray (7.5YR 7/1) and very dark gray (7.5YR 3/1), fine to medium sand, poorly graded, saprolite, gneissic structure	

4.4

9.4

14.7

19.4

20.1

2" SCH 40 PVC

Bentonite Seal

Cement Grout

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WELL NUMBER MW-41

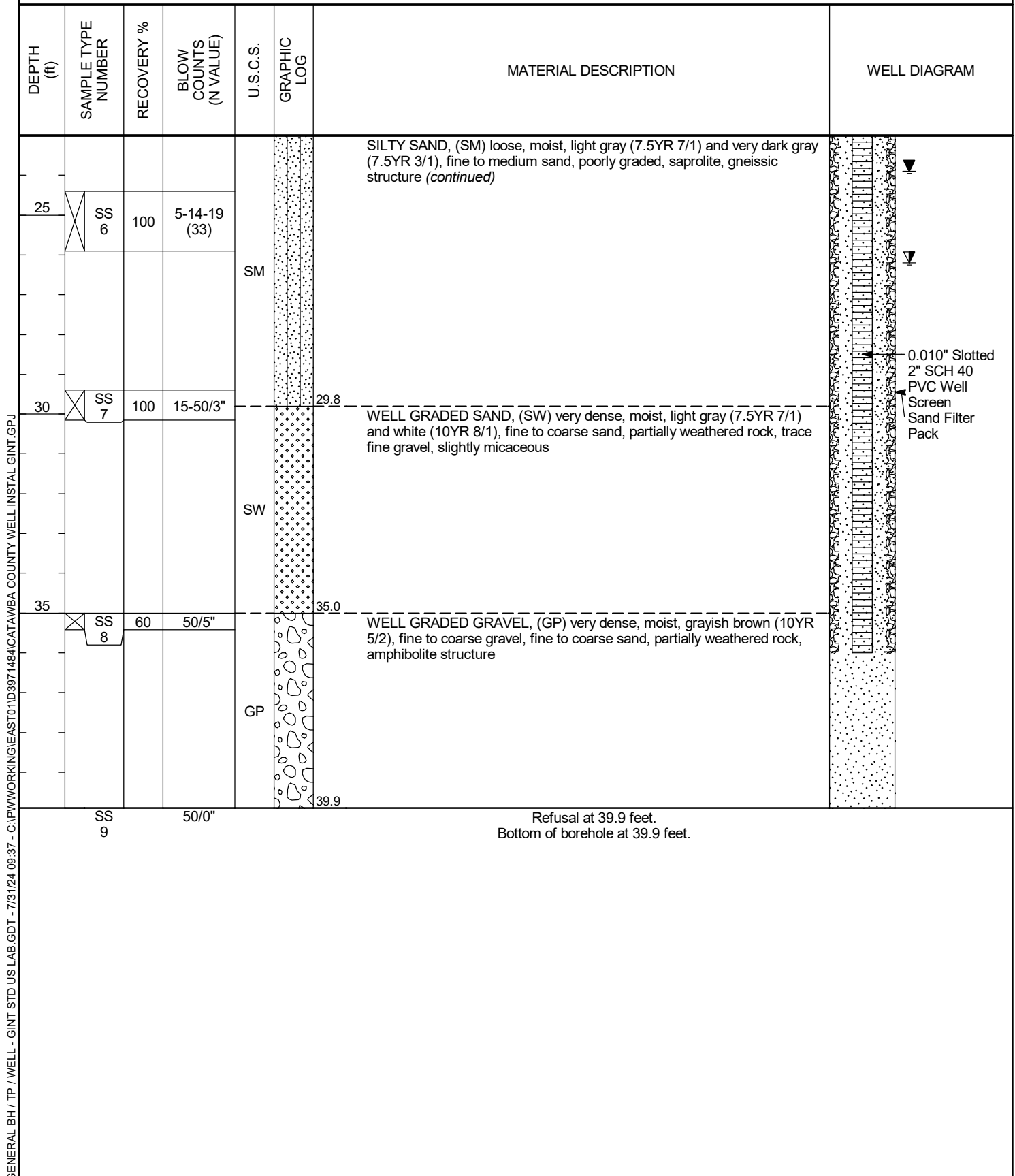
PAGE 2 OF 2

CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC





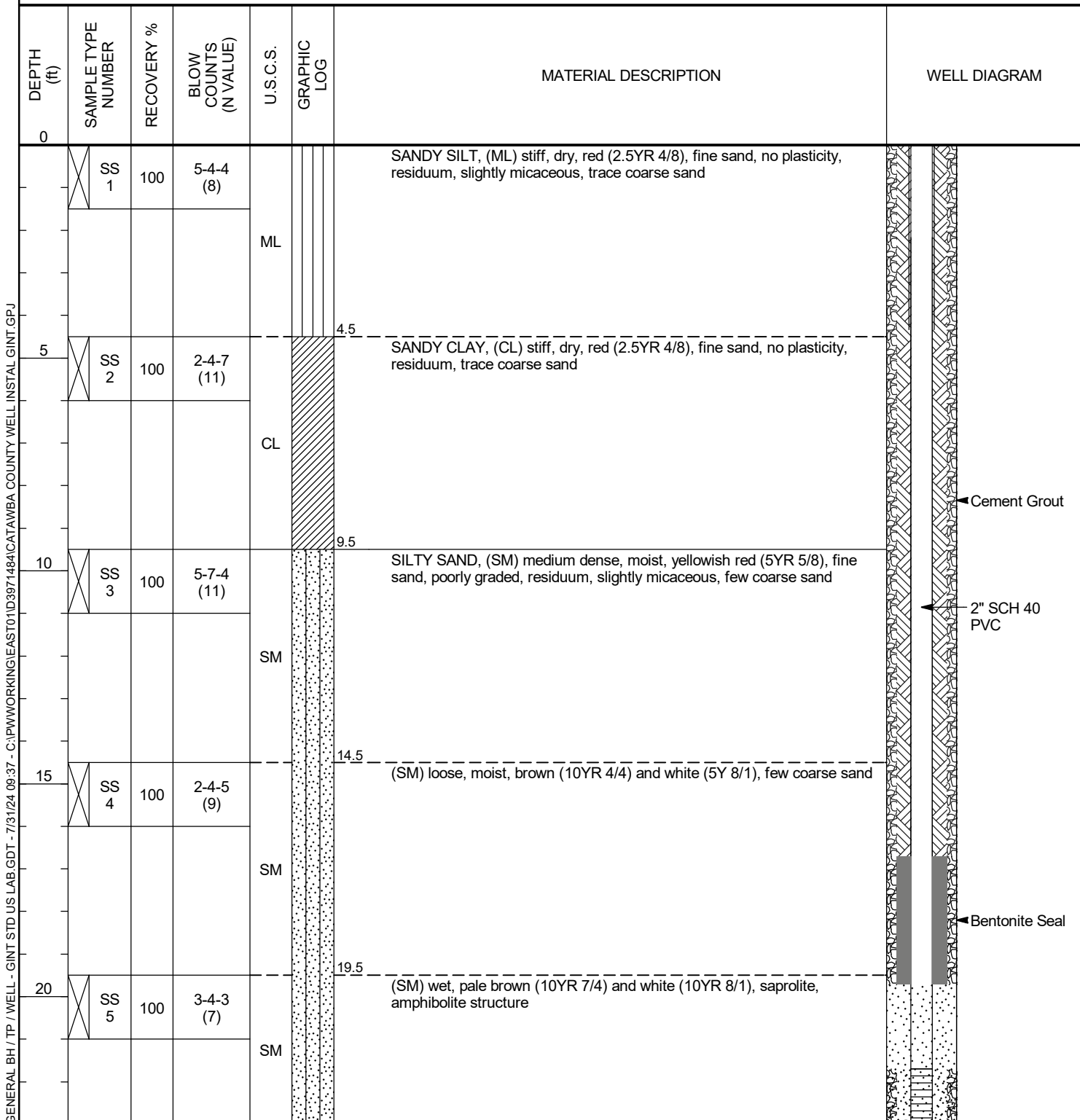
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WELL NUMBER MW-42A

PAGE 1 OF 3

CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	07/02/24 00:00	COMPLETED	07/02/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50	HOLE SIZE	8.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			

GROUND WATER LEVELS:
▼ AT END OF DRILLING 25.50 ft
▼ 20.5hrs AFTER DRILLING 24.90 ft



(Continued Next Page)



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WELL NUMBER MW-42A

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	4-4-3 (7)	SM		(SM) wet, pale brown (10YR 7/4) and white (10YR 8/1), saprolite, amphibolite structure (continued)	
					24.5	(SM) with dark yellowish brown (10YR 4/4)	
				SM			
30	SS 7	67	3-7-8 (15)				
					29.5	(SM) medium dense to very dense, iron oxide observed in fractures, gneissic structure, rig chatter began at 33 feet	
35	SS 8	83	28-22-39 (61)				
40	SS 9	67	19-25-49 (74)	SM			
45	SS 10	100	40-9/3"				

▼
▼
Sand Filter Pack
0.010" Slotted
2" SCH 40
PVC Well
Screen

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WELL NUMBER MW-42A

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
50	SS 11	0	50/1"	SM		49.5 SILTY SAND, (SM) very dense, wet, pale brown (10YR 7/4) and white (10YR 8/1), fine sand, partially weathered rock 53.5	

Refusal at 53.5 feet.
Bottom of borehole at 53.5 feet.



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WELL NUMBER MW-43

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	07/03/24 00:00	COMPLETED	07/03/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D 50	HOLE SIZE	8.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING 27.40 ft	
		▼ 76.5hrs AFTER DRILLING 26.10 ft	

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	7-6-6 (12)	CL		SANDY CLAY, (CL) stiff, dry, red (2.5YR 5/8), fine sand, no plasticity, residuum, organics	
						4.0	
5	SS 2	100	7-5-5 (10)	SM		SILTY SAND, (SM) loose, dry, yellowish red (5YR 5/8), fine sand, poorly graded, residuum	
10	SS 3	100	6-4-3 (7)			Dark yellowish brown (10YR 3/6) and white (10YR 8/1), fine sand, poorly graded, residuum, micaceous, faint relict structure	Cement Grout
							2" SCH 40 PVC
15	SS 4	100	4-4-4 (8)	ML		SANDY SILT, (ML) medium, dry, yellowish red (5YR 5/8), fine sand, no plasticity, residuum	
						15.0	
						15.5	
						SILTY SAND, (SM) medium dense, dry, very pale brown (10YR 7/4) and white (10YR 8/1), fine to coarse sand, well graded, residuum, gneissic structure	
20	SS 5	100	5-8-10 (18)	SM			Bentonite Seal

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WELL NUMBER MW-43

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	9-5-4 (9)	SM		24.0 (SM) loose, moist to wet	
				SM			
30	SS 7	100	2-3-5 (8)	ML		29.0 SANDY SILT, (ML) medium, wet, red (5YR 5/8), fine sand, no plasticity, residuum, manganese structure	
				ML			
35	SS 8	100	0-3-4 (7)	ML		34.0 (ML) few coarse sand	
				ML			
40	SS 9	22	1-2-7 (9)	SM		39.0 SILTY SAND, (SM) loose, wet, very pale brown (10YR 7/4) and white (10YR 8/1), fine sand, poorly graded, saprolite, gneissic structure	
				SM			
45	SS 10	100	23-27-20 (47)	SM		44.0 (SM) few coarse sand	
				SM			
						49.0	

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▼
▼
Sand Filter Pack
0.010" Slotted
2" SCH 40
PVC Well
Screen

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PROJECT NAME Blackburn LF Well Installation

PROJECT LOCATION Newton, NC

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 7/31/24 09:37 - C:\PWWORKING\EAST01\ID3971484\CATAWBA COUNTY WELL INSTAL GINT.GPJ

Refusal at 56.4 feet.
Bottom of borehole at 56.4 feet.



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WELL NUMBER PZ-210

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/12/24 00:00	COMPLETED	06/14/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50	HOLE SIZE	8.25 inches
LOGGED BY	C. Gruenberg	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			

GROUND WATER LEVELS:
▼ AT END OF DRILLING 11.30 ft
▼ 66hrs AFTER DRILLING 11.37 ft




DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	2-1-1 (2)	SM	1.0	SILTY SAND, (SM) very loose, dry, strong brown (7.5YR 4/6), fine to medium sand, poorly graded, residuum, relict struture	
						SANDY SILT, (ML) very soft to medium, dry to moist, yellowish red (5YR 4/6) with light red (2.5YR 6/6), fine sand, no plasticity, residuum	
5	SS 2	100	1-1-1 (2)	ML			← Cement Grout
							← 2" SCH 40 PVC
							← Bentonite Seal
10	SS 3	100	2-3-3 (6)	ML	9.4	(ML) wet, fine to coarse sand	
15	SS 4	100	2-3-3 (6)	ML	15.2		
						SILTY SAND, (SM) medium dense, wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, residuum, relict structure	← Sand Filter Pack
				SM			← 0.010" Slotted 2" SCH 40 PVC Well Screen
20	SS 5	100	3-6-8 (14)	ML	19.4	SANDY SILT, (ML) stiff, wet, yellowish red (5YR 4/6), fine to medium sand, no plasticity, saprolite	
					20.0	SILTY SAND, (SM) medium dense to dense, wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, saprolite	
				SM			

(Continued Next Page)



PROJECT NAME Blackburn LF Well Installation

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	3-7-12 (19)	SM		SILTY SAND, (SM) medium dense to dense, wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, saprolite <i>(continued)</i>	
30	SS 7	100	9-17-28 (45)				
35	SS 8	100	4-14-26 (40)				
40	SS 9	100	50/4"	SM		(SM) with black (7.5YR 2.5/1), trace fine feldspar gravel	
45	SS 10	100	50/4"				

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WELL NUMBER PZ-210

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
50	SS 11	100	50/4"	SM		SILTY SAND, (SM) medium dense to dense, wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, partially weathered rock (continued)	
55	SS 12					54.2 SPT refusal, no recovery	
						56.4 SPT refusal, no recovery	

SS
13

SPT refusal, no recovery

Refusal at 56.4 feet.
Bottom of borehole at 56.4 feet.



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WELL NUMBER PZ-211

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/17/24 00:00	COMPLETED	06/17/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D 50	HOLE SIZE	8.25 inches
LOGGED BY	C. Gruenberg	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES	GROUND WATER LEVELS: ▼ AT END OF DRILLING 9.20 ft ▼ 46hrs AFTER DRILLING 11.30 ft		

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0								
	SS 1	100	3-3-4 (7)				SILTY SAND, (SM) loose, dry, light reddish brown (5YR 7/2) and red (2.5YR 4/6), fine sand, poorly graded, residuum, relict structure	
5	SS 2	100	6-4-4 (8)		SM			
				Shelby Tube (ST-1) collected from 8-10'				
10	SS 3	100	4-2-3 (5)		ML		SANDY SILT, (ML) stiff, dry to moist, red (2.5YR 4/6) and pinkish gray (5YR 6/2), fine sand, no plasticity, residuum, micaceous	
15	SS 4	100	2-4-5 (9)		SM		SILTY SAND, (SM) loose to medium dense, moist to wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, saprolite, slightly micaceous	
20	SS 5	100	2-3-4 (7)		ML		SANDY SILT, (ML) stiff, wet, yellowish red (5YR 4/6) and strong brown (7.5YR 4/6), fine sand, no plasticity, saprolite, relict structure mottled	

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WELL NUMBER PZ-211


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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	5-4-7 (11)		ML		SANDY SILT, (ML) stiff, wet, yellowish red (5YR 4/6) and strong brown (7.5YR 4/6), fine sand, no plasticity, saprolite, relict structure mottled (<i>continued</i>)	
30	SS 7	100	4-10-17 (27)					
35	SS 8	100	25-9/3"		SM		SILTY SAND, (SM) medium to dense, wet, light gray (10YR 7/2) and white (10YR 8/1), fine to medium sand, poorly graded, saprolite, trace amphibolite lenses, rig chatter at 37 feet	
	SS 9		50/0"					

Refusal at 38.6 feet.
Bottom of borehole at 38.6 feet.

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WELL NUMBER PZ-212

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CLIENT <u>Catawba County</u>	PROJECT NAME <u>Blackburn LF Well Installation</u>
PROJECT NUMBER <u>10400064</u>	PROJECT LOCATION <u>Newton, NC</u>
DATE STARTED <u>06/18/24 00:00</u> COMPLETED <u>06/18/24 00:00</u>	GROUND ELEVATION _____ HOLE SIZE <u>8.25 inches</u>
CONTRACTOR <u>Geologic Exploration, Inc./ D. Hall</u>	NORTHING _____ EASTING _____
DRILLING METHOD <u>2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50</u>	
LOGGED BY <u>C. Gruenberg</u> CHECKED BY <u>Z. Hector</u>	GROUND WATER LEVELS: ▼ AT END OF DRILLING <u>9.31 ft</u> ▼ 0.5hrs AFTER DRILLING <u>10.00 ft</u>
NOTES _____	

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0								
	SS 1	100	5-9-11 (20)		SM		SILTY SAND, (SM) medium dense, dry, light brown (7.5YR 6/3), fine sand, poorly graded, residuum / CLAYEY SAND, (SC) very stiff, dry, red (2.5YR 4/6), fine to medium sand, no plasticity, residuum, few fine gravel	Cement Grout 2" SCH 40 PVC Bentonite Seal
5	SS 2	100	10-4-5 (9)		SC			
10	SS 3	100	5-3-5 (8)	Shelby Tube (ST-1) collected from 9.2-11.2'				
15	SS 4	100	7-10-12 (22)		SM		SILTY SAND, (SM) loose, wet, strong brown (7.5YR 5/8) and pale brown (10YR 6/3), fine to coarse sand, well graded, residuum, micaceous	0.010" Slotted 2" SCH 40 PVC Well Screen Sand Filter Pack
20	SS 5	100	4-4-5 (9)		ML		SANDY SILT, (ML) stiff, moist to wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine sand, no plasticity, residuum, relict foliations/ gneissic structure, micaceous	

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WELL NUMBER PZ-212

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	10-15-4 (19)		ML		SANDY SILT, (ML) stiff, moist to wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine sand, no plasticity, residuum, relict foliations/ gneissic structure, micaceous (continued)	
					ML		(ML) reddish yellow (7.5YR 6/8) and black (7.5YR 2.5/1), saprolite, amphibolite structure	
30	SS 7	100	7-6-13 (19)		SC		CLAYEY SAND, (SC) very stiff to hard, brown (7.5YR 5/4) and white (10YR 8/1), fine to medium sand, poorly graded, saprolite, relict structure	
35	SS 8	100	10-22-33 (55)		SM		SILTY SAND, (SM) very dense, wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, saprolite, amphibolite lenses	
40	SS 9	100	11-20-32 (52)		SM		SILTY SAND, (SM) very dense, dry to moist, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, partially weathered rock, amphibolite lenses	
45	SS 10	100	11-27-50 (77)		SM			
	SS	100	50/4"					

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WELL NUMBER PZ-212

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
50	11							
					SM		SILTY SAND, (SM) very dense, dry to moist, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, partially weathered rock, amphibolite lenses (<i>continued</i>)	
	SS 12	100	50/3"				54.0 (SM) rig chatter at 54 feet	
55					SM		55.1	

SS
13

50/0"

Refusal at 55.1 feet.
Bottom of borehole at 55.1 feet.



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WELL NUMBER PZ-213

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/19/24 00:00	COMPLETED	06/19/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50	HOLE SIZE	8.25 inches
LOGGED BY	C. Gruenberg	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			

GROUND WATER LEVELS:
▼ AT END OF DRILLING 10.00 ft
▼ 18hrs AFTER DRILLING 9.14 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	3-3-4 (7)	SM		SILTY SAND, clayey, (SM) loose, dry, yellowish red (5YR 4/6) and light brown (7.5YR 6/4), fine sand, poorly graded, residuum, micaceous	
5	SS 2	100	11-5-5 (10)	SM		SILTY SAND, (SM) loose, dry to wet, light brown (7.5YR 6/4) with white (7.5YR 8/1), fine sand, poorly graded, saprolite, relict foliations/ gneissic structure, wet at 9 feet	
10	SS 3	100	5-3-4 (7)	SM			
15	SS 4	100	4-4-4 (8)	SM			
20	SS 5	100	5-6-8 (14)	SM			

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4.9

Cement Grout

Bentonite Seal 2" SCH 40 PVC

Sand Filter Pack 0.010" Slotted 2" SCH 40 PVC Well Screen

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WELL NUMBER PZ-213

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	6-6-8 (14)	SM		SILTY SAND, (SM) loose, dry to wet, light brown (7.5YR 6/4) with white (7.5YR 8/1), fine sand, poorly graded, saprolite, relict foliations/ gneissic structure, wet at 9 feet (<i>continued</i>)	
30	SS 7	100	4-4-7 (11)	ML		SANDY SILT, (ML) wet, reddish yellow (7.5YR 6/8), medium to coarse sand, saprolite, amphibolite structure	
35	SS 8	100	9-14-17 (31)	SM		SILTY SAND, (SM) dense, black (10YR 2/1) with white (10YR 8/1), fine to medium sand, poorly graded	
40	SS 9	100	3-5-24 (29)	SM			
45	SS 10	100	12-50/5"	SM			

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WELL NUMBER PZ-213

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
50	 SS 11	100	44-50/1"	SM		SILTY SAND, (SM) dense, black (10YR 2/1) with white (10YR 8/1), fine to medium sand, poorly graded (<i>continued</i>)	

SS
12

50/0"

Refusal at 53.5 feet.
Bottom of borehole at 53.5 feet.



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WELL NUMBER PZ-214

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/19/24 00:00	COMPLETED	06/19/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50	HOLE SIZE	8.25 inches
LOGGED BY	C. Gruenberg	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			

GROUND WATER LEVELS:
▼ AT END OF DRILLING 14.95 ft
▼ 24hrs AFTER DRILLING 14.84 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	3-4-4 (8)	SM		SILTY SAND, (SM) loose, dry to moist, light reddish brown (2.5YR 7/3) to yellowish red (5YR 5/8), fine sand, poorly graded, residuum	
5	SS 2	100	3-3-3 (6)	SC		CLAYEY SAND, (SC) loose, moist, yellowish red (5YR 5/8) to pale brown (10YR 6/3), fine sand, poorly graded, residuum	
10	SS 3	100	6-3-7 (10)	SC		(SC) fine to coarse sand, well graded, micaceous, trace fine gravel	
15	SS 4	100	4-4-4 (8)	SC			
20	SS 5	100	4-4-6 (10)	SM		SILTY SAND, (SM) loose to dense, wet, light brownish gray (10YR 6/2) with white (10YR 8/1), fine sand, poorly graded, saprolite, slightly micaceous, relict formations, gneissic structure, fine weathered gneissic gravel at 29.6 feet	

(Continued Next Page)



PROJECT NAME Blackburn LF Well Installation

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	17-14-30 (44)			SILTY SAND, (SM) loose to dense, wet, light brownish gray (10YR 6/2) with white (10YR 8/1), fine sand, poorly graded, saprolite, slightly micaceous, relict formations, gneissic structure, fine weathered gneissic gravel at 29.6 feet (<i>continued</i>)	
30	SS 7	100	50/5"				
35	SS 8	100	50/4"				
39.7	SS 9 SS 10	0	50/1" 50/0"	SM			
						Refusal at 39.7 feet. Bottom of borehole at 39.7 feet.	

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WELL NUMBER PZ-215

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/20/24 00:00	COMPLETED	06/20/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D 50	HOLE SIZE	8.25 inches
LOGGED BY	C. Gruenberg	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			

GROUND WATER LEVELS:
▼ AT END OF DRILLING 15.10 ft
▼ 18hrs AFTER DRILLING 14.75 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0								
	SS 1	100	4-3-4 (7)		SM		SILTY SAND, (SM) loose, dry, dark red (2.5YR 3/6), fine sand, poorly graded, residuum, micaceous	
5	SS 2	100	6-4-2 (6)		CL	4.5 5.1	SANDY CLAY, (CL) medium, dry, dark red (2.5YR 3/6), fine sand, low plasticity, residuum, micaceous SILTY SAND, (SM) loose, dry to moist, yellowish red (5YR 5/8), fine sand, poorly graded, residuum	Cement Grout 2" SCH 40 PVC Bentonite Seal
10	SS 3	100	6-3-3 (6)	Shelby Tube (ST-1) collected from 9.4-11.4'	ML	9.5	SANDY SILT, (ML) soft to medium, moist, light brownish gray (10YR 6/2) and grayish brown (10YR 5/2), fine sand, no plasticity, saprolite, micaceous	
15	SS 4	100	5-4-5 (9)		SM	15.3	SILTY SAND, (SM) loose to dense, moist to wet, light brownish gray (10YR 6/2) and grayish brown (10YR 5/2), fine sand, poorly graded, saprolite, wet at 19.5 feet, slow drilling begun at 31 feet	
20	SS 5	100	5-16-36 (52)		SM			Sand Filter Pack 0.010" Slotted 2" SCH 40 PVC Well Screen

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	29-20-38 (58)		SM		SILTY SAND, (SM) loose to dense, moist to wet, light brownish gray (10YR 6/2) and grayish brown (10YR 5/2), fine sand, poorly graded, saprolite, wet at 19.5 feet, slow drilling begun at 31 feet (<i>continued</i>)	
30	SS 7	100	22-50/4"					
35	SS 8	100	40-50/3"					
40	SS 9	100	50/3"		SM		(SM) amphibolite structure, rig chatter at 40 feet	
	SS 10		50/0"				Refusal at 43.3 feet. Bottom of borehole at 43.3 feet.	



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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/21/24 00:00	COMPLETED	06/21/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50	HOLE SIZE	8.25 inches
LOGGED BY	C. Gruenberg	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING 12.95 ft	
		▼ 2hrs AFTER DRILLING 13.17 ft	

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0								
	SS 1	100	4-4-4 (8)		CL		SANDY CLAY, silty, (CL) very loose to loose, dry to moist, red (2.5YR 4/8) with brownish yellow (10YR 6/8), fine to medium sand, residuum, slightly micaceous	
5	SS 2	100	4-3-4 (7)			4.7	SILTY SAND, (SM) very loose, moist to wet, light brownish gray (10YR 6/2) with white (10YR 8/1), fine to medium sand, poorly graded, residuum, wet at 14.4 feet	Cement Grout 2" SCH 40 PVC Bentonite Seal
10	SS 3	94	2-2-2 (4)		SM			
15	SS 4	100	2-2-2 (4)			15.7	SANDY SILT, (ML) very soft, wet, yellowish red (5YR 5/6), fine sand, no plasticity, residuum	
20	SS 5	100	2-3-5 (8)		ML			0.010" Slotted 2" SCH 40 PVC Well Screen Sand Filter Pack
					SM	19.4	SILTY SAND, (SM) very loose to very dense, moist to wet, light brownish gray (10YR 6/2) with white (10YR 8/1), fine to medium sand, poorly graded, residuum, relict foliations	

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	3-2-3 (5)	Shelby Tube (ST-1) collected from 26.1-28.1ft	SM		SILTY SAND, (SM) very loose to very dense, moist to wet, light brownish gray (10YR 6/2) with white (10YR 8/1), fine to medium sand, poorly graded, residuum, relict foliations (continued)	
	ST 1	100			ML		SANDY SILT, (ML) medium, wet, yellowish red (5YR 5/8), fine sand, no plasticity, residuum, relict formations	
30	SS 7	100	2-5-5 (10)		SM		SILTY SAND, (SM) loose, wet, light brownish gray (10YR 6/2) and white (10YR 8/1), fine to medium sand, poorly graded, saprolite, slightly micaceous, relict foliations	
35	SS 8	100	4-5-7 (12)		SM		(SM) with brown (10YR 4/3), amphibolite structure	
40	SS 9	100	6-9-13 (22)					
45	SS 10	100	10-25-38 (63)					

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
50	SS 11	100	12-30-50 (80)		SM		SILTY SAND, (SM) black (10YR 2/1) with white (10YR 8/1), fine sand, amphibolite structure, chatter at 46 feet No Recovery	

SS
12

50/0"

Refusal at 53.4 feet.
Bottom of borehole at 53.4 feet.



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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/25/24 00:00	COMPLETED	06/25/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D 50	HOLE SIZE	8.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING 5.00 ft	
		▼ 24hrs AFTER DRILLING 5.25 ft	

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	3-3-2 (5)	ML		SANDY SILT, (ML) medium, dry to moist, yellowish red (5YR 5/6), fine sand, no plasticity, residuum, organics, micaceous	Cement Grout Bentonite Seal
4.0							
5	SS 2	100	4-4-4 (8)	SM		SILTY SAND, (SM) medium, moist to wet, reddish yellow (5YR 7/6), fine to medium sand, poorly graded, residuum	▼ 2" SCH 40 PVC Sand Filter Pack 0.010" Slotted 2" SCH 40 PVC Well Screen
10	SS 3	100	4-3-3 (6)	SM			
14.0							
15	SS 4	100	2-3-2 (5)	SM		(SM) very loose, wet, black (10YR 2/1), fine sand, residuum, relict structure, micaceous	
19.0							
20	SS 5	83	3-2-3 (5)	SM		(SM) loose, wet, red (2.5YR 4/8), fine to coarse sand, well graded, residuum, relict structure	

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	67	14-18-21 (39)	SM		(SM) loose, wet, red (2.5YR 4/8), fine to coarse sand, well graded, residuum, relict structure <i>(continued)</i>	
				SM		SILTY SAND, (SM) dense, wet, light brownish gray (10YR 6/2), fine sand, poorly graded, saprolite, relict foliations/ gneissic structure	
30	SS 7	44	3-14-11 (25)	SM		(SM) medium dense, wet, fine to coarse sand, well graded, saprolite	
35	SS 8	100	50/4"			Rig chatter began at 35 feet No Recovery	
40	SS 9	100	44-50/4"	SM		SILTY SAND, (SM) very dense, wet, white (10YR 8/1) and yellowish brown (10YR 5/4), fine to coarse sand, well graded, partially weathered rock, gneiss and amphibolite structure	
45	SS 10	100	50/3"	SM		(SM) blueish black (5B 2.5/1) with white (10YR 8/1)	
	SS 11		50/0"			Refusal at 47.0 feet. Bottom of borehole at 47.0 feet.	



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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	06/25/24 00:00	COMPLETED	06/25/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D 50	HOLE SIZE	8.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			

GROUND WATER LEVELS:
▼ AT END OF DRILLING 9.82 ft
▼ 20.5hrs AFTER DRILLING 10.05 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	7-6-4 (10)	ML		SANDY SILT, (ML) stiff, dry, red (2.5YR 4/8), fine sand, no plasticity, residuum, organics, micaceous	Cement Grout Bentonite Seal 2" SCH 40 PVC
5	SS 2	67	3-2-2 (4)	ML		(ML) soft, wet, brownish yellow (10YR 6/6), fine sand, no plasticity	
10	SS 3	100	4-3-3 (6)	SM		SILTY SAND, (SM) loose, wet, brownish yellow (10YR 6/6), fine sand, poorly graded, residuum, relict structure	Sand Filter Pack 0.010" Slotted 2" SCH 40 VC Well Screen
15	SS 4	67	2-1-2 (3)	SM		(SM) very loose, wet, red (2.5YR 4/6) and dark yellowish brown (10YR 3/4), fine sand, saprolite, gneiss structure	
20	SS 5	67	3-3-2 (5)	SM		(SM) loose, wet, pale brown (10YR 6/3) and white (10YR 8/1), poorly graded, saprolite	

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	0	3-2-4 (6)	SM		(SM) loose, wet, pale brown (10YR 6/3) and white (10YR 8/1), poorly graded, saprolite (<i>continued</i>) No Recovery	
30	SS 7	67	5-5-2 (7)	SM		29.0 SILTY SAND, (SM) loose, wet, pale brown (10YR 6/3) and white (10YR 8/1), fine sand, poorly graded, saprolite, gneiss structure	
35	SS 8	67	9-14-18 (32)	SM		34.0 (SM) dense 35.2 (SM) blueish black (5B 2.5/1) with white (10YR 8/1), amphibolite structure	
40	SS 9	60	6-13-11/0"	SM		39.0 (SM) medium dense, pale brown (10YR 6/3) and white (10YR 8/1), no amphibolite structure	
45	SS 10	240	9-20-38/0"	SM		44.0 (SM) very dense	
						49.0	

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
50	SS 11	61	16-37-39 (76)	SM		(SM) amphibolite lenses <i>(continued)</i>	
				SM			
55	SS 12	100	28-50/2"	SM		SILTY SAND, (SM) very dense, pale brown (10YR 6/3) and white (10YR 8/1), partially weathered rock, rig chatter begun at 55 feet, slow drilling from 55-59 feet	
				SM			

SS
13

50/0"

Refusal at 59.0 feet.
Bottom of borehole at 59.0 feet.

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CLIENT <u>Catawba County</u>	PROJECT NAME <u>Blackburn LF Well Installation</u>
PROJECT NUMBER <u>10400064</u>	PROJECT LOCATION <u>Newton, NC</u>
DATE STARTED <u>07/01/24 00:00</u> COMPLETED <u>07/01/24 00:00</u>	GROUND ELEVATION _____ HOLE SIZE <u>8.25 inches</u>
CONTRACTOR <u>Geologic Exploration, Inc./ D. Hall</u>	NORTHING _____ EASTING _____
DRILLING METHOD <u>2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dierich D-50</u>	GROUND WATER LEVELS:
LOGGED BY <u>B.Weiserbs</u> CHECKED BY <u>Z. Hector</u>	▼ AT END OF DRILLING <u>8.12 ft</u>
NOTES _____	▼ 15hrs AFTER DRILLING <u>9.00 ft</u>

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	3-2-4 (6)	ML		SANDY SILT, (ML) medium, moist, yellowish red (5YR 5/8), fine sand, no plasticity, residuum, few coarse grains, manganese oxide	Cement Grout
							Bentonite Seal
							2" SCH 40 PVC
5	SS 2	100	6-2-3 (5)	ML		4.0 (ML) micaceous	
10	SS 3	33	2-2-2 (4)	SM		9.0 SILTY SAND, (SM) very loose, wet, very pale brown (10YR 7/4) and white (10YR 8/1), fine sand, poorly graded, saprolite, gneissic structure, dark brown oxidation observed in fractures, rig chatter at 12 feet	
15	SS 4	100	9-22-20/0"	SM		14.0 (SM) dense, gray (10YR 6/1) and white (10YR 8/1)	
20	SS 5	100	24-26-26 (52)	SM		19.0 (SM) very dense, with yellowish brown (10YR 4/6), few coarse sand, few fine to coarse amphibolite gravel	
							Sand Filter Pack
							0.010" Slotted 2" SCH 40 PVC Well Screen

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CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	11-19- 41/0"	SM		(SM) very dense, with yellowish brown (10YR 4/6), few coarse sand, few fine to coarse amphibolite gravel (<i>continued</i>) SANDY GRAVEL, (GW) very dense, wet, dark greenish gray (10BG 4/1) and white (10YR 8/1), fine to coarse gravel, coarse sand, well graded, saprolite, gravel is amphibolite	
30	SS 7	78	36-41-48 (89)	SM		SILTY SAND, (SM) very dense, gray (10YR 6/1) and white (10YR 8/1), fine sand, poorly graded, saprolite, some fine feldspar gravel, rig chatter begun at 33 feet	
	SS 8		50/0"			Refusal at 33.5 feet. Bottom of borehole at 33.5 feet.	

