APPLIED ENGINEERING
CONSULTANT SERVICES

4825 Convair Drive, Suite 17; Carson City, Nevada 89706
Telephone (775) 888-9939, Fax (775) 888-9469

September 12, 2005
Project No. 125-250-05

Mr. Scott Musser
Comstock Real Estate Services
158 South "B" Street
P.O. Box 828
Virginia City, Nevada 89440

Re: Individual Sewage Disposal System
Rivera Single Family Residence
1850 Lousetown Road (APN: 003-141-23)
Carson City, Nevada

References: State of Nevada Administrative Code – Chapter 444
Regulation Governing Individual Sewage Disposal System

Percolation Rates for Determining Disposal Area

Test Percolation Rate (Results Attached)
Test Pit No. 1---Total Depth 10.0 feet—No Free Water Encountered
Percolation Test Pit No. 1 = 20.0 min./inch @ 6.0 feet
Percolation Test Pit No. 2 = 53.3 min./inch @ 3.0 feet

Given: Preliminary Shallow Standard Disposal Trench
Design Percolation Rate = 53.3 min./inch
SFD up to 4 bedrooms = 1000 Gallon Tank
Residential Septic Tank: Jensen Model Js – 1000 or Equal. 1000 Gal. Capacity
Utilize Shallow Trench Disposal System – Assume 4.0 feet Sidewall Depth

Soil Texture	Design Perc Rate	Tank Size
Brown Silty Sand (SM)	53.3 min./inch	1000 Gallons

$$\frac{5}{\sqrt{T}} = \frac{5}{\sqrt{53.3}} = 0.685 \text{ Application Rate}$$

Area = 1000 Gals//0.685 =1470.6 Sq. Ft.

Disposal Trench Dimensions
Absorption Sidewall Area Required
Assume 4.0 ft. Aggregate Depth Below Pipe

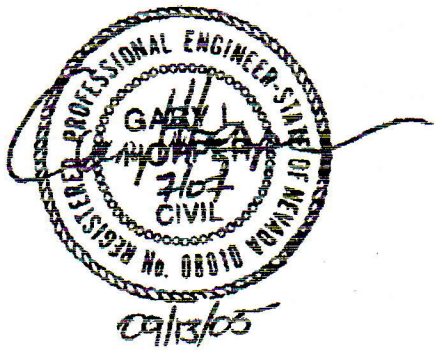
Length of Disposal Trench
1470.6 Sq. Ft./(2') (4') = 183.8 Ft.

Use Two (2) Trenches 100 Feet Long Each, Total of 200 Feet
Total Square Footage Provided = 1,600 Sq. Ft.

OR

Three (3) Trenches 65 Feet Long Each Total of 195 Feet
Total Square Footage Provided = 1,560 Sq. Ft.

Based upon our percolation test results obtained, we believe that a standard individual septic disposal system can be utilized to dispose of the sewage generated by the proposed single family residence. A finalized site plan and septic disposal system should be completed once the construction plans for the proposed single family residence are finalized for submission to the State of Nevada Environmental Health Department.



PERCOLATION TEST No. 1

JOB NAME: Rivera Single Family Residence
APN NUMBER: (003-141-23) 1850 Lousetown Road

TEST PIT # 1

LOCATION	TEST PIT LOG	
	DEPTH	DESCRIPTION
See Site Plan	1.5	Dark Brown Sandy Clayey
	3.0	Lt. Brown Clayey Sand
	5.0	Brown Clayey Sand with Calcium Staining
	10.0	Brown Clayey Sands Bottom of Test Pit @ 10.0 ft No free groundwater encount.

SURFACE ELEVATION
DEPTH TO TEST 6.0 feet
TIME OF FIRST SATURATION (12" WATER) 11:00 am 09-07-05
TIME WATER DISAPPEARS Greater than 10 minutes Begin presoak
TIME OF REFILL
TIME WATER DISAPPEARS
DATE OF PERCOLATION TEST: 09-08-05

TIME	INTERVAL	DEPTH TO WATER	CHANGE IN WATER
BEGIN TEST		INITIAL DEPTH	INCHES
09-08-05		Refill	
9:20 am	10 minutes	2 3/16	
9:30 am	10 minutes	3 4/16	1 1/16 inches
9:40 am	10 minutes	4 2/16	0-14/16 inches
9:50 am	10 minutes	4 14/16	0-12/16 inches
10:00 am	10 minutes	5 8/16	0-10/16 inches
10:10 am	10 minutes	6 0/16	0-8/16 inches
10:20 am	10 minutes	6 8/16	0-8/16 inches
10:30 am	10 minutes	6 15/16	0-7/16 inches
10:40 am	10 minutes	7 5/16 / 2 2/16	0-6/16 inches
10:50 am	10 minutes	2 15/16	0-13/16 inches
11:00 am	10 minutes	3 8/16	0-9/16 inches
11:10 am	10 minutes	4 2/16	0-10/16 inches
11:20 am	10 minutes	4 10/16	0-8/16 inches
11:30 am	10 minutes	5 3/16	0-9/16 inches
	10 minutes (3)		0-8/16 inch (4)

