Eldridge Parks & Recreation Board Meeting Agenda
Tuesday, January 14, 2025
6:30 p.m. at City Hall

- Call to Order & Roll Call
- Approval of Agenda
- Public Comment
- Consideration of approval of the minutes from December 11, 2024.
- Consideration of approval of Park bills
- Old Business
    - Sanctuary Gardens Sign Approval and Pergola
    - Rec Desk Update
    - Concession RFI
    - Fee Schedule
    - Tournaments
- New Business
    - Terracon Geotechnical Engineering Report for Hickory Creek Park
- Adjourn

The next Park and Recreation Board meeting is Tuesday, January 14, 2024, at 6:30 p.m.

Jeff Ashcraft
Tricia Campbell
Jill DeWulf
Scott LaPlante
Dean Halverson

City of Eldridge
Park Board

The regular meeting of the Eldridge Park Board was called to order at 6:31 P.M. on December 11, 2024, at City Hall.

Board members present were Jeff Ashcraft, Jill DeWulf, and Tricia Campbell. Dean Halverson and Scott LaPlante were absent. Also present were Scott Campbell, and Ashley Lacey.

Motion by T. Campbell, second by DeWulf to approve the agenda. Motion was approved unanimously by voice vote.

Motion by DeWulf, second by T. Campbell to approve the minutes from the November 12, 2024, meeting. Motion approved unanimously by voice vote.

Motion by T. Campbell, second by DeWulf to approve bills payable in the amount of $11,834.85. Motion approved unanimously by voice vote.

Old Business-

Lacey presented the board with pictures of the new pad and pergola at Sanctuary Gardens. She also showed them a sign and a quote. The board also decided they would like to get pricing on a rock to be engraved for the graves found there.

Ashcraft also gave an update on a strategy meeting; city staff will be putting out an RFI for the concession stand. Lacey will sit through a few meetings about software for scheduling the ball diamonds. Motion by DeWulf, second by T. Campbell to approve a scheduling platform for up to $6,000. Motion approved unanimously by voice vote. Ashcraft also mentioned that they had reached out to the YMCA about incorporating some of our summer programs, but at this time they were not interested.

Motion by T. Campbell, second by DeWulf to adjourn the meeting at 7:19 pm. Motion approved unanimously by voice vote.

Respectfully submitted,
Ashley Lacey, Billing Clerk

Name	GL Description	Amount
DUBUQUE FIRE EQUIPMENT INC	PARKS FIRE EXTINGUISHER CERT	$59.00
AMAZON CAPITAL SERVICES	PET WASTE BAGS	$179.96
SHACKS LLC	PORTA POTTY RENTAL	$125.00
LOGAN CONTR SUPPLY INC.	AIR HOSE	$107.62
MENARDS	HICKORY PARK IRRIGATION PUMP	$5.89
SHACKS LLC	PORTA POTTY RENTAL	$125.00
SHACKS LLC	PORTA POTTY RENTAL	$125.00
CLS MUDJACKING	S CONCESS. 4 PLEX MUDJACKING	$1,200.00
STAPLES	PARKS TP	$104.98
SHACKS LLC	PORTA POTTY RENTAL	$125.00
MIDAMERICAN ENERGY COMPANY	851 N 1ST ST	$37.40
IHRIG WORKS LLC	SANCTUARY GAZEBO PAD	$9,640.00
		$11,834.85

BILLS PAYABLE			
CHECK #	**VENDOR**	**FUND**	**AMOUNT**
155320	MIDAMERICAN ENERGY COMPANY	004-5-430-6371	$94.66
155311	GRUNWALD ARDITA	004-5-430-6600	$101.25
155316	LINGLE CHAR	004-5-430-6601	$300.00
155317	LOVEWELL FENCING INC.	301-5-430-6795	$10,180.00
		TOTAL	$10,675.91

January 9, 2025

CITY OF ELDRIDGE
REQUEST FOR PROPOSAL
CONCESSION LEASE PROPOSAL
(Sheridan Meadows Park)

The City of Eldridge and the Eldridge Park Board are now soliciting a request for proposal regarding individuals and/or organizations that are interested in providing concession services at the Sheridan Meadows Park baseball and softball complex.

Enclosed you will find the following information:

A concession proposal form that must be filled out completely and returned by the due date of Thursday, February 13th, 2025 at 4:30pm.

If you or your organization is interested in submitting a proposal for Sheridan Meadows Park concessions, please fill out the attached proposal form and return it in a sealed envelope clearly marked "concession proposal" to Eldridge City Hall – City Clerk's Office, 305 N 3rd St, Eldridge, IA 52748 by the deadline of Thursday, February 13th, 2025 at 4:30pm. Proposals will be opened and reviewed by staff on Friday, February 14th, 2025 and a recommendation will be made to the Park Board on Tuesday, February 18th, 2025. The proposal that is awarded the contract will be notified no later than Friday, February 21st. Late proposals will be returned unopened.

As this is a request for proposal and not a bid, the proposals will be evaluated on: concession food service experience, ability to provide additional concession equipment as needed, completeness of proposal, highest percentage of gross sales proposed to the City, ability to provide staff as needed, and experience in working with the public.

Thank you for your interest. If you have any questions or concerns or if you wish to have a tour of the concession stands, please contact the Eldridge Parks Department at (563)285-4841. The deadline to submit a proposal is Thursday, February 13th, 2025 at 4:30pm.

CITY OF ELDRIDGE
CONCESSION LEASE PROPOSAL

Proposals are now being accepted for individual(s) interested in obtaining the concession agreement for Sheridan Meadows Park Softball & Baseball Complex.

Proposals must be received in the City Clerk's Office office by 4:30pm on Thursday, February 13th, 2025.

Individual(s) submitting proposals should be aware of the following:

Proposals are for the Sheridan Meadows Park concessions.

The successful proposer could be awarded a one (1) year contract with the understanding as per the concession agreement that the City reserves the right to terminate this agreement if the terms and conditions of the concession agreement are not performed.

Exclusive concession sales rights in Sheridan Meadows Park except as provided for in the agreement.

Must obtain all necessary licenses and permits.

May need to provide some concession equipment.

A minimum of $500,000 general liability and $500,000 aggregate insurance is required.

The financial arrangements will be based on gross sales net the sales tax or a flat fee paid to the City.

Must demonstrate a business plan that efficiently and effectively serves the public with minimal service lines.

Must have experience in concession operations or food service.

Expected to provide acceptable credit references.

For a proposal form and additional information contact: Eldridge Parks Department, 305 N. 3rd St., Eldridge, Iowa 52748 at (563)285-4841.

CONCESSION LEASE PROPOSAL

2025 Sheridan Meadows Park
Concession Proposal Form

Name / Business _____ Address _____

_____

Telephone _____
_____(h)

_____(m)

Proposer Qualifications

A. Concession or food service experience: _____
_____
_____
_____

B. Concession equipment that you will or could provide: _____
_____
_____
_____

C. Can you obtain a minimum of $500,000 general liability and $500,000 aggregate insurance with the City named as additional insured: _____Yes ___No

D. If needed, can you provide the following specialty equipment:
1. Concession trailer or unit? _____Yes _____No
2. Beverage/snack carts? _____Yes _____No
3. A grill? _____Yes _____No

E. What percentage (%) of your gross sales net the sales tax or a flat dollar amount would you pay to the City: _____

PLEASE NOTE: The City of Eldridge is expecting to receive a minimum of 10% commission on gross sales net the 7% sales tax. Proposals with a lower percentage or a flat dollar amount will still be considered.

Are there any terms that you have questions on?

G. Please list sample menu items, services, proposed prices, etc. (attach additional page as needed):

H. Can you provide additional staff for large or multiple events and tournaments? Please explain your business plan that will efficiently and effectively serve the public with minimal service lines.

I. Please list all partners and/or sub-contractors completely by name, business name, phone number and address.

J. What term or length of contract are you interested in?

K. Please provide three (3) business references that the City of Eldridge may contact:

Authorized Representatives Signature

Date

City of Eldridge

Parks & Recreation Department
305 N 3rd Street
Eldridge, Iowa 52748
(563) 285-4841· FAX (563) 285-7376
MEMBER IOWA LEAGUE OF CITIES

AGREEMENT FOR SERVICE

By and between the City of Eldridge, Iowa Park Board, herein after “City” and _____ (vendor name), herein after "Service Provider” or “contractor”.

The City desires and Service Provider agrees to provide the service of concession service during the Eldridge Parks & Recreation baseball / softball season. The main season runs from April through June, with the potential for some games in July, August and September. All games are held at Sheridan Meadows Park and service shall be provided to both concessions stands at the park.

Article I, TERM - The City grants the contractor, for a period of one year the exclusive privilege, responsibility and obligation to manage and operate concession sales for Eldridge Parks & Recreation Baseball & Softball games at Sheridan Meadows Park. This agreement may be extended for successive year periods of one year each for four additional years, subject to annual review and approval by the City.

Article II. TERMINATION OF AGREEMENT -The parties shall have the right to terminate the agreement upon good cause by delivery of written notice to the other party. The parties agree that a material breach of any of the provisions of this agreement shall constitute good cause for termination and the effective date of the termination shall be sixty (60} days from the date upon which written notice of termination is given to the other party.