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	07/01/24 00:00	COMPLETED	07/01/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D-50	HOLE SIZE	4.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING 8.00 ft	
		▼ 19hrs AFTER DRILLING 6.52 ft	

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0								
	SS 1	100	5-4-1 (5)		ML		SANDY SILT, (ML) medium, dry, red (2.5YR 4/8), fine sand, no plasticity, residuum, trace coarse gneiss and amphibolite gravel, organics	
5	SS 2	100	3-3-4 (7)		ML		(ML) moist, light red (2.5YR 6/6), manganese oxide, no gravel	
10	SS 3	100	2-3-6 (9)	Shelby Tube (ST-6) collected from 10-12ft	ML		SANDY CLAY, (ML) stiff, moist, strong brown (7.5YR 5/6), fine to coarse sand, low plasticity, residuum	
15	SS 4	100	2-4-14 (18)		ML		(ML) very stiff	
					SM		SILTY SAND, (SM) medium dense, brownish yellow (10YR 6/6), fine sand, poorly graded, saprolite, few coarse sand grains, amphibolite structure	
20	SS 5	100	20-20-14 (34)		SM		(SM) dense, very pale brown (10YR 7/3) and white (10YR 8/1), gneissic structure, rig chatter begun at 23 feet	
	SS 6		50/0"				Refusal at 23.5 feet. Bottom of borehole at 23.5 feet.	

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CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	07/03/24 00:00	COMPLETED	07/03/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Diehead D-50	HOLE SIZE	4.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING 12.60 ft	
		▼ 48.25hrs AFTER DRILLING 8.60 ft	

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 7/3/24 09:37 - C:\P\WORKING\EAST01D3971484\CATAWBA COUNTY WELL INSTAL GINT.GPJ

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	2-2-3 (5)	ML		SANDY SILT, (ML) medium, dry to moist, brownish yellow (10YR 6/8), fine sand, no plasticity, residuum, manganese oxide	Cement Grout
5	SS 2	100	3-3-5 (8)	SM		4.8 SILTY SAND, (SM) loose, moist to wet, very pale brown (10YR 7/4) and white (10YR 8/1), fine sand, poorly graded, saprolite, amphibolite structure	Bentonite Seal 2" SCH 40 PVC
10	SS 3	0	2-1-2 (3)			9.0 No Recovery	Sand Filter Pack 0.010" Slotted 2" SCH 40 PVC Well Screen
15	SS 4	33	2-2-5 (7)	SM		14.0 (SM) wet, fine to medium sand, gneissic structure	
20	SS 5	67	4-4-6 (10)	SM		19.0 (SM) with dark yellowish brown (10YR 3/6), fine sand, micaceous	

(Continued Next Page)



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WELL NUMBER PZ-221

PAGE 2 OF 2

CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	100	10-26-12 (38)	SM		(SM) with dark yellowish brown (10YR 3/6), fine sand, micaceous (continued) Fine to coarse sand, well graded, absence of micaceous layer	
30	SS 7	100	50/5"	SM		29.0 30.0 SILTY SAND, (SM) very dense, wet, blueish black (5PB 2.5/1) with white (10YR 8/1), fine sand, poorly graded, partially weathered rock, amphibolite structure, rig chatter begun at 27.5 feet	

Refusal at 30.0 feet.
Bottom of borehole at 30.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 7/3/24 09:37 - C:\P\WORKING\EAST01D3971484\CATAWBA COUNTY WELL INSTAL GINT.GPJ

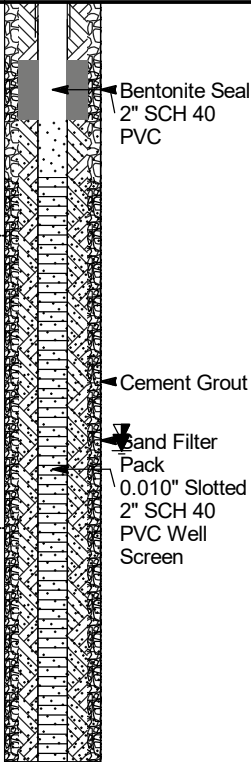


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WELL NUMBER PZ-222

PAGE 1 OF 2

CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	07/08/24 00:00	COMPLETED	07/08/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dielectric D 50	HOLE SIZE	4.25 inches
LOGGED BY	B.Weiserbs	NORTHING	
CHECKED BY	Z. Hector	EASTING	
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING 7.50 ft	
		▼ 25.25hrs AFTER DRILLING 7.68 ft	

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	SS 1	100	3-3-6 (9)	ML		SANDY SILT, clayey, (ML) stiff, dry, red (2.5YR 4/8), fine sand, no plasticity, residuum, manganese oxide	
5	SS 2	100	3-3-4 (7)	CL		SANDY CLAY, (CL) medium, moist, light red (2.5YR 7/8), medium sand, low plasticity, residuum	
10	SS 3	11	1-2-1 (3)	ML		SANDY SILT, (ML) soft, fine sand, no plasticity, residuum	
15	SS 4	67	2-2-2 (4)	ML			
20	SS 5	22	4-6-3 (9)	SM		SILTY SAND, (SM) loose, wet, dark yellowish brown (10YR 4/6) and white (10YR 8/1), fine sand, poorly graded, saprolite, micaceous, faint gneissic structure	

(Continued Next Page)



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WELL NUMBER PZ-222

PAGE 2 OF 2

CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	33	3-6-7 (13)	SM		(SM) very pale brown (10YR 7/8), gneissic structure	
30	SS 7	94	18-50/3"	SM		SILTY SAND, (SM) very dense, wet, blueish black (5PB 2.5/1) with white (10YR 8/1), fine sand, poorly graded, partially weathered rock, amphibolite structure Rig chatter at 32 feet No Recovery	

SS
8 50/0"

Refusal at 34.0 feet.
Bottom of borehole at 34.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 7/3/24 09:37 - C:\P\WORKING\EAST01D3971484\CATAWBA COUNTY WELL INSTAL GINT.GPJ

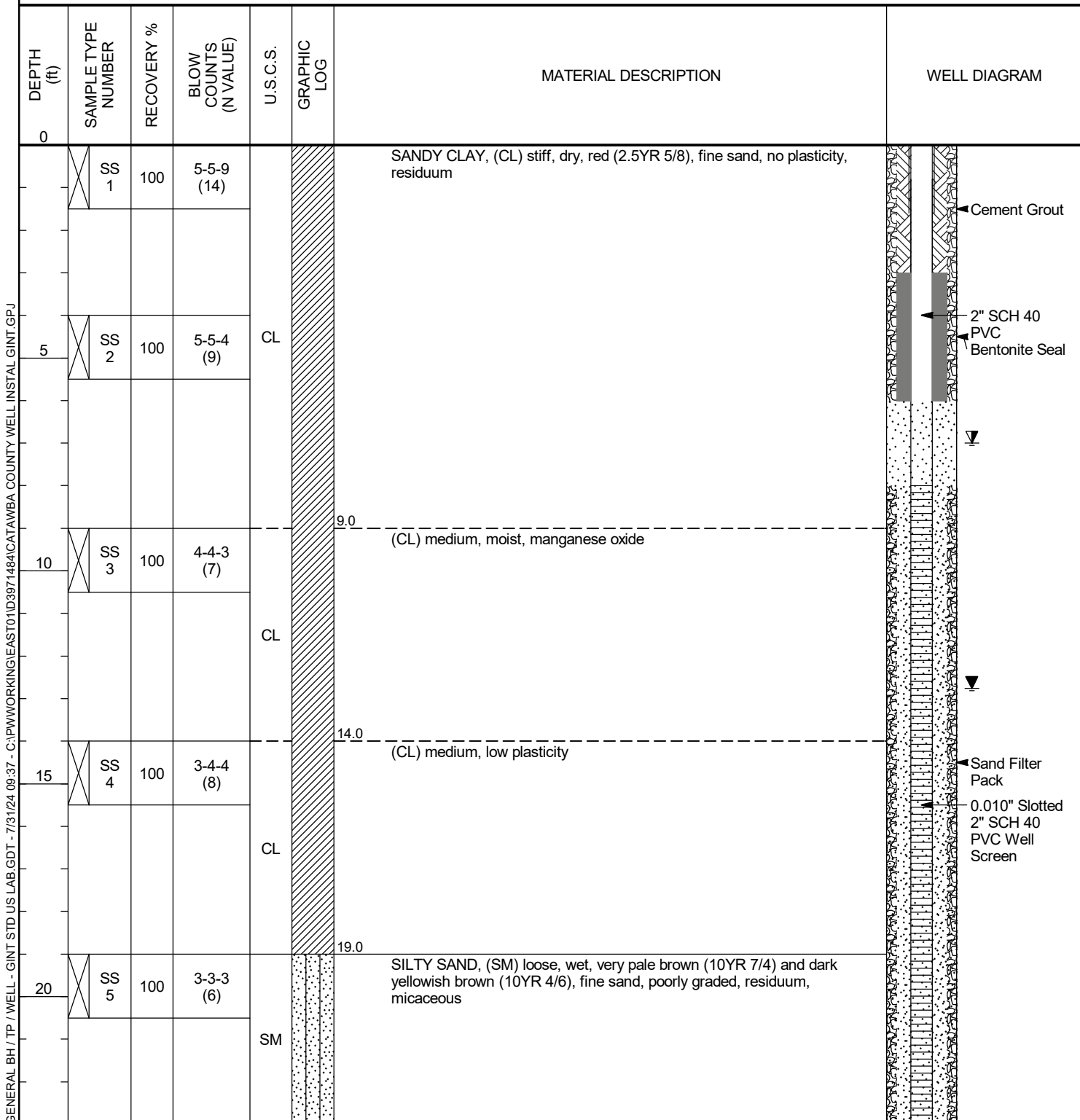


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WELL NUMBER PZ-223

PAGE 1 OF 3

CLIENT	Catawba County	PROJECT NAME	Blackburn LF Well Installation
PROJECT NUMBER	10400064	PROJECT LOCATION	Newton, NC
DATE STARTED	07/08/24 00:00	COMPLETED	07/08/24 00:00
CONTRACTOR	Geologic Exploration, Inc./ D. Hall	GROUND ELEVATION	
DRILLING METHOD	2 1/4 Hollow Stem Auger, & 4 1/4 Hollow Stem Auger/ Dierich D-50		
LOGGED BY	B.Weiserbs	CHECKED BY	Z. Hector
NOTES			
		GROUND WATER LEVELS:	
		▼ AT END OF DRILLING	7.00 ft
		▼ 18hrs AFTER DRILLING	12.76 ft



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WELL NUMBER PZ-223

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CLIENT Catawba County

PROJECT NAME Blackburn LF Well Installation

PROJECT NUMBER 10400064

PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25	SS 6	33	3-2-3 (5)	SM		24.0 (SM) with white (10YR 8/1)	
				SM			
30	SS 7	0	4-3-3 (6)	SM		29.0 (SM) rig chatter at 30 feet No Recovery	
				SM			
35	SS 8	17	3-4-5 (9)	SM		34.0 SILTY SAND, (SM) loose, wet, very pale brown (10YR 7/4) and dark yellowish brown (10YR 4/6), fine sand, poorly graded, residuum, micaceous	
				SM			
40	SS 9	22	3-3-5 (8)	ML		39.0 SANDY SILT, (ML) stiff, wet, yellowish red (5YR 5/8) and white (10YR 8/1), fine sand, no plasticity, residuum, very faint structure	
				ML			
45	SS 10	47	11-27- 50/5"	SM		44.0 SILTY SAND, (SM) very dense, wet, very pale brown (10YR 7/4) and white (10YR 8/1), fine sand, poorly graded, saprolite	
				SM			
						49.0	

(Continued Next Page)




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WELL NUMBER PZ-223

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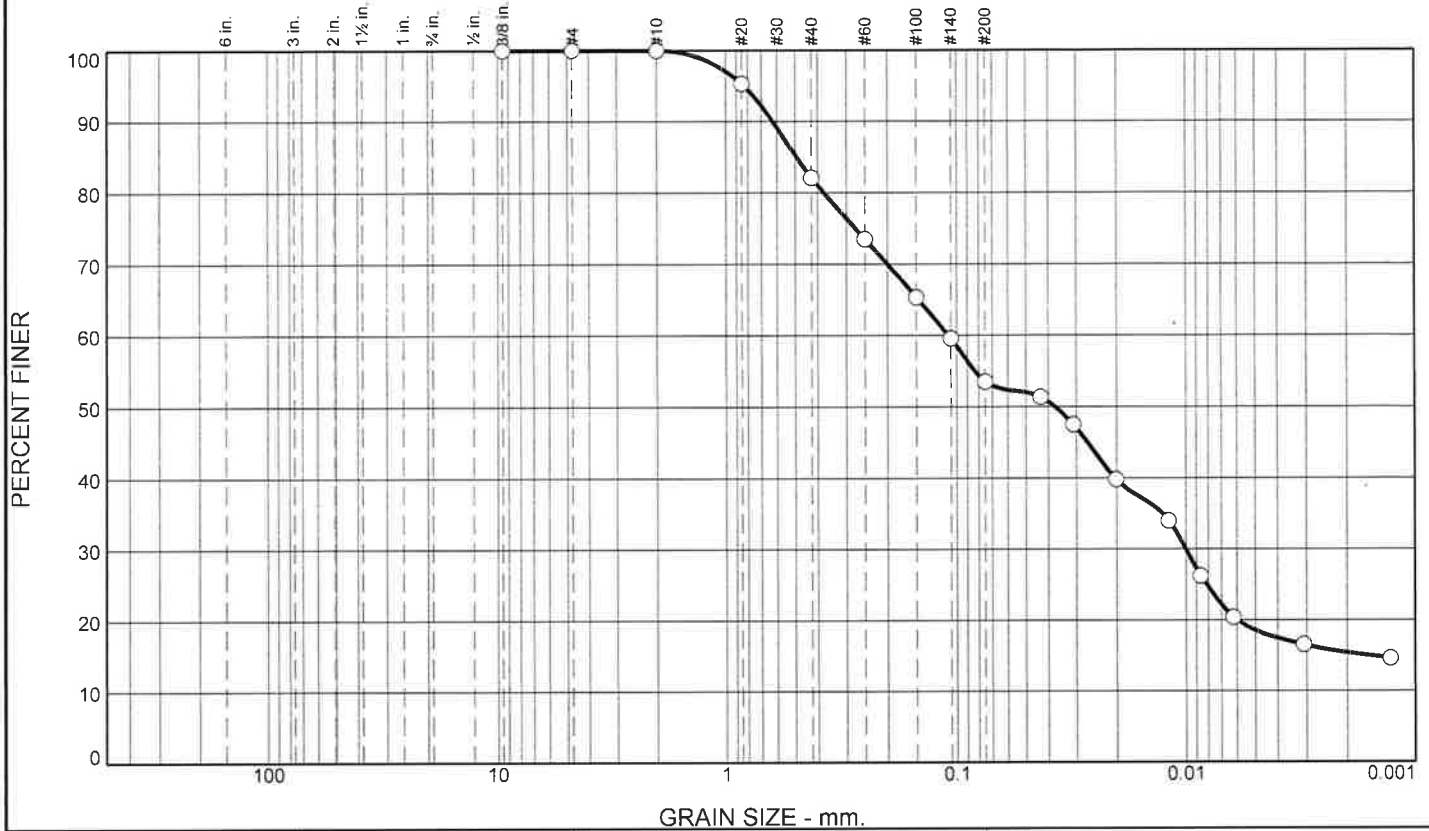
CLIENT Catawba County PROJECT NAME Blackburn LF Well Installation
PROJECT NUMBER 10400064 PROJECT LOCATION Newton, NC

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
50	SS 11	33	6-5-42 (47)	SM SM		(SM) with blueish black (5B 2.5/1), weathered amphibolite lenses (continued)	
					51.0		

Refusal at 51.0 feet.
Bottom of borehole at 51.0 feet.

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	17.9	28.6	35.0	18.5

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	95.3			95.3
#40	82.1			82.1
#60	73.5			73.5
#100	65.3			65.3
#140	59.5			59.5
#200	53.5			53.5
0.0432 mm.	51.4			
0.0310 mm.	47.5			
0.0202 mm.	39.8			
0.0119 mm.	34.0			
0.0086 mm.	26.2			
0.0062 mm.	20.4			
0.0031 mm.	16.6			
0.0013 mm.	14.6			

* (no specification provided)

Location: PZ-210, SS-2 @ 4.4'-5.9'

Material Description

Dark Orange-Brown Silty, Clayey Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6264 D₈₅= 0.4944 D₆₀= 0.1089
D₅₀= 0.0373 D₃₀= 0.0100 D₁₅= 0.0016
D₁₀= C_u= C_c=

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

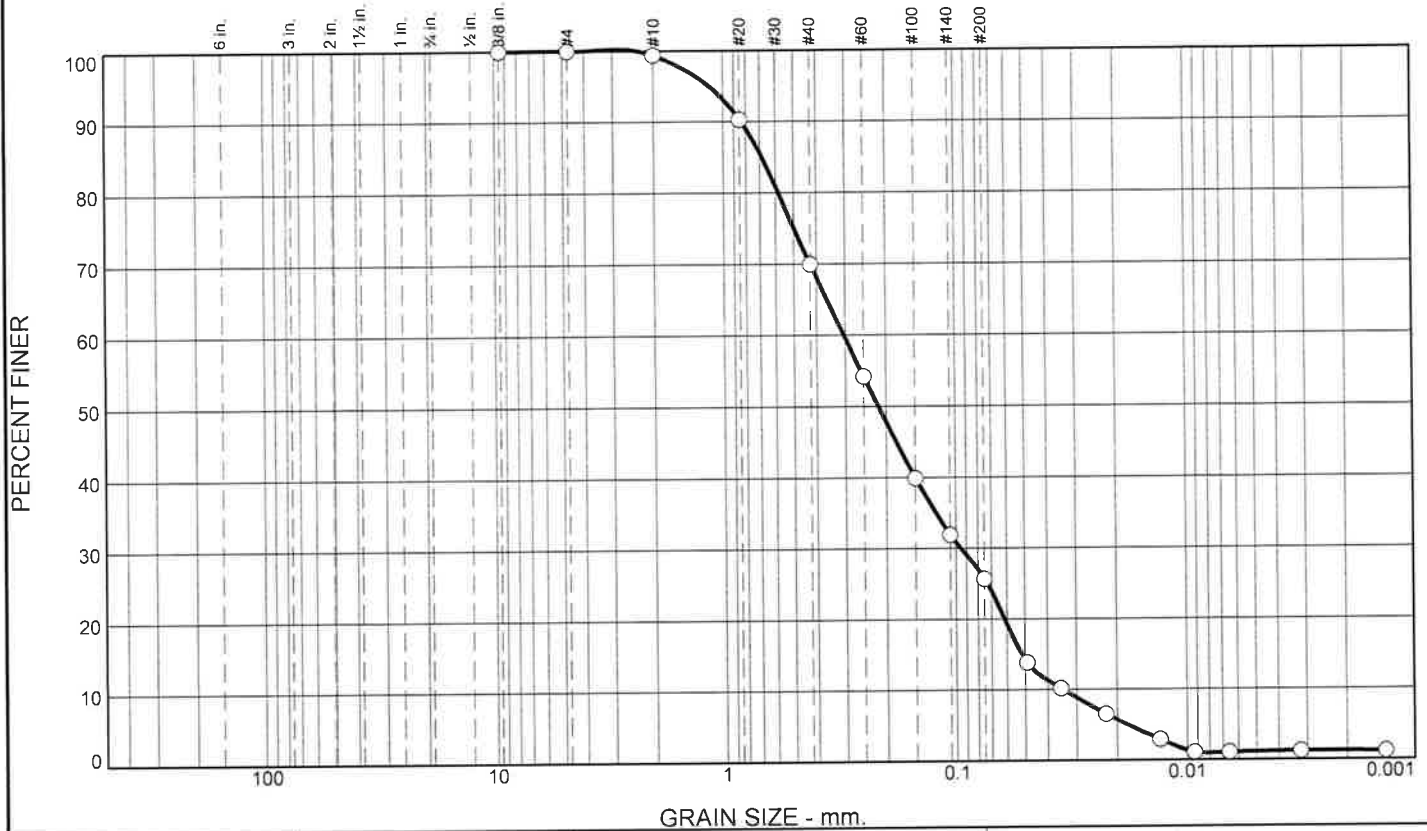
Tested By: DG

Checked By: MH

Sample Date: 08-23-24

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.6	29.5	44.2	24.6	1.1

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.4			90.8
#20	90.3			70.4
#40	69.9			54.5
#60	54.2			40.1
#100	39.9			32.1
#140	31.9			25.8
#200	25.7			
0.0490 mm.	13.9			
0.0350 mm.	10.2			
0.0224 mm.	6.6			
0.0131 mm.	2.9			
0.0093 mm.	1.1			
0.0066 mm.	1.1			
0.0032 mm.	1.2			
0.0013 mm.	1.2			

* (no specification provided)

Location: PZ-210, SS-5 @ 19.4'-20.9'

Sample Date: 08-23-24

Material Description
Light Orange-Brown Very Slightly Clayey, Silty Sand

Atterberg Limits
 PL= LL= PI=
Coefficients
 D₉₀= 0.8382 D₈₅= 0.6871 D₆₀= 0.3047
 D₅₀= 0.2163 D₃₀= 0.0955 D₁₅= 0.0516
 D₁₀= 0.0342 C_u= 8.90 C_c= 0.88

Classification
USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

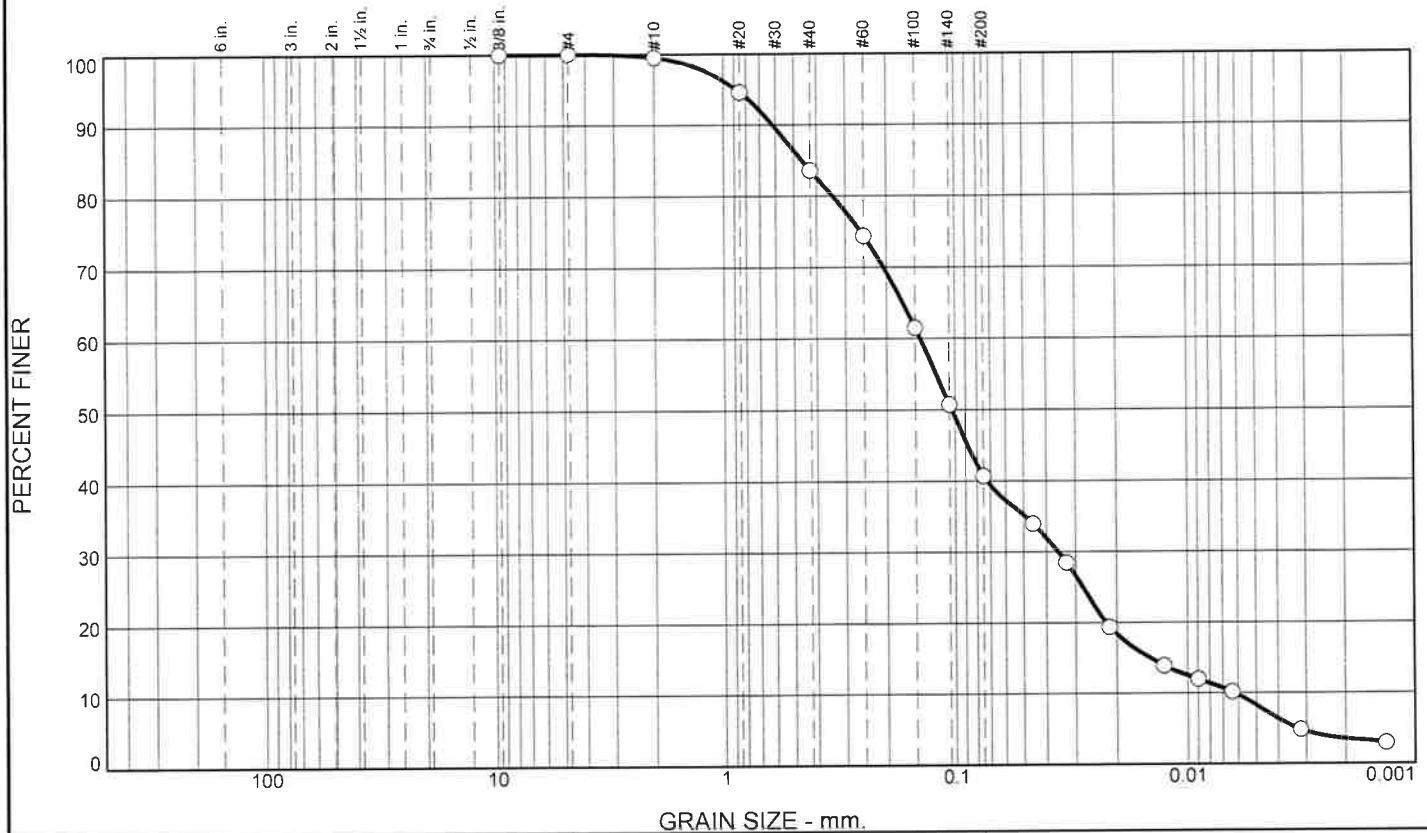
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	16.0	42.8	32.4	8.3

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.5			
#20	94.6			95.1
#40	83.5			83.9
#60	74.3			74.7
#100	61.5			61.8
#140	50.7			51.0
#200	40.7			40.9
0.0456 mm.	33.9			
0.0329 mm.	28.5			
0.0215 mm.	19.4			
0.0126 mm.	13.9			
0.0090 mm.	12.0			
0.0064 mm.	10.2			
0.0032 mm.	4.8			
0.0013 mm.	3.0			

* (no specification provided)

Material Description
Light Orange-Brown Clayey. Silty Sand

Atterberg Limits
 PL= LL= PI=
Coefficients
 D₉₀= 0.6163 D₈₅= 0.4635 D₆₀= 0.1424
 D₅₀= 0.1035 D₃₀= 0.0357 D₁₅= 0.0144
 D₁₀= 0.0062 C_u= 22.92 C_c= 1.44

Classification
USCS= AASHTO=

Test Remarks

Location: PZ-211. SS-2 @ 4.1'-5.6'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

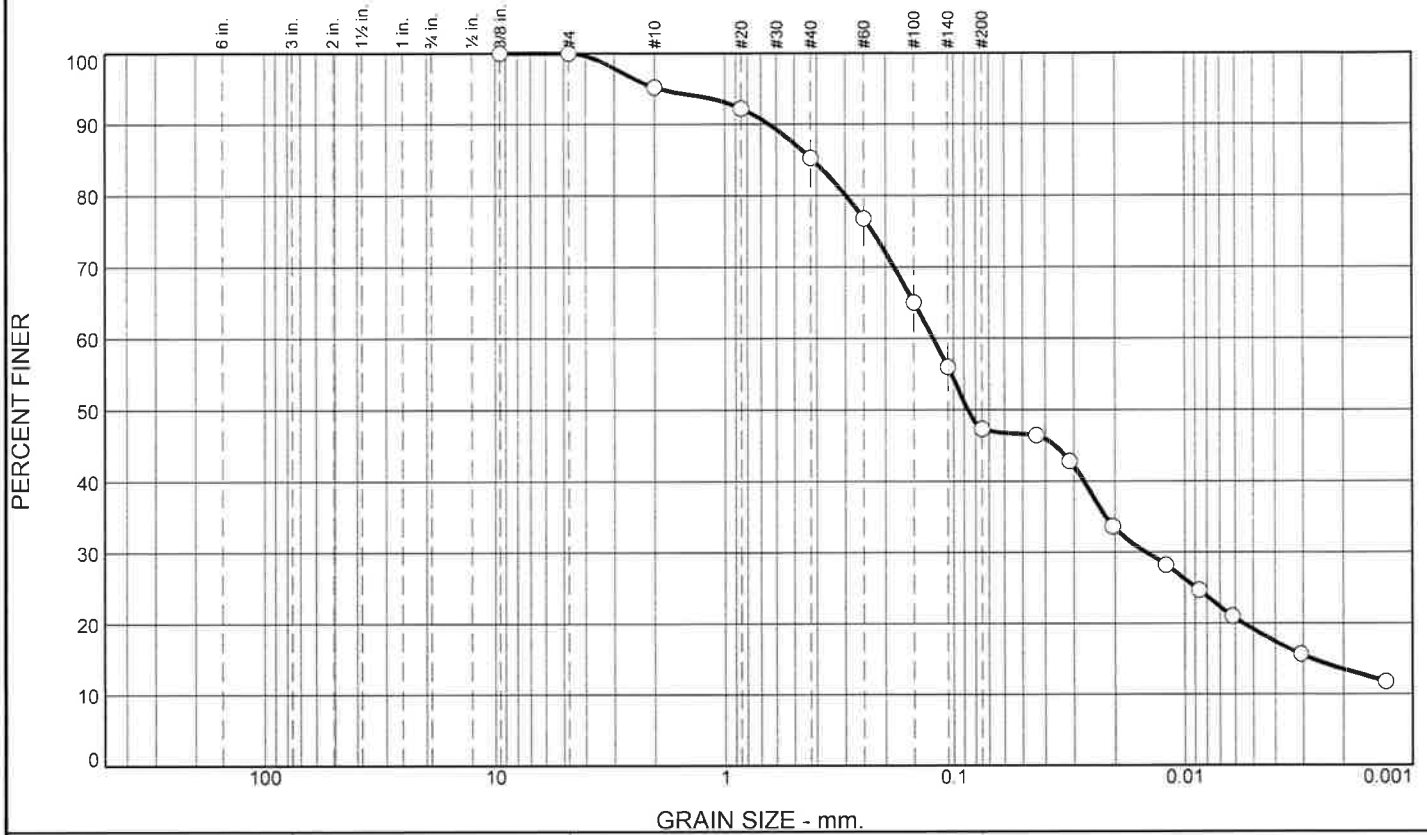
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	4.8	10.0	37.9	28.1	19.2

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	95.2			
#20	92.2			96.9
#40	85.2			89.5
#60	76.7			80.6
#100	65.0			68.3
#140	56.0			58.8
#200	47.3			49.7
0.0437 mm.	46.4			
0.0314 mm.	42.8			
0.0205 mm.	33.7			
0.0121 mm.	28.2			
0.0086 mm.	24.7			
0.0062 mm.	21.0			
0.0031 mm.	15.7			
0.0013 mm.	11.8			

* (no specification provided)

Material Description

Tan-Brown Clayey, Silty Sand

PL= **Atterberg Limits** LL= PI=

Coefficients
D₉₀= 0.6464 D₈₅= 0.4177 D₆₀= 0.1235
D₅₀= 0.0869 D₃₀= 0.0147 D₁₅= 0.0027
D₁₀= C_u= C_c=

USCS= **Classification** AASHTO=

Test Remarks

Location: PZ-211, SS-4 @ 14.1'-15.6'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

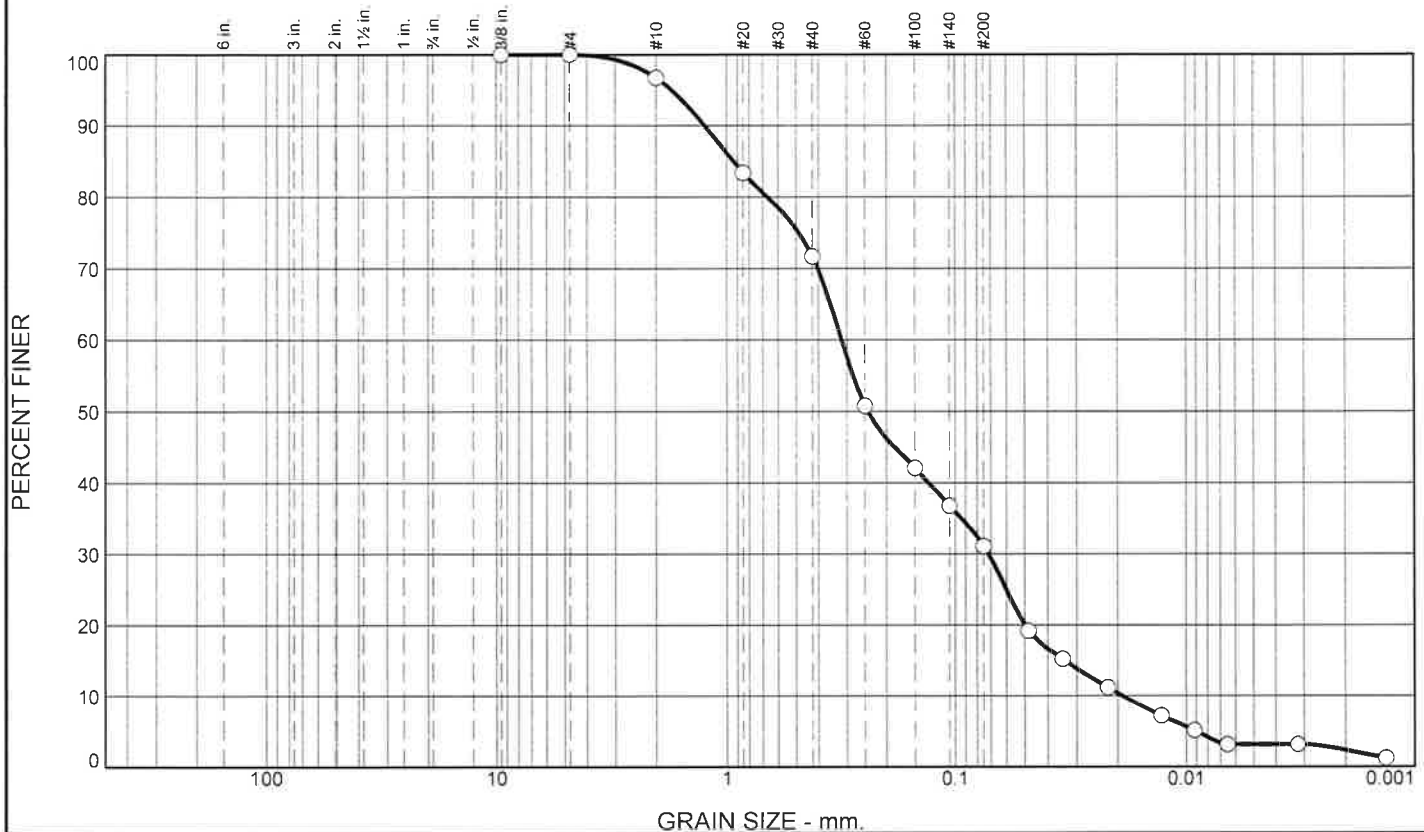
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Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