PERCOLATION RATE = (3) / (4) = 10 min//0-8/16 inch = 20 min/inch

APPLIED ENGINEERING CONSULTANT SERVICES

TESTED BY: GLH/JPL

DATE: 09-08-05

JOB NO.: 126-250-05

PROFESSIONAL ENGINEER STATE OF NEVADA REGISTERED No. 08010 GARY L. HOPPER CIVIL

7/13/05

PERCOLATION TEST No. 2

TEST PIT # 1

JOB NAME: Rivera Single Family Residence
APN NUMBER: (003-141-23) 1850 Lousetown Road

LOCATION	TEST PIT LOG DEPTH	DESCRIPTION
See Site Plan		See Perc Test No. 1

SURFACE ELEVATION
DEPTH TO TEST 3.0 feet
TIME OF FIRST SATURATION (12" WATER) 11:02 am 09-07-05
TIME WATER DISAPPEARS Greater then 10 minutes Begin presoak
TIME OF REFILL
TIME WATER DISAPPEARS
DATE OF PERCOLATION TEST: 09-08-05

TIME	INTERVAL	DEPTH TO WATER	CHANGE IN WATER
BEGIN TEST		INITIAL DEPTH	INCHES
09-08-05			
9:21 am	10 minutes	1 12/16	
9:31 am	10 minutes	2 0/16	0-4/16
9:41 am	10 minutes	2 3/16	0-3/16
9:51 am	10 minutes	2 5/16	0-2/16
10:01 am	10 minutes	2 9/16	0-4/16
10:11 am	10 minutes	2 11/16	0-2/16
10:21 am	10 minutes	2 14/16	0-3/16
10:31 am	10 minutes	3 1/16	0-3/16
10:41 am	10 minutes	3 5/16	0-4/16
10:51 am	10 minutes	3 9/16	0-4/16
11:01 am	10 minutes	3 12/16	0-3/16
11:11 am	10 minutes	3 15/16	0-3/16
11:21 am	10 minutes	4 2/16	0-3/16
11:31 am	10 minutes	4 5/16	0-3/16
	10 minutes (3)		0-3/16 inches (4)

PERCOLATION RATE = (3) / (4) = 10 min//0-3/16 inch = 53.3 min/inch

APPLIED ENGINEERING CONSULTANT SERVICES

TESTED BY: GLH/JPL

DATE: 09-08-05

JOB NO.: 125-250-05

PROFESSIONAL ENGINEER STATE OF NEVADA REGISTERED No. 08010 GARY L. HOPPER CIVIL

09/13/05

RECEIVED
APR 14 2004
Storey County Buildi...