Article lll, DUTIES OF CONTRATOR -

1. Maintain regular communication with City staff to ensure coordination of concession activities. The City of Eldridge will always have access to the facility.
2. Keep the concession area open and available to users during periods when games are being played, except for those times as mutually agreed upon by both parties.
3. Provide a listing of all items and prices of concessions purchased by the contractor and sold during games. All products and prices shall be subject to prior approval by the City. The Contractor shall not sell or have in the concession area any alcoholic beverages, tobacco, cigarettes or cigarette papers.
4. Keep all food, equipment and food service areas in a clean and sanitary condition, according to all appropriate food handling regulations. The City and other authorized health inspectors shall have the right to enter and inspect the premises at any time. Any directives shall be complied with immediately. Any written violations not rectified within 72 hours shall be cause for immediate termination of the agreement by the City.
5. Manage and maintain the 4 pop machines that are in service in the summer, which includes one machine at each of the following locations: Sheridan Meadows North Concession Stand, Sheridan Meadows South Concession Stand, Sheridan Meadows Lions Shelter, and the Centennial Park Shelter.
6. Pick up trash, litter and debris associated with concession facility usage on a regular and routine basis. Place all collected trash, litter and debris in designated areas. Trash cans will be provided by city staff and placed near the concession areas.
7. Report identified hazards to the City.
8. Provide all records and information pertaining to concession sales on a seasonal basis (after the season is completed). Records shall be subject to an annual audit by the City in addition to periodic

unannounced spot checks and audits by the City.

9. Purchase all concession products being offered for sale and pay all vendors resulting invoices in a timely fashion. The City shall not be responsible for the contractor's debt. The City has an existing contract with Pepsi for use of the concession stand coolers. All **soda** being sold in the concession stand must be purchased directly from Pepsi.
10. Pay any sales or other taxes attributable to contractor's operations.
11. The contractor is responsible for all FICA, unemployment, employee withholdings and etc.

Article IV. DUTIES OF THE CITY-

1. Schedule all baseball & softball activities Sheridan Meadows Park.
2. Provide keys to the concession stand at both locations.
3. Provide maintenance of baseball/ softball fields and grounds, including providing trash receptacles.
4. Provide, as well as maintain/repair/replace as needed, the following concessions equipment:
   South Stand – Hot Dog Roller, Coffee, Pot, Popcorn Machine, Nacho Cheese Machine, Upright Freezer, & Microwave. (Pepsi Co. provides (1) Double Cooler and (3) Single Coolers).
   North Stand – Hot Dog Roller, Coffee Pot, Popcorn Machine, Nacho Cheese Machine, Chest Freezer, Microwave, (2) Refrigerator/Freezer Units. (Pepsi Co. provides (1) Double Cooler).

Article V. INSURANCE -

1. The Contractor shall maintain general liability, worker's compensation, property and vehicle insurance to insure itself, personnel, property and vehicles used in performance of the terms and conditions of this agreement, with limits of not less than $500,000 per occurrence for general liability and $500,000 for property and vehicle coverage. The City shall be named as additional insured, and a certificate of such insurance shall be provided to the City.

   INSURANCE CERTIFICATES. Each policy noted above shall be issued by an insurance company authorized to write such insurance in the State of Iowa and shall reasonably be acceptable to the City. These insurance policies shall not be cancelled without at least 30 days' prior written notice to the City. A properly executed Certificate of Insurance showing evidence of these insurance requirements shall be delivered to the City prior to the commencement of this contract.

   GOVERNMENT IMMUNITY. The following clauses will be added to all liability coverages:

1. NONWAIVER OF GOVERNMENTAL IMMUNITY. The company and insured expressly agree and state that the purchase of this policy of insurance by the insured does not waive any of the defenses of governmental immunity available to the City of Eldridge under Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time.

2. CLAIMS COVERAGE. The company and the insured further agree that this policy of insurance shall cover only those claims not subject to the defense of governmental immunity under the Iowa Code Section 670.4 as it now exists and as it may be amended from time to time

Article VI. COMPENSATION -

1. The Service provider shall pay **10%** of net income on an annual basis. Contractor shall make payment to the City thirty (30} days following the close of the season. Payments shall be accompanied by a written report of the gross sales/ expenses/ taxes for the season.

Article VII. DAMAGE AND DESTRUCTION -

1. The Contractor shall be responsible to make restitution for any damage or destruction of any of the property at Sheridan Meadows Park as a result of acts of the contractor and its members, employees, or agents in the performance of this agreement. A $100 damage deposit must be paid by the contractor prior to the season to ensure the facilities are left in the condition they are found.

Article VIII. LICENSES, PERMITS AND CERTIFICATES

1. The Contractor shall be responsible to comply with and secure all necessary licenses, permits and certificates required by, and shall conducts its activities in accordance with, all federal, state and local statues, rules and regulations to carry out its responsibilities under this agreement.

Article IX. INDEMNIFICATION AND HOLD HARMLESS-

1. The Contractor agrees to assume full and absolute responsibility for, and to defend, hold harmless and indemnify the City and its officers, employees and agents for any and all claims, damages and losses to persons or property in any way resulting from the care, operation or use of the concession area covered by this agreement.

Article X. WHOLE AGREEMENT-

1. The agreement contains the whole agreement of the parties and none of the terms or conditions shall be modified, waived or abandoned except by a written instrument duly signed by the parties and delivered to the parties.

Dated on this _____day of_____2025.

City of Eldridge

Service Provider: _____
(Names of Service Provider Parties)

By _____

By _____

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

CLIENT: City of Eldridge

PROJECT: Hickory Creek Pond – Geotechnical Investigation Memo

PROJECT LOCATION: Hickory Creek Park, Eldridge, IA

DATE: December 20, 2024

Shive-Hattery was contracted to assist the City with a geotechnical investigation for a potential pond located on Hickory Creek. See attached location map (Exhibit 1) with provided boring locations. In addition, the geotechnical report provided by Terracon is included in Attachment A.

Pond Sizing and Considerations

A pond should be sized appropriately for its watershed, which typically falls within the range of 15 to 50 to 1 ratio of watershed area to pond surface area. A pond that is too large compared to its watershed can struggle to maintain a full pool while having a pond too small can lead to excess sedimentation and loss of water volume. In addition, a pond with a larger watershed ratio will require a larger, more expensive outlet to convey stormwater. The proposed pond location has a drainage area of approximately 750 acres consisting of a mix of agricultural and suburban land. This puts the ideal pond size at 15 to 50 acres for the watershed. This size may not be practical at this location, as a pond ranging from 5-10 acres may fit onto the site.

A five to ten acre pond on this site would require a large outlet works and may be prone to sedimentation and high maintenance costs. Generally, the sediment delivery to the pond is hard to predict without additional data collection. A rough estimation based on typical values for sediment delivery in agricultural landscapes yields an estimate of approximately 1,150 cubic yards of sediment accumulation per year. Using this rate, it is estimated that within 30 years the pond's average depth would reduce from 9 feet to 6 feet, accumulating approximately 35,000 cubic yards of sediment. At that time, recreational opportunities and water quality are expected to be negatively impacted (and may have been impacted for years prior) and a maintenance dredging may be needed. The estimated dredging cost will vary depending on the method of dredging (mechanical vs hydraulic) and the proposed sediment disposal site. Assuming a local spoil site within 0.5 miles of the site and a mechanical dredging, a dredging project is expected to cost approximately $500,000 to 650,000 (2024 dollars). The pond would be drained for approximately one year and the established fishery would be lost and require restocking.

Based on lidar information, the upstream culvert at S Buttermilk Road is estimated to have an invert elevation near elevation 752. This would need to be verified by survey data in design phase. The top of embankment should not be built higher than the culvert invert, as the pond could have an adverse effect on the culvert capacity and flooding of properties east of the roadway. In addition, at least four feet of elevation difference should be included between the normal water level and the top of dam. This allows for water surface elevation fluctuations during rain events of two feet that are passed through a principal spillway pipe and an additional two' deep auxiliary spillway channel. These are minimum requirements based on typical dam design standards. This would mean a proposed water level of approximately 748 feet. The ground elevation near the embankment location, outside the channel, is approximately 745. For this reason, the pond water depth would primarily be achieved through excavation rather than constructing a tall embankment. In order to maintain fish in the pond, an area of at least twelve feet deep and 25% of the pond footprint is recommended for overwintering and avoidance of fish kills during thick ice conditions. This amount of excavation will be expensive. An estimated excavation quantity of 120,000 Cubic yards or more would be needed to achieve a mean depth near 8-9 feet in an 8-acre pool.

Geotechnical Report

The geotechnical report shows soil boring locations and logs as well as infiltration rates of the onsite soils. With the assumption of the pond bottom being near 735 feet, the bottom would terminate in loamy and clay loam soils. These may or may not be favorable for a pond liner and it is recommended that a compacted clay liner be constructed to minimize seepage from the pond. The clay liner material and thickness may require additional consultation with a geotechnical engineer to determine acceptable seepage rates based on the city's goals. A suitable source of clay material for embankment and liner construction appears to be present in the upper soil strata. This select material could be stockpiled during excavation for use in the clay liner construction. A minimum of twelve inches of clay liner is expected to be needed to reduce infiltration due to sand seams and sandier soils that are expected to be present.

Preliminary Project Cost Estimate

Considering the excavation quantity, the large outlet pipe size, a compacted clay liner, and the need for drawdown capabilities for maintenance, the pond construction cost is estimated to be approximately $1,250,000, which incudes a 25% contingency. A twelve-inch thick clay liner for an 8-acre pool is anticipated to cost approximately $100,000 to $150,000 using on site suitable soils. A suitable soil stockpile or project requiring a large amount of fill would be needed for over 100,000 cubic yards of excess soils.

In addition to construction costs and permitting, engineering costs are expected to be approximately $100,000 to provide construction documents. A permit from the Army Corps of Engineers and DNR Dam Safety will be required. Based on experience with the Army Corps of Engineers, we assume that the United States Army Corps of Engineers would have jurisdiction on Hickory Creek and that it would have a perennial stream designation. Permitting would require purchase of mitigation credits adding another $150,000 to total project costs. Mitigation credit purchase is based on current market rates and an estimate for purchase of credits for approximately 1,000 linear feet of stream loss. Actual stream impacts and purchase price may vary depending on future environmental reviews, political climate, and the credit market at the time of purchase. Impacts to stream bed must be less than 0.5 acres for permitting under Regional Permit 42. If impacts over 0.5 acres are expected or more than 1,000 linear feet of stream, then individual permitting process will increase costs of permitting and mitigation. It will also reduce the probability that the Army Corps of Engineers will permit the site.