ASTM D422

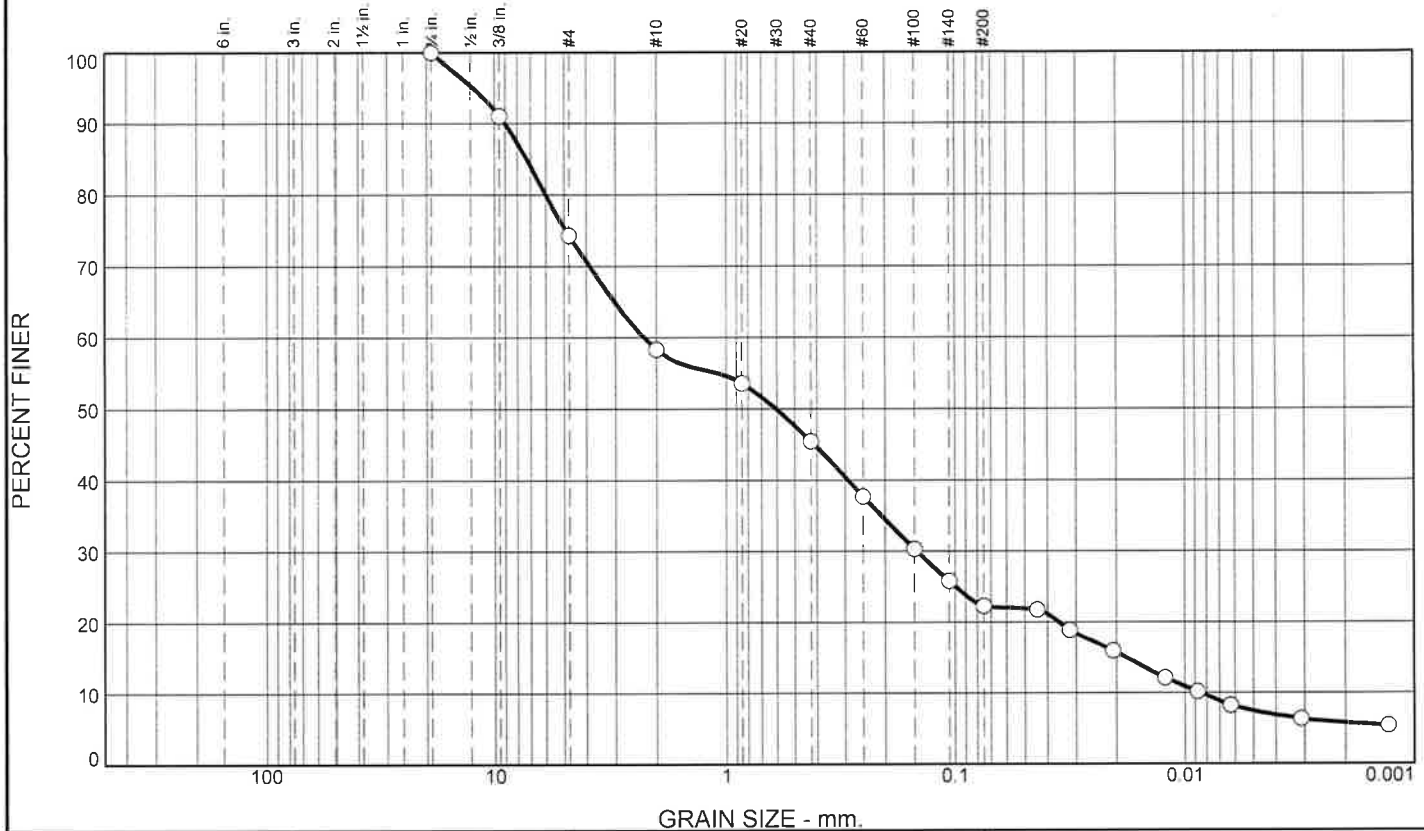
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(no specification provided)

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	25.7	16.0	12.9	23.1	14.8	7.5

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.75	100.0			
0.375	91.0			
#4	74.3			
#10	58.3			91.8
#20	53.6			77.9
#40	45.4			64.6
#60	37.7			52.0
#100	30.3			44.2
#140	25.8			38.2
#200	22.3			
0.0443 mm.	21.7			
0.0320 mm.	18.9			
0.0207 mm.	15.9			
0.0122 mm.	12.1			
0.0088 mm.	10.2			
0.0063 mm.	8.3			
0.0031 mm.	6.4			
0.0013 mm.	5.4			

* (no specification provided)

Material Description
Dark Orange-Brown Clayey, Silty Sand

Atterberg Limits
 PL= LL= PI=
Coefficients
 D₉₀= 9.0267 D₈₅= 7.2922 D₆₀= 2.2634
 D₅₀= 0.6065 D₃₀= 0.1464 D₁₅= 0.0181
 D₁₀= 0.0085 C_u= 266.81 C_c= 1.12

Classification
USCS= AASHTO=

Test Remarks

Location: PZ-212, ST-1 @ 9.2'-11.2'

Sample Date: 08-23-25



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

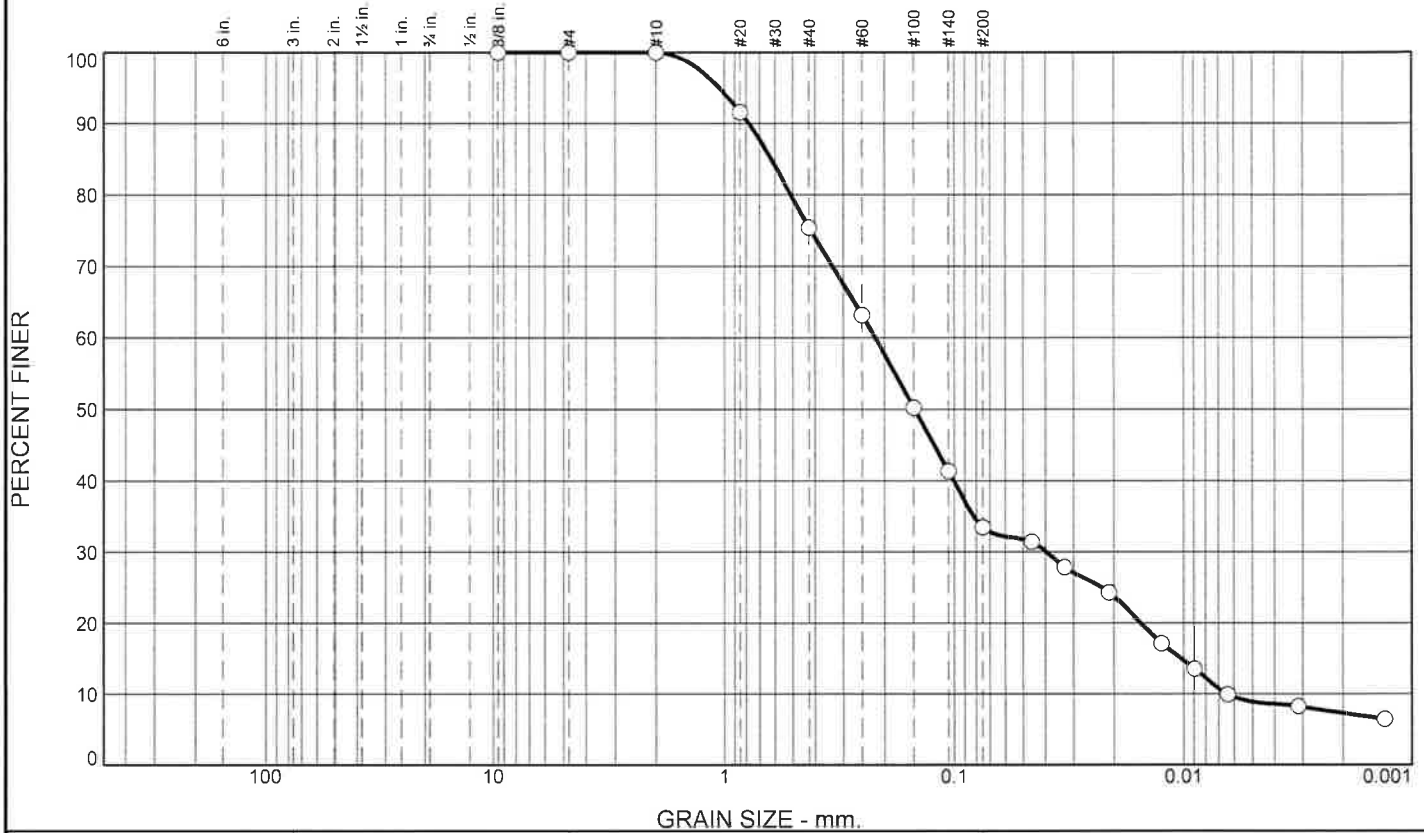
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	24.6	41.9	24.6	8.9

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	91.6			91.6
#40	75.4			75.4
#60	63.1			63.1
#100	50.2			50.2
#140	41.3			41.3
#200	33.5			33.5
0.0459 mm.	31.4			
0.0329 mm.	27.8			
0.0211 mm.	24.3			
0.0125 mm.	17.1			
0.0089 mm.	13.5			
0.0064 mm.	9.9			
0.0031 mm.	8.3			
0.0013 mm.	6.5			

* (no specification provided)

Material Description
Tan-Brown Clayey, Silty Sand

PL= **Atterberg Limits** LL= PI=

Coefficients
 D₉₀= 0.7786 D₈₅= 0.6242 D₆₀= 0.2200
 D₅₀= 0.1487 D₃₀= 0.0397 D₁₅= 0.0103
 D₁₀= 0.0065 C_u= 34.03 C_c= 1.11

USCS= **Classification** AASHTO=

Test Remarks

Location: PZ-212, SS-5 @ 18.9'-20.4'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

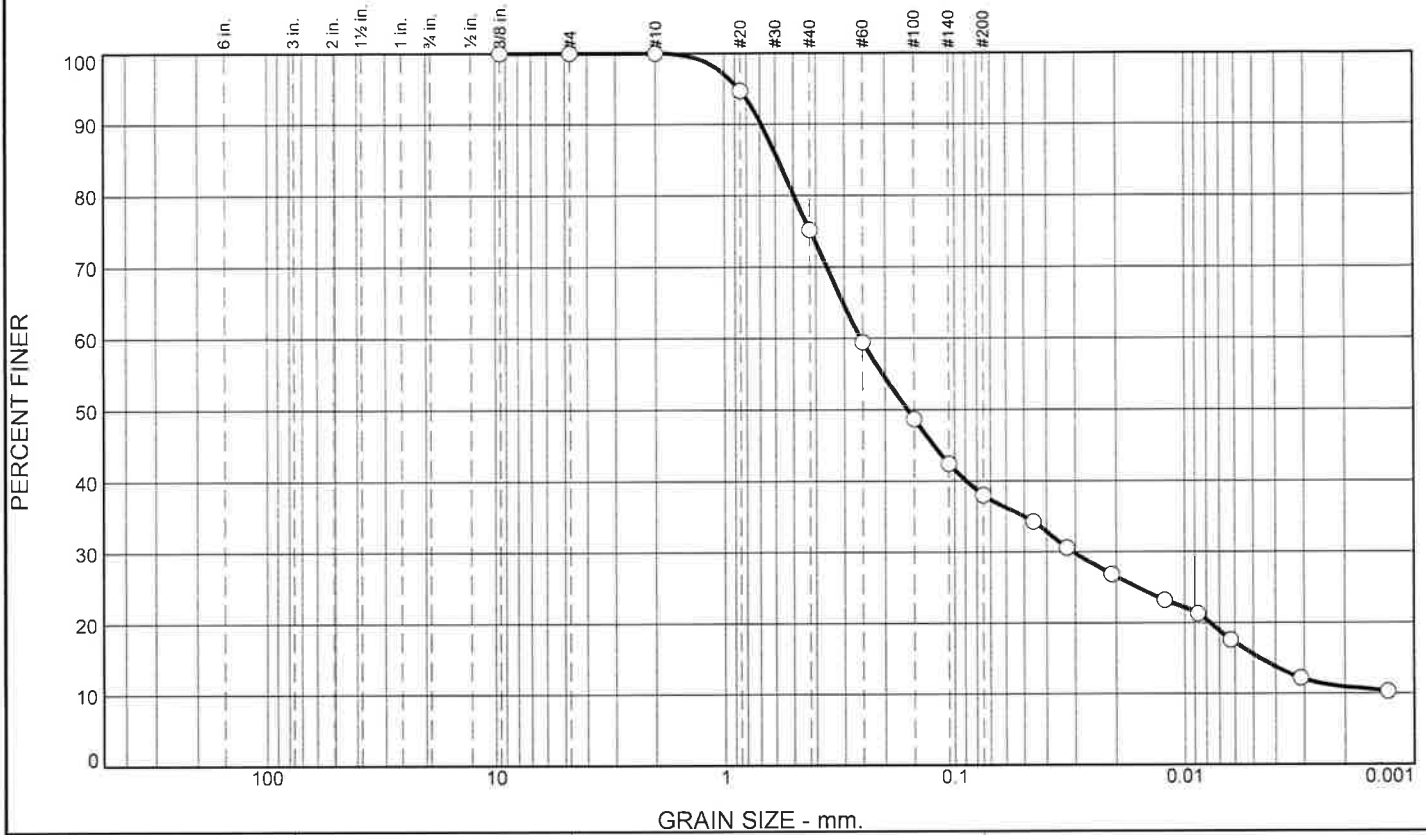
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	24.9	37.1	22.4	15.6

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	94.7			94.7
#40	75.1			75.1
#60	59.4			59.4
#100	48.7			48.7
#140	42.4			42.4
#200	38.0			38.0
0.0456 mm.	34.3			
0.0327 mm.	30.6			
0.0210 mm.	26.9			
0.0122 mm.	23.2			
0.0087 mm.	21.3			
0.0063 mm.	17.6			
0.0031 mm.	12.2			
0.0013 mm.	10.3			

* (no specification provided)

Material Description

Orange-Brown Clayey, Silty Sand

Atterberg Limits
 PL= LL= PI=
Coefficients
 D₉₀= 0.6913 D₈₅= 0.5838 D₆₀= 0.2555
 D₅₀= 0.1603 D₃₀= 0.0307 D₁₅= 0.0047
 D₁₀= C_u= C_c=

Classification
 USCS= AASHTO=

Test Remarks

Location: PZ-212, SS-7 @ 28.9'-30.4'

Sample Date: 08-23-24



Client: HDR Engineering
 Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

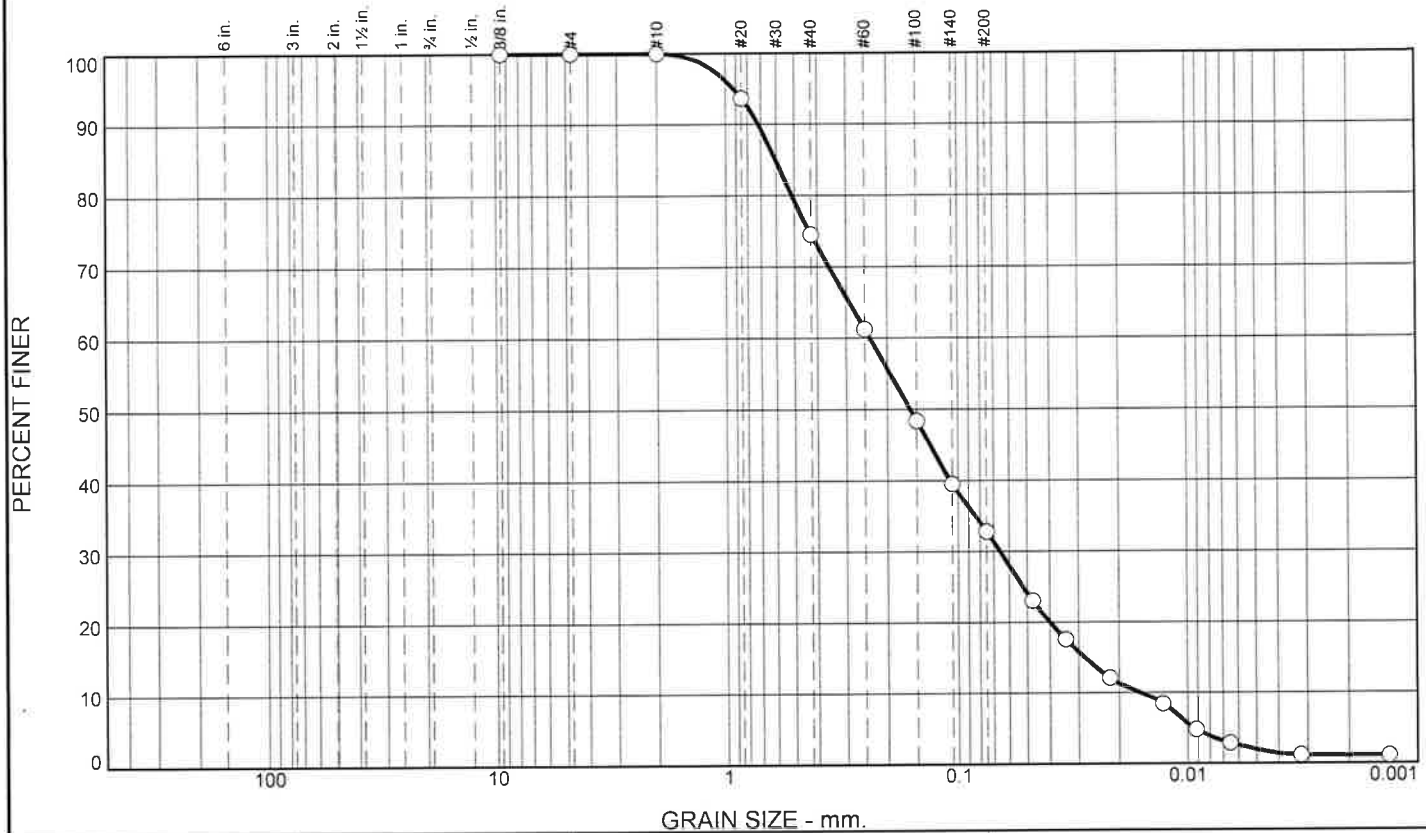
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	26.4	38.4	24.6	10.6

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
.375	100.0			
#4	100.0			
#10	100.0			
#20	90.2			90.2
#40	73.6			73.6
#60	61.9			61.9
#100	49.6			49.6
#140	41.1			41.1
#200	35.2			35.2
0.0460 mm.	34.2			
0.0327 mm.	32.3			
0.0210 mm.	28.4			
0.0123 mm.	22.6			
0.0088 mm.	18.7			
0.0064 mm.	12.8			
0.0031 mm.	9.0			
0.0013 mm.	9.0			

(no specification provided)

Orange-Brown Clayey, Silty Sand

Orange-Brown Clayey, Silty Sand

Atterberg Limits

$$LL =$$

Coefficients

Coefficients

$$D_{8.5} = 0.6682$$
$$D_{30} = 0.0248$$
$$C_u = 50.50$$

Classification

Classification
AASH

ARCH

Test Remarks

Sa

on

Sample Date: 08-23-24



Project: Catawba Unit 4 Landfill Expansion

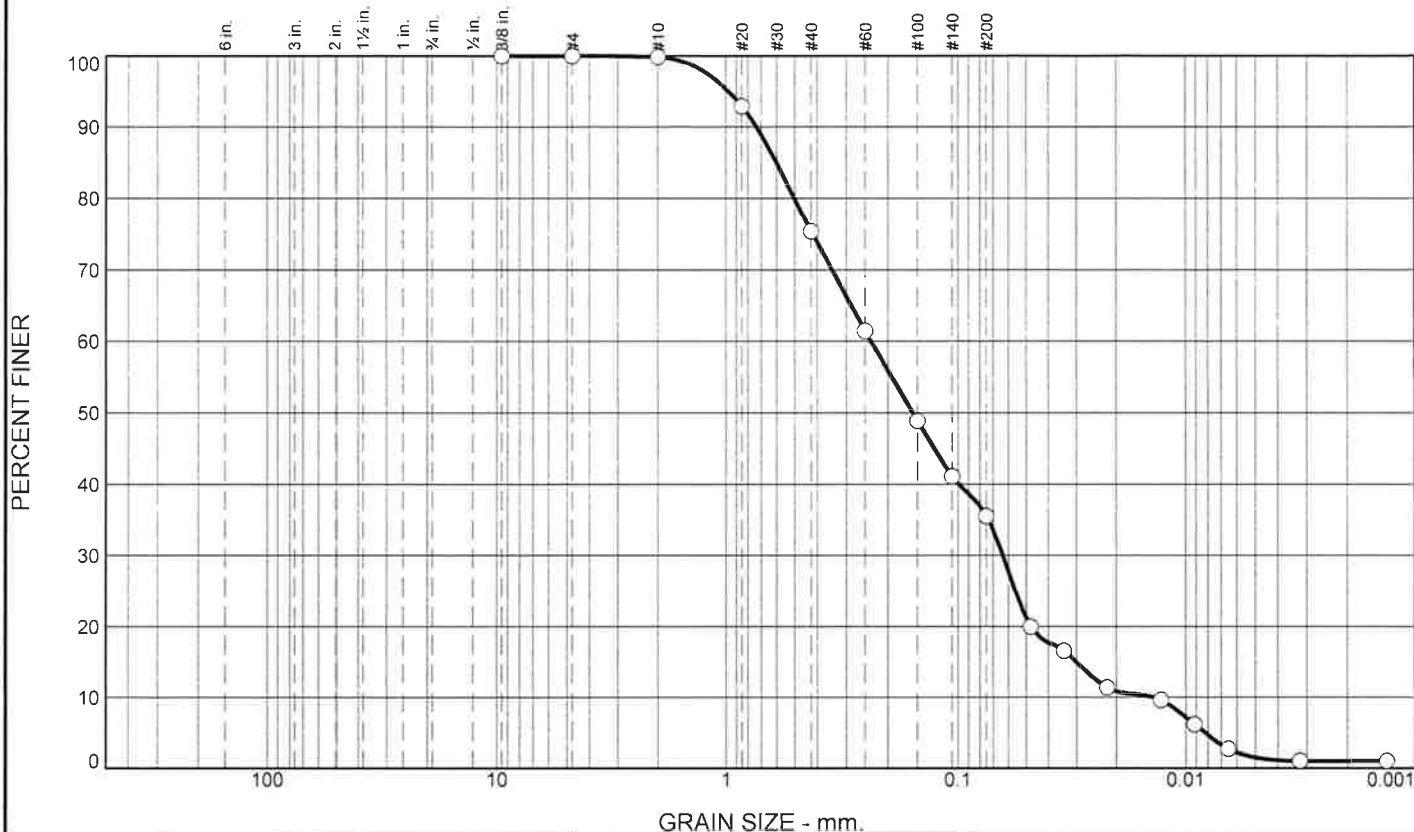
Project No: A24117.01899.000

Figure

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	24.4	39.9	34.0	1.5

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.8			93.0
#20	92.9			75.5
#40	75.4			61.5
#60	61.4			48.9
#100	48.8			41.1
#140	41.0			35.5
#200	35.5			
0.0478 mm.	20.0			
0.0342 mm.	16.5			
0.0220 mm.	11.4			
0.0128 mm.	9.6			
0.0091 mm.	6.2			
0.0065 mm.	2.7			
0.0032 mm.	1.0			
0.0013 mm.	1.0			

* (no specification provided)

Material Description

Brown Slightly Clayey. Silty Sand

PL= Atterberg Limits LL= PI=

Coefficients
D₉₀= 0.7346 D₈₅= 0.6027 D₆₀= 0.2367
D₅₀= 0.1575 D₃₀= 0.0637 D₁₅= 0.0302
D₁₀= 0.0137 C_u= 17.24 C_c= 1.25

USCS= Classification AASHTO=

Test Remarks

Location: PZ-213. SS-9 @ 39.5'-41'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

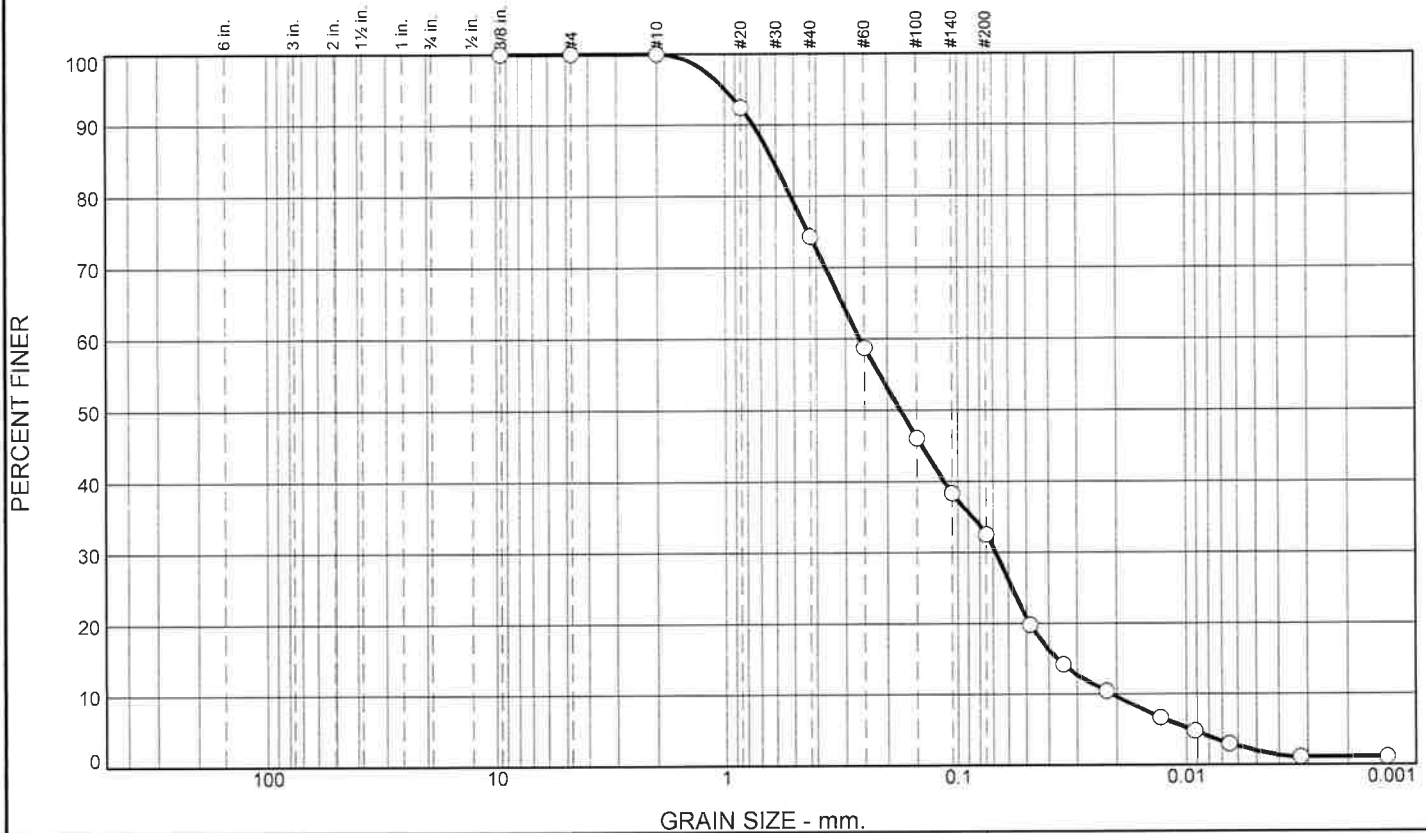
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	25.7	41.8	30.5	2.0

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	92.4			92.4
#40	74.3			74.3
#60	58.7			58.7
#100	46.0			46.0
#140	38.3			38.3
#200	32.5			32.5
0.0481 mm.	19.8			
0.0346 mm.	14.2			
0.0221 mm.	10.5			
0.0129 mm.	6.7			
0.0092 mm.	4.8			
0.0065 mm.	3.0			
0.0032 mm.	1.1			
0.0013 mm.	1.1			

* (no specification provided)

Location: PZ-214, SS-2 @ 4.4'-5.9'

Material Description
Tan-Brown Slightly Clayey. Silty Sand

PL= **Atterberg Limits** LL= PI=

Coefficients
D₉₀= 0.7525 D₈₅= 0.6174 D₆₀= 0.2618
D₅₀= 0.1772 D₃₀= 0.0682 D₁₅= 0.0368
D₁₀= 0.0209 C_u= 12.54 C_c= 0.85

USCS= **Classification** AASHTO=

Test Remarks

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

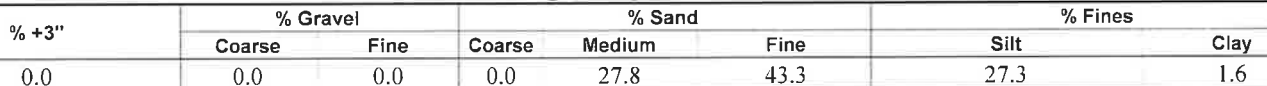
Project No: A24117.01899.000

Figure

Tested By: DG

Checked By: MH

ASTM D422



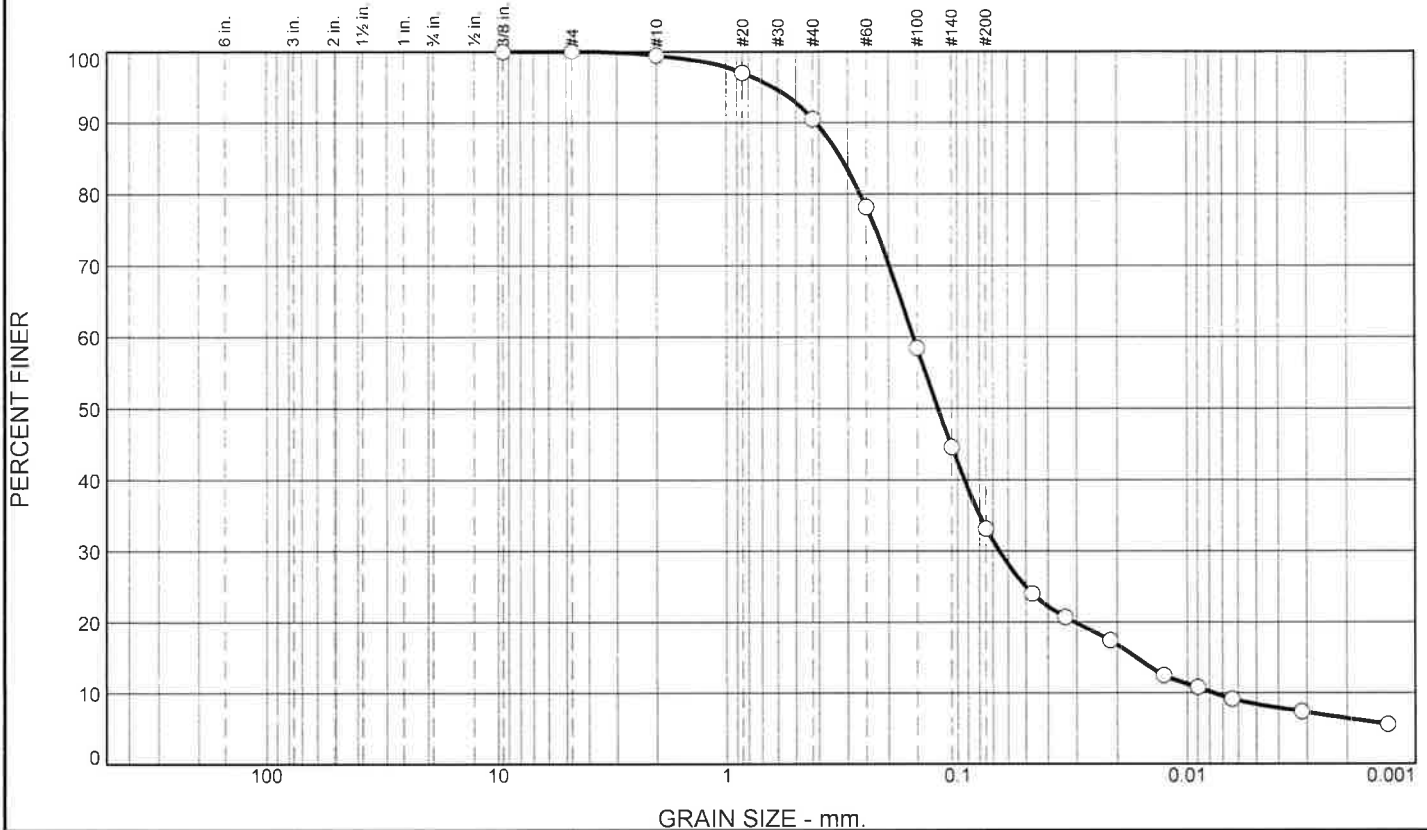
(no specification provided)

Test Remarks

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	9.0	57.4	24.7	8.4

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.5			97.5
#20	97.0			91.0
#40	90.5			78.6
#60	78.2			58.8
#100	58.5			44.8
#140	44.6			33.3
#200	33.1			
0.0468 mm.	24.0			
0.0335 mm.	20.7			
0.0215 mm.	17.4			
0.0126 mm.	12.5			
0.0090 mm.	10.8			
0.0064 mm.	9.2			
0.0032 mm.	7.4			
0.0013 mm.	5.6			

(no specification provided)