2 DISCONNECTS ARE REQUIRED AT SERVICE PANEL:
1. MAIN POWER
2. WELL SERVICE

STOREY COUNTY
BUILDING & PLANNING

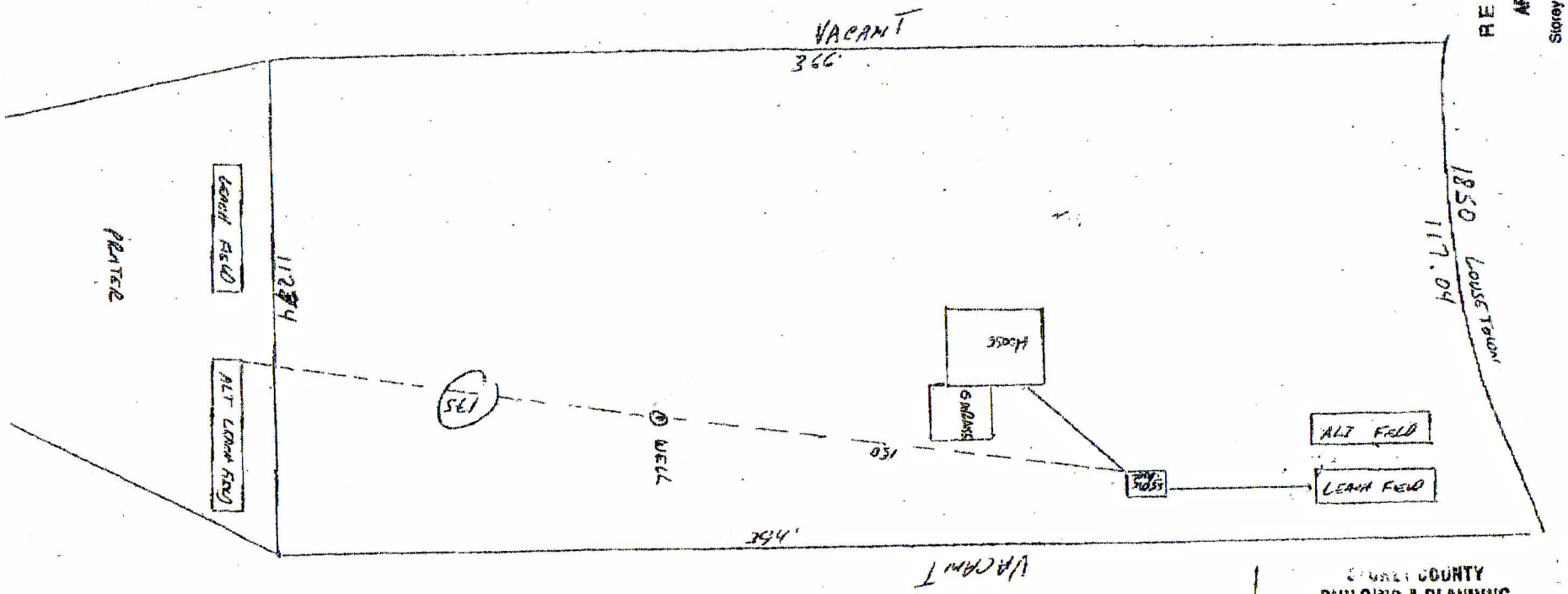
☑ APPROVED AS SUBMITTED
☐ APPROVED AS NOTED
☐ RESUBMIT WITH CORRECTIONS

Approved Code Compliance only
Date 4-15-04

Steve & Alexandra
1850 Lousetown Rd
Virginia City Highlands

09/01/2005 18:59 7758470989 STOREY COUNTY SCH D PAGE 01/01

J70157



RECEIVED
APR 14 2004
Storey County Building

09/01/2005 18:59 7/584/0989

STOREY COUNTY
BUILDING & PLANNING

- [x] APPROVED AS SUBMITTED
- [ ] APPROVED AS NOTED
- [ ] RESUBMIT WITH CORRECTIONS

Approved Code Compliance Only
Date 4-15-04

2 DISCONNECTS ARE REQUIRED AT SERVICE PANEL:
1. *MAIN POWER*
2. *WELL SERVICE*

EXISTING TELEPHONE POLES NUMBERS

J76115

204694 ?

Steve & Alexandra
1850 Lousetown Rd
Virginia City Highlands

ESTIMATE

Ryan's Rock And Hoe
P.O Box 876
Virginia City, NV 89440

ryansrockandhoe@gmail.com
+1 (775) 772-7378
http://ryansrocks.com

Frank Funes

Bill to
Frank Funes
1850 Lousetown

Ship to
Frank Funes
1850 Lousetown

Estimate details

Estimate no.: 1359
Estimate date: 02/01/2024

#	Date	Product or service	Description	SKU	Qty	Rate	Amount
1.		**Linkbelt 135 excavator**	for excavation of a house pad and tree removal		32	$195.00	$6,240.00
2.		**ST45 Tracked Skid Steer**	for house pad excavation, driveway grading and tree removal		24	$150.00	$3,600.00
3.		**10 wheel dump truck**	for tree removal		8	$110.00	$880.00
4.		**Labor**	for layout, grade setting, hand grading and machine maintenance		12	$120.00	$1,440.00
5.		**3/4" Type 2 Base**	for house pad if slab on grade is done		72	$32.00	$2,304.00
6.		**1.5" Gravel**	gravel for the driveway		90	$34.00	$3,060.00
7.		**Compactor**	to compact pad if slab on grade is done		8	$120.00	$960.00
8.		**Equipment Transport**	to get machinery to and from the job site		2	$200.00	$400.00

Note to customer

This is an estimate for the excavation of a house pad and driveway, tree removal, as well as compacted base on the house pad (if slab on grade design is used) and 1.5” gravel on the driveway. This is only an estimate and may be subject to change if the property owner changes plans, material prices change or if excavation becomes more difficult than anticipated. Thank you for your business.

Subtotal	$18,884.00
Sales tax	$407.66
Total	**$19,291.66**

NORTECH
GEOTECHNICAL/CIVIL CONSULTANTS, LTD. 300 Western Road, #3, Reno, NV 89506 • (775) 852-7475 FAX (775) 852-7488

May 8, 2023
28752-8N

Frank Funes
8425 Gipsy Way
Reno, Nevada 89506

Geotechnical Investigation
Proposed Residence
1850 Lousetown Road
Storey County, Nevada

Introduction

This report presents the results of our geotechnical investigation for the proposed residence to be located at 1850 Lousetown Road in, Nevada. We have not received a building site plan, but we understand that the project will involve construction of a new residential structure. We anti-cipate that the building will be constructed of wood framing, utilizing joist supported and/or slab-on-grade floors.

Our scope of work was to conduct a subsurface investigation with testing and analysis to deter-mine site conditions and the engineering properties of the underlying soils and any rock. We are to provide con-clusions and recommendations concerning any geologic hazards, seismic design criteria, site preparation and grading, design criteria for foundations and retaining walls, including estimates of settlement, and support of interior and exterior flatwork. Recommendations for structural fill and drainage will also be presented.