The total project cost is estimated to be $1,500,000 and is summarized below. The cost below assumes an 8-acre pond with a clay liner and excess excavated materials are stockpiled on site. Hauling of excess excavation soils is not included but may be required. The cost of adjacent amenities and other park improvements are not included in these costs.

Description	Preliminary Cost Estimate
Engineering and Permitting	$100,000
Compensatory Mitigation	$150,000
Construction Cost	$1,000,000
Construction Contingency (25%)	$250,000
Total	**$1,500,000**

Recommendations

While the geotechnical report indicates that a pond could be feasible in this location, we believe the cost of construction and permitting may be cost prohibitive for the city to pursue at this location. If desired, Shive-Hattery can develop a pond concept and more detailed cost estimate for your consideration as outlined in our full proposal.

If you have any questions regarding this memo, please contact us.

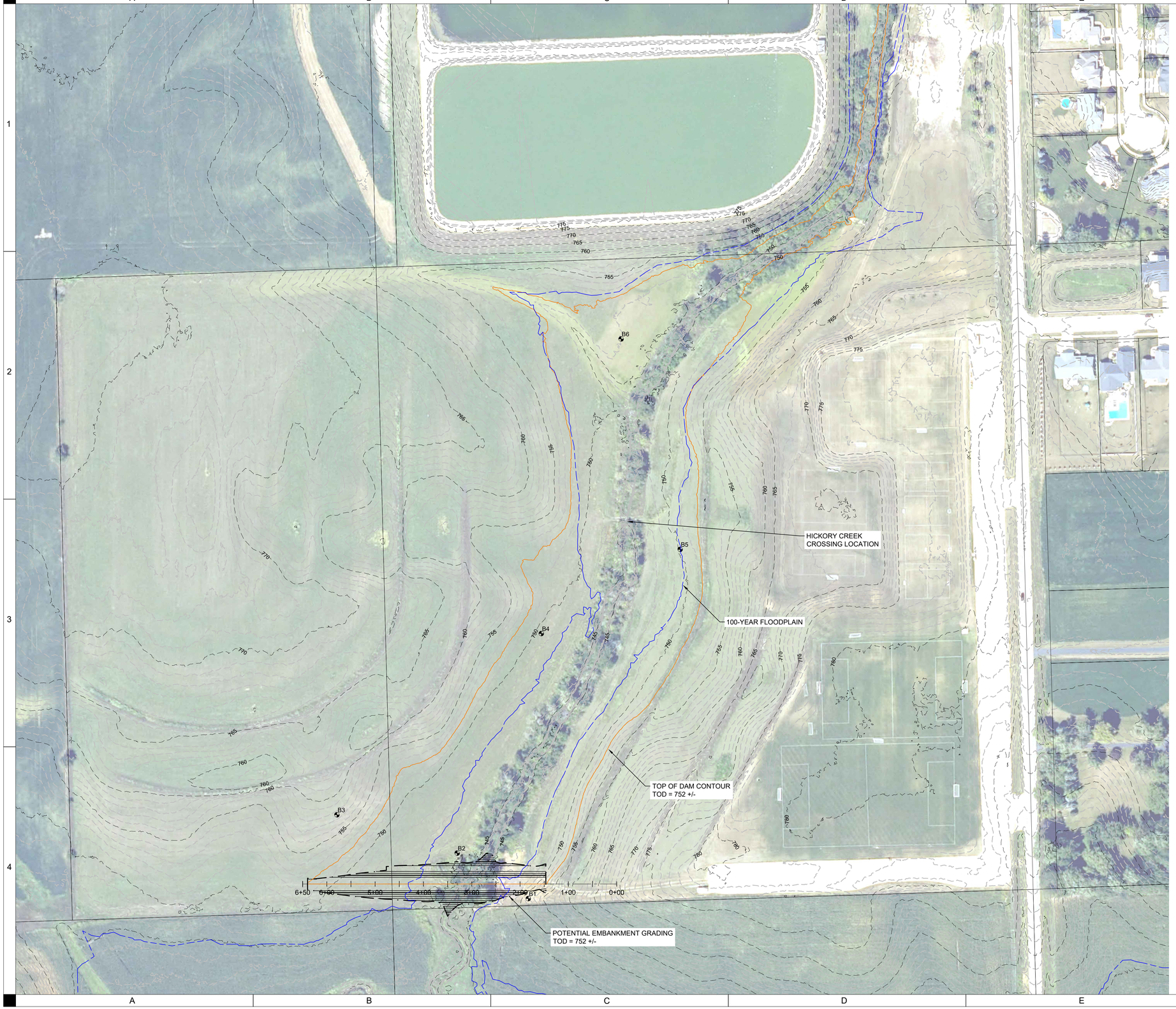
Sincerely,
SHIVE-HATTERY, INC.

Dan Jensen, PE
Civil Engineer
djensen@shive-hattery.com

Copies:
Zach Howell, SH

Attachments

- Exhibit 1 – Boring Locations Map
- Attachment A – Geotechnical Report by Terracon



NORTH

0 50 100 200

SCALE IN FEET

SOIL BORING TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	612090.32	2432413.56	751.61	B1
2	612184.38	2432266.39	745.27	B2
3	612263.65	2432017.52	757.50	B3
4	612638.72	2432440.58	749.55	B4
5	612812.85	2432727.90	750.17	B5
6	613248.29	2432605.66	750.74	B6

SHIVEHATTERY
ARCHITECTURE + ENGINEERING
800.798.0313 | SHIVE-HATTERY.COM

HICKORY CREEK POND

CITY OF ELDRIDGE
ELDRIDGE, IA

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWN BY	--
APPROVED BY	--
ISSUED FOR	BORINGS
ISSUE DATE	09/27/2024
PROJECT NUMBER	2240016700
FIELD BOOK	--

BORING LOCATIONS

EX01

P:\Projects\2024\2240016700\Delivered\Arc\Drawings\1_Civil\EX01-Concept.dwg
Printed: 9/27/2024 10:35:25 AM

Recreational Pond

Geotechnical Engineering Report

Eldridge, Iowa

October 29, 2024 | Terracon Project No. 07245105

Prepared for:

Shive-Hattery Inc.
2144 56th Avenue W
Bettendorf, Iowa 52722

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa. October 29, 2024 Sara J. Somsky, P.E. Date My license renewal date is December 31, 2024. Pages or sheets covered by this seal: All pages

870 40th Avenue
Bettendorf, Iowa 52722
P (563) 355-0702
Terracon.com

October 29, 2024

Shive-Hattery Inc.
2144 56th Avenue W
Bettendorf, Iowa 52722

Attn: Zachary Howell
P: (309) 277-1973
E: zhowell@shive-hattery.com

Re: Geotechnical Engineering Report
Recreational Pond
S Buttermilk Road and 155th Avenue
Eldridge, Iowa
Terracon Project No. 07245105

Dear Mr. Howell:

We have completed the scope of geotechnical engineering services for the above referenced project in general accordance with Terracon Proposal No. P07245105 dated August 21, 2024. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and pond construction.

We appreciate the opportunity to be of service to you on this project and look forward to providing the recommended testing and observation services during construction. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

Stella G. Brown, E.I.T.
Staff Engineer

Sara J. Somsky, P.E.
Principal

Table of Contents

Figures

Attachments

Note: This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon logo will bring you back to this page. For more interactive features, please view your project online at **client.terracon.com**.

Refer to each individual Attachment for a listing of contents.

Introduction

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed recreational pond to be located at S Buttermilk Road and 155th Avenue in Eldridge, Iowa. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Infiltration rates based on USDA empirical correlations and laboratory testing

The geotechnical engineering Scope of Services for this project included the advancement of borings, laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and boring locations are shown on the **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included in the boring logs in the **Exploration and Laboratory Results** section.

Project Description

Our current understanding of the project conditions is as follows:

Item	Description
Information Provided	An email request for proposal was provided by Mr. Zach Howell on August 13, 2024. The request included a project description, requested boring depths, and access information.
Project Description	This project includes the construction of a recreational pond at Hickory Creek Park near Eldridge, Iowa.
Grading	A grading plan has not been made available to us. We assume the maximum depth of the pond will not extend to elevations deeper than about 735 feet.

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration.

Item	Description
Parcel Information	The project is located west of S Buttermilk Road and 155th Avenue in Eldridge, Iowa. 41.6458° N, 90.6022° W See **Site Location**
Existing Improvements	None
Current Ground Cover	Grass, light vegetation, creek extending northeast to south in the eastern portion of the site
Existing Topography	Based on information provided by Shive-Hattery, the ground surface elevation at the borings ranges between about 745 and 757.5 feet.

Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each boring location are indicated on the individual logs. The individual logs can be found in the **Exploration and Laboratory Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	**Surface**	Root Zone
2	**Native Cohesive Soil**	Lean Clay, Lean to Fat Clay, and Fat Clay with various amounts of organics, silt, sand, and gravel; Silt
3	**Native Granular Soil**	Poorly Graded Sand with clay seams

The borings were advanced using a rotary drilling technique that allows short term groundwater observations to be made while drilling. The following table summarizes the subsurface water levels encountered at this site:

Boring ID	Depth to Subsurface Water (feet bgs[1, 2])	
	While Drilling	After Drilling
1	NE	28
2	20½	24½
3	NE	NE
4	19	18
5	19	19
6	9	18

1. feet bgs – feet below existing ground surface
2. NE – not encountered

Groundwater conditions may be different at the time of construction. Mapping by the Natural Resources Conservation Service (NRCS) indicates a seasonal high groundwater level at the ground surface in the vicinity of Hickory Creek, and more than 80 inches below ground surface farther from the creek. Groundwater conditions may change because of seasonal variations in rainfall, runoff, water level in Hickory Creek, and other conditions not apparent at the time of drilling. Long-term groundwater monitoring was outside the scope of services for this project.