Material Description

Tan-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4116 D₈₅= 0.3216 D₆₀= 0.1558
D₅₀= 0.1218 D₃₀= 0.0658 D₁₅= 0.0167
D₁₀= 0.0077 C_u= 20.36 C_c= 3.63

Classification

USCS= AASHTO=

Test Remarks

Location: PZ-215, SS-3 @ 9.5'-11'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

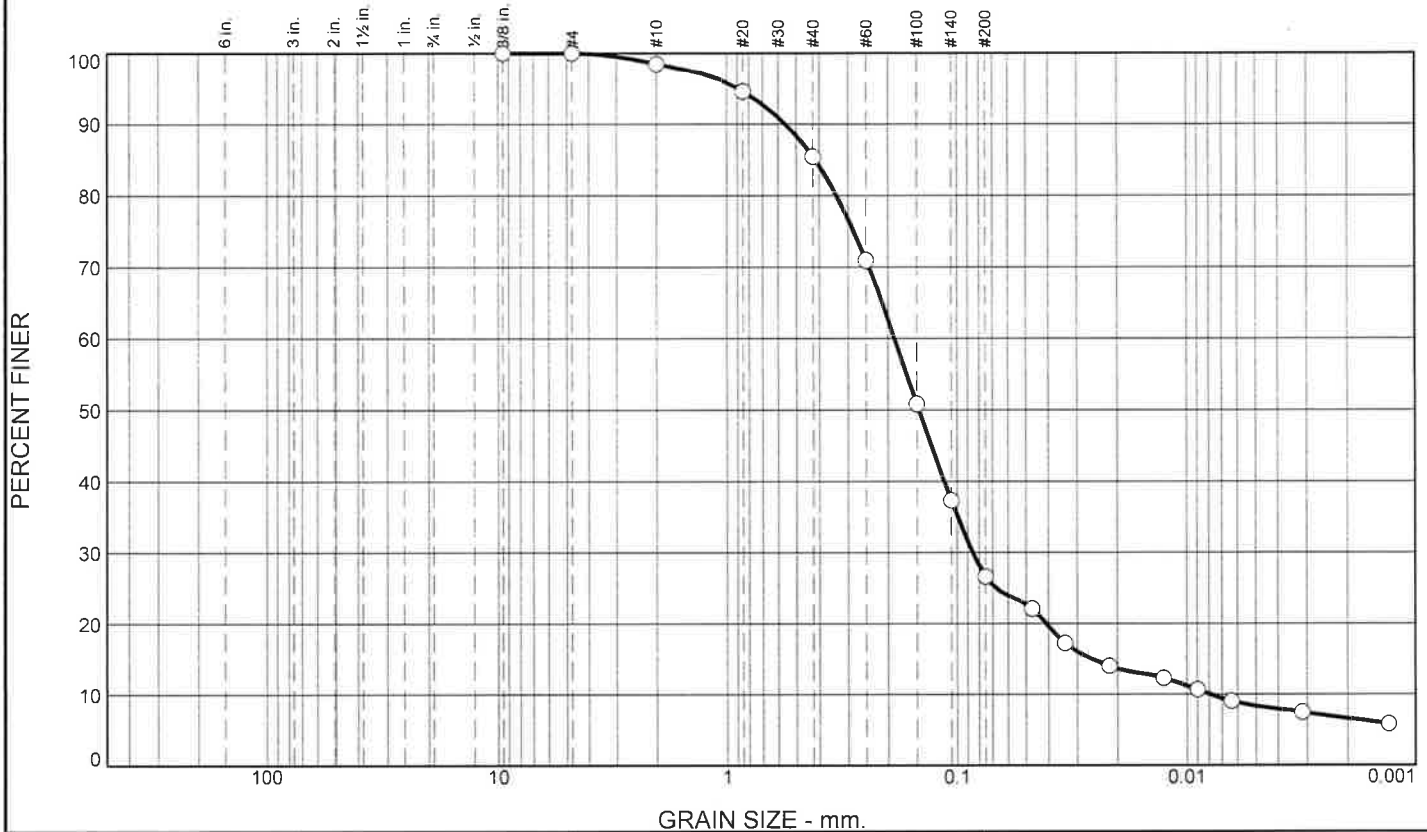
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.5	13.1	58.8	18.2	8.4

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	98.5			96.1
#20	94.6			86.7
#40	85.4			72.0
#60	70.9			51.6
#100	50.8			37.9
#140	37.3			27.0
#200	26.6			
0.0470 mm.	22.1			
0.0339 mm.	17.2			
0.0217 mm.	14.0			
0.0126 mm.	12.3			
0.0090 mm.	10.7			
0.0064 mm.	9.1			
0.0031 mm.	7.5			
0.0013 mm.	5.8			

* (no specification provided)

Material Description
Dark Grey-Brown Micaceous Clayey, Silty Sand

Atterberg Limits
 PL= LL= PI=
Coefficients
 D₉₀= 0.5590 D₈₅= 0.4178 D₆₀= 0.1879
 D₅₀= 0.1469 D₃₀= 0.0855 D₁₅= 0.0260
 D₁₀= 0.0078 C_u= 23.95 C_c= 4.96

Classification
USCS= AASHTO=

Test Remarks

Location: PZ-215, ST-1 @ 9.4'-11.4'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

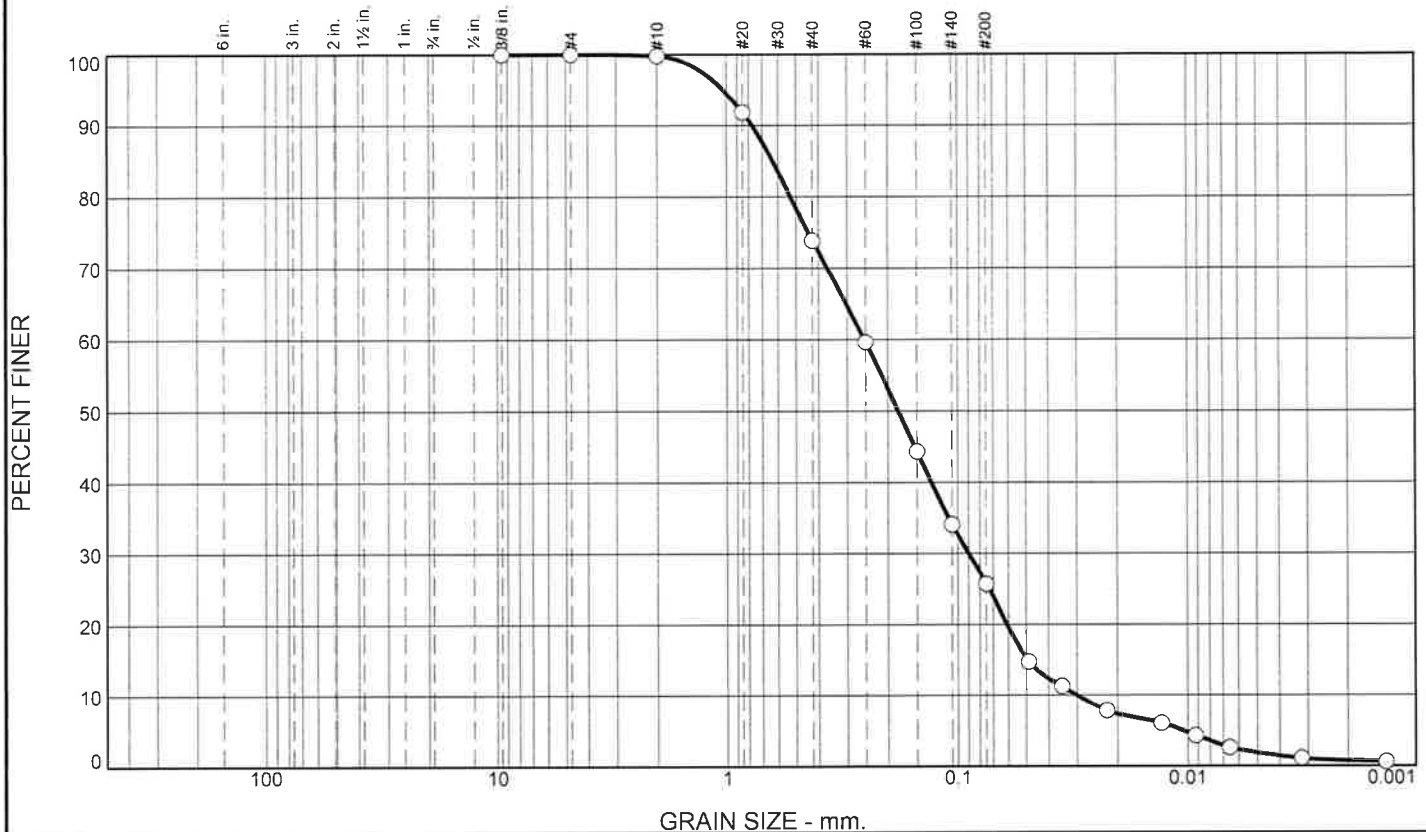
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	26.0	48.1	23.9	1.8

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.8			
#20	91.9			92.0
#40	73.8			73.9
#60	59.6			59.7
#100	44.3			44.4
#140	34.1			34.1
#200	25.7			25.8
0.0488 mm.	14.7			
0.0349 mm.	11.3			
0.0223 mm.	7.9			
0.0130 mm.	6.1			
0.0092 mm.	4.3			
0.0066 mm.	2.6			
0.0032 mm.	1.1			
0.0014 mm.	0.6			

* (no specification provided)

Location: PZ-215, SS-5 @ 19.5'-21'

Material Description

Orange-Brown Slightly Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7739 D₈₅= 0.6327 D₆₀= 0.2536
D₅₀= 0.1813 D₃₀= 0.0899 D₁₅= 0.0496
D₁₀= 0.0302 C_u= 8.41 C_c= 1.06

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

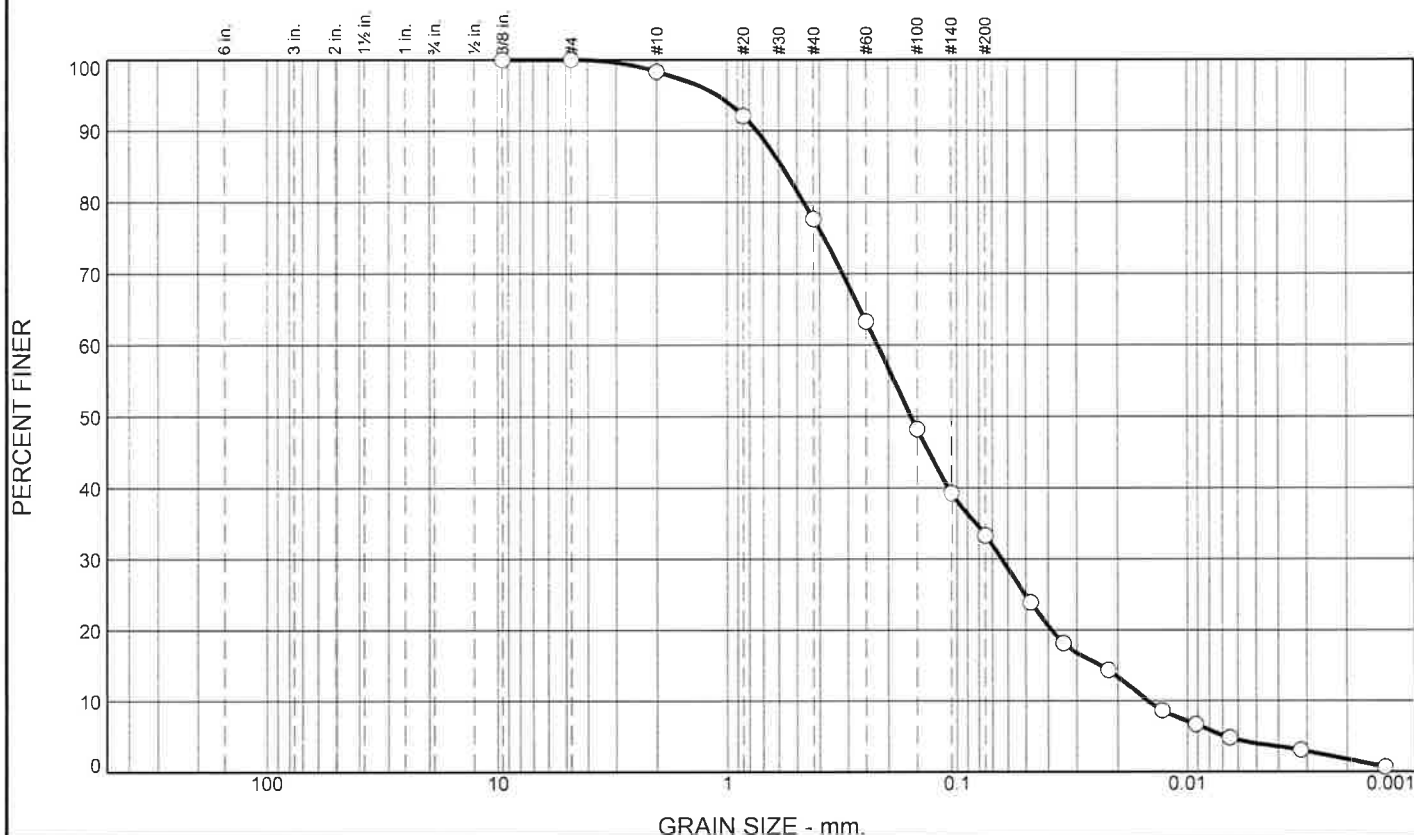
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.7	20.7	44.3	29.3	4.0

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	98.3			93.7
#20	92.1			78.9
#40	77.6			64.4
#60	63.3			49.0
#100	48.2			39.9
#140	39.3			33.9
#200	33.3			
0.0477 mm.	23.9			
0.0343 mm.	18.1			
0.0220 mm.	14.3			
0.0129 mm.	8.7			
0.0092 mm.	6.7			
0.0065 mm.	4.8			
0.0032 mm.	3.1			
0.0014 mm.	0.7			

(no specification provided)

Material Description
Light Orange-Brown Clayey, Silty Sand

Atterberg Limits
PL= LL= PI=

Coefficients
D₉₀= 0.7452 D₈₅= 0.5823 D₆₀= 0.2233
D₅₀= 0.1598 D₃₀= 0.0638 D₁₅= 0.0237
D₁₀= 0.0148 C_u= 15.06 C_c= 1.23

Classification
USCS= AASHTO=

Test Remarks

Location: PZ-216. SS-3 @ 9.4'-10.9'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

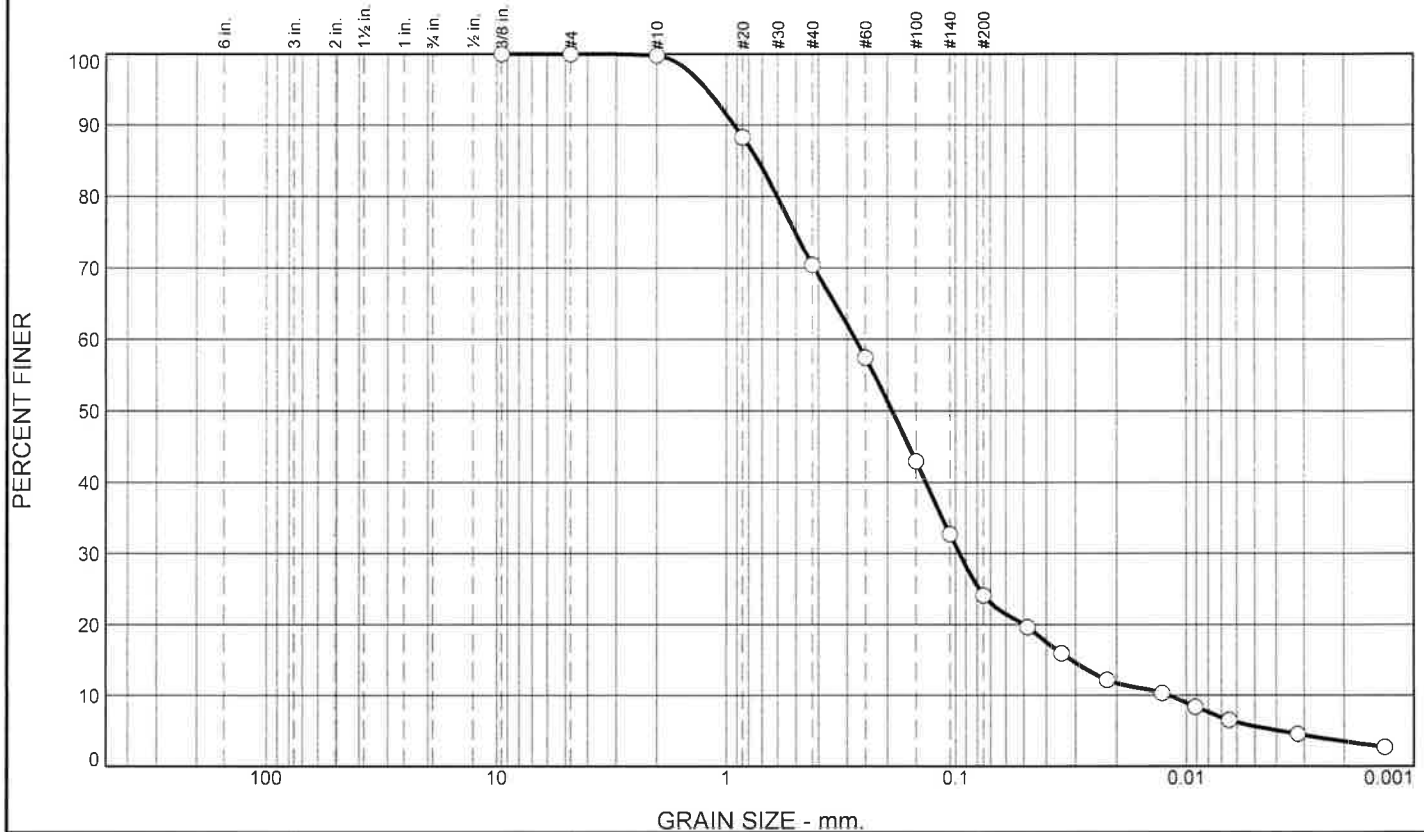
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	29.4	46.3	18.4	5.7

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
.375	100.0			
#4	100.0			
#10	99.8			
#20	88.3			88.5
#40	70.4			70.5
#60	57.5			57.6
#100	42.9			43.0
#140	32.7			32.8
#200	24.1			24.2
0.0481 mm.	19.6			
0.0345 mm.	15.9			
0.0220 mm.	12.2			
0.0128 mm.	10.3			
0.0091 mm.	8.4			
0.0065 mm.	6.5			
0.0032 mm.	4.6			
0.0013 mm.	2.7			

(no specification provided)

Material Description

Light-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.9263 D₈₅= 0.7320 D₆₀= 0.2761
D₅₀= 0.1914 D₃₀= 0.0960 D₁₅= 0.0313
D₁₀= 0.0120 C_u= 23.10 C_c= 2.79

Classification

USCS= AASHTO=

Test Remarks

Location: PZ-216. SS-5 @ 19.4'-20.9'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

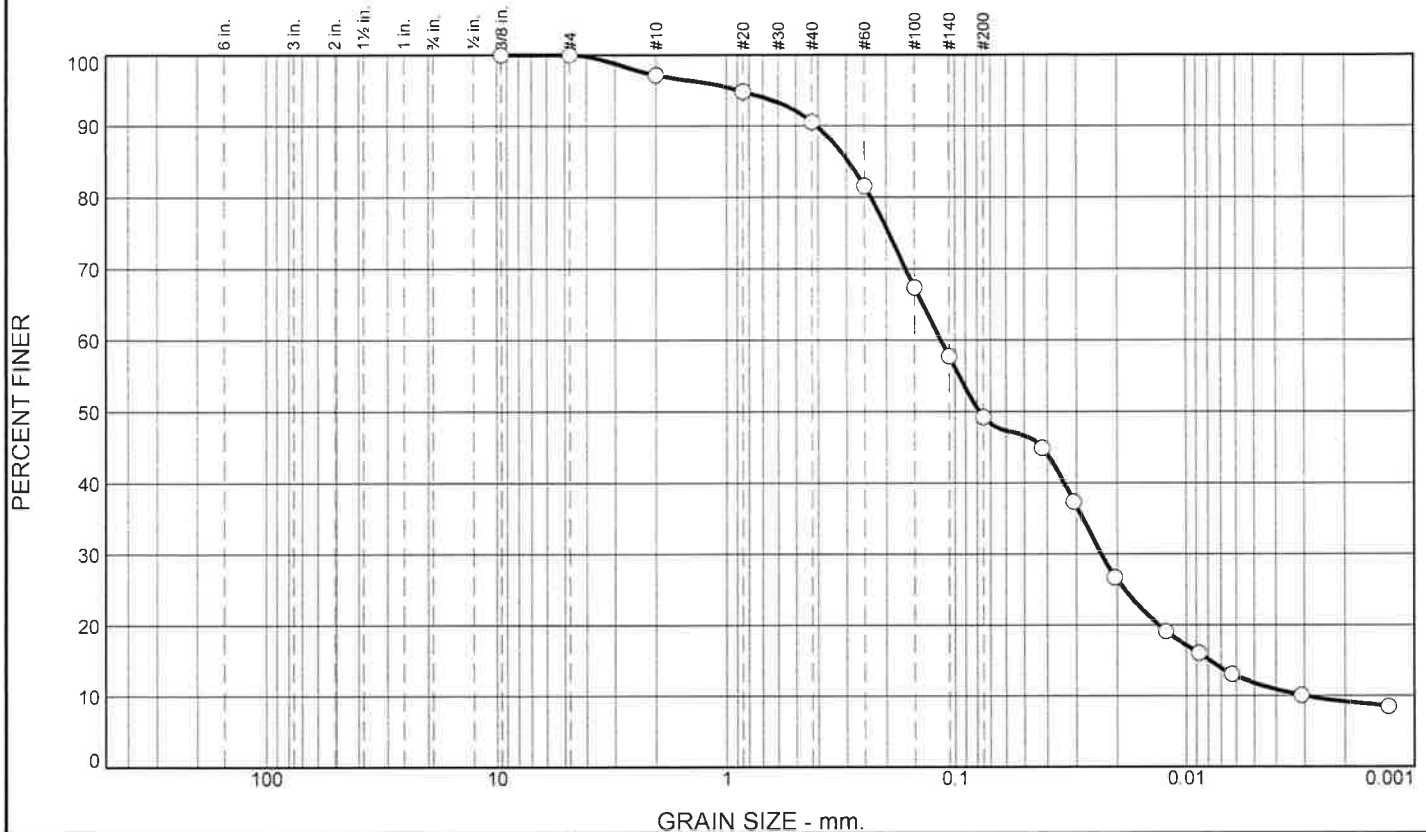
Figure

Tested By: FG / DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.9	6.5	41.4	37.4	11.8

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	97.1			97.7
#20	94.8			93.2
#40	90.6			83.9
#60	81.5			69.3
#100	67.3			59.4
#140	57.7			50.7
#200	49.2			
0.0420 mm.	44.9			
0.0309 mm.	37.3			
0.0205 mm.	26.7			
0.0122 mm.	19.1			
0.0088 mm.	16.1			
0.0063 mm.	13.0			
0.0031 mm.	10.1			
0.0013 mm.	8.5			

(no specification provided)

Location: PZ-216, ST-1 @ 26.1'-28.1'

Material Description

Light Orange-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4056 D₈₅= 0.2936 D₆₀= 0.1155
D₅₀= 0.0783 D₃₀= 0.0235 D₁₅= 0.0078
D₁₀= 0.0030 C_u= 38.92 C_c= 1.62

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

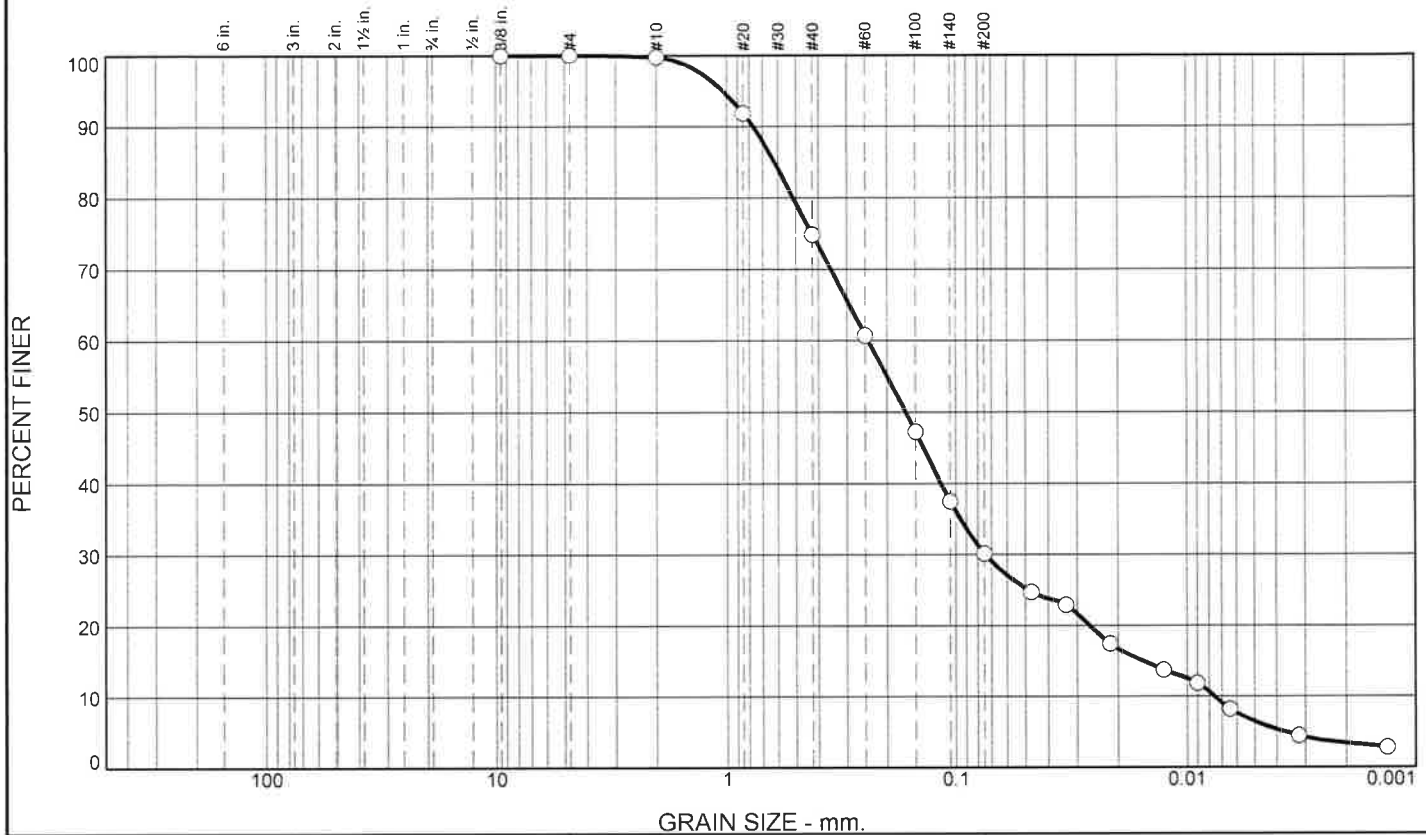
Tested By: DG

Checked By: MH

Sample Date: 08-23-24

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	25.0	44.7	23.6	6.5

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.8			92.1
#20	91.9			74.9
#40	74.8			60.9
#60	60.7			47.3
#100	47.2			37.5
#140	37.4			30.2
#200	30.1			
0.0473 mm.	24.7			
0.0336 mm.	22.9			
0.0217 mm.	17.4			
0.0127 mm.	13.7			
0.0090 mm.	11.9			
0.0065 mm.	8.2			
0.0032 mm.	4.5			
0.0013 mm.	2.8			

* (no specification provided)

Location: PZ-216. SS-8 @ 34.4'-35.9'

Material Description

Grey-Brown Clayey. Silty Sand

PL= Atterberg Limits LL= PI=

Coefficients
 D₉₀= 0.7696 D₈₅= 0.6228 D₆₀= 0.2434
 D₅₀= 0.1663 D₃₀= 0.0744 D₁₅= 0.0157
 D₁₀= 0.0076 C_u= 32.03 C_c= 2.99

USCS= Classification AASHTO=

Test Remarks



Client: HDR Engineering
 Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

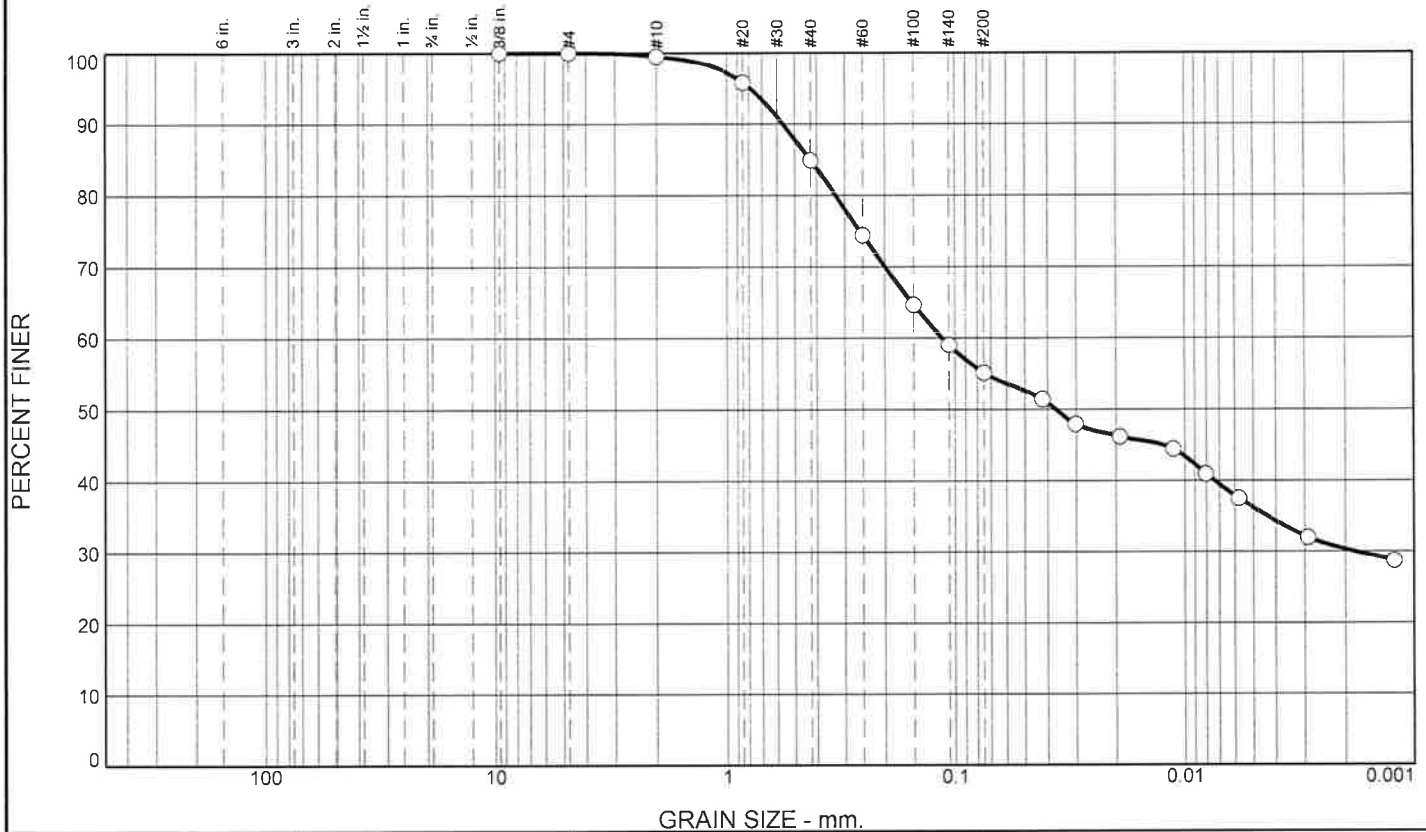
Tested By: DG

Checked By: MH

Sample Date: 08-23-24

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	14.7	29.7	18.9	36.2

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.5			96.3
#20	95.8			85.3
#40	84.8			74.7
#60	74.3			64.9
#100	64.6			59.3
#140	59.0			55.4
#200	55.1			
0.0421 mm.	51.4			
0.0302 mm.	47.9			
0.0193 mm.	46.2			
0.0112 mm.	44.4			
0.0080 mm.	40.9			
0.0058 mm.	37.5			
0.0029 mm.	32.0			
0.0012 mm.	28.7			

(no specification provided)

Material Description

Orange-Brown Silty, Clayey Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5666 D₈₅= 0.4287 D₆₀= 0.1137
D₅₀= 0.0369 D₃₀= 0.0018 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= AASHTO=

Test Remarks

Location: PZ-217. SS-2 @ 4'-5.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