Our work also included performing percolation tests for an on site sewage disposal (septic) system de-sign. The percolation tests results and the septic design will be submitted under separate cover.

Site, Soil and Rock Conditions

The structure will be located on a lot that is located at the southwest side of Lousetown Road. The pro-perty surface is uneven and slopes gently down to the north. The vegetation on the lot consists mostly of high and low brush, weeds and grass, with trees and tree stumps. Large boulders were partially exposed the surface of the property.

We explored the subsurface conditions by sampling and logging two test pits that were excava-ted with a backhoe to depths of about 9 and 8 feet below the existing grade respectively. Test Pit 1 Storey County Storey County Storey County was located in the northeast corner of the lot and Test Pit 2 was located in the southeast portion. Test Pit 1 doubled as a percolation pit and a soil sampling pit. Both pits exhibited dark·brown, medium stiff, clayey sand (SC) to a depth of 5 feet underlain by medium brown, dense, silty sand (SM) to a depth of 8-9 feet. Both pits ex-hibited roots to 8 inches in depth and cobbles up to 6 inches in size. At the time of our field ex-ploration (April, 2023), no free ground water was encountered in either pit.

Typically for these lot studies, the test pits are primarily used to confirm that a fairly uniform soil profile exists over the building zone or, to reveal a different soil (or rock) condition, which then is addressed. One test pit revealed that the upper soil exhibits a medium dense, clayey sand to a depth of about 5 feet. Lab-oratory test results indicated that this soil exhibits moderate expansion (shrink-swell) potential due to the plasticity level and high fines content.

The materials encountered in the test pits were logged and representative samples were obtained for laboratory classification testing. The site plan with the approximate locations of the test pits is shown on Plate 1 and logs of the materials encountered are presented on Plate 2. The soils are classified in accordance with the Unified Soil Classification System which is described on Plate 4. Laboratory classification results are shown on the logs and on Plates (Figures) 4 through 8.

Geologic, Seismic and Flooding Considerations

The site is located in the Virginia City Highlands off of Lousetown Road to the East of the Sierra Nevada mountain range. The present topography of the site is derived from the geologic rock formation known as 'Younger Andesite and Intermediate Flows and Breccias' (NVTa3;0) (Crafford, A.E.J., 2007, Geologic Map of Nevada: U.S. Geological Survey Data Series 249, 1 CD-ROM, 46 p., 1 plate; Scale 1:250,000. Extended unit descriptions taken from pamphlet that accompanies geologic data/map.)

No active faults transect the property. There is an unnamed undifferentiated quaternary fault trending southwest approximately 0.3 miles from the site. See (Plate 9)

There is a regional potential for moderate to large magnitude earthquakes in the mid and western portions of Nevada. Washoe County currently requires the use of the site characterization criteria found in the 2018 International Residential Code (IRC) for design. The 2018 IRC directly references the ASCE 7-16. The seismic design criteria is found in code and the USGS website. The IRC requires that the Site Class be determined by soil and rock parameters described per ASCE 7-16, Chapter 11, Section 11.4.3: "Site Class" and Chapter 20, Section 20.1: "Site Classification". A shear wave velocity analysis was performed to a depth of 100 feet to determine the subsurface geologic properties. Based on this study, the Site Class is "C", see attached Plate 10 and Table 1 below. The maximum considered earthquake ground motion spectral accelerations for short periods and for one second periods are given on figures in the International Building Code (IBC) code. Using the site latitude and longitude as input, the USGS website provides accurate site specific acceleration values along with the respective site coefficients and design spectral response acceleration parameters in their Design Maps Summary Report. Only the Design Spectral Response Acceleration for Short Periods, SD_S is needed for design. The Residential Seismic Design Category is also given in the IRC. Based on this research, the site specific seismic design criteria for the subject property is presented below:

TABLE 1 - 2018 IRC SEISMIC DESIGN CRITERIA	
Spectral Response at Short Periods, S_S (USGS)	2.131
Spectral Response at 1-Second Period, S1 (USGS)	0.752
Site Class (USGS)	C
Site Coefficient F_a (USGS)	1.200
Site Coefficient Fv (USGS)	1.400
Design Spectral Response Acceleration, Short Periods, $SD_S = 2/3 \times F_a \times S_S$ (USGS)	1.705
Peak Ground Acceleration (PGA)	0.922

The Federal Emergency Management Agency (FEMA) Study Flood Boundary and Floodway Map (Map Number 32031C3350G, March 16, 2009) indicates that the subject property is located in Zone X. The Zone X designation describes those areas within the 0.2% annual chance flood zone.