It is not uncommon for trapped or perched water to develop above the higher plasticity and strength glacial till, or within sand or silt seams within the alluvial deposits or glacial till, particularly after heavy or prolonged rainfall. The possibility of subsurface water fluctuations should be considered when developing the design and construction plans for the project.

Infiltration

A stormwater detention basin system is planned, as outlined in **Project Description**. Based on the soils encountered and summarized in **Geotechnical Characterization**, the soils planned for infiltration are anticipated to consist of GeoModel Layers 2 and 3, which are generally moderate to low plasticity clays.

Terracon performed grain size distribution and hydrometer testing on two samples from selected depths in the anticipated infiltration areas. Using the information obtained from the grain size analyses performed, the soils were classified in accordance with the USDA textural system (**Supporting Information**). The following table summarizes the classifications:

Boring	Depths (ft bgs[1])	USDA Soils Classification
3	14 to 16½	Silt Loam
5	19 to 20½	Loam

1. feet bgs – feet below existing ground surface

Based on the textural classification, the approximate design infiltration rates were obtained from the Iowa Stormwater Management Manual (ISMM), Chapter 5 Soils Testing Requirements for Infiltration Practices. Based on the ISMM Chapter 5, the estimated design infiltration rate for loam is anticipated to range between 0.13 and 0.24 inches per hour. Higher infiltration rates should be anticipated where sand lenses are encountered during excavation for the basin. The estimated design infiltration rates provided in the ISMM are as follows:

Soil Textural Classification	Design Infiltration rate (inches/hour) [1, 2]
Coarse sand or coarser	3.60
Loamy coarse sand	3.60
Sand	3.60
Loamy sand	1.63
Sandy loam	0.50
Loam	0.24
Silt loam	0.13
Sandy clay loam	0.11
Clay loam	0.09
Silty clay loam	0.063
Sandy clay	0.05
Silty clay	0.04
Clay	0.02

1. Infiltration rates represent the lowest value for each textural class presented in Table 2 of Rawls[3]
2. Infiltration rate is an average based on Rawls[4], 1982
3. Rawls, W.J., D. Gimenez, and R. Grossman. Use of Soil Texture, Bulk Density, and Slope of Water Retention Curve to Predict Saturated Hydraulic Conductivity. 1998. Transactions of the ASAE. Vol. 41(4):983-988
4. Rawls, W.J., D.L Brakensiek, and K.E. Saxton, K. E. Estimation of Water Properties.1982, Transactions of ASAE. Vol 25 (5):1316-1320 &1328

Earthwork

Earthwork is anticipated to include clearing and grubbing, excavations, and engineered fill placement. The following sections provide recommendations for use in the preparation of specifications for the work.

Site and Subgrade Preparation

Mature trees are located within or near the project site, which will require removal at the onset of construction. Tree root systems can remove substantial moisture from surrounding soils. Where trees are removed, the full root ball and all associated dry and desiccated soils should be removed. The soil materials which contain less than 5 percent organics can be reused as engineered fill provided the material is moisture conditioned and properly compacted.

All exposed areas which will receive fill, once properly cleared where necessary, should be scarified to a minimum depth of 9 inches, moisture conditioned as necessary, and compacted per the compaction requirements in this report. Compacted structural fill soils should then be placed to the proposed design grade and the moisture content and compaction of subgrade soils should be maintained until application of a vegetative cover or construction of a clay liner.

The subgrade should be proofrolled with an adequately loaded vehicle such as a fully loaded tandem-axle dump truck. The proofrolling should be performed under the observation of the Geotechnical Engineer or representative. Areas excessively deflecting under the proofroll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be stabilized. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

We observed clay soils with higher moisture contents (20 percent or above) throughout the borings. It is likely that these soils will be unstable in their current condition. Areas of lower moisture clay soils may become unstable if subjected to typical earthwork and construction traffic after precipitation events. Effective site drainage should be completed early in the construction sequence and maintained after construction to avoid potential strength and/or stability issues. If possible, the grading should be performed during the warmer and drier time of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable or unsuitable subgrade will persist. The contractor should review the boring logs prior to the commencement of construction.

Excavation

We anticipate that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to placement fill and/or continuation of construction.

Soil Stabilization

Since higher moisture content clays (above 20 percent) are present within the upper 5 feet across the site, stabilization will likely be required. Potential methods of subgrade improvement could include scarification, moisture conditioning, and recompaction, removal of unstable materials and replacement with granular fill (with or without geosynthetics), or chemical stabilization. The appropriate method of improvement, if required, would be dependent on factors such as schedule, weather, the size of the area to be stabilized, and the nature of the instability. More detailed recommendations can be provided during construction as the need for subgrade stabilization occurs.

- **Scarification and Recompaction** - It may be feasible to scarify, dry, and recompact the exposed soils. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Stable subgrades likely would not be achievable if the thickness of the unstable soil is greater than about 1 foot, if the unstable soil is at or near groundwater levels, or if construction is performed during a period of wet or cool weather when drying is difficult.
- **Crushed Stone** - The use of crushed stone or crushed gravel is a common procedure to improve subgrade stability. Typical undercut depths would be expected to range from about 12 to 18 inches below finished subgrade elevation. The use of high modulus geotextiles (i.e., engineering fabric or geogrid) could also be considered after underground work such as utility construction is completed. Prior to placing the fabric or geogrid, we recommend that all below grade construction, such as utility line installation, be completed to avoid damaging the fabric or geogrid. Equipment should not be operated above the fabric or geogrid until one full lift of crushed stone fill is placed above it. The maximum particle size of granular material placed over geotextile fabric or geogrid should not exceed 1½ inches. The use of crushed stone should be approved by the Civil Engineer prior to use.
- **Chemical Modification** - Improvement of subgrades with dry bentonite could be considered for improving unstable soils. Chemical modification should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions. Results of chemical analysis of the additive materials should be provided to the geotechnical engineer prior to use. The hazards of chemicals

blowing across the site or onto adjacent property should also be considered. Additional testing would be needed to develop specific recommendations to improve subgrade stability by blending chemicals with the site soils. Additional testing could include, but not be limited to, determining the most suitable stabilizing agent, the optimum amounts required, the presence of sulfates in the soil, and freeze-thaw durability of the subgrade.

Further evaluation of the need and recommendations for subgrade stabilization can be provided during construction as the geotechnical conditions are exposed.

Earthwork Construction Considerations

The groundwater table could affect overexcavation efforts, especially for overexcavation and replacement of lower strength soils. A temporary dewatering system consisting of sumps with pumps may be necessary to achieve the recommended depth of overexcavation depending on groundwater conditions at the time of construction. Extensive dewatering systems will be required where excavations extend below groundwater levels. The groundwater levels should be maintained at least 2 feet below the excavation level to improve the stability of conditions at the base of excavation.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

General Comments

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration and Laboratory Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing

services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials, or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly affect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damage due to vibration, modification of groundwater/surface water flow during construction, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

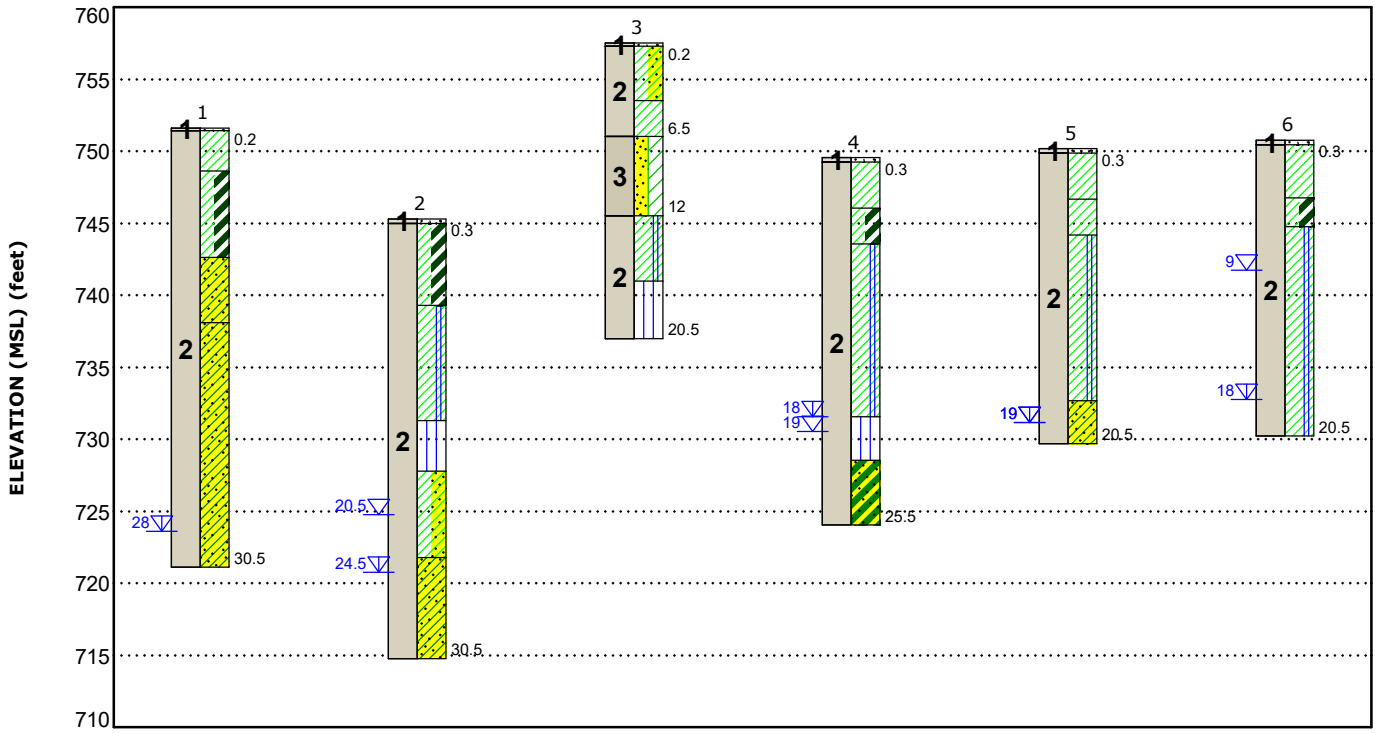
Figures

Contents:

Recreational Pond Eldridge, IA
S Buttermilk Rd and 155th Ave | Eldridge, Iowa
Terracon Project No. 07245105

Terracon
870 40th Ave
Bettendorf, IA

GeoModel



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Surface	Root Zone
2	Native Cohesive Soil	Lean Clay, Lean to Fat Clay, and Fat Clay with various amounts of organics, silt, sand, and gravel; Silt
3	Native Granular Soil	Poorly Graded Sand with clay seams

Legend

- Topsoil
- Lean Clay
- Lean Clay/Fat Clay
- Sandy Lean Clay
- Lean Clay with Silt
- Silt
- Lean Clay with Sand
- Poorly-graded Sand with Clay
- Sandy Fat Clay

▽ First Water Observation
▽ Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

Attachments

Exploration and Testing Procedures

Field Exploration

Shive-Hattery requested the following field exploration program:

Boring ID	Approximate Boring Depth (feet)	Location
1, 2	30½	See **Exploration Plan**
3, 5, 6	20½	
4	25½	

Boring Layout and Elevations: Shive-Hattery located the borings in the field. Coordinates and ground surface elevations included on the boring logs were provided by Shive-Hattery.

Subsurface Exploration Procedures: We advanced the borings with an ATV-mounted rotary drill rig using continuous-flight hollow-stem augers. Four samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. Sampling was performed using split-barrel sampling procedures in which a standard 2-inch outer diameter split-barrel sampling spoon was driven into the bottom of the borehole by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths.

We also observed the boreholes while drilling and at the completion of drilling for the presence of groundwater. The groundwater levels are shown on the attached boring logs. For safety purposes, all borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information were recorded on the field logs. The samples were placed in appropriate containers and taken to our laboratory for testing and classification by an engineer. Our exploration team prepared field logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Boring logs included in this report were prepared from the field logs, represent the project engineer's interpretation of the field logs, and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Moisture Content
- Atterberg Limits
- Grain Size Analysis
- Organic Content Test

The laboratory testing program included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Site Location and Exploration Plan

Contents:

Site Location
Exploration Plan

Note: All attachments are one page unless noted above.

Site Location

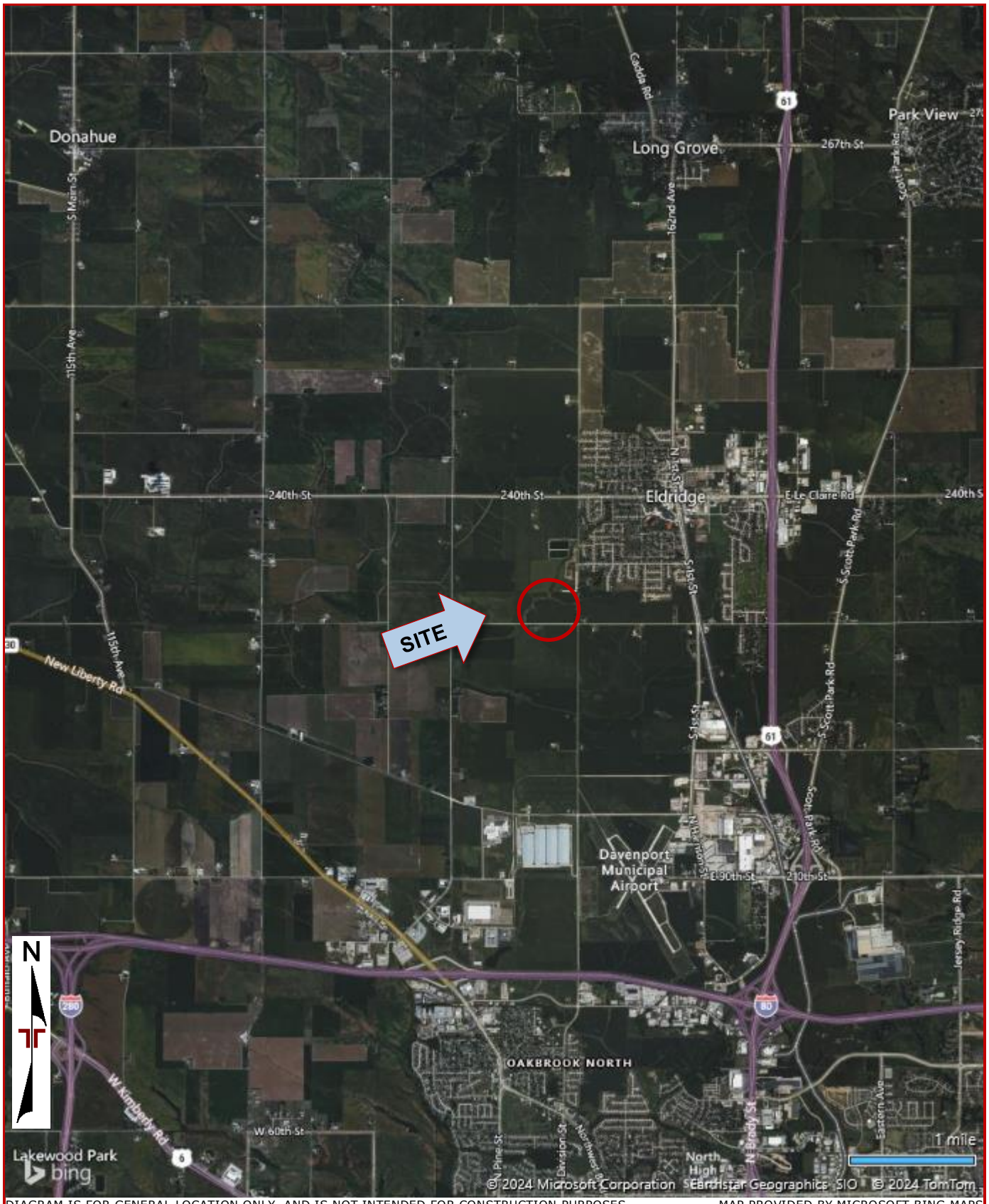


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

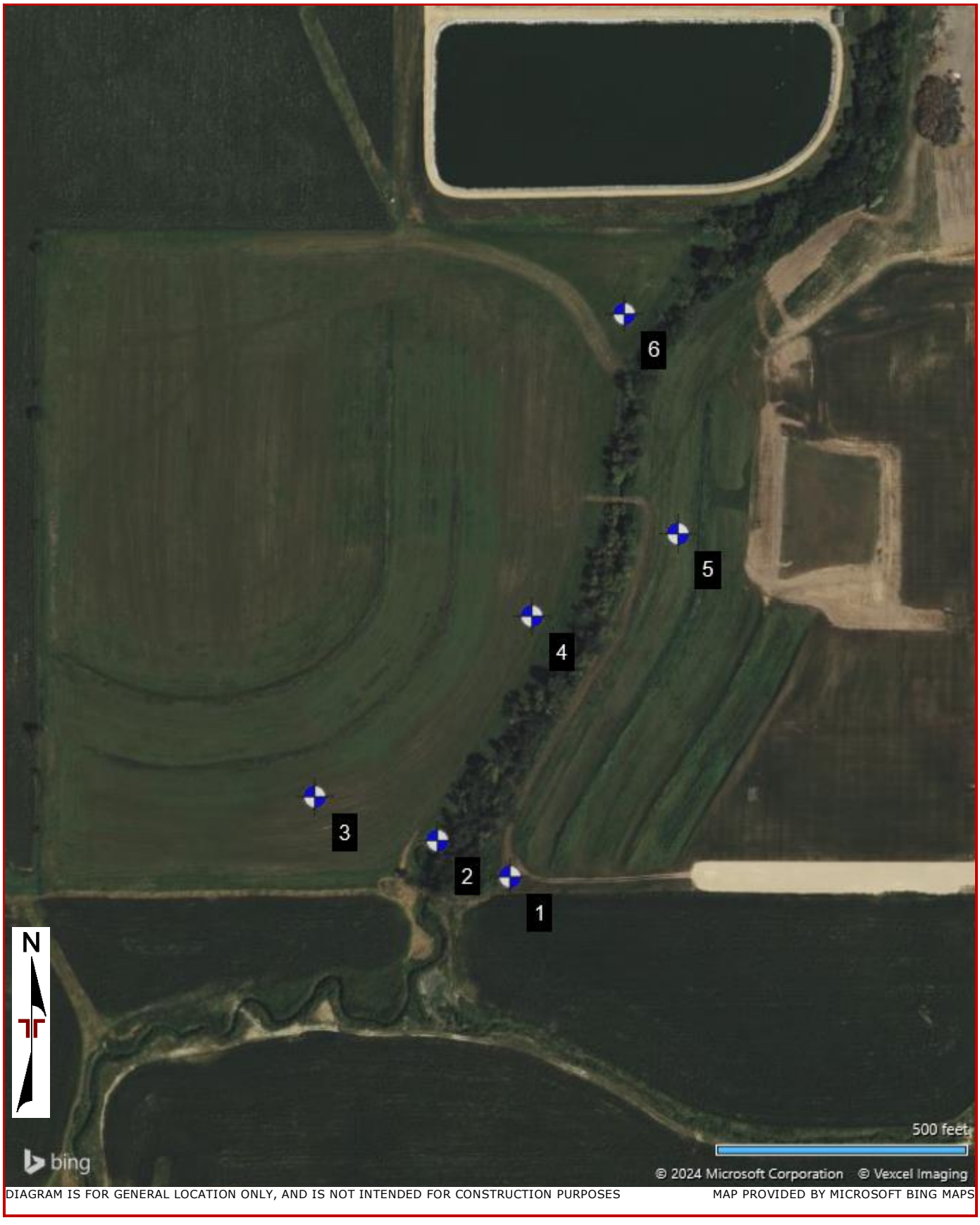


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Note: All attachments are one page unless noted above.