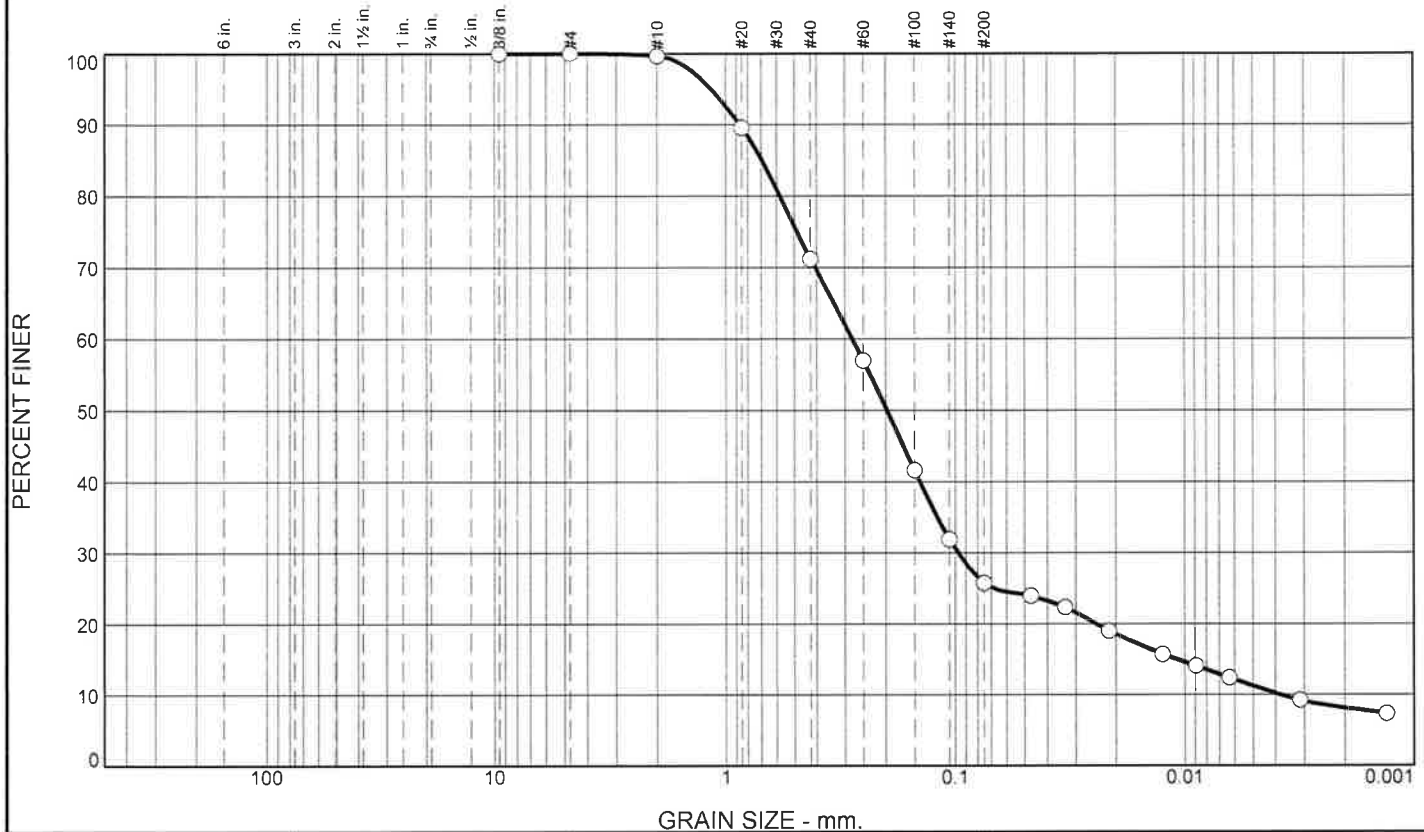
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	28.6	45.3	14.5	11.3

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.7			
#20	89.6			89.9
#40	71.1			71.4
#60	56.9			57.1
#100	41.6			41.7
#140	31.9			32.0
#200	25.8			25.9
0.0471 mm.	24.0			
0.0335 mm.	22.3			
0.0215 mm.	19.0			
0.0125 mm.	15.7			
0.0089 mm.	14.1			
0.0063 mm.	12.4			
0.0031 mm.	9.2			
0.0013 mm.	7.4			

(no specification provided)

Location: PZ-217. SS-5 @ 19'-20.5'

Material Description

Orange-Brown Clayey. Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.8686 D₈₅= 0.6954 D₆₀= 0.2790
D₅₀= 0.1981 D₃₀= 0.0971 D₁₅= 0.0109
D₁₀= 0.0038 C_u= 73.15 C_c= 8.86

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

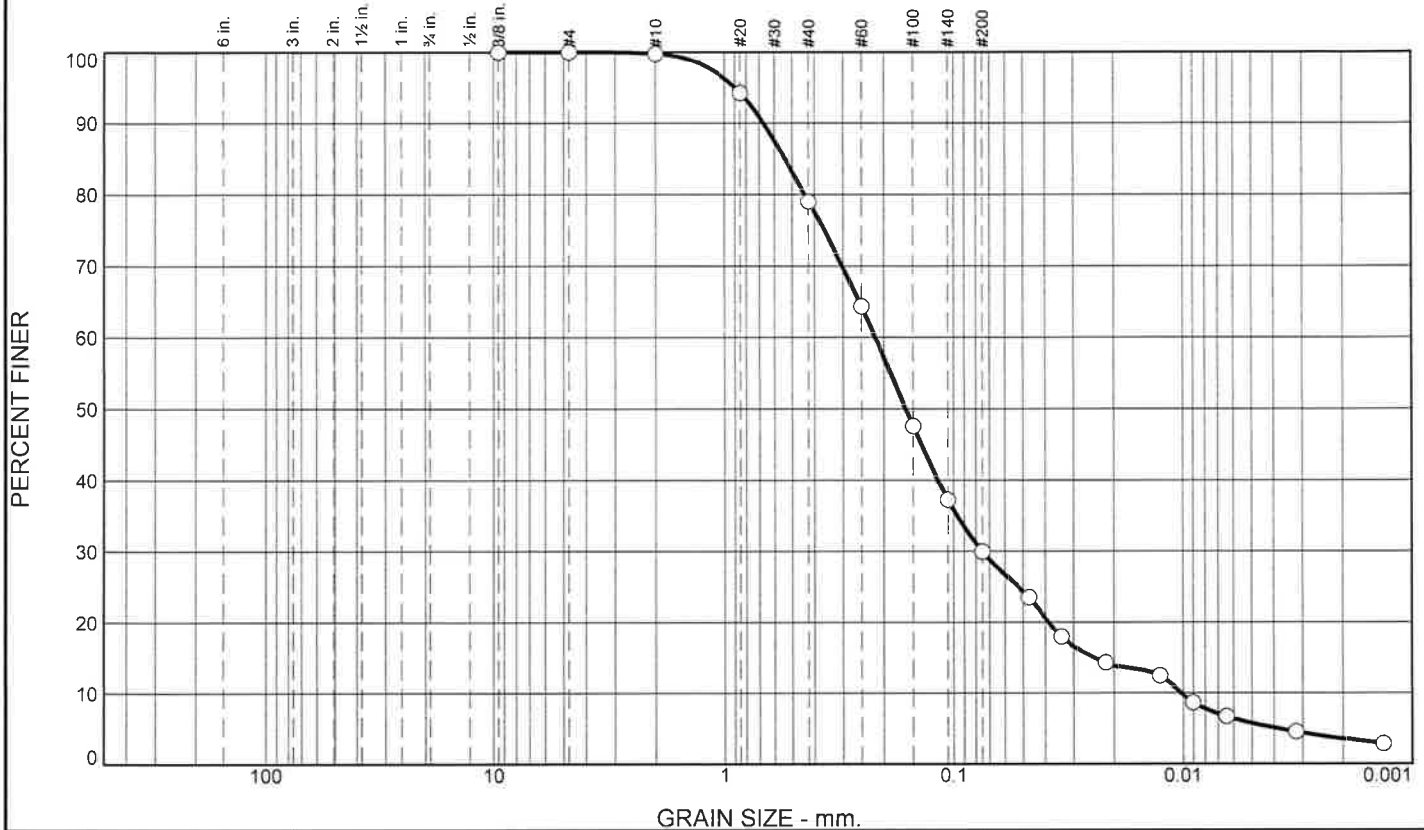
Tested By: DG

Checked By: MH

Sample Date: 08-23-24

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	20.8	49.1	24.1	5.8

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.8			94.5
#20	94.3			79.2
#40	79.0			64.4
#60	64.2			47.6
#100	47.5			37.2
#140	37.2			30.0
#200	29.9			
0.0472 mm.	23.5			
0.0340 mm.	17.9			
0.0218 mm.	14.2			
0.0126 mm.	12.4			
0.0090 mm.	8.7			
0.0065 mm.	6.7			
0.0032 mm.	4.5			
0.0013 mm.	2.8			

* (no specification provided)

Material Description

Orange-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6709 D₈₅= 0.5405 D₆₀= 0.2186
D₅₀= 0.1620 D₃₀= 0.0753 D₁₅= 0.0246
D₁₀= 0.0102 C_u= 21.38 C_c= 2.53

Classification

USCS= AASHTO=

Test Remarks

Location: PZ-217, SS-6 @ 24'-25.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

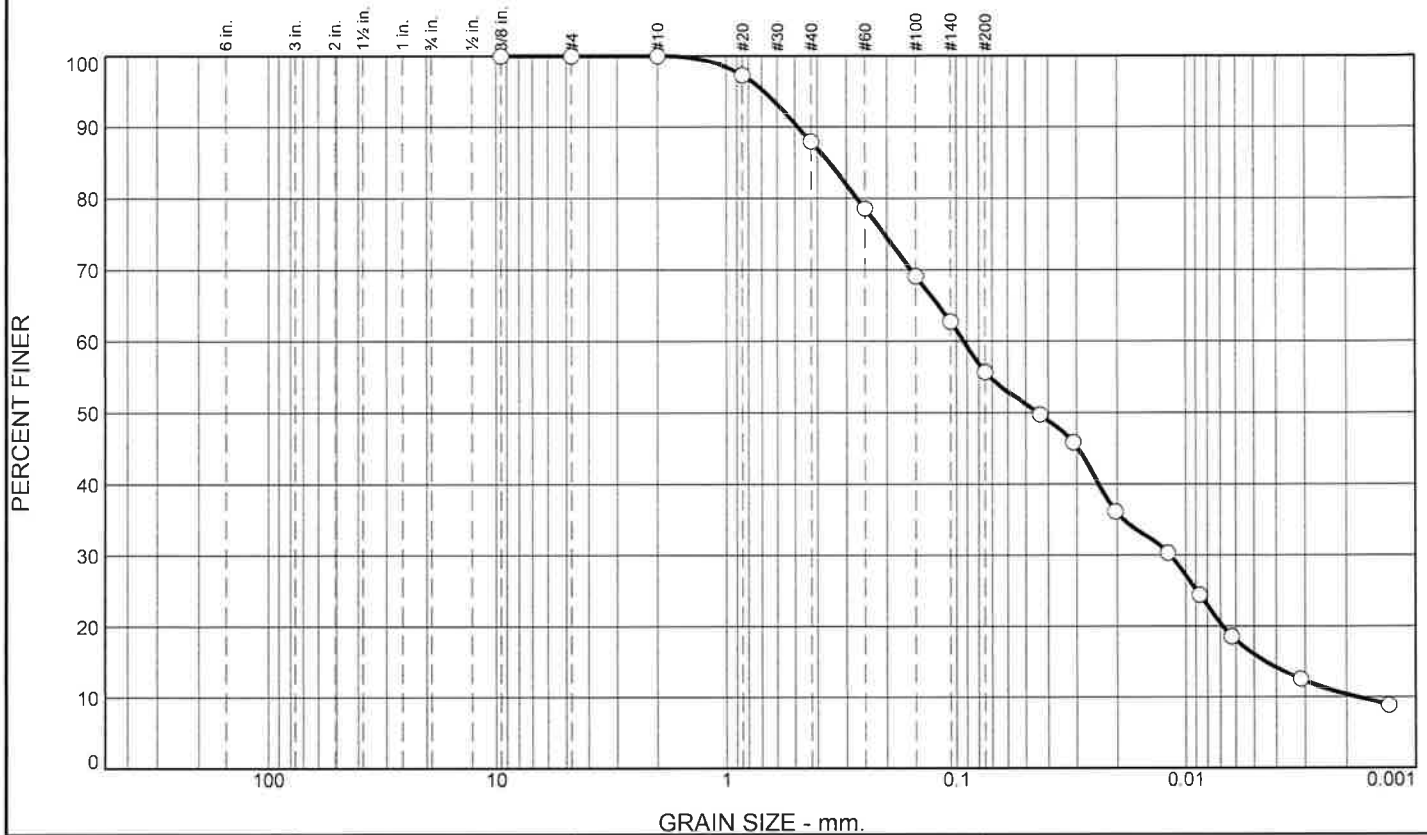
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	12.1	32.2	39.7	16.0

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	97.3			97.3
#40	87.9			87.9
#60	78.5			78.5
#100	69.1			69.1
#140	62.7			62.7
#200	55.7			55.7
0.0434 mm.	49.7			
0.0311 mm.	45.9			
0.0204 mm.	36.2			
0.0120 mm.	30.3			
0.0087 mm.	24.4			
0.0063 mm.	18.6			
0.0031 mm.	12.5			
0.0013 mm.	8.9			

* (no specification provided)

Location: PZ-218, SS-2 @ 4'-5.5'

Material Description
Orange-Brown Clayey, Silty Sand

Atterberg Limits
PL= LL= PI=

Coefficients
D₉₀= 0.4863 D₈₅= 0.3575 D₆₀= 0.0932
D₅₀= 0.0445 D₃₀= 0.0117 D₁₅= 0.0045
D₁₀= 0.0018 C_u= 52.19 C_c= 0.83

Classification
USCS= AASHTO=

Test Remarks

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

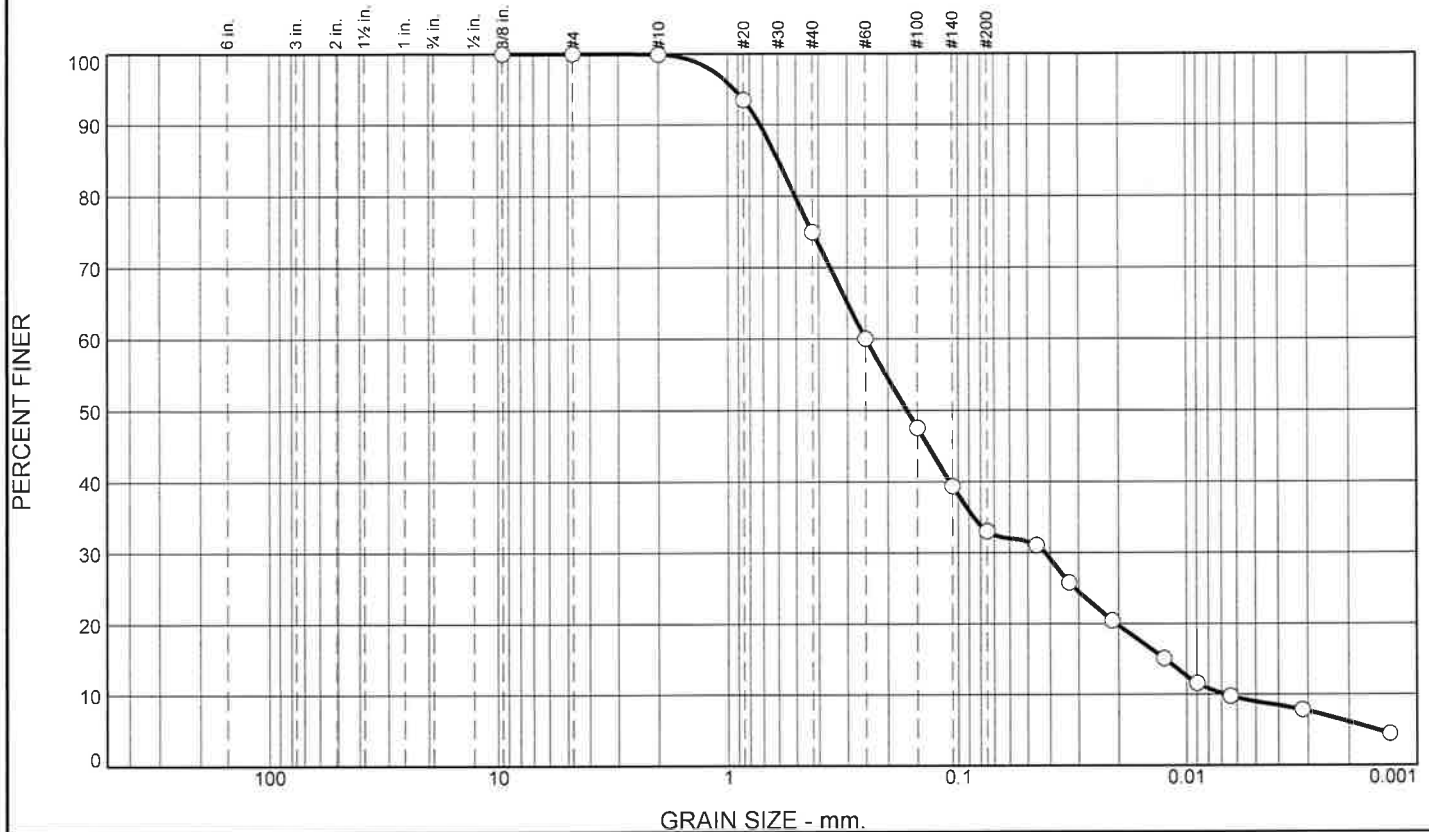
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	25.0	41.9	24.0	9.0

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.9			
#20	93.5			93.6
#40	74.9			75.0
#60	60.0			60.0
#100	47.5			47.5
#140	39.4			39.4
#200	33.0			33.0
0.0459 mm.	31.0			
0.0331 mm.	25.8			
0.0213 mm.	20.4			
0.0126 mm.	15.1			
0.0090 mm.	11.6			
0.0064 mm.	9.8			
0.0032 mm.	7.8			
0.0013 mm.	4.5			

* (no specification provided)

Material Description

Dark-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7207 D₈₅= 0.5992 D₆₀= 0.2500
D₅₀= 0.1666 D₃₀= 0.0421 D₁₅= 0.0124
D₁₀= 0.0067 C_u= 37.21 C_c= 1.06

Classification

USCS= AASHTO=

Test Remarks

Location: PZ-218, SS-7 @ 29'-30.5

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

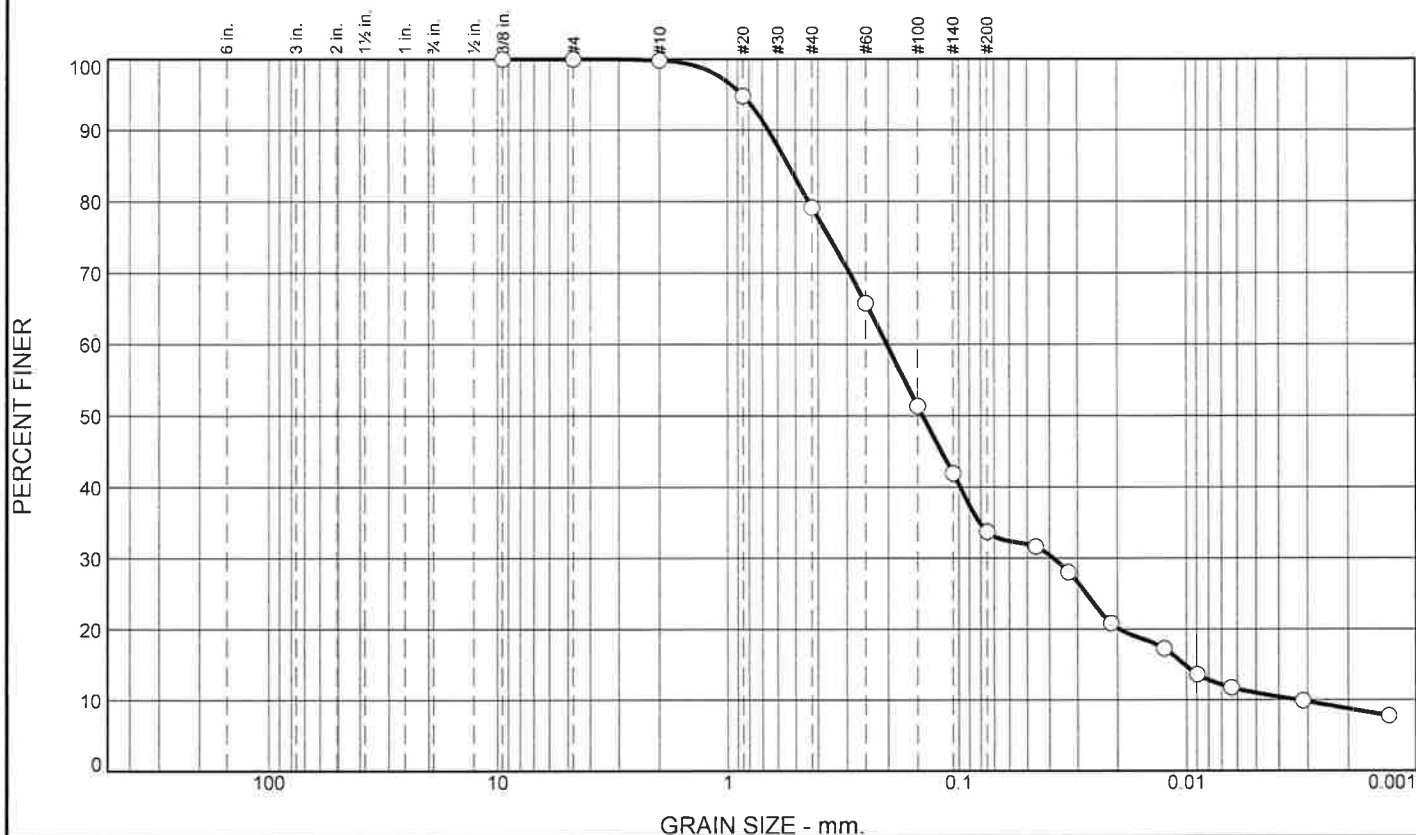
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	20.7	45.4	22.7	11.0

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.8			95.0
#20	94.8			79.3
#40	79.1			65.9
#60	65.8			51.4
#100	51.3			42.0
#140	41.9			33.8
#200	33.7			
0.0459 mm.	31.6			
0.0329 mm.	28.0			
0.0213 mm.	20.8			
0.0125 mm.	17.3			
0.0089 mm.	13.6			
0.0064 mm.	11.8			
0.0031 mm.	9.9			
0.0013 mm.	7.8			

* (no specification provided)

Material Description

Tan-Brown Clayey, Silty Sand

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 0.6593

D₈₅= 0.5372

D₆₀= 0.2033

D₅₀= 0.1430

D₃₀= 0.0384

D₁₅= 0.0102

D₁₀= 0.0033

C_u= 62.44

C_c= 2.23

Classification

USCS=

AASHTO=

Test Remarks

Location: PZ-219, SS-2 @ 4'-5.5'

Sample Date: 08-23-24



Client: HDR Engineering

Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

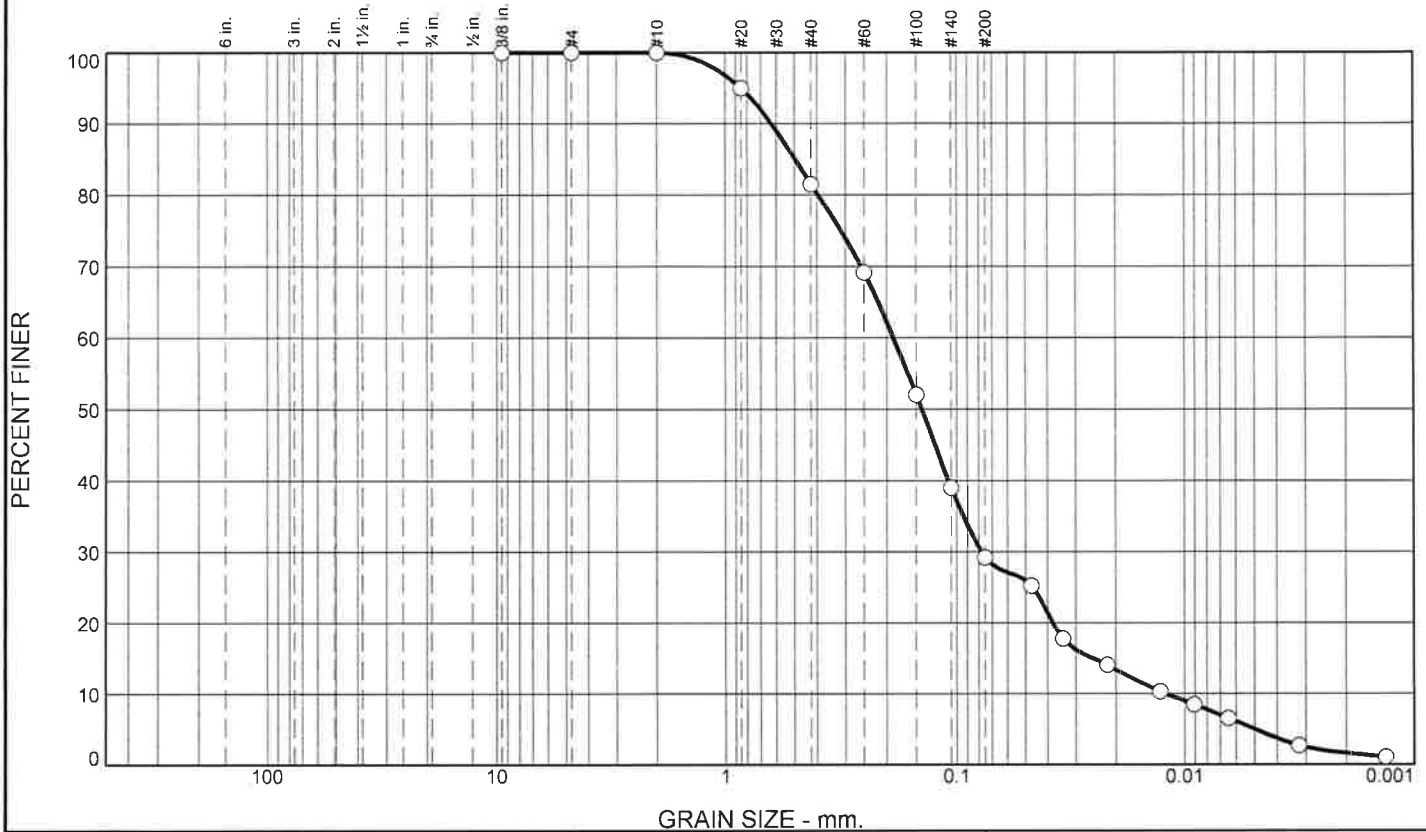
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	18.5	52.3	24.2	5.0

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	95.0			95.0
#40	81.5			81.5
#60	69.1			69.1
#100	52.0			52.0
#140	39.0			39.0
#200	29.2			29.2
0.0475 mm.	25.2			
0.0343 mm.	17.8			
0.0219 mm.	14.1			
0.0128 mm.	10.4			
0.0091 mm.	8.5			
0.0065 mm.	6.5			
0.0032 mm.	2.7			
0.0013 mm.	1.1			

* (no specification provided)

Material Description

Light-Brown Clayey, Silty Sand

PL= Atterberg Limits LL= PI=

Coefficients
D₉₀= 0.6318 D₈₅= 0.4992 D₆₀= 0.1880
D₅₀= 0.1420 D₃₀= 0.0780 D₁₅= 0.0254
D₁₀= 0.0121 C_u= 15.59 C_c= 2.68

USCS= Classification AASHTO=

Test Remarks

Location: PZ-219, SS-3 @ 9'-10.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

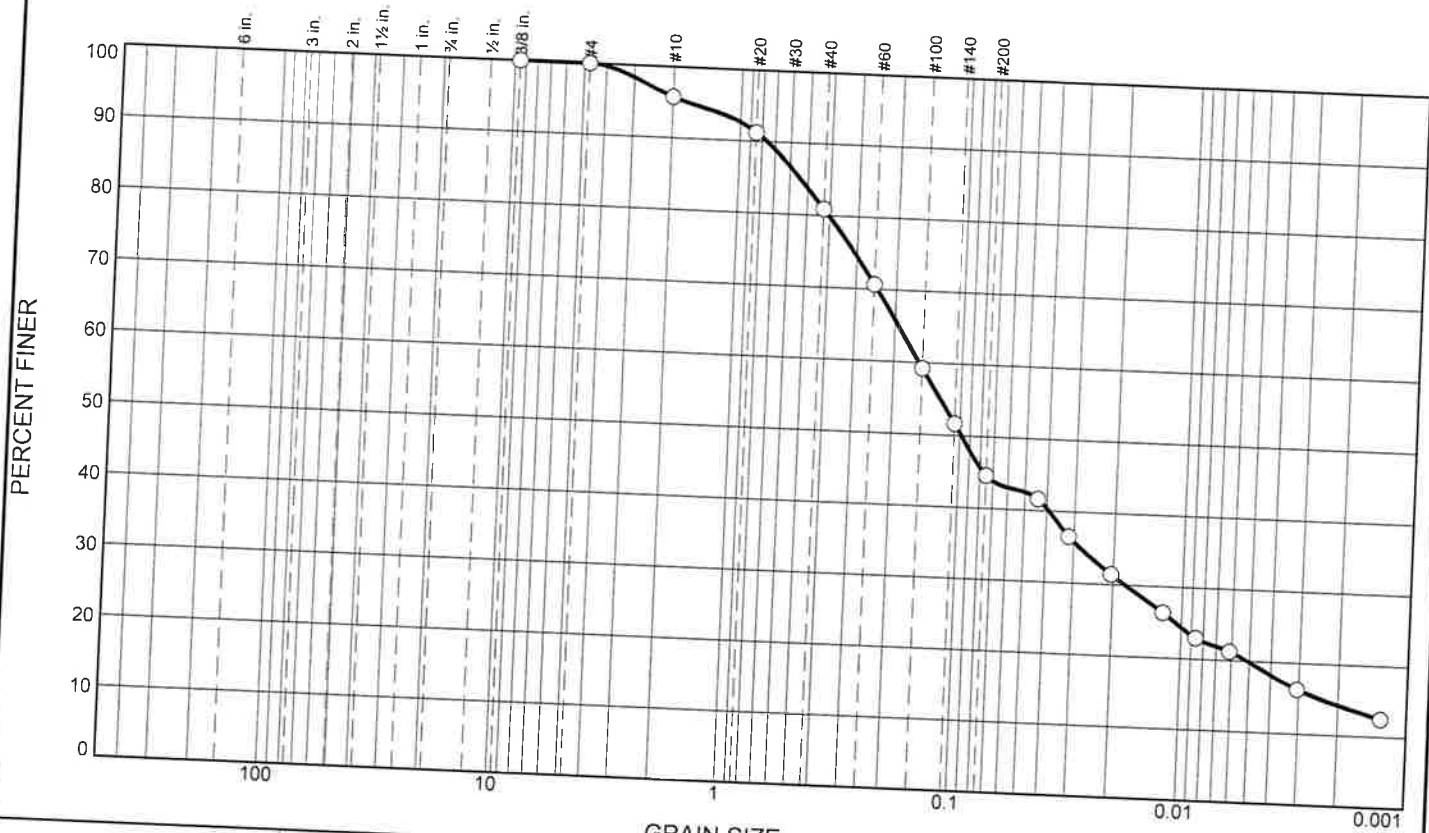
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	4.3	14.8	36.3	24.7	19.9

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	95.7			
#20	91.2			95.3
#40	80.9			84.5
#60	70.6			73.8
#100	59.2			61.8
#140	51.7			54.0
#200	44.6			46.5
0.0439 mm.	41.6			
0.0317 mm.	36.5			
0.0205 mm.	31.4			
0.0121 mm.	26.3			
0.0086 mm.	23.0			
0.0061 mm.	21.3			
0.0031 mm.	16.3			
0.0013 mm.	12.5			

* (no specification provided)

Location: PZ-220, SS-2 @ 4'-5.5'

Material Description

Dark-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7608 D₈₅= 0.5414 D₆₀= 0.1555
D₅₀= 0.0984 D₃₀= 0.0178 D₁₅= 0.0024
D₁₀= C_u= C_c=

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Sample Date: 08-23-24

Project No: A24117.01899.000

Figure

Tested By: DG / FG

Checked By: MH

ASTM D422



% +3''

% Gravel% Sand

% Fines

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	99.7			
#10	91.5			
#20	87.8			96.0
#40	77.7			85.0
#60	68.6			75.0
#100	58.4			63.9
#140	51.3			56.1
#200	45.2			49.5
0.0429 mm.	40.9			
0.0308 mm.	37.9			
0.0199 mm.	33.5			
0.0117 mm.	30.5			
0.0083 mm.	29.0			
0.0059 mm.	27.6			
0.0029 mm.	21.9			
0.0013 mm.	19.9			

Material Description

Atterberg Limits

$$LL =$$

Coefficients

$$D_{85} = 0.6718$$
$$D_{30} = 0.0105$$
 C_u^{∞}
$$D_{15} =$$
$$C_C \equiv$$

Classification

AASHTO=

Test Remarks

Sample Date: 08-23-24



Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

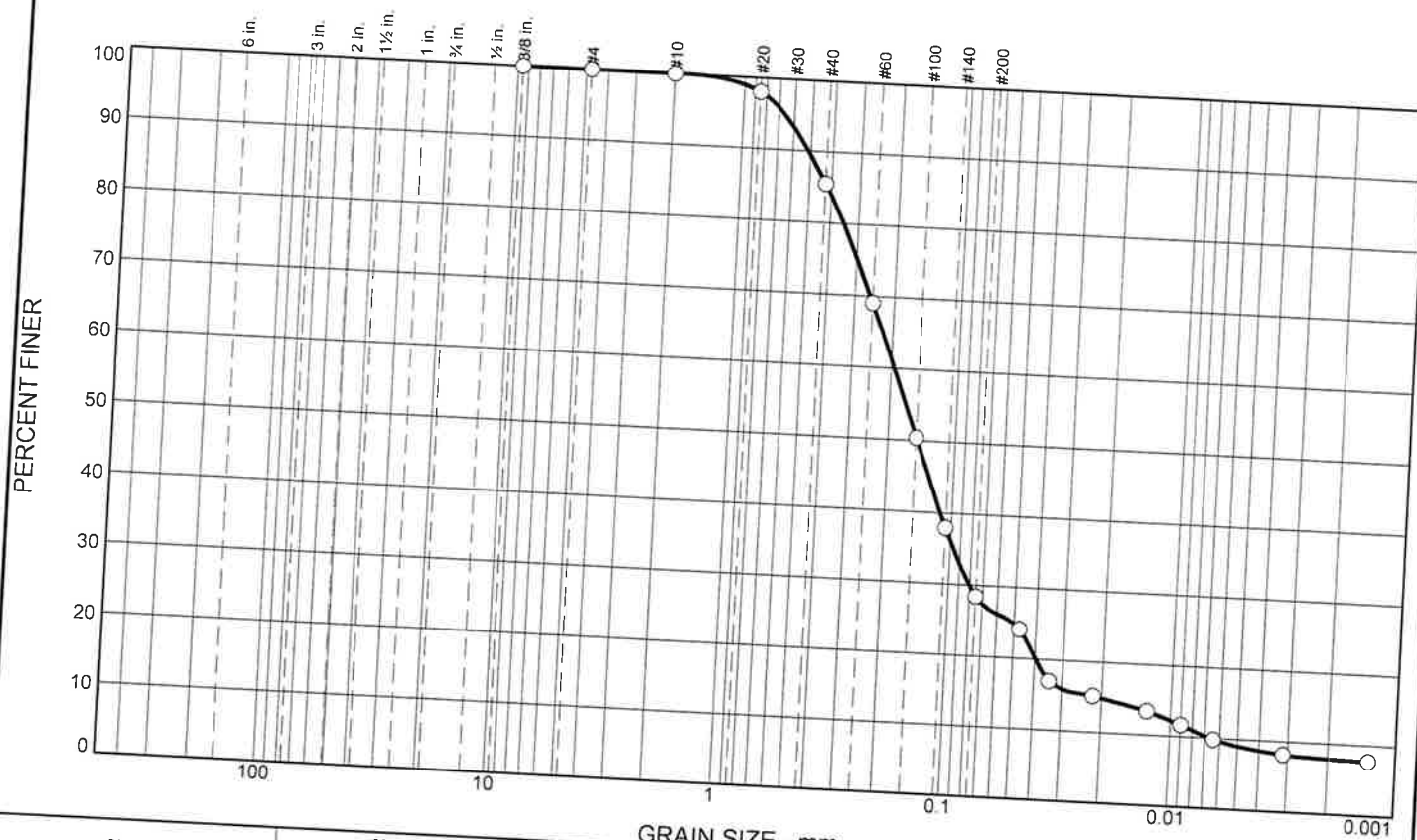
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	14.5	57.1	19.3	9.1