Conclusions

Based upon the results of our investigation we conclude that the native clayey soils encountered to a depth of 5 feet within the building area are not suitable for foundation and concrete floor slab support and they will need to be removed to a finite depth and be replaced, as needed with structural fill. We believe that in general, conventional site grading techniques, building foundations and floor slab construction can be used for the development, on structural fill, though deeper excavation difficulty may be encountered due to the expectation of encountering boulders and/or a hard bedrock mantle. If volcanic rock is within the footing trench depth or other deeper excavations, site grading techniques may involve special grading techniques. The structure and flatwork can be supported on firm compacted imported structural fill or on boulders and/or bedrock. The exterior foundation excavations will be at least 18 inches deep and minor fill may be needed for pad leveling. Material can be imported. All fill should be approved by the geotechnical engineer and be placed and compacted as recommended in subsequent sections of this report.

If there are planned cuts of substantial depth (greater than about 7 to 10 feet), very hard bedrock may be encountered in some, if not all, of the excavations. Boulders can be encountered at any depth. Deeper excavation for foundations and any utilities will be very difficult and blasting or other rock splitting technique will most likely be needed.

We anticipate that for the shallow foundations designed and constructed in accordance with our recommendations, the post construction differential settlement will be on the order of 1/2 to 3/4 inch. Any post construction differential settlement for footings bearing entirely on bedrock would be negligible.

Due to some uncertainty regarding the makeup and abundance of the rock, or presence of bedrock, prospective contractors should perform their own excavation and evaluation of the sub-surface conditions before final bidding.

Our exploration trenches (pits) were backfilled without mechanical compaction; therefore, where these pits lie in building or exterior flatwork areas, the backfill in the trenches should be mitigated by removal and replacement. This is needed where ever the test pits are deeper than the plan-ed cuts or over-excavation depths. **Removal and replacement mitigation of these pits will be considered mandatory by Nortech to ensure there are no loose backfill zones left existing in building and flatwork areas that would result in isolated settlements.** The pits have also been approximately located using GPS equipment and the data is presented on the logs. **Since there is some error associated with the GPS readings, the removal and replacement oper-tions should be performed prior to any stripping and the beginning of new site grading. This provides the best opportunity to field locate the pits by using the same GPS reference points and by evidence of surface disturbance, if possible.** Nortech personnel can assist the earthwork contractor in pit location and provide follow up testing of the new backfill operations. The same material excavated, if granular can be used for replacement backfill. Replacement material should be spread in thin, moisture conditioned lifts and be compacted as recommended later in his report for structural and trench backfill.

Recommendations

Initially, upon completion of any test pit mitigation needed, areas to be developed, should be cleared of any surface vegetation, trees, and debris, then stripped approximately 4 to 6 inches of organic laden soils. The clayey soils should then be over-excavated to a minimum depth of 2 feet below all footing grades and any floor slab subgrade to expose suitable granular soils or remaining clayey soils. The removed material should be replaced with structural fill. This clayey material can be removed from the site or used as landscaping fill. All stripped and any excavated soil surfaces in suitable soils should be moisture conditioned and compacted to at least 90 percent relative compaction (per ASTM D1557) prior to any fill placement.

Only select structural materials should be used for fill and backfill. Structural materials imported to the site should be free of organic and other deleterious matter, have low to negligible expansion potential and conform in general to the following requirements:

Sieve Size	Percent Passing (by dry weight)
6 inch	100
3/4 Inch	70 - 100
No. 4	50 - 100
No. 200	10 - 35

Liquid Limit = 35 maximum
Plasticity Index = 15 maximum

As mentioned above, all fill materials should be approved by the geotechnical engineer prior to use. The removal of any large boulders (or bedrock) will typically result in large depressions and cavities that will require refilling. Special attention should be given to properly filling any cavities with compacted structural materials. Structural fill and backfill should be spread in 8- to 10 inch, moisture conditioned, loose lifts and compacted to at least 90 percent relative compaction.

Conventional spread foundations can be supported on the recommended structural fill and/or boulders and bedrock if encountered, as previously discussed.

To provide confinement and for adequate frost protection, building perimeter and any other exterior footings should bottom at least 18 inches below lowest exterior grade. Footings can be designed to impose dead plus long-term live load bearing pressures of no greater than 2,500 pounds per square foot (psf). This bearing capacity is based on all foundation grades being compacted to a firm condition. This allowable bearing pressure can be increased by one-third for consideration of all live loads including wind or seismic. These allowable bearing pressures also apply to a footing widths of 16 inches or greater.

Prior to installation of reinforcing steel, all bearing surfaces should be observed by the geotechnical engineer and tested for adequate compaction to ensure the design bearing capacity is met and that there are no objectionable materials present. Any loose material should be removed from the footing trenches prior to pouring concrete.