Recreational Pond Eldridge, IA
S Buttermilk Rd and 155th Ave | Eldridge, Iowa
Terracon Project No. 07245105

Terracon
870 40th Ave
Bettendorf, IA

Boring Log No. 1

Location: See Exploration Plan

Northing: 612090.3222 Easting: 2432413.556

Model Layer	Depth (Ft.)	Elevation.: 751.61 (Ft.)	Recovery (In.)	Field Test Results	Sample Number	Organic Content (%)	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.2	**ROOT ZONE**, approx. 2" 751.41							
		LEAN CLAY (CL), trace fine roots, brown, medium stiff to stiff	8	3-4-4 N=8	1		15.7		
	3.0	748.61							
		LEAN TO FAT CLAY (CL/CH), trace sand, brown and reddish brown, medium stiff to stiff	11	3-4-5 N=9	2		21.1		
			18	2-3-3 N=6	3		20.1		
	9.0	742.61							
		SANDY LEAN CLAY (CL), brown, soft	18	2-1-2 N=3	4		23.0		
	13.5	738.11							
2		**SANDY LEAN CLAY (CL)**, trace gravel, brownish gray and reddish brown, stiff to very stiff	18	4-6-11 N=17	5		12.6		
		gray below 19 feet	18	3-4-5 N=9	6		15.2		
			18	4-5-8 N=13	7		13.4		
	30.5	721.11	18	4-6-10 N=16	8		14.7		
		Boring Terminated at 30.5 Feet							

Depth (Ft.) 5 10 15 20 25 30

Water Level Observations: ▽ 28' after drilling

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were provided by Shive-Hattery.

Water Level Observations
None observed while drilling
▽ 28' after drilling

Notes

Advancement Method
Continuous-Flight Hollow-Stem Augers

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
416

Hammer Type
Automatic

Driller
CN

Logged by
OC

Boring Started
10-01-2024

Boring Completed
10-01-2024

Recreational Pond Eldridge, IA
S Buttermilk Rd and 155th Ave | Eldridge, Iowa
Terracon Project No. 07245105

Terracon
870 40th Ave
Bettendorf, IA

Boring Log No. 2

Location: See Exploration Plan

Northing: 612184.383 Easting: 2432266.386

Depth (Ft.) Elevation.: 745.27 (Ft.)

Model Layer	Graphic Log	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Sample Number	Organic Content (%)	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1		0.3 **ROOT ZONE**, approx. 3" 744.97									
		LEAN TO FAT CLAY (CL/CH), trace organics, dark gray, soft to medium stiff		X	6	2-2-4 N=6	1		28.2		
				X	8	4-2-2 N=4	2		24.4		
		6.0 739.27									
		LEAN CLAY WITH SILT (CL), gray and reddish brown, very soft to soft		X	15	1-1-1 N=2	3		27.3		
				X	18	0-0-1 N=1	4		31.7		
		14.0 731.27									
2		**SILT (ML)**, dark gray, soft		X	18	0-1-1 N=2	5		29.4		
		17.5 727.77									
		LEAN CLAY (CL), with sand seams, trace gravel, gray, stiff	▽	X	6	2-4-5 N=9	6		19.4		
		23.5 721.77									
		SANDY LEAN CLAY (CL), trace gravel, gray, stiff	▽	X	18	3-5-8 N=13	7		19.0		
		30.5 714.77		X	18	4-4-7 N=11	8		18.6		
		Boring Terminated at 30.5 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were provided by Shive-Hattery.

Water Level Observations
▽ 20½' while drilling
▽ 24½' after drilling

Drill Rig
416

Hammer Type
Automatic

Driller
CN

Logged by
OC

Boring Started
10-01-0101

Boring Completed
10-01-2024

Notes

Advancement Method
Continuous-Flight Hollow-Stem Augers

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Terracon
870 40th Ave
Bettendorf, IA

Boring Log No. 3

Location: See Exploration Plan

Northing: 612263.6502 Easting: 2432017.524

Depth (Ft.) Elevation.: 757.50 (Ft.)

Model Layer	Graphic Log	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Sample Number	Organic Content (%)	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1		0.2 **ROOT ZONE**, approx. 2" 757.3									
2		**LEAN CLAY (CL)**, with sand seams, brown, medium stiff to stiff		X	18	3-4-4 N=8	1		17.6		
		4.0 753.5									
		LEAN CLAY (CL), brown, soft to medium stiff		X	18	1-2-2 N=4	2		22.1		
		6.5 751									
3		**POORLY GRADED SAND (SP)**, with clay seams, fine grained, brown, loose		X	6	2-2-2 N=4	3		9.3		
				X	6	2-3-4 N=7	4		13.6		
		12.0 745.5									
2		**LEAN CLAY WITH SILT (CL)**, gray and brown, soft		X	18	2-1-2 N=3	5		25.7		
		16.5 741									
		SILT (ML), dark gray, medium stiff		X	18	2-2-3 N=5	6		26.1	24-21-3	100
		20.5 737									
		Boring Terminated at 20.5 Feet									

5 10 15 20

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were provided by Shive-Hattery.

Water Level Observations
None observed while drilling

None observed after drilling

Drill Rig
416

Hammer Type
Automatic

Driller
CN

Logged by
OC

Boring Started
10-01-2024

Boring Completed
10-01-2024

Notes

Advancement Method
Continuous-Flight Hollow-Stem Augers

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Recreational Pond Eldridge, IA
S Buttermilk Rd and 155th Ave | Eldridge, Iowa
Terracon Project No. 07245105

Terracon
870 40th Ave
Bettendorf, IA

Boring Log No. 4

Location: See Exploration Plan

Northing: 612638.7152 Easting: 2432440.58

Model Layer	Depth (Ft.)	Elevation.: 749.55 (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Sample Number	Organic Content (%)	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.3	**ROOT ZONE**, approx. 3" 749.25									
2	3.5	**LEAN CLAY (CL)**, trace organics, dark brown, medium stiff 746.05		X	8	3-3-3 N=6	1		23.9		
	6.0	**LEAN TO FAT CLAY (CL/CH)**, gray and brown, medium stiff 743.55		X	12	2-3-3 N=6	2		25.2		
	18.0	**LEAN CLAY WITH SILT (CL)**, gray and brown, soft 731.55		X	18	1-1-1 N=2	3		25.3		
				X	18	1-1-1 N=2	4		27.3		
				X	15	1-1-1 N=2	5		20.7		
	21.0	**SILT (ML)**, gray and dark gray, medium stiff 728.55	▽ ▽	X	8	2-3-3 N=6	6	2.4	28.0		
	25.5	**SANDY FAT CLAY (CH)**, trace gravel, gray and brown, stiff 724.05		X	6	3-3-6 N=9	7		21.2		
		Boring Terminated at 25.5 Feet									

Depth (Ft.): 5, 10, 15, 20, 25

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were provided by Shive-Hattery.

Water Level Observations
▽ 19' while drilling
▽ 18' after drilling

Drill Rig
416

Hammer Type
Automatic

Driller
CN

Logged by
OC

Boring Started
10-01-2024

Boring Completed
10-01-2024

Notes

Advancement Method
Continuous-Flight Hollow-Stem Augers

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Recreational Pond Eldridge, IA
S Buttermilk Rd and 155th Ave | Eldridge, Iowa
Terracon Project No. 07245105

Terracon
870 40th Ave
Bettendorf, IA

Boring Log No. 5

Location: See Exploration Plan

Northing: 612812.8483 Easting: 2432727.895

Model Layer	Depth (Ft.)	Elevation.: 750.17 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Sample Number	Organic Content (%)	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.3	**ROOT ZONE**, approx. 3" 749.87										
		LEAN CLAY (CL), trace organics, dark brown and gray, medium stiff			X	6	2-3-4 N=7	1		26.6		
	3.5	746.67										
		LEAN CLAY (CL), trace sand and organics, dark brown, soft to medium stiff	5		X	11	2-2-2 N=4	2		24.6		
	6.0	744.17										
2		**LEAN CLAY WITH SILT (CL)**, gray, soft to medium stiff very soft at Sample 3			X	0	0-0-1 N=1	3				
			10		X	16	1-2-2 N=4	4		23.0		
			15		X	12	0-1-1 N=2	5		23.5		
	17.5	732.67										
		SANDY LEAN CLAY (CL), trace gravel, brownish gray, medium stiff to stiff		▽								
	20.5	729.67	20		X	18	2-3-5 N=8	6		16.8	30-14-16	65
		Boring Terminated at 20.5 Feet										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were provided by Shive-Hattery.