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	98.0			98.0
#40	85.5			85.5
#60	69.0			69.0
#100	50.4			50.4
#140	37.9			37.9
#200	28.4			28.4
0.0474 mm.	24.1			
0.0343 mm.	17.0			
0.0219 mm.	15.1			
0.0127 mm.	13.4			
0.0090 mm.	11.7			
0.0064 mm.	9.8			
0.0032 mm.	8.2			
0.0013 mm.	7.7			

(no specification provided)

Location: PZ-220, SS-5 @ 19'-20.5'

Material Description

Light-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5140 D₈₅= 0.4166 D₆₀= 0.1943
D₅₀= 0.1483 D₃₀= 0.0808 D₁₅= 0.0209
D₁₀= 0.0067 C_u= 29.15 C_c= 5.05

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Sample Date: 08-23-24

Project No: A24117.01899.000

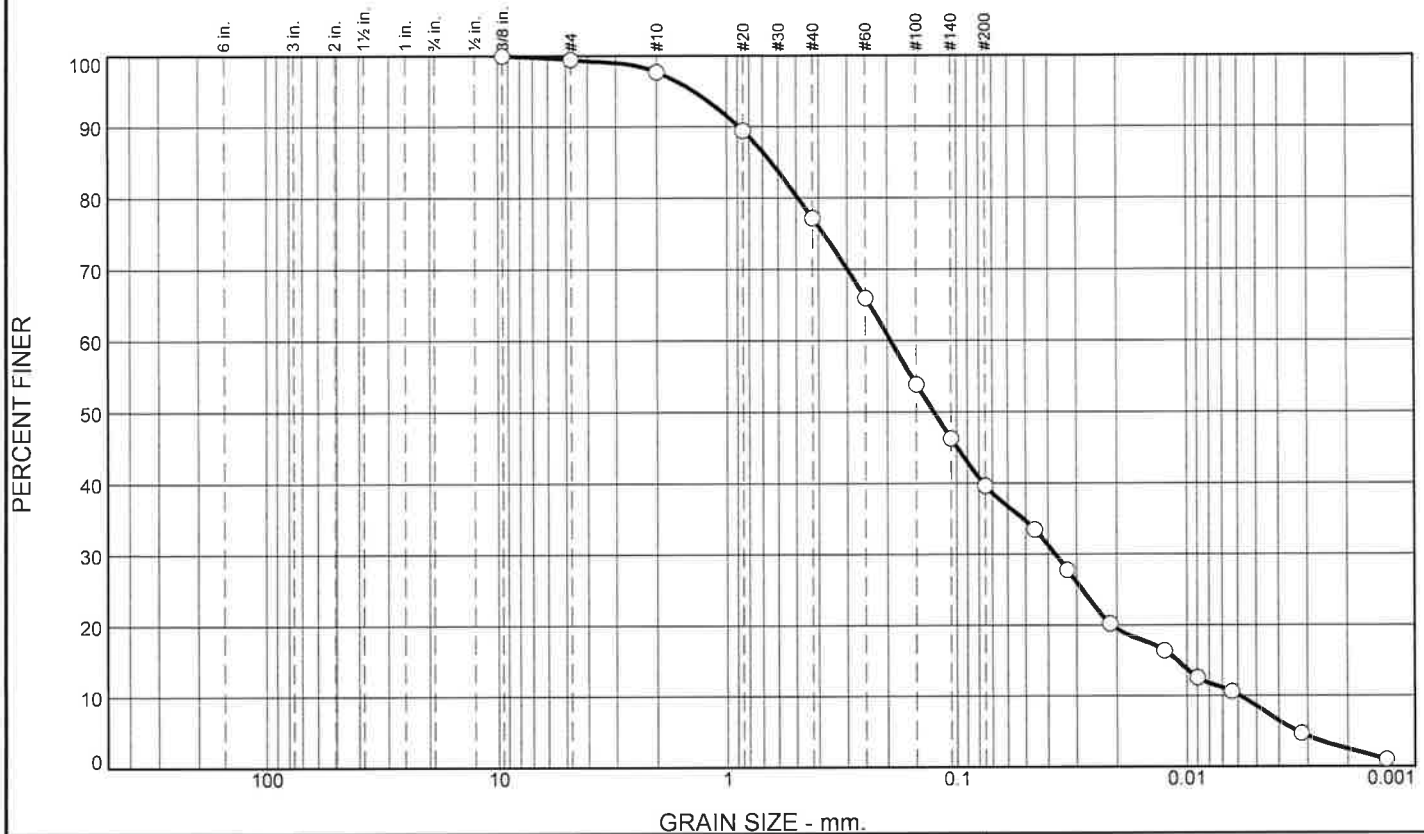
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	1.7	20.6	37.5	31.0	8.6

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	99.4			
#10	97.7			
#20	89.4			91.5
#40	77.1			79.0
#60	66.0			67.5
#100	53.9			55.1
#140	46.3			47.4
#200	39.6			40.5
0.0458 mm.	33.5			
0.0330 mm.	27.8			
0.0214 mm.	20.2			
0.0125 mm.	16.4			
0.0090 mm.	12.6			
0.0064 mm.	10.6			
0.0032 mm.	4.7			
0.0013 mm.	1.0			

* (no specification provided)

<u>Material Description</u>		
Tan-Brown Clayey, Silty Sand		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.8870	D ₈₅ = 0.6432	D ₆₀ = 0.1942
D ₅₀ = 0.1262	D ₃₀ = 0.0373	D ₁₅ = 0.0110
D ₁₀ = 0.0059	C _u = 33.03	C _c = 1.22
<u>Classification</u>		
USCS=	AASHTO=	
<u>Test Remarks</u>		

Location: PZ-221, SS-2 @ 4'-5.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

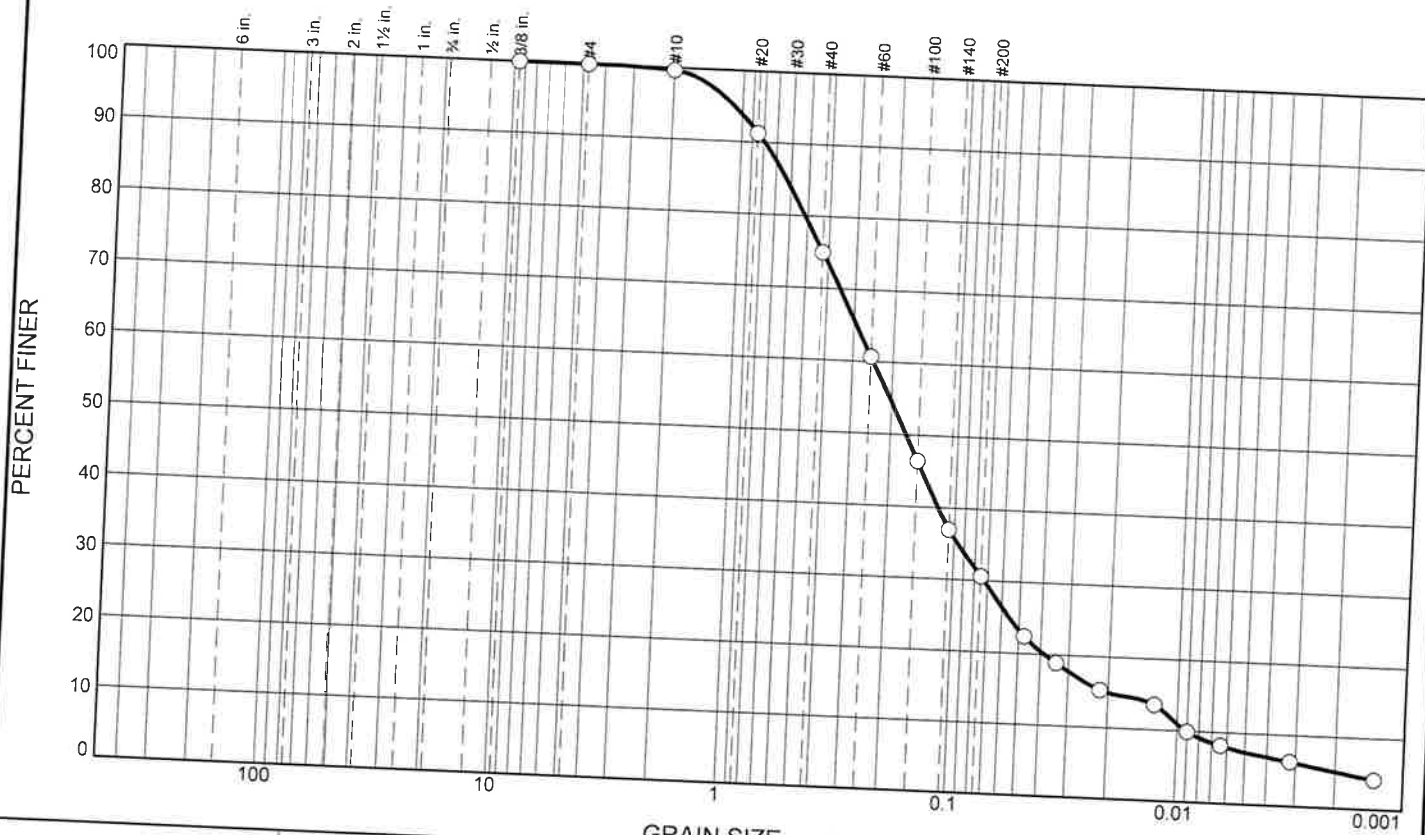
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	24.6	44.4	23.3	7.3

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.6			
#20	91.3			91.6
#40	75.0			75.3
#60	60.7			60.9
#100	46.4			46.6
#140	37.0			37.1
#200	30.6			30.7
0.0474 mm.	22.4			
0.0340 mm.	18.9			
0.0217 mm.	15.3			
0.0126 mm.	13.5			
0.0090 mm.	9.9			
0.0064 mm.	8.2			
0.0032 mm.	6.3			
0.0013 mm.	4.2			

* (no specification provided)

Material Description

Light-Brown Clayey, Silty Sand

PL= **Atterberg Limits** PI=

LL=

Coefficients

D₉₀= 0.7908 D₈₅= 0.6290 D₆₀= 0.2438

D₅₀= 0.1707 D₃₀= 0.0726 D₁₅= 0.0203

D₁₀= 0.0091 C_u= 26.78 C_c= 2.37

USCS= **Classification** AASHTO=

Test Remarks

Location: PZ-221, SS-4 @ 14'-15.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

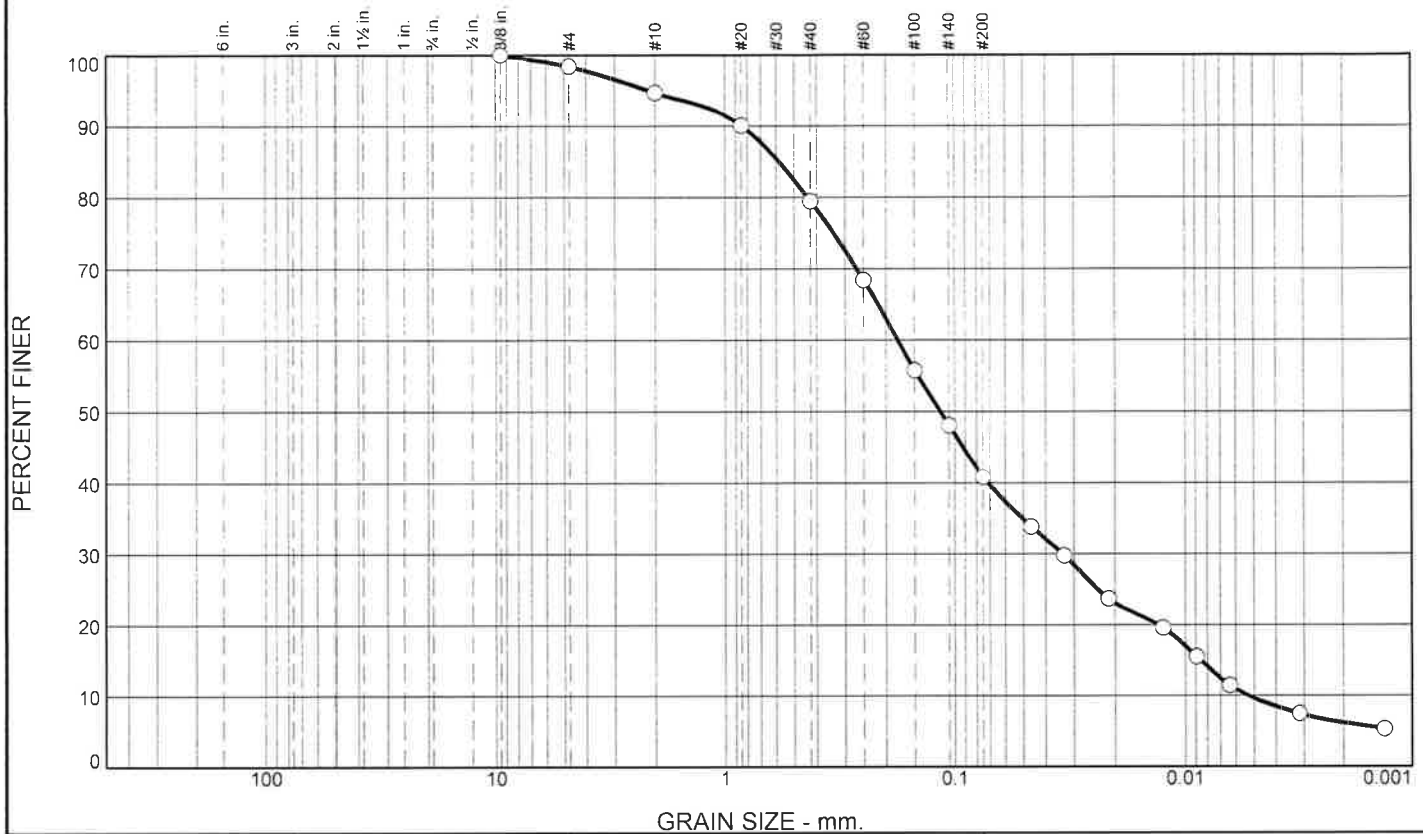
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.6	3.7	15.2	38.7	31.2	9.6

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	98.4			
#10	94.7			
#20	90.1			95.2
#40	79.5			83.9
#60	68.4			72.2
#100	55.8			58.9
#140	48.1			50.8
#200	40.8			43.1
0.0462 mm.	33.9			
0.0331 mm.	29.8			
0.0213 mm.	23.7			
0.0125 mm.	19.6			
0.0089 mm.	15.5			
0.0064 mm.	11.5			
0.0032 mm.	7.5			
0.0013 mm.	5.3			

* (no specification provided)

Location: PZ-222, SS-4 @ 14'-15.5'

Material Description
Dark-Brown Micaceous Clayey, Silty Sand

PL= **Atterberg Limits** LL= PI=

Coefficients
D₉₀= 0.8417 D₈₅= 0.5841 D₆₀= 0.1782
D₅₀= 0.1159 D₃₀= 0.0337 D₁₅= 0.0086
D₁₀= 0.0053 C_u= 33.69 C_c= 1.20

USCS= **Classification** AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

Tested By: DG

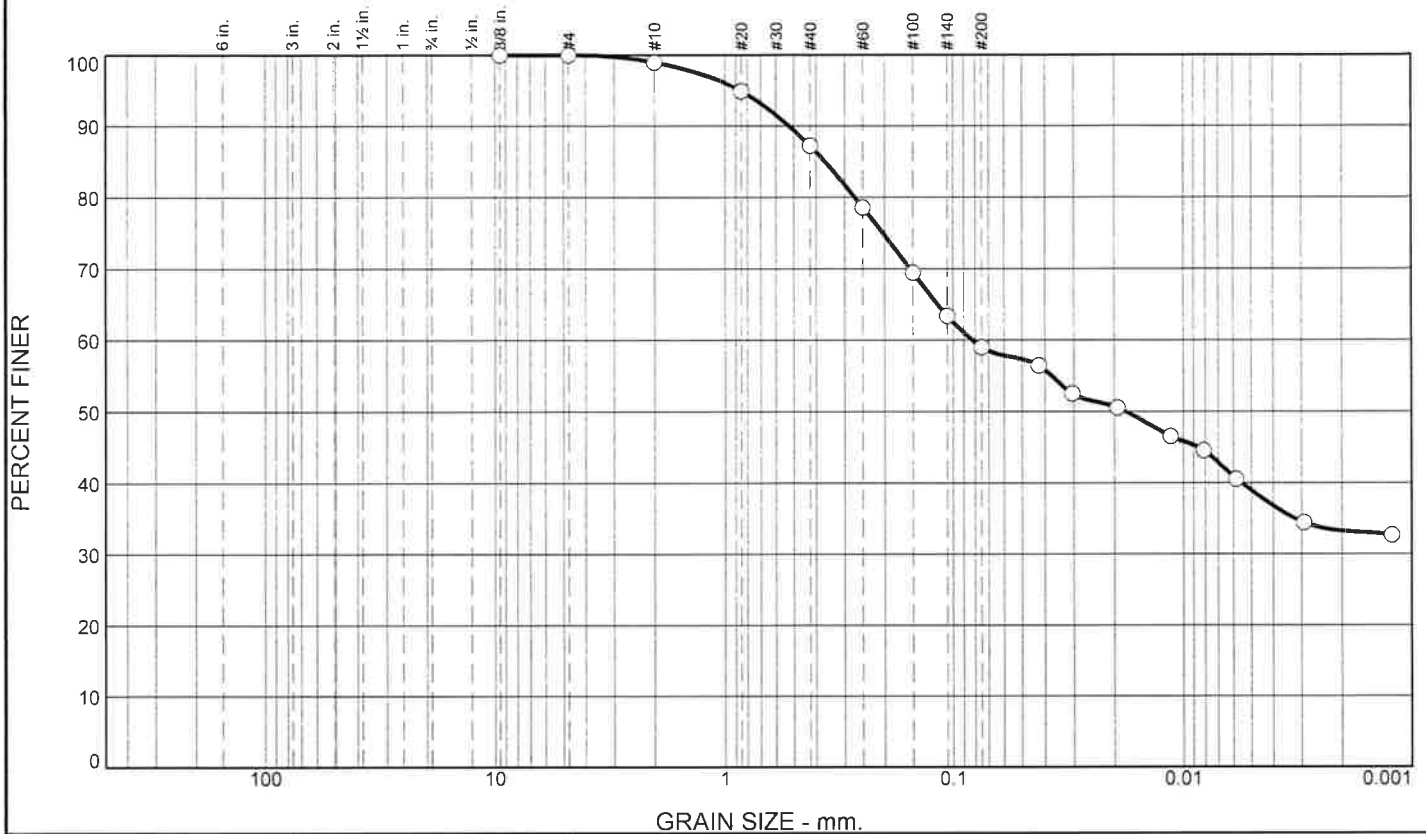
Checked By: MH

Sample Date: 08-23-24

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.0	11.8	28.2	20.1	38.9

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.0			95.9
#20	94.9			88.1
#40	87.2			79.4
#60	78.6			70.2
#100	69.4			64.1
#140	63.4			59.6
#200	59.0			
0.0425 mm.	56.5			
0.0305 mm.	52.5			
0.0194 mm.	50.6			
0.0114 mm.	46.6			
0.0081 mm.	44.5			
0.0058 mm.	40.5			
0.0029 mm.	34.5			
0.0012 mm.	32.7			

* (no specification provided)

Location: PZ-223, SS-2 @ 4'-5.5'

Material Description

Red-Brown Silty, Clayey Sand

PL= Atterberg Limits LL= PI=

Coefficients
D₉₀= 0.5270 D₈₅= 0.3662 D₆₀= 0.0828
D₅₀= 0.0179 D₃₀= D₁₅=
D₁₀= C_u= C_c=

USCS= Classification AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

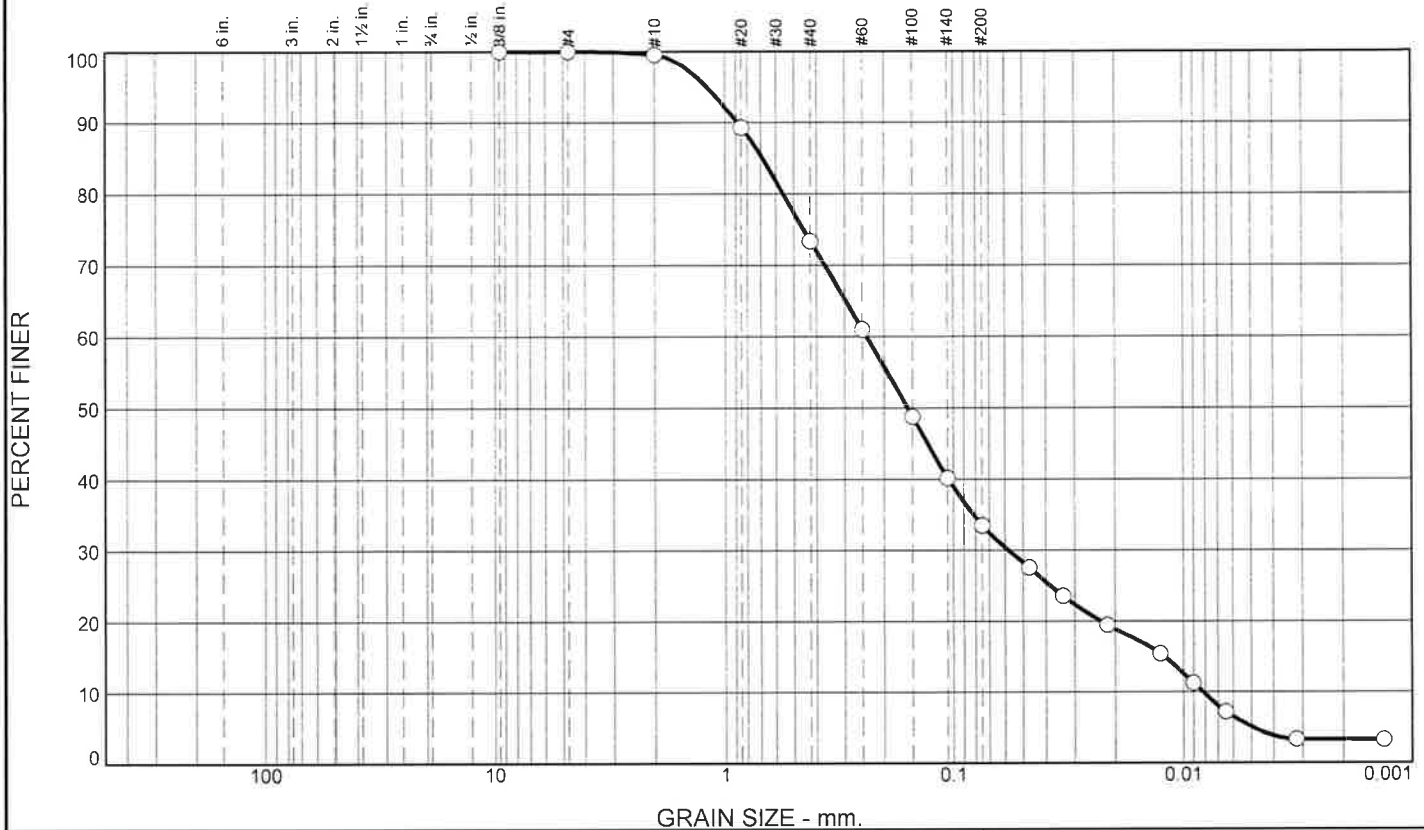
Tested By: DG

Checked By: MH

Sample Date: 08-12-24

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	26.2	39.8	28.4	5.1

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.5			89.7
#20	89.3			73.6
#40	73.3			61.2
#60	60.9			49.0
#100	48.8			40.3
#140	40.2			33.6
#200	33.5			
0.0471 mm.	27.5			
0.0337 mm.	23.5			
0.0216 mm.	19.4			
0.0126 mm.	15.4			
0.0090 mm.	11.3			
0.0065 mm.	7.2			
0.0032 mm.	3.3			
0.0013 mm.	3.3			

(no specification provided)

Location: PZ-223. SS-5 @ 19'-20.5

Material Description

Orange-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.8853 D₈₅= 0.6885 D₆₀= 0.2402
D₅₀= 0.1577 D₃₀= 0.0580 D₁₅= 0.0122
D₁₀= 0.0082 C_u= 29.35 C_c= 1.71

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

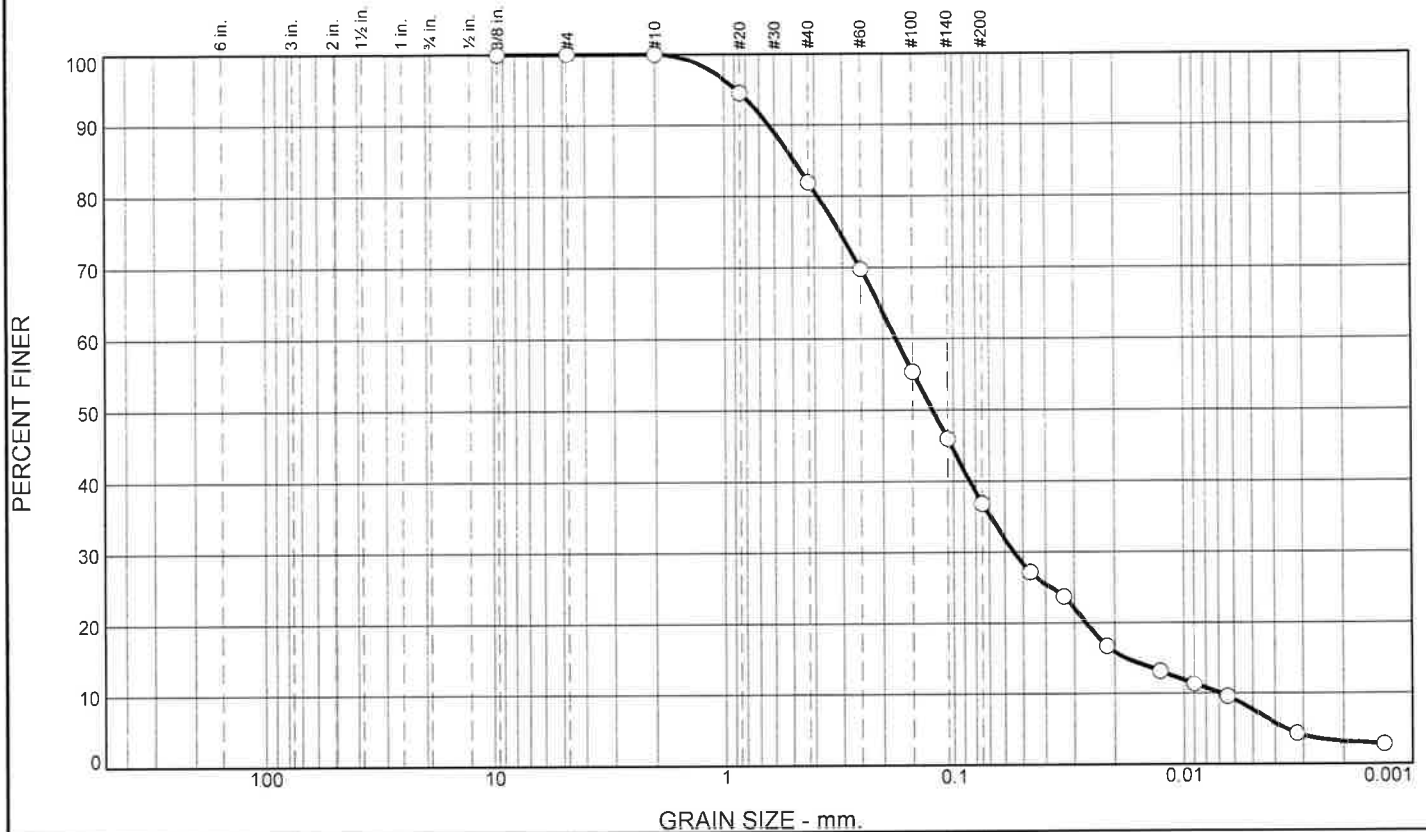
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	18.1	45.1	29.2	7.6

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	94.5			94.5
#40	81.9			81.9
#60	69.7			69.7
#100	55.3			55.3
#140	45.9			45.9
#200	36.8			36.8
0.0466 mm.	27.1			
0.0334 mm.	23.6			
0.0217 mm.	16.6			
0.0127 mm.	13.2			
0.0090 mm.	11.4			
0.0064 mm.	9.6			
0.0032 mm.	4.3			
0.0013 mm.	2.7			

* (no specification provided)

Material Description

Grey-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6368 D₈₅= 0.4944 D₆₀= 0.1770
D₅₀= 0.1237 D₃₀= 0.0549 D₁₅= 0.0179
D₁₀= 0.0068 C_u= 25.84 C_c= 2.49

Classification

USCS= AASHTO=

Test Remarks

Location: PZ-223, SS-10 @ 44'-45.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

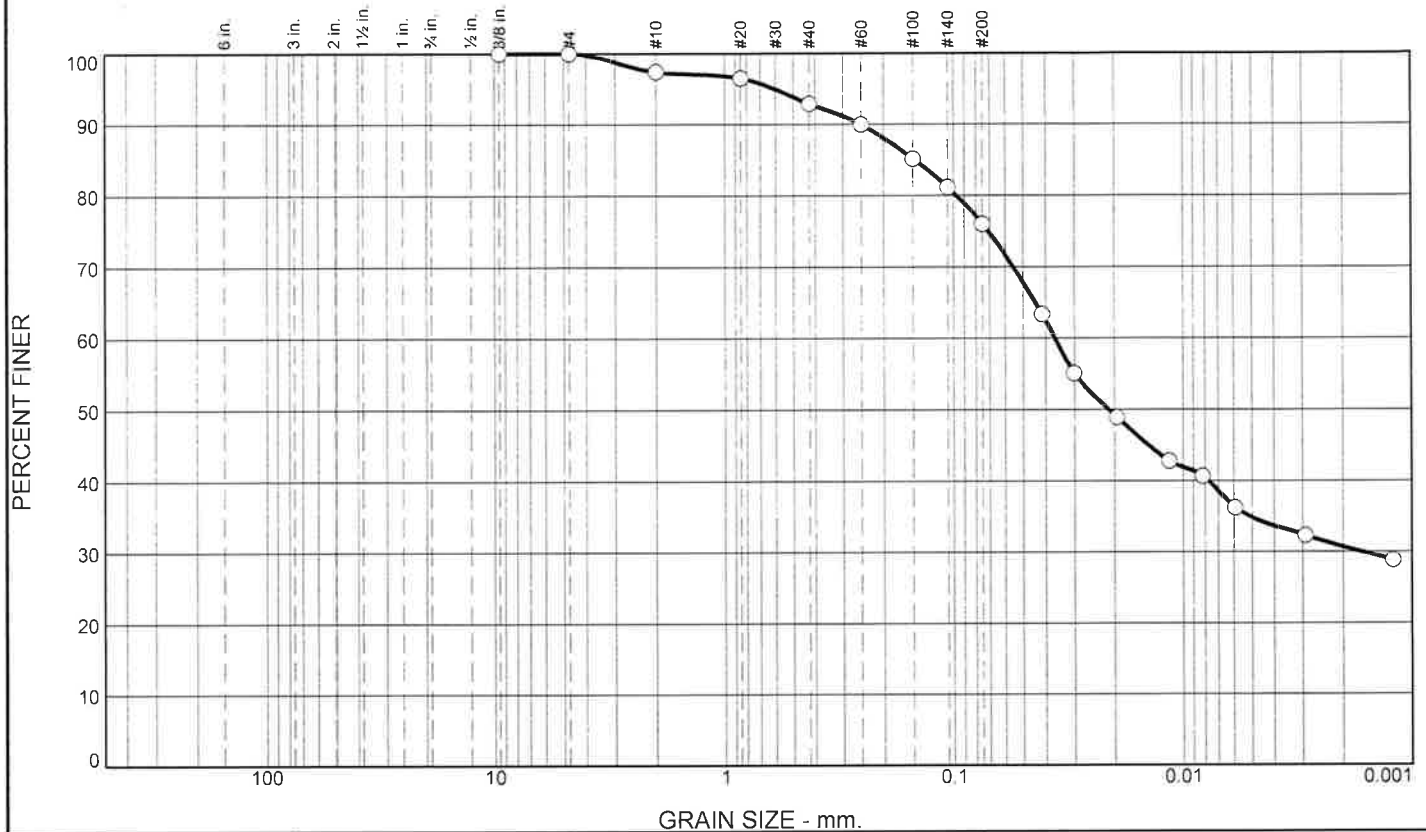
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.6	4.5	16.9	41.2	34.8

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	97.4			99.1
#20	96.5			95.4
#40	92.9			92.3
#60	89.9			87.4
#100	85.1			83.3
#140	81.1			78.0
#200	76.0			
0.0413 mm.	63.3			
0.0302 mm.	55.1			
0.0195 mm.	48.9			
0.0115 mm.	42.8			
0.0082 mm.	40.7			
0.0059 mm.	36.2			
0.0029 mm.	32.3			
0.0012 mm.	28.9			

* (no specification provided)

Location: MW-37, SS-2 @ 4.5'-5.5'