Resistance to lateral loads can be obtained from passive earth pressures and soil friction. We recommend the following design criteria:

Passive Earth Resistance - 350 pounds per cubic foot (pcf), equivalent fluid

Soil Friction Factor - 0.40

We are unaware if retaining walls will be needed. If planned, we recommend that any unrestrained (cantilever) or restrained retaining walls be designed to resist the active or "at rest" pressures imposed by soils with equivalent fluid unit weights of 35 or 55 pcf, respectively. Wall backdrains, with a four inch diameter collector pipe (at the base of the wall), should be installed along the retaining walls to collect any seepage that may accumulate and discharge it to planned outlet points or drainage areas. The gravel (drain rock) should extend to within 12 inches of the final grade and should be covered with a fabric interlayer. Native soils should be placed on the top of the drain rock and fabric. All walls should be backfilled with structural material as design pressure calculations are based on the use of on-site or imported granular soils.

For seismic design pressures on retaining walls greater than 4 feet in height, use:

$$\text{Resultant Seismic Force} = 0.375*K_h*Y*H^2$$

$$\text{Seismic design Coefficient } (K_h), = Sd_s/2.5$$

$$\text{Total Soil Unit Weight } (Y) = 120 \text{ pounds per cubic foot}$$

The pressure distribution is inverted semi-triangular (with the maximum pressure at the top of the wall) and the resultant acts at 0.6 X H above the wall base. The 0.6 reference is from the Retain-Pro manual. For restrained walls, RetainPro suggests that K_h = 0.30 maximum. We concur with this value.

Interior floor slabs can be supported on the recommended thickness of approved compacted fill. Floor slabs should be underlain by at least six inches of free draining crushed rock base or aggregate base. Exterior concrete flatwork such as driveways, curbs, sidewalks and patios supported on 18 inches of replacement structural fill to mitigate the clayey soils and should be underlain by at least six inches of aggregate base. Aggregate base material used in these interior and exterior areas should be compacted to at least 95 percent relative compaction. To provide uniform slab section support, all subgrade surfaces (upper six inches) should be scarified, moisture conditioned, and compacted to at least 90 percent relative compaction. The resulting subgrade and base surfaces should be smooth, firm and non-yielding.

If a vapor barrier is to be used, we recommend Stego-Wrap or equal. It should be installed with proper procedures and care so as not to expose the concrete slabs to a potential for curling.

Concrete mix proportions and construction techniques, including the addition of water and improper curing, can adversely affect the finished quality of the concrete and result in cracking and spalling of the slabs and other flatwork. We recommend that all placement and curing be performed in accordance with procedures outlined by the American Concrete Institute (ACI). Special consideration should be given to concrete placed and cured during hot or cold weather conditions. Proper control joints and reinforcing should be provided where applicable to minimize any cracking resulting from shrinkage.

Backfilling around building walls needed to attain final grade in non structural areas should be moisture conditioned, placed in 12 inch maximum thickness lifts, and be compacted to at least 85 percent minimum relative compaction. Field density testing of the backfill operations should be performed to ensure compaction is being achieved.

The ground surface around the structure should be permanently sloped to drain away from the building so that water is not allowed to pond against perimeter walls. The finish grading around the structure should be in accordance with current building code requirements. Finish grading should be verified by the Civil Engineer.

In addition to adequate surface drainage, a system of roof gutters and downspouts is recommended to collect roof drainage and direct it away from the walls and foundations. Foundation drainage is also recommended.

There has been an increase in ground water rising to, and seeping out of concrete floor slab and/or collecting in crawl spaces in many foothill and alpine communities. Many project design plans show that the drain pipe and rock (or mira-drain type systems) around the exterior foun-dation is to be located on the top of the footing. We strongly recommended that the drains be installed along the side of the footing and be placed at the foundation grade. These drains along foundations should be graded to drain to a collection point, with a pipe provided to daylight to an exterior discharge area. Details for the various foundation and wall systems are presented on the attached Plate 11.

Site drainage should also be designed to restrict infiltration from entering any flatwork sections. Periodic crack sealing and surface sealing should be implemented to increase service life of the concrete slabs and any pavements. Upon occupancy and/or any sale of the individual residence, the Builder, the design and project managing Architect and Civil Engineer, and Nortech will have no control over any alteration of the respective site grades and drainage conveyance. Therefore, it is the responsibility of the current, and any future property owners, to maintain proper surface and subsurface drainage on this lot.

Additional Geotechnical Engineering and Inspection Services

The conclusions and recommendations presented in this report are based on the results of current field exploration, our previous experience in the Virginia City Highlands and our understanding of the proposed development.

This report has been prepared in accordance with current, generally accepted, geotechnical engineering standards of practice for the limited scope of work authorized. It is believed that the soil information compiled presents an accurate representation of the subsurface conditions and variations to be expected within the areas studied. However, there is a possibility that conditions other than those found in this investigation exist on-site. In the event that unanticipated conditions are encountered during construction, we should be given budget allowances to evaluate the condition(s) and make timely new recommendations or modify our existing report to satisfy the project needs.

We should provide on-site observations, together with field and laboratory testing during site preparation and grading, excavation and foundation and slab installation. These observations and tests would allow us to verify that the soil conditions are as anticipated and that the Contractor's work is in conformance with this report and the approved plans and specifications.