Water Level Observations
▽ 19' while drilling
▽ 19' after drilling

Drill Rig
416

Hammer Type
Automatic

Driller
CN

Logged by
OC

Boring Started
10-01-2024

Boring Completed
10-01-2024

Notes

Advancement Method
Continuous-Flight Hollow-Stem Augers

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Recreational Pond Eldridge, IA
S Buttermilk Rd and 155th Ave | Eldridge, Iowa
Terracon Project No. 07245105

Terracon
870 40th Ave
Bettendorf, IA

Boring Log No. 6

Location: See Exploration Plan

Northing: 613248.2891 Easting: 2432605.664

Model Layer	Graphic Log	Depth (Ft.)	Elevation.: 750.74 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Sample Number	Organic Content (%)	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1		0.3	**ROOT ZONE**, approx. 3" 750.44										
			LEAN CLAY (CL), trace organics, dark brown and gray, medium stiff				6	2-3-3 N=6	1		26.1		
		4.0	746.74										
			LEAN TO FAT CLAY (CL/CH), gray and dark gray, soft to medium stiff	5			18	1-2-2 N=4	2		27.6		
		6.0	744.74										
			LEAN CLAY WITH SILT (CL), gray and brown, very soft to soft				18	1-1-1 N=2	3		29.4		
2				10			18	0-0-1 N=1	4		29.8		
				15			8	2-3-3 N=6	5		24.4		
		20.5	sand seam* at 20 feet 730.24	20			10	0-2-5 N=7	6		22.1		
			Boring Terminated at 20.5 Feet										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were provided by Shive-Hattery.

Water Level Observations
9' while drilling
18' after drilling

Drill Rig
416

Hammer Type
Automatic

Driller
CN

Logged by
OC

Boring Started
10-01-2024

Boring Completed
10-01-2024

Notes

Advancement Method
Continuous-Flight Hollow-Stem Augers

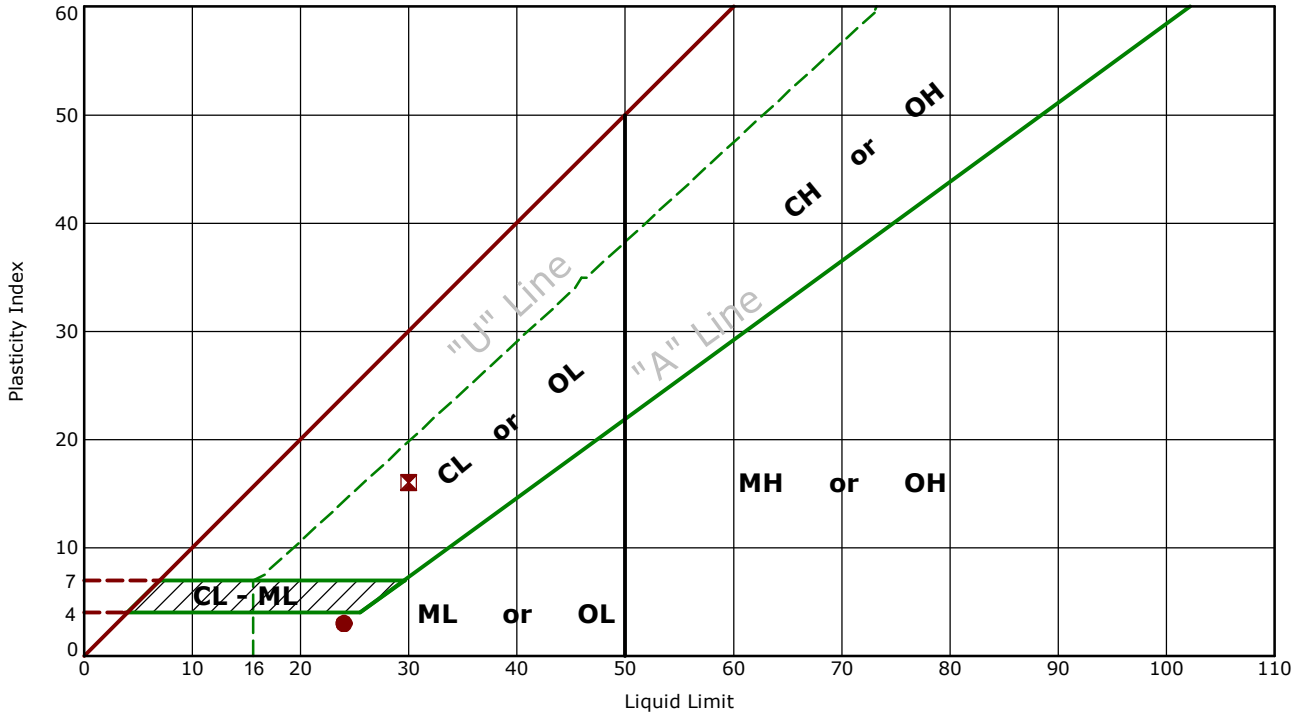
Abandonment Method
Boring backfilled with auger cuttings upon completion.

Recreational Pond Eldridge, IA
S Buttermilk Rd and 155th Ave | Eldridge, Iowa
Terracon Project No. 07245105

870 40th Ave
Bettendorf, IA

Atterberg Limit Results

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	3	19 - 20.5	24	21	3	99.7	ML	Silt
⊠	5	19 - 20.5	30	14	16	65.3	CL	Sandy Lean Clay

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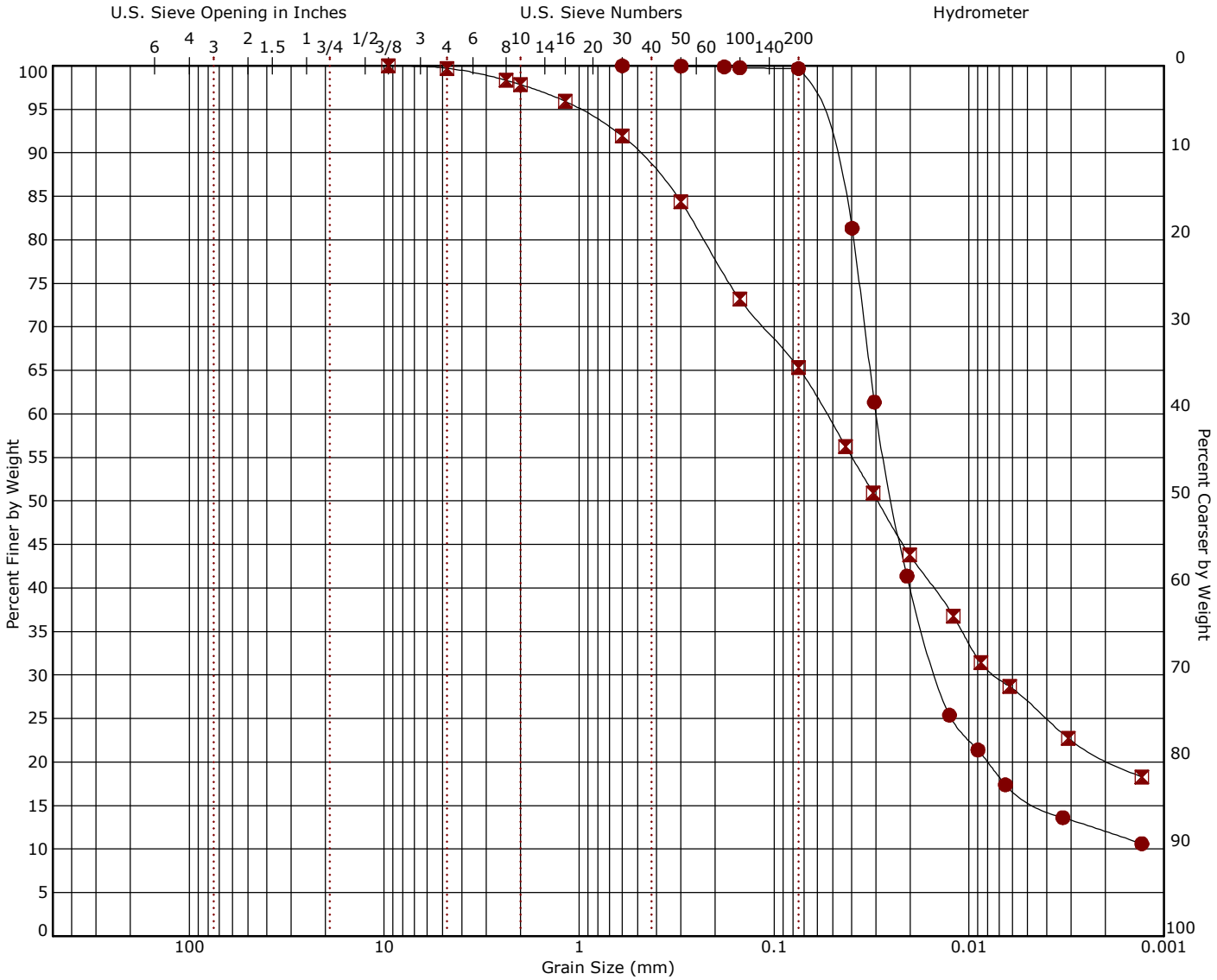
Grain Size Distribution

ASTM D422 / ASTM C136 / AASHTO T27



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID		Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
●	3	19 - 20.5	Silt	ML	24	21	3		
⊠	5	19 - 20.5	Sandy Lean Clay	CL	30	14	16		

Boring ID		Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
●	3	19 - 20.5	0.6	0.03	0.015		0.0	0.0	0.3		83.8	15.9
⊠	5	19 - 20.5	9.5	0.054	0.007		0.0	0.3	34.4		38.5	26.8