Material Description

Orange-Brown Sandy, Clayey Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.2523 D₈₅= 0.1483 D₆₀= 0.0365
D₅₀= 0.0213 D₃₀= 0.0017 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Sample Date: 08-23-24

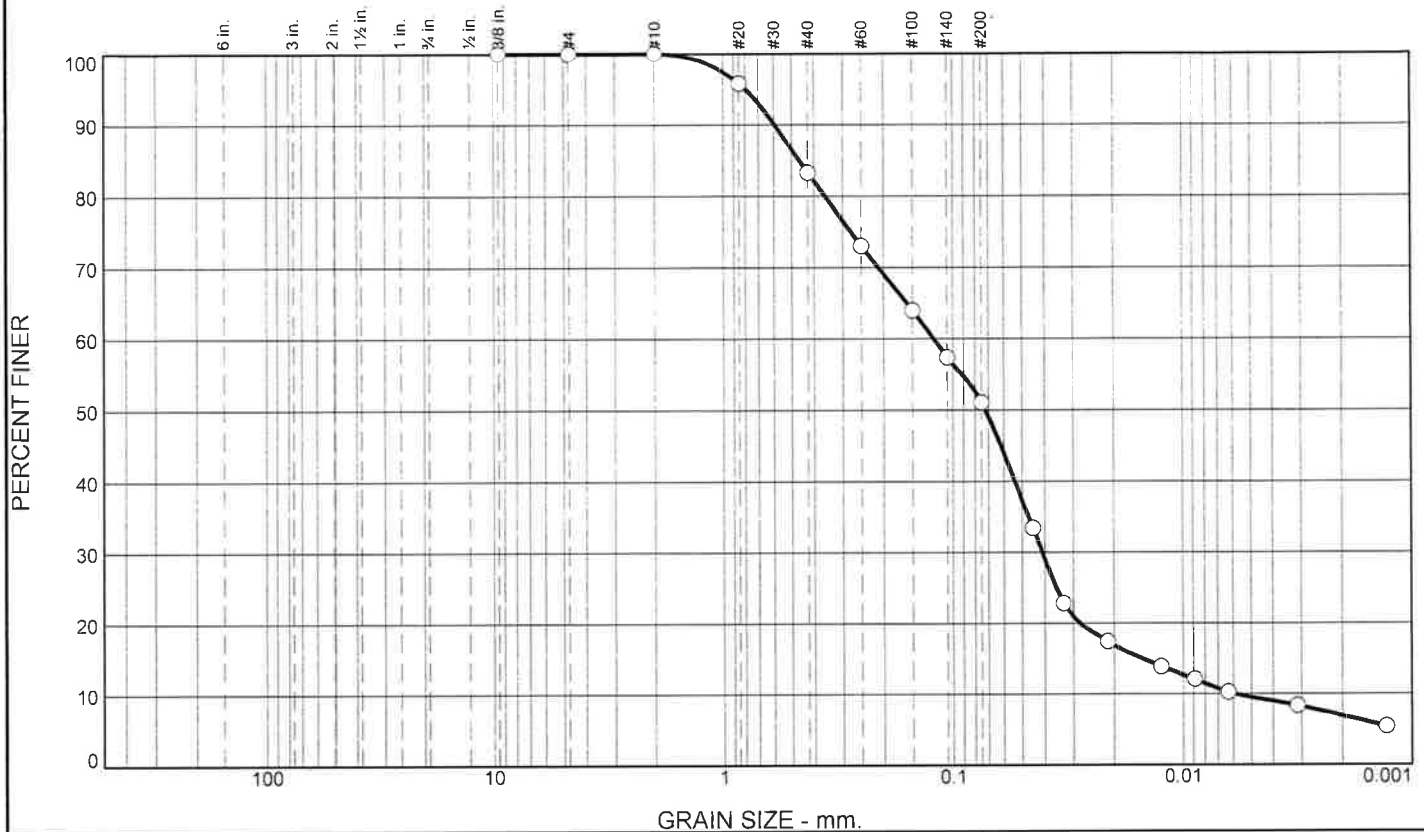
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	16.7	32.2	41.6	9.5

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	95.8			95.8
#40	83.3			83.3
#60	72.9			72.9
#100	64.0			64.0
#140	57.4			57.4
#200	51.1			51.1
0.0450 mm.	33.4			
0.0331 mm.	22.8			
0.0214 mm.	17.4			
0.0125 mm.	13.9			
0.0089 mm.	12.1			
0.0063 mm.	10.3			
0.0031 mm.	8.4			
0.0013 mm.	5.4			

* (no specification provided)

Location: MW-37. SS-4 @ 14'-15.5'

Material Description

Tan-Brown Clayey Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5954 D₈₅= 0.4647 D₆₀= 0.1217
D₅₀= 0.0722 D₃₀= 0.0411 D₁₅= 0.0152
D₁₀= 0.0059 C_u= 20.76 C_c= 2.36

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

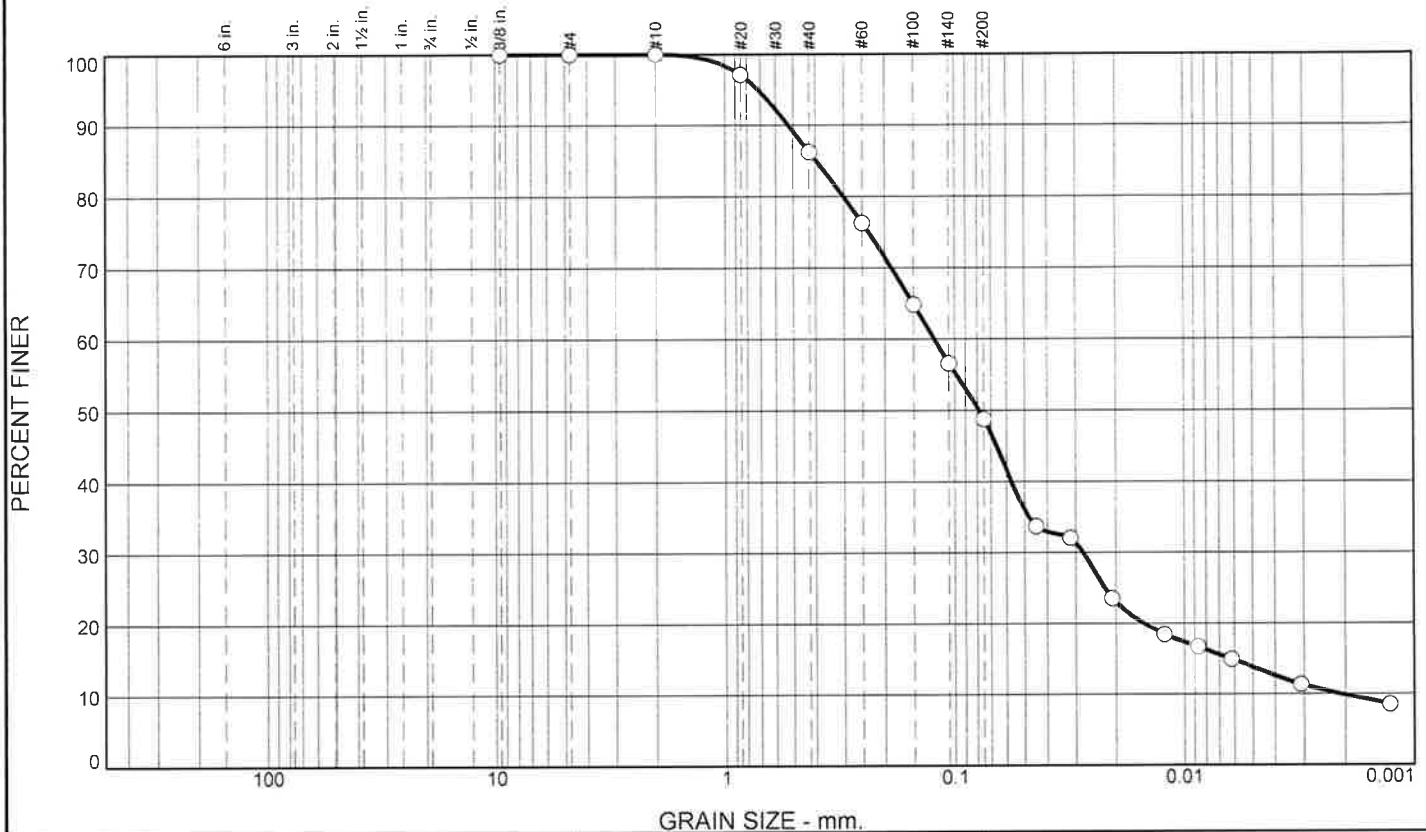
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	13.8	37.4	35.0	13.8

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	97.0			97.0
#40	86.2			86.2
#60	76.2			76.2
#100	64.8			64.8
#140	56.6			56.6
#200	48.8			48.8
0.0446 mm.	33.7			
0.0317 mm.	32.0			
0.0208 mm.	23.5			
0.0122 mm.	18.4			
0.0087 mm.	16.7			
0.0062 mm.	14.9			
0.0031 mm.	11.4			
0.0013 mm.	8.5			

* (no specification provided)

Material Description

Orange-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5275 D₈₅= 0.3974 D₆₀= 0.1225
D₅₀= 0.0788 D₃₀= 0.0279 D₁₅= 0.0063
D₁₀= 0.0021 C_u= 58.83 C_c= 3.06

Classification

USCS= AASHTO=

Test Remarks

Location: MW-38. SS-3 @ 8'-9.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

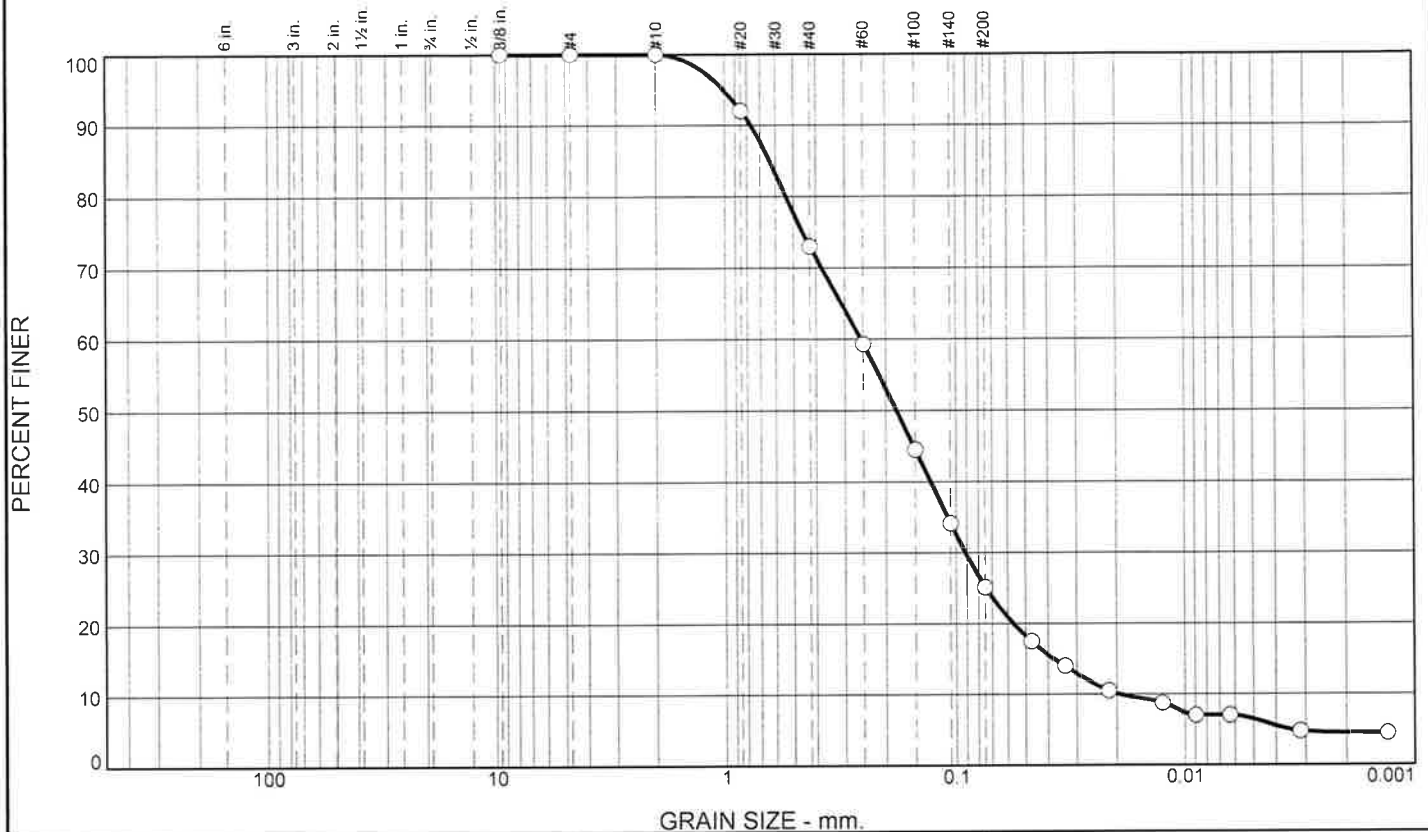
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	27.0	47.9	18.6	6.5

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	92.1			92.1
#40	73.0			73.0
#60	59.3			59.3
#100	44.5			44.5
#140	34.1			34.1
#200	25.1			25.1
0.0473 mm.	17.4			
0.0338 mm.	14.0			
0.0217 mm.	10.5			
0.0126 mm.	8.8			
0.0089 mm.	7.0			
0.0063 mm.	7.0			
0.0032 mm.	4.8			
0.0013 mm.	4.5			

(no specification provided)

Location: MW-38. SS-4 @ 13'-14.5'

Material Description

Yellow-Brown Clayey, Silty Sand

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 0.7703

D₈₅= 0.6380

D₆₀= 0.2566

D₅₀= 0.1808

D₃₀= 0.0914

D₁₅= 0.0379

D₁₀= 0.0193

C_u= 13.28

C_c= 1.69

Classification

USCS=

AASHTO=

Test Remarks



Client: HDR Engineering

Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

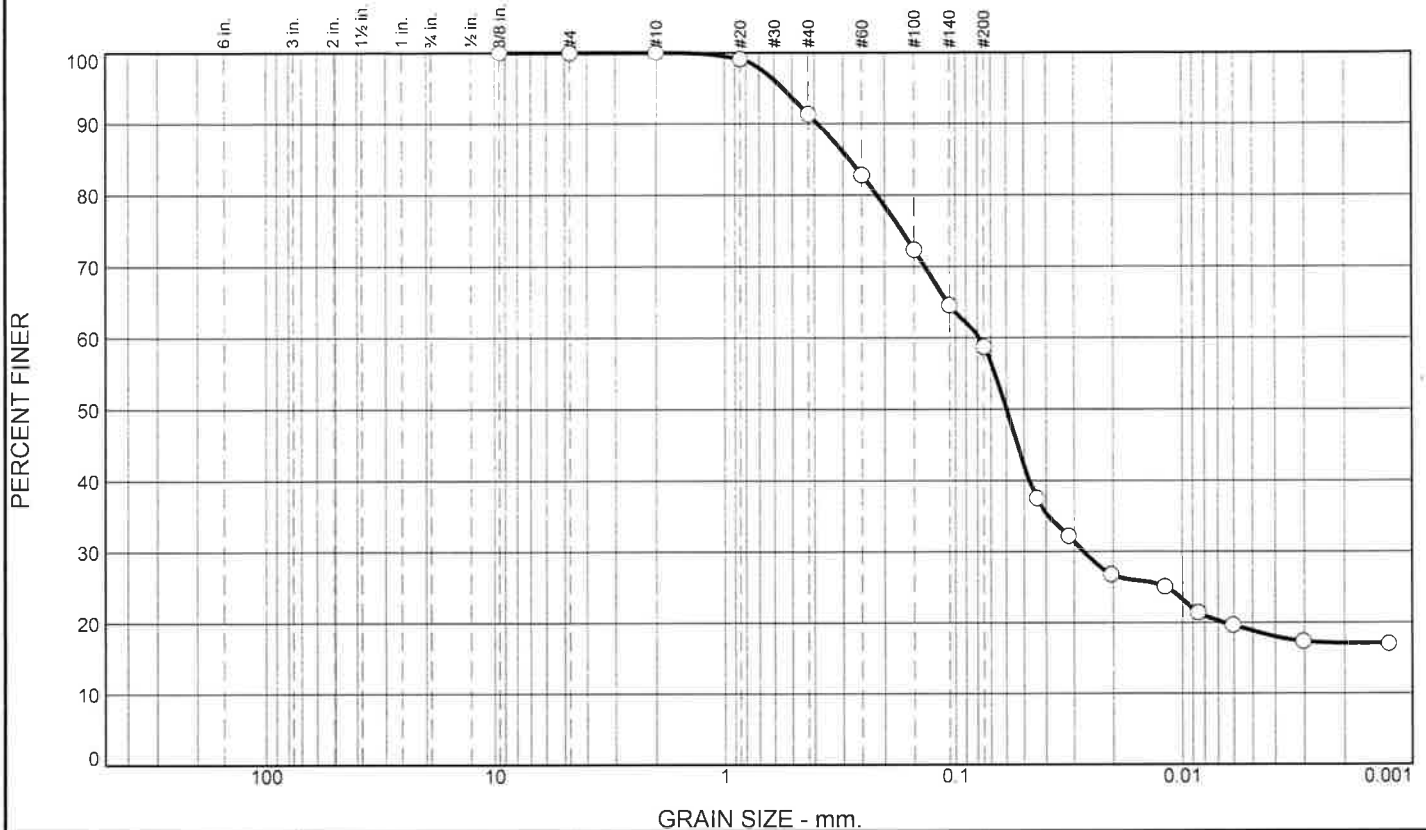
Figure

Tested By: DG

Checked By: MH

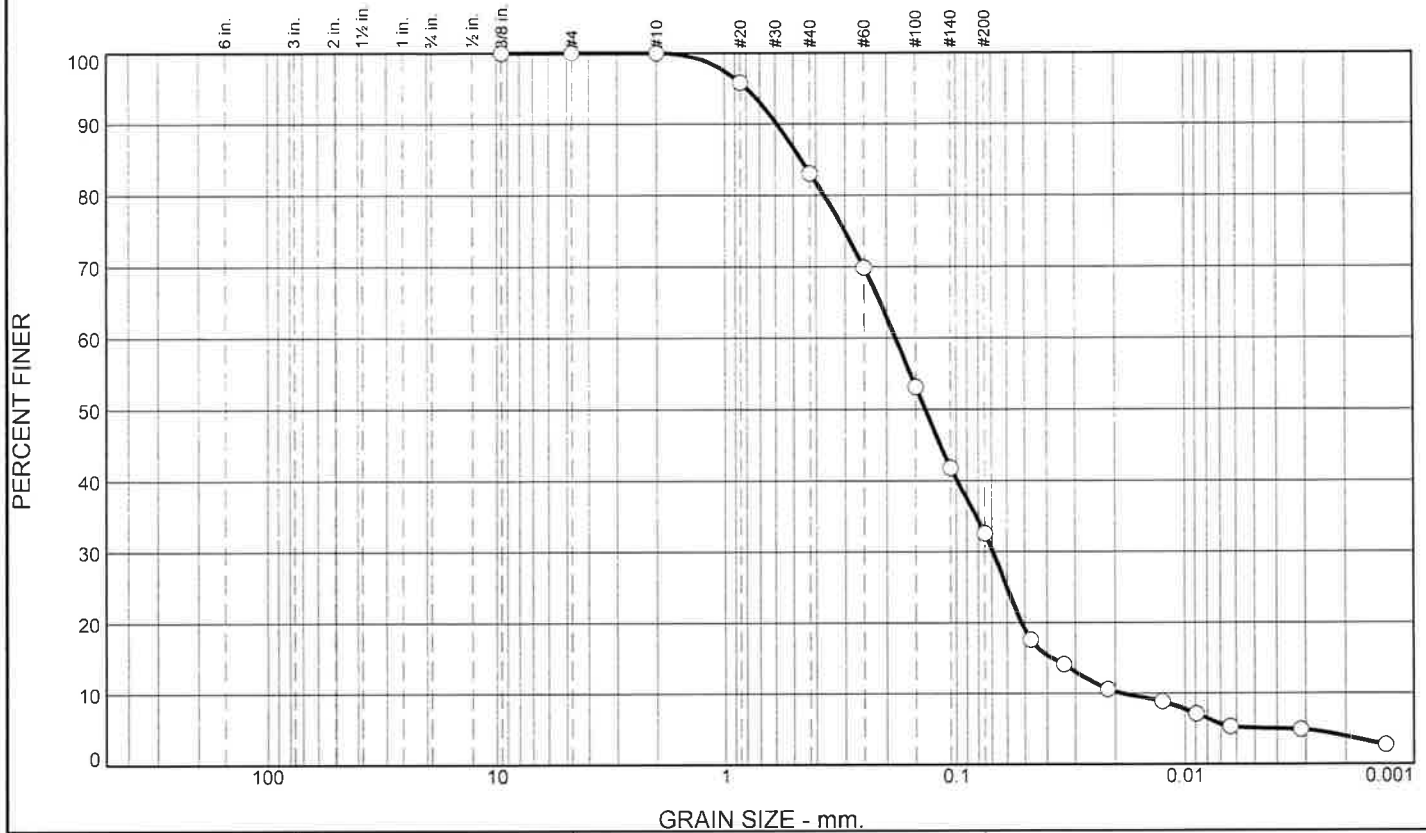
Particle Size Distribution Report

ASTM D422



Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	16.9	50.5	27.5	5.1

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	95.8			95.8
#40	83.1			83.1
#60	69.9			69.9
#100	53.2			53.2
#140	41.8			41.8
#200	32.6			32.6
0.0472 mm.	17.6			
0.0338 mm.	14.1			
0.0216 mm.	10.6			
0.0126 mm.	8.9			
0.0089 mm.	7.1			
0.0064 mm.	5.3			
0.0032 mm.	4.9			
0.0013 mm.	2.7			

* (no specification provided)

Material Description

Dark-Brown Clayey. Silty Sand

PL= Atterberg Limits LL= PI=

Coefficients
D₉₀= 0.5913 D₈₅= 0.4644 D₆₀= 0.1838
D₅₀= 0.1364 D₃₀= 0.0692 D₁₅= 0.0381
D₁₀= 0.0187 C_u= 9.85 C_c= 1.40

USCS= Classification AASHTO=

Test Remarks

Location: MW-39A, SS-3 @ 9'-10.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

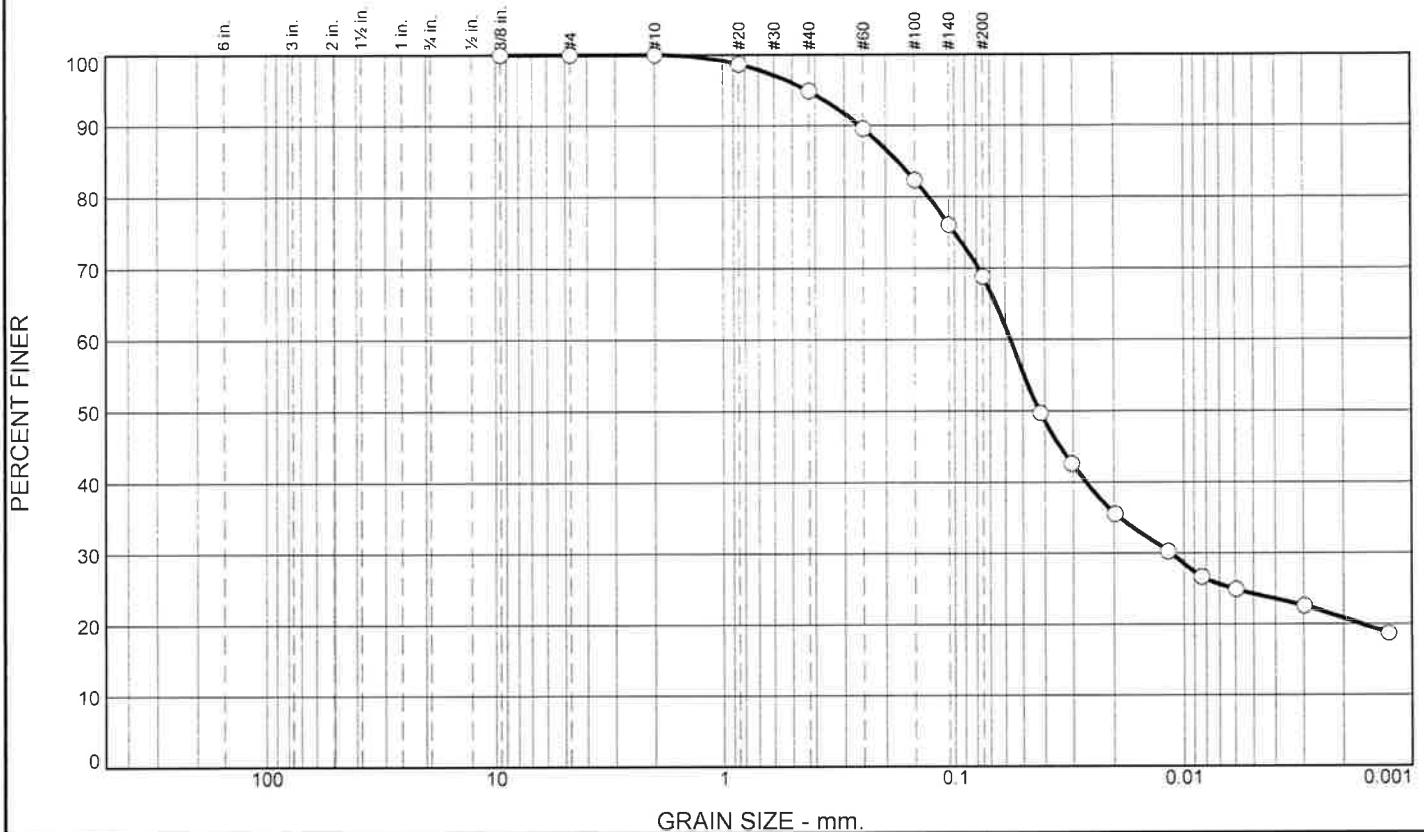
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	5.1	26.1	44.5	24.3

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	98.7			98.7
#40	94.9			94.9
#60	89.6			89.6
#100	82.4			82.4
#140	76.0			76.0
#200	68.8			68.8
0.0418 mm.	49.7			
0.0305 mm.	42.6			
0.0198 mm.	35.5			
0.0117 mm.	30.2			
0.0084 mm.	26.7			
0.0059 mm.	24.9			
0.0030 mm.	22.6			
0.0013 mm.	18.7			

* (no specification provided)

Material Description

Orange-Brown Clayey, Sandy Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.2595 D₈₅= 0.1779 D₆₀= 0.0571
D₅₀= 0.0423 D₃₀= 0.0114 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= AASHTO=

Test Remarks

Location: MW-40, SS-2 @ 5'-6.5'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

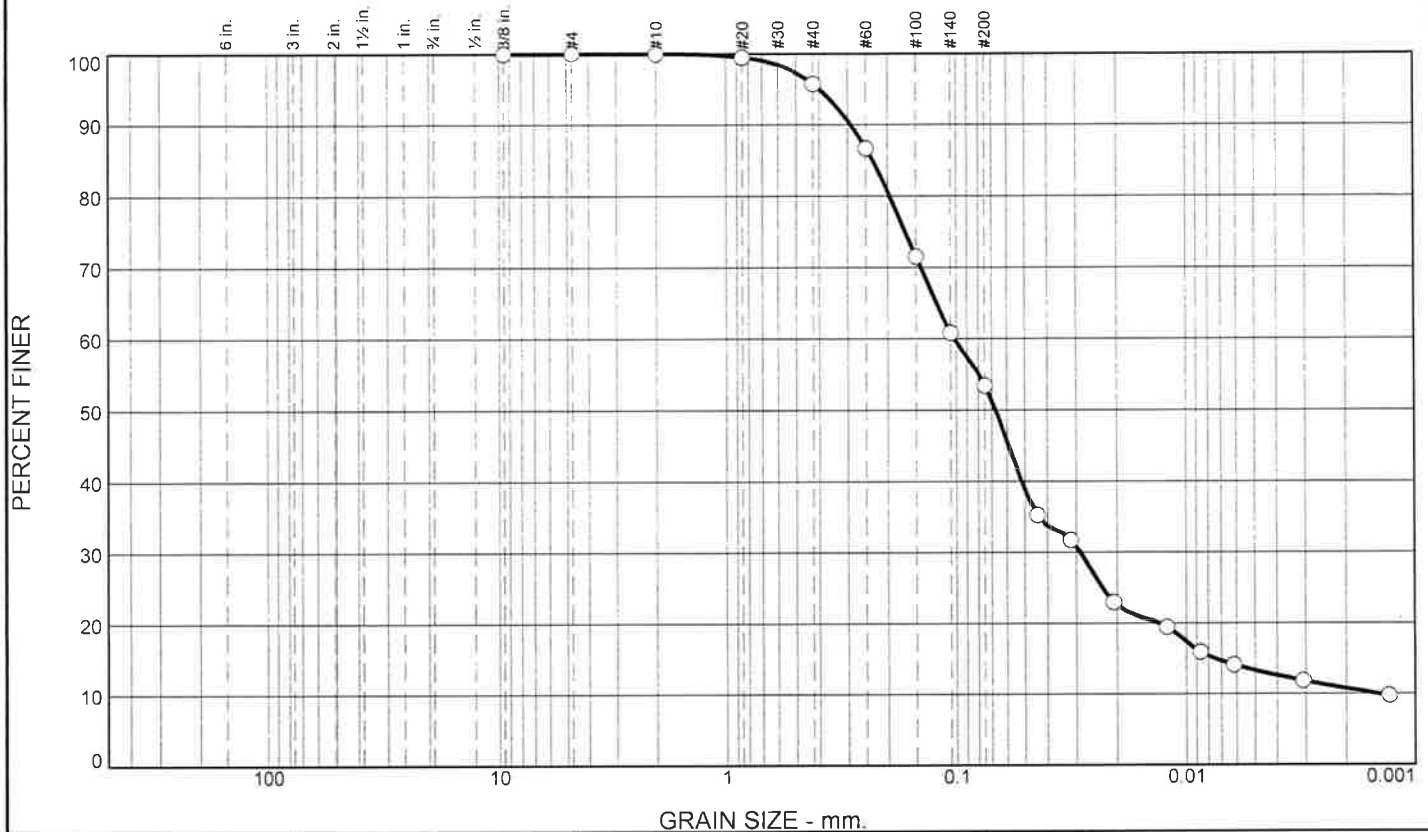
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	4.3	42.3	40.1	13.3

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	99.5			99.5
#40	95.7			95.7
#60	86.7			86.7
#100	71.5			71.5
#140	60.8			60.8
#200	53.4			53.4
0.0443 mm.	35.2			
0.0318 mm.	31.7			
0.0207 mm.	23.0			
0.0121 mm.	19.5			
0.0087 mm.	15.9			
0.0062 mm.	14.1			
0.0031 mm.	11.9			
0.0013 mm.	9.8			

(no specification provided)

Location: MW-40, SS-8 @ 35'-36.5'

Material Description

Orange-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.2918 D₈₅= 0.2336 D₆₀= 0.1025
D₅₀= 0.0674 D₃₀= 0.0289 D₁₅= 0.0075
D₁₀= 0.0014 C_u= 71.56 C_c= 5.71

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

Tested By: DG

Checked By: MH

Sample Date: 08-23-24

ASTM D422

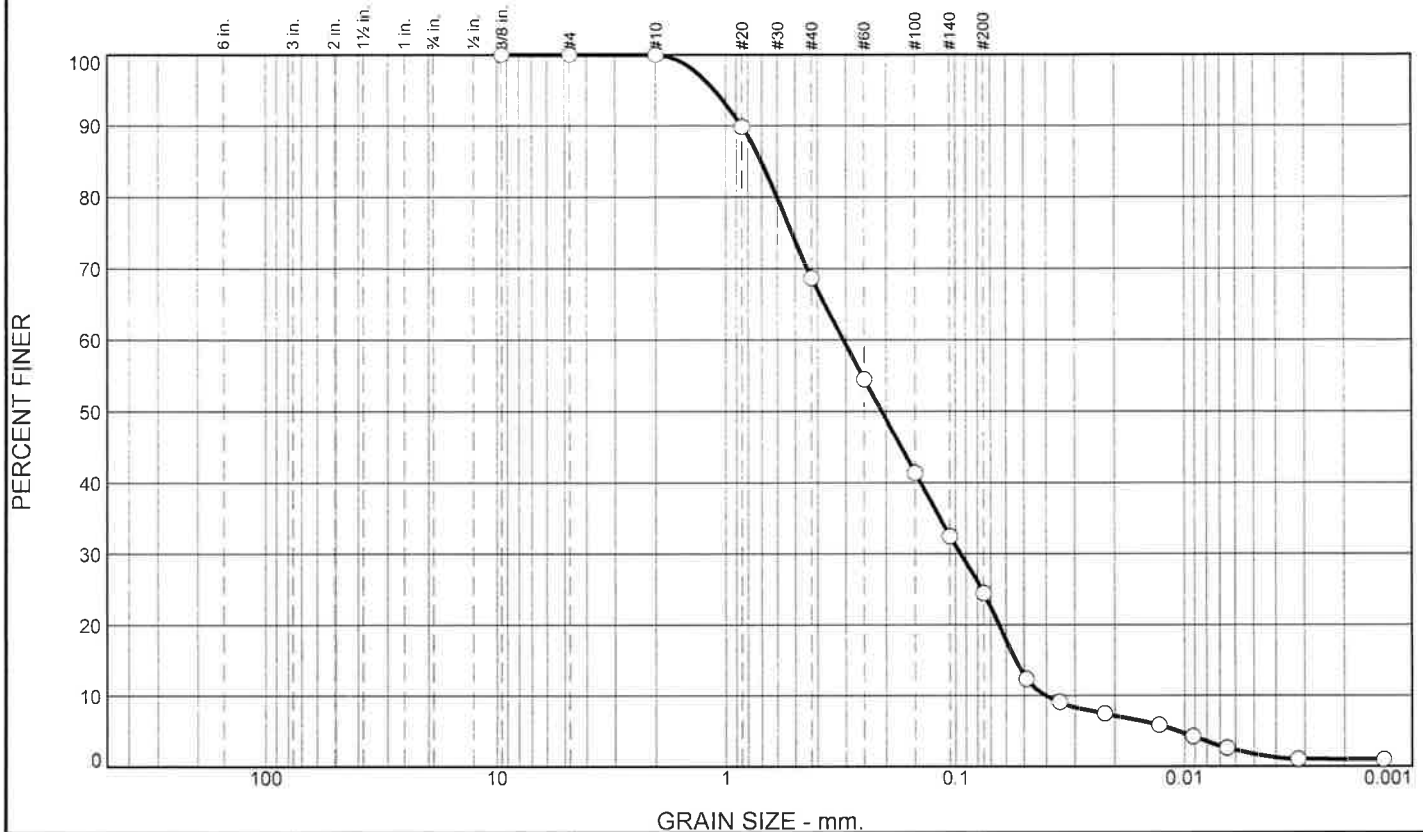


(no specification provided)