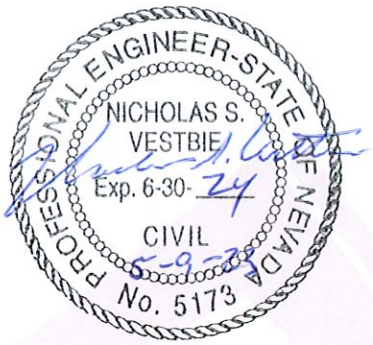
In addition, Nortech can provide any and all IBC Special Inspection services such as masonry, concrete, steel (welding, bolting, dry pack, etc.), fireproofing and any other construction or instal-lations requiring such services. We have ICC certified inspectors on staff and would be pleased to submit a proposal for any inspection services prior to construction.

We trust this provides the information needed; however, if you have any questions regarding this report, please contact our office.

Yours very truly,

NORTECH Geotechnical/Civil Consultants, Ltd.

Andrew R. Mayse
0T-8855



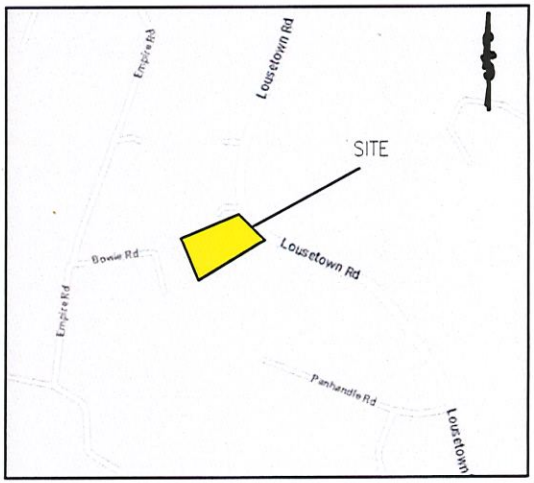
Nicholas S. Vestbie
Civil Engineer - 5173

NSV\ARM\mth

Enclosures:
Plate 1: Site and Exploration Plan
Plate 2: Logs of Test Pit 1 & Test Pit 2
Plate 3: Unified Soil Classification Chart
Figure 4: Particle Size Distribution Report
Figure 5: Particle Size Distribution Report
Figure 6: Particle Size Distribution Report
Figure 7: Atterberg Limits Test Report
Figure 8: Atterberg Limits Test Report
Plate 9: USGS Fault Map
Plate 10: Vs100 Shear Wave Analysis
Plate 11: Foundation Drain Details



SITE PLAN
(n.t.s.)



LOCATION MAP
(n.t.s.)

REFERENCE

SITE PLAN SUPPLIED BY: GOOGLE

NORTECH
GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

Job No. 28752-8N
Appr. /NSV
Date 04/27/23

SITE AND EXPLORATION PLAN
1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE
1

Laboratory Tests (and other info.)	MAXIMUM DRY DENSITY (PCF)	MOISTURE CONTENT (%)	IN- SITU DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE	Test Pit No.: 1 Equipment: Backhoe Elevation: N/A Date: 04/20/23
*SIEVE ANALYSIS & ATTERBERG LIMITS (See Figures 4 & 7) TEST PIT LOCATION: LATITUDE: 39.370732 LONGITUDE: −119.637423 Estimated Error: 5 to 6' radius from mid point		16.4	69	5 10	*	**DARK BROWN CLAYEY SAND (SC)** Moist, medium stiff, roots to 8", cobbles up to 6" in size **MEDIUM BROWN SILTY SAND (SM)** Moist, medium dense, cobbles up to 6" in size No Free Water Encountered

Laboratory Tests (and other info.)	MAXIMUM DRY DENSITY (PCF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE	Test Pit No.: 2 Equipment: Backhoe Elevation: N/A Date: 04/20/23
*SIEVE ANALYSIS AND ATTERBERG LIMITS (See Figures 5 & 8) **SIEVE ANALYSIS (See Figure 6) TEST PIT LOCATION: LATITUDE: 39.370592 LONGITUDE: −119.637955 Estimated Error: 5 to 6' radius from mid point		15.4	72	5 10	* ** X	**DARK BROWN CLAYEY SAND (SC)** Moist, medium stiff, roots to 8", cobbles up to 6" in size **MEDIUM BROWN SILTY SAND (SM)** Moist, medium dense, cobbles up to 6" in size No Free Water Encountered

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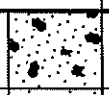
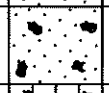
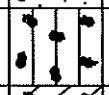
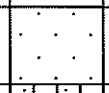
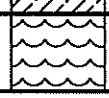
Job # 28752-8N
Appr. /nsv
Date: 04/27/23

LOGS OF TEST PITS 1 & 2

1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE 2

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN # 200 SIEVE)	GRAVELS (MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL–SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL–SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL–SAND–SILT MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL–SAND–CLAY MIXTURES
	SANDS (MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE)	CLEAN SANDS WITH LITTLE OR NO FINES	SP		POORLY GRADED SANDS, GRAVELLY SANDS
			SW		WELL GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND–SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND–CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN # 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAY LIQUID LIMIT GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OR HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