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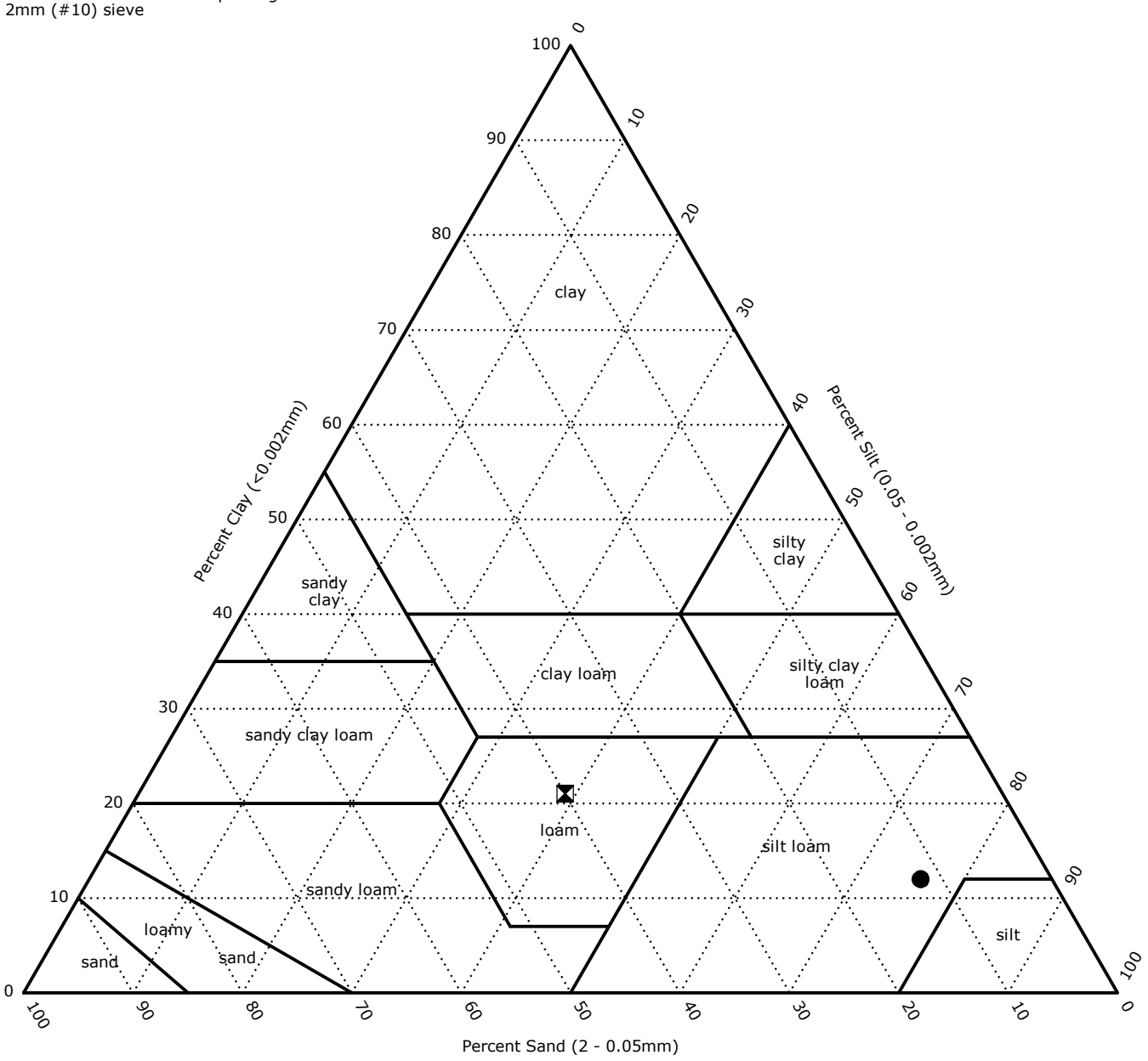
USDA Textural Classification

Fractions normalized to 100% passing the 2mm (#10) sieve



	Borehole	Depth (ft)	USDA Classification	Sand (%)	Silt (%)	Clay (%)
●	3	19 - 20.5	SILT LOAM	12.1	75.9	12.0
⊠	5	19 - 20.5	LOAM	40.0	39.1	21.0

Supporting Information

Contents:

Note: All attachments are one page unless noted above.

Terracon
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General Notes

Sampling

Standard Penetration Test

Water Level

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Cave In Encountered

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

Field Tests

N	Standard Penetration Test Resistance (Blows/Ft.)
(HP)	Hand Penetrometer
(T)	Torvane
(DCP)	Dynamic Cone Penetrometer
UC	Unconfined Compressive Strength
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils
(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

Consistency of Fine-Grained Soils
(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

Relative Density	Standard Penetration or N-Value (Blows/Ft.)	Consistency	Unconfined Compressive Strength Qu (psf)	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3	Very Soft	less than 500	0 - 1
Loose	4 - 9	Soft	500 to 1,000	2 - 4
Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	4 - 8
Dense	30 - 50	Stiff	2,000 to 4,000	8 - 15
Very Dense	> 50	Very Stiff	4,000 to 8,000	15 - 30
		Hard	> 8,000	> 30

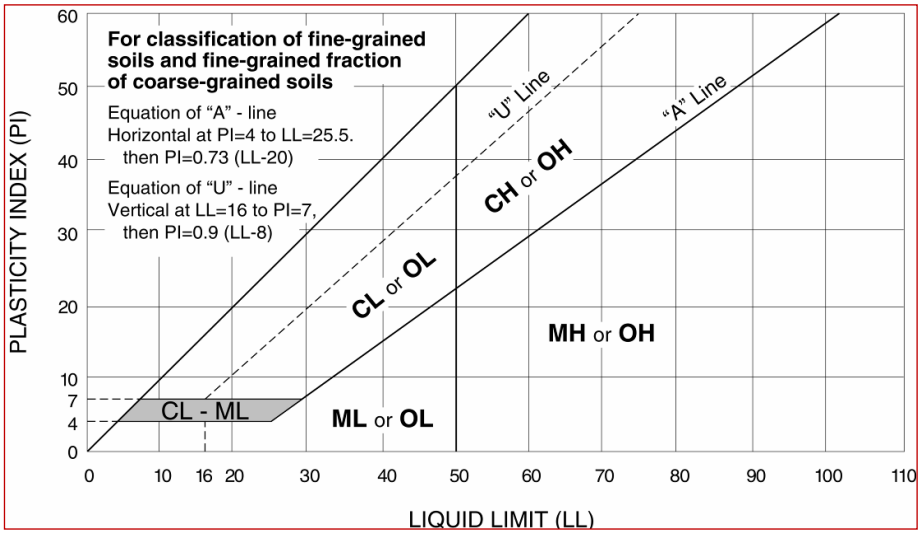
Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

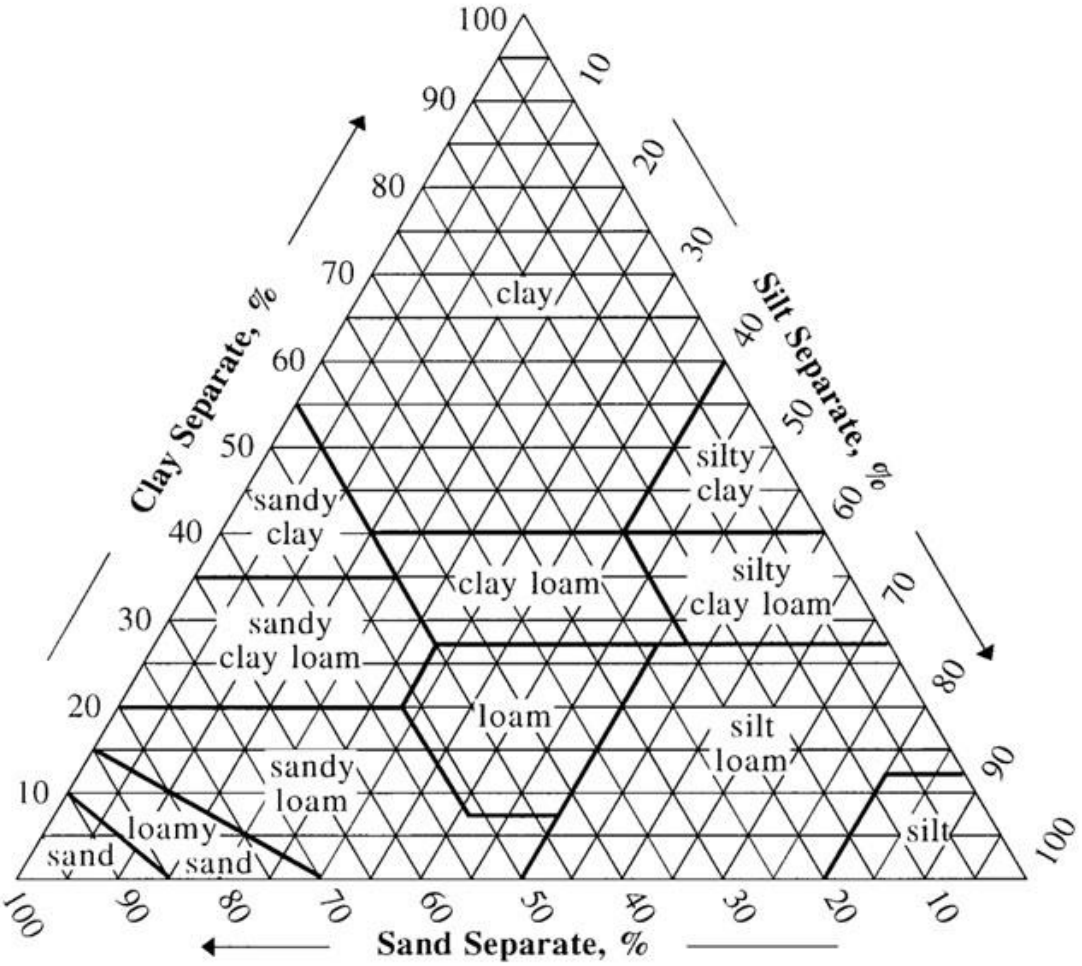
Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 4 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



USDA Textural Classification Triangle



COMPARISON OF PARTICLE SIZE SCALES