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	31.3	44.2	22.7	1.8

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	89.8			89.8
#40	68.7			68.7
#60	54.5			54.5
#100	41.4			41.4
#140	32.4			32.4
#200	24.5			24.5
0.0489 mm.	12.3			
0.0350 mm.	9.1			
0.0222 mm.	7.5			
0.0129 mm.	5.9			
0.0092 mm.	4.2			
0.0065 mm.	2.6			
0.0032 mm.	1.0			
0.0013 mm.	1.0			

(no specification provided)

Material Description
Yellow-Brown Slightly Clayey, Silty Sand

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.8569 D₈₅= 0.7054 D₆₀= 0.3090
 D₅₀= 0.2104 D₃₀= 0.0954 D₁₅= 0.0547
 D₁₀= 0.0403 C_u= 7.68 C_c= 0.73

Classification
USCS= AASHTO=

Test Remarks

Location: MW-41, SS-4 @ 14.4'-15.9'

Sample Date: 08-23-24



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

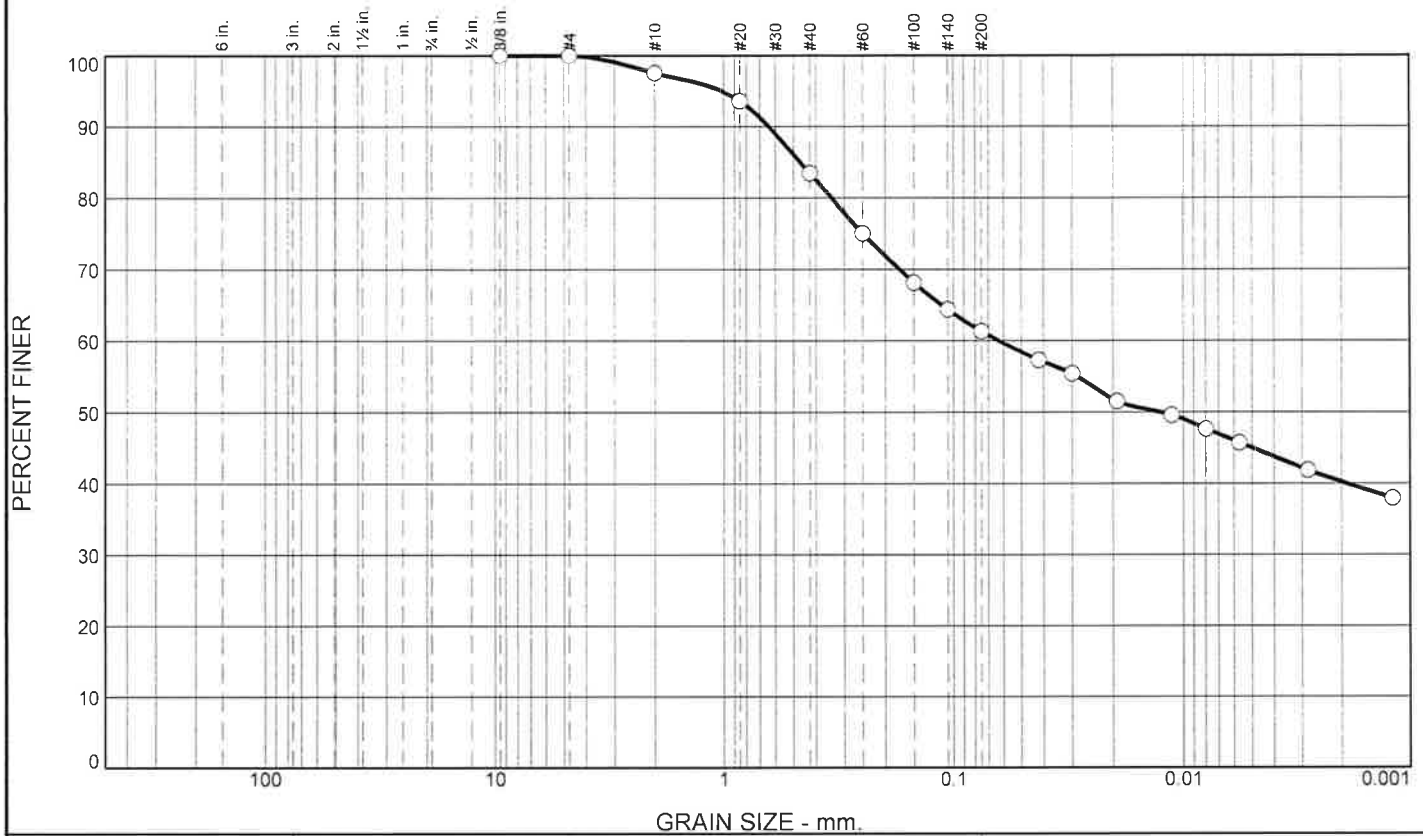
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.4	14.1	22.2	16.3	45.0

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	97.6			95.9
#20	93.6			85.6
#40	83.5			76.9
#60	75.0			69.9
#100	68.1			66.0
#140	64.4			62.9
#200	61.3			
0.0421 mm.	57.4			
0.0300 mm.	55.4			
0.0192 mm.	51.6			
0.0112 mm.	49.6			
0.0080 mm.	47.7			
0.0057 mm.	45.7			
0.0028 mm.	41.9			
0.0012 mm.	38.0			

* (no specification provided)

Location: MW-42A. SS-2 @ 4.5'-6'

Material Description

Orange-Brown

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 0.6412

D₈₅= 0.4685

D₆₀= 0.0629

D₅₀= 0.0124

D₃₀=

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS=

AASHTO=

Test Remarks



Client: HDR Engineering

Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

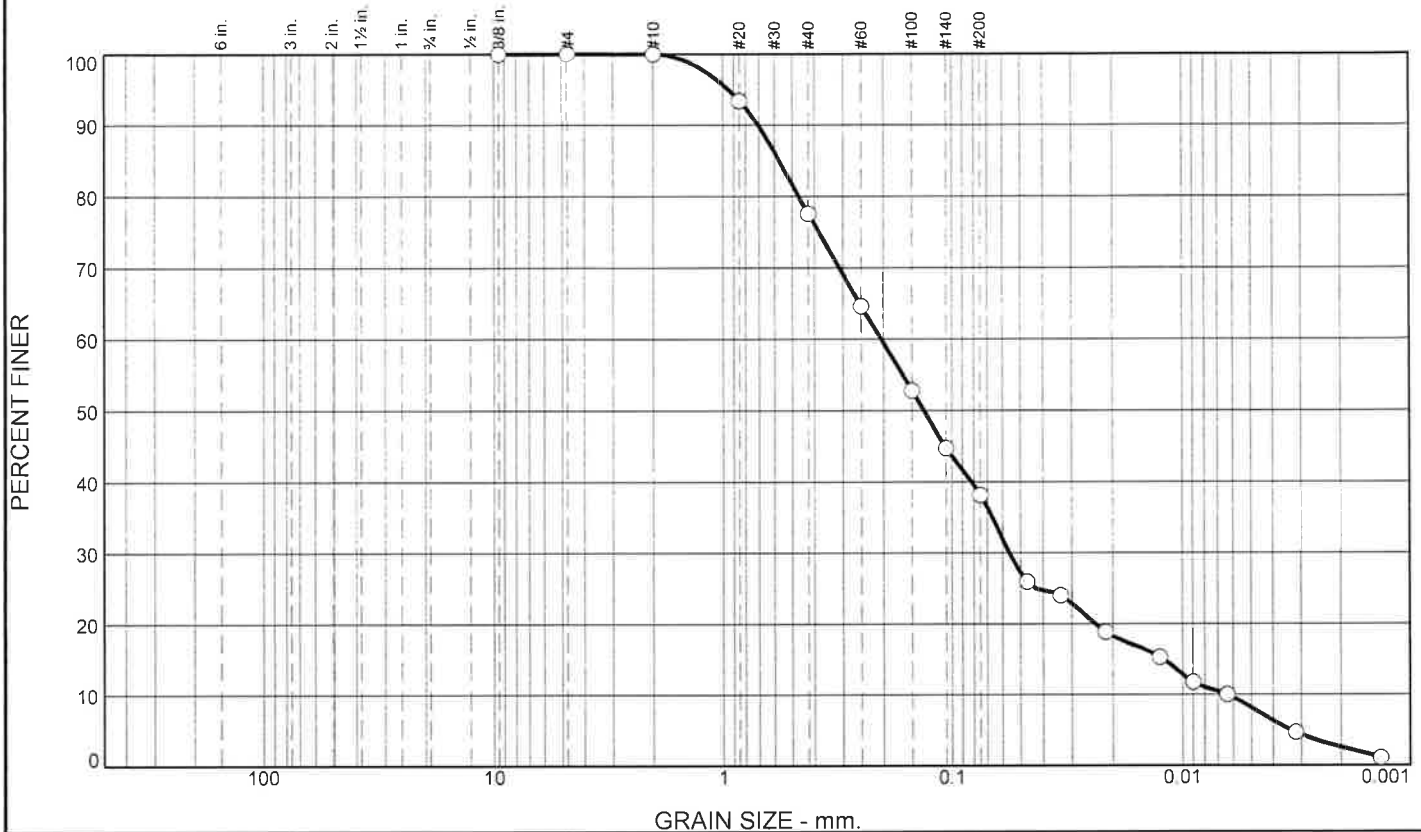
Tested By: DG

Checked By: MH

Sample Date: 08-23-24

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	22.5	39.4	29.9	8.2

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	100.0			
#20	93.4			93.4
#40	77.5			77.5
#60	64.6			64.6
#100	52.8			52.8
#140	44.7			44.7
#200	38.1			38.1
0.0468 mm.	25.9			
0.0335 mm.	24.0			
0.0215 mm.	18.9			
0.0125 mm.	15.3			
0.0090 mm.	11.8			
0.0064 mm.	10.0			
0.0032 mm.	4.7			
0.0013 mm.	1.1			

* (no specification provided)

Location: MW-42A. SS-4 @ 14.5'-16'

Material Description

Orange-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7078 D₈₅= 0.5727 D₆₀= 0.2053
D₅₀= 0.1334 D₃₀= 0.0560 D₁₅= 0.0121
D₁₀= 0.0064 C_u= 32.17 C_c= 2.40

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

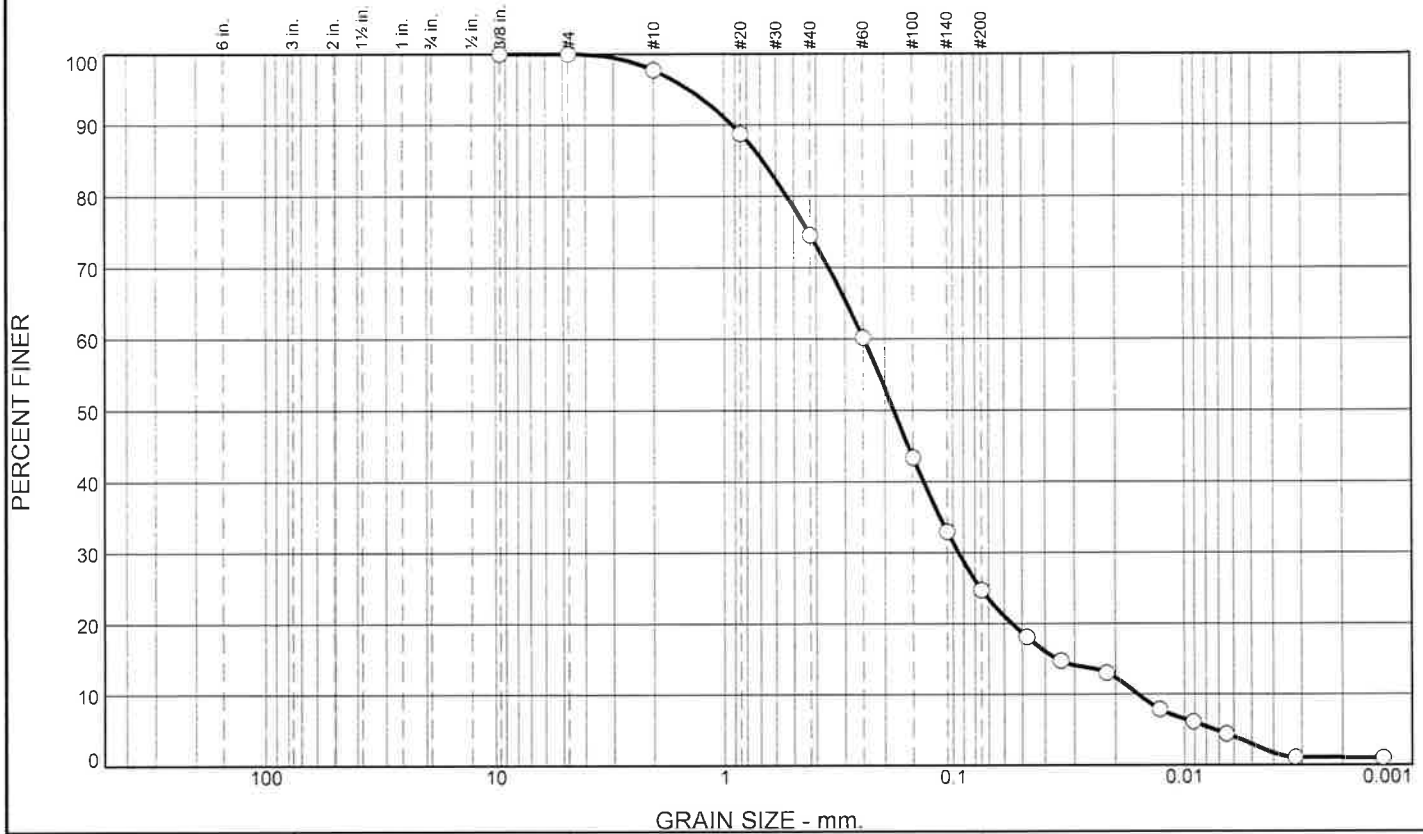
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.3	23.2	49.8	21.8	2.9

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	97.7			90.8
#20	88.8			76.2
#40	74.5			61.6
#60	60.2			44.4
#100	43.4			33.7
#140	33.0			25.3
#200	24.7			
0.0475 mm.	18.1			
0.0342 mm.	14.7			
0.0218 mm.	13.0			
0.0128 mm.	7.9			
0.0091 mm.	6.1			
0.0065 mm.	4.4			
0.0032 mm.	1.1			
0.0013 mm.	1.1			

* (no specification provided)

Location: MW-43, SS-3 @ 9'-10.5'

Material Description
Dark-Brown Slightly Clayey, Silty Sand

PL= **Atterberg Limits** LL= PI=

Coefficients
D₉₀= 0.9241 D₈₅= 0.6859 D₆₀= 0.2482
D₅₀= 0.1832 D₃₀= 0.0947 D₁₅= 0.0355
D₁₀= 0.0160 C_u= 15.54 C_c= 2.26

USCS= **Classification** AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

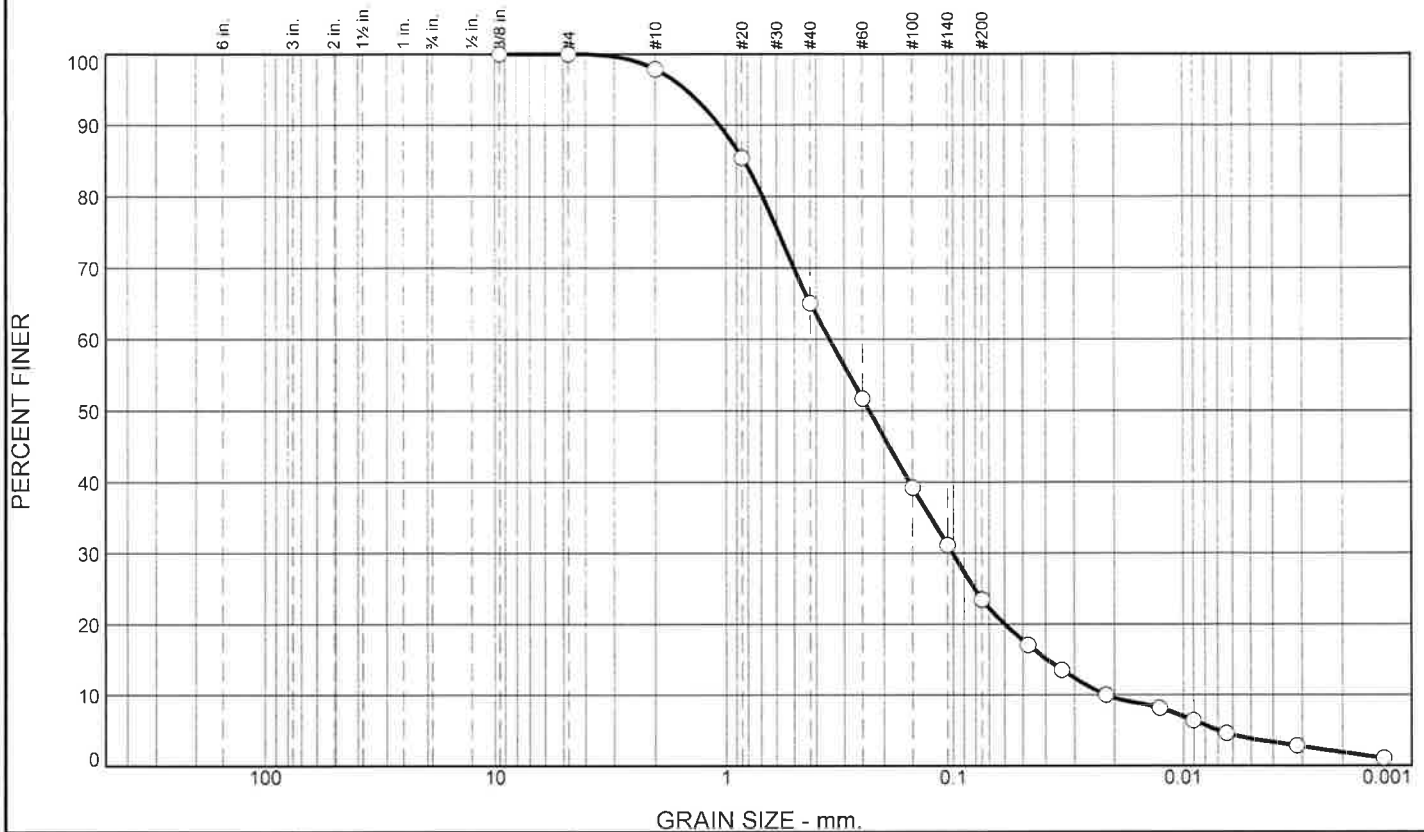
Figure

Tested By: DG

Checked By: MH

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.1	32.8	41.7	19.6	3.8

Test Results (ASTM D422)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec. * (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	97.9			87.3
#20	85.4			66.5
#40	65.1			52.8
#60	51.7			40.1
#100	39.2			31.8
#140	31.2			24.0
#200	23.4			
0.0475 mm.	17.1			
0.0341 mm.	13.6			
0.0218 mm.	10.0			
0.0127 mm.	8.2			
0.0090 mm.	6.4			
0.0064 mm.	4.6			
0.0032 mm.	2.9			
0.0013 mm.	1.1			

* (no specification provided)

Location: MW-43, SS-5 @ 19'-20.5'

Material Description

Yellow-Brown Slightly Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 1.0697 D₈₅= 0.8344 D₆₀= 0.3501
D₅₀= 0.2333 D₃₀= 0.1008 D₁₅= 0.0396
D₁₀= 0.0217 C_u= 16.13 C_c= 1.34

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Project No: A24117.01899.000

Figure

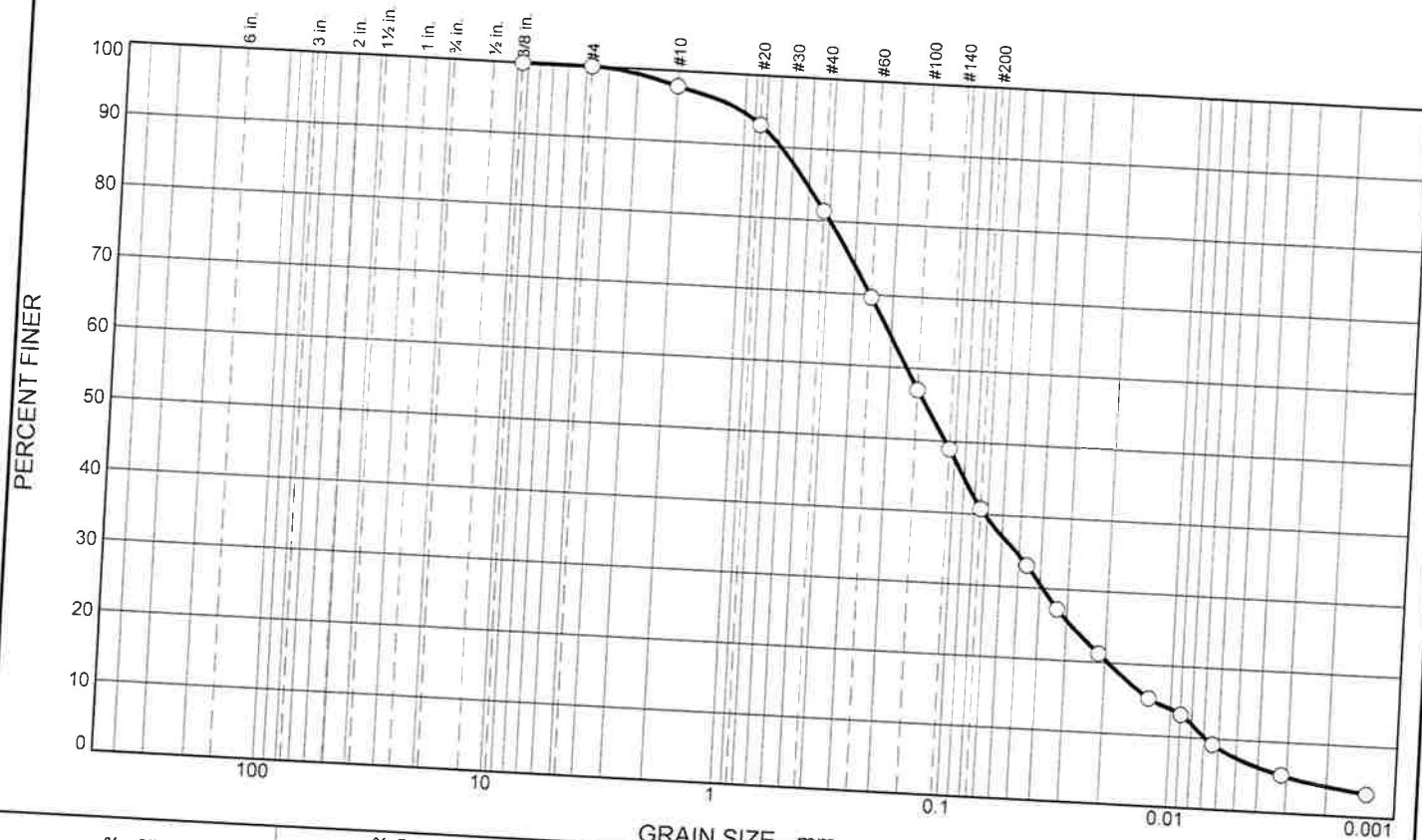
Tested By: DG

Checked By: MH

Sample Date: 08-23-24

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.2	16.4	40.7	33.3	7.4

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	97.8			
#20	93.0			
#40	81.4			95.1
#60	69.6			83.2
#100	57.0			71.2
#140	48.9			58.3
#200	40.7			50.0
0.0461 mm.	33.1			41.6
0.0332 mm.	27.2			
0.0214 mm.	21.2			
0.0126 mm.	15.3			
0.0090 mm.	13.2			
0.0064 mm.	9.2			
0.0032 mm.	5.3			
0.0013 mm.	3.3			

(no specification provided)

Location: MW-43, SS-8 @ 34'-35.5'

Material Description

Dark-Brown Clayey, Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6817 D₈₅= 0.5133 D₆₀= 0.1695
D₅₀= 0.1110 D₃₀= 0.0389 D₁₅= 0.0122
D₁₀= 0.0069 C_u= 24.52 C_c= 1.29

Classification

USCS= AASHTO=

Test Remarks



Client: HDR Engineering
Project: Catawba Unit 4 Landfill Expansion

Sample Date: 08-23-24

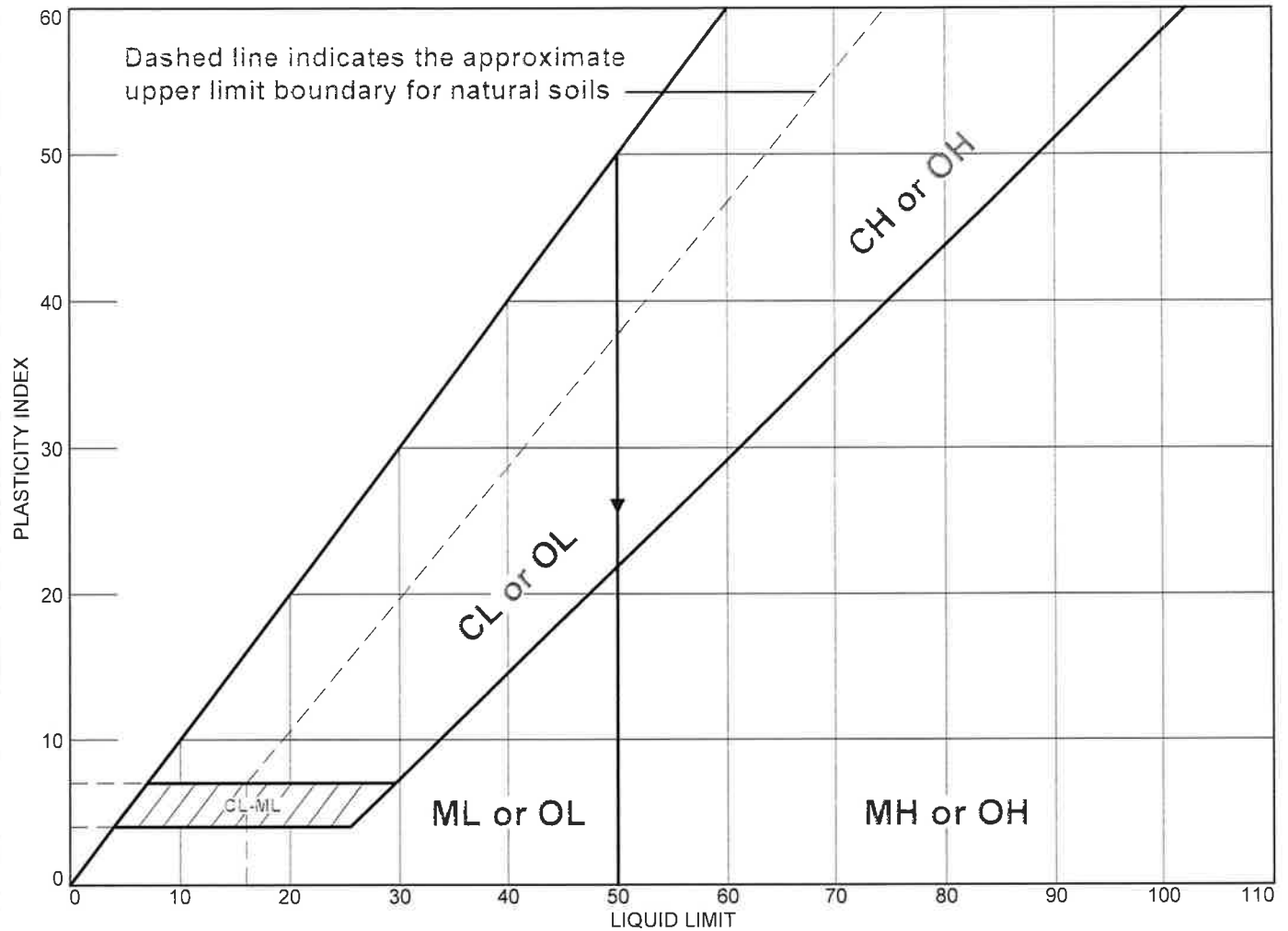
Project No: A24117.01899.000

Figure

Tested By: DG

Checked By: MH

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Orange-Brown Silty Sand (Visual)	NP	NP	NP			
■	Red-Brown Silty Sand (Visual)	NP	NP	NP			
▲	Red-Brown Silty Sand (Visual)	NP	NP	NP			
◆	Light-Brown Silty Sand (visual)	NP	NP	NP			
▼	Orange-Brown Clayey Sand (visual)	50	24	26			

Project No. A24117 01899 000 **Client:** HDR Engineering

Project: Catawba Unit 4 Landfill Expansion

● **Location:** PZ-210, SS-3 @ 9.4'-10.9'

■ **Location:** PZ-214, SS @ 9.4'-10.9'

▲ **Location:** PZ-215, SS-2 @ 4.5'-6'

◆ **Location:** PZ-216, SS-2 @ 4.4'-5.9'

▼ **Location:** PZ-220, SS-3 @ 9'-10.5'



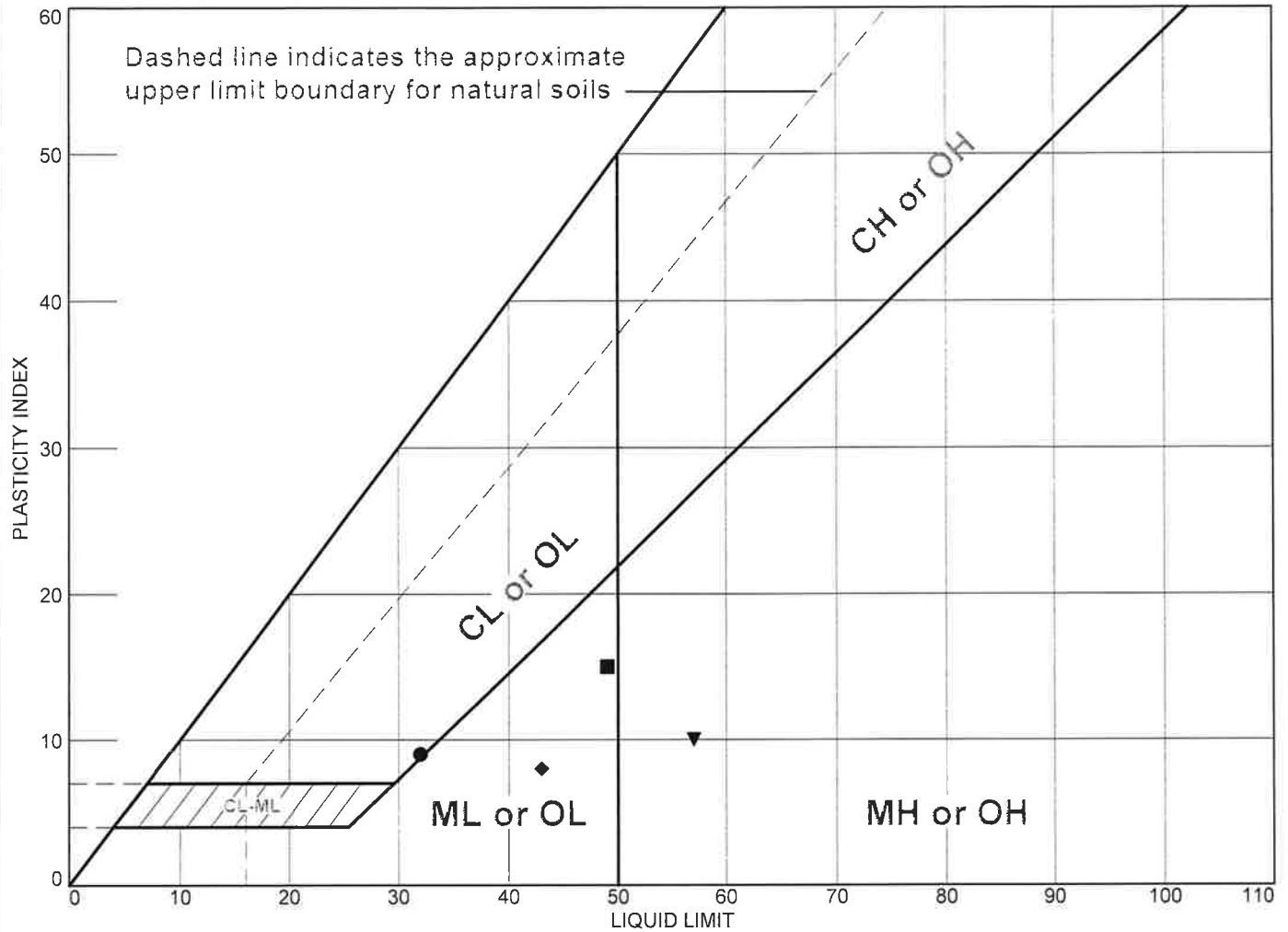
Remarks:

Figure

Tested By: DG

Checked By: MH

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Grey-Brown Clayey Sand (Visual)	32	23	9			
■	Grey-Brown Sandy Silt (Visual)	49	34	15			
▲	Orange-Brown Silty Sand (Visual)	NP	NP	NP			
◆	Tan-Brown Sandy Silt (Visual)	43	35	8			
▼	Red-Brown Sandy Elastic Silt (Visual)	57	47	10			

Project No. A24117 01899 000 **Client:** HDR Engineering

Project: Catawba Unit 4 Landfill Expansion

● **Location:** PZ-222, SS-2 @ 4'-5.5'

■ **Location:** PZ-222, SS-4 @ 14'-15.5'

▲ **Location:** PZ-223, SS-9 @ 39'-40.5'

◆ **Location:** MW-38, SS-2 @ 3'-4.5'

▼ **Location:** MW-41, SS-2 @ 4.4'-5.9'



Remarks:

Figure

Tested By: DG

Checked By: MH