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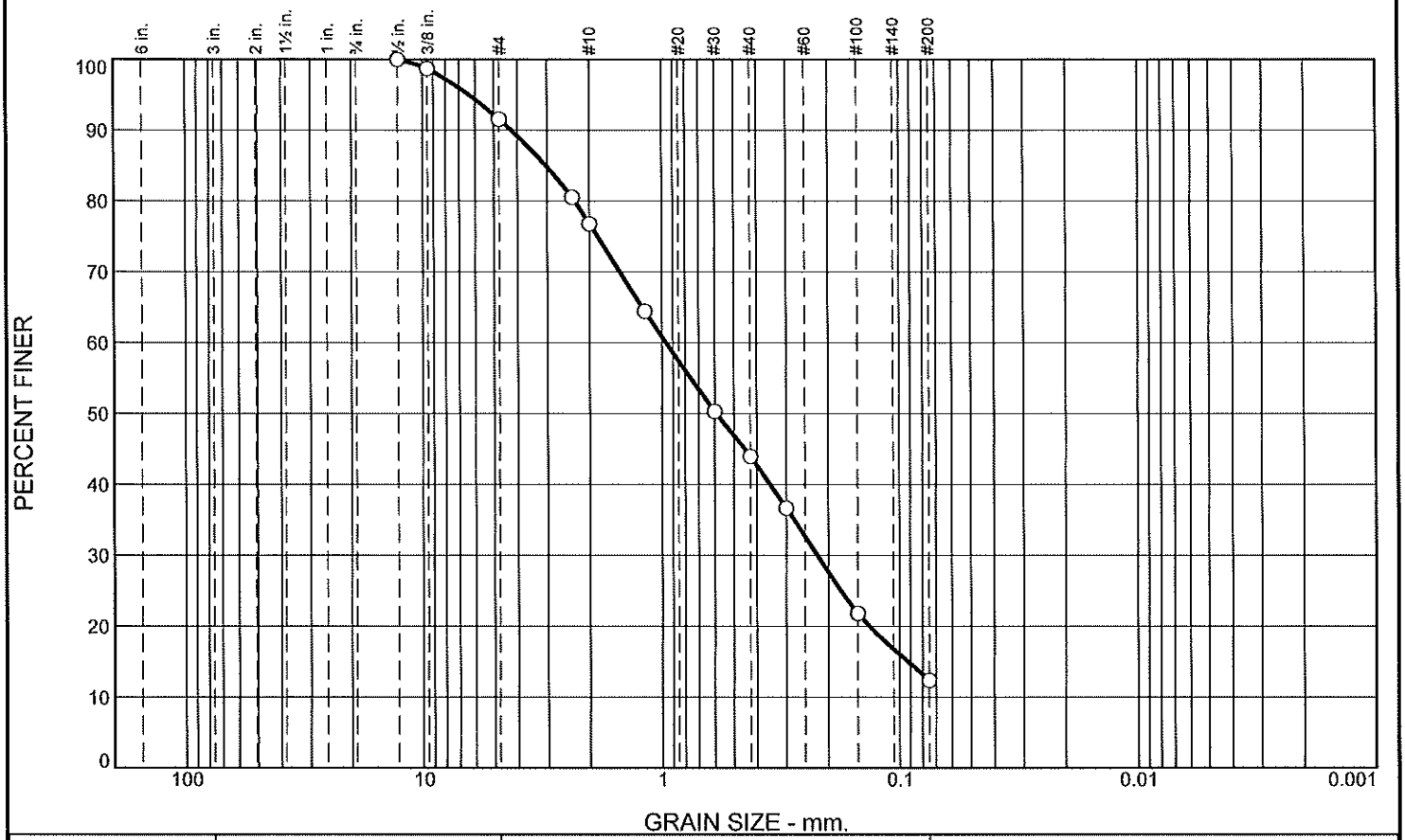
Job # 28752-8N
Appr. ww /nsv
Date: 4/27/23

UNIFIED SOIL CLASSIFICATION CHART

1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE
3

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	8.5	14.7	32.9	31.6	12.3	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.5	100.0		
.375	98.7		
#4	91.5		
#8	80.5		
#10	76.8		
#16	64.4		
#30	50.3		
#40	43.9		
#50	36.7		
#100	21.8		
#200	12.3		

* (no specification provided)

Soil Description

Dark Brown clayey sand

Atterberg Limits

PL= 22 LL= 44 PI= 22

Coefficients

D_{90}= 4.2407 D_{85}= 3.0374 D_{60}= 0.9628
D_{50}= 0.5909 D_{30}= 0.2226 D_{15}= 0.0923
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO= A-2-7(0)

Remarks

Source of Sample: Test Pit 1 **Depth:** 3'-4'
Sample Number: GI **Date:** 4/27/23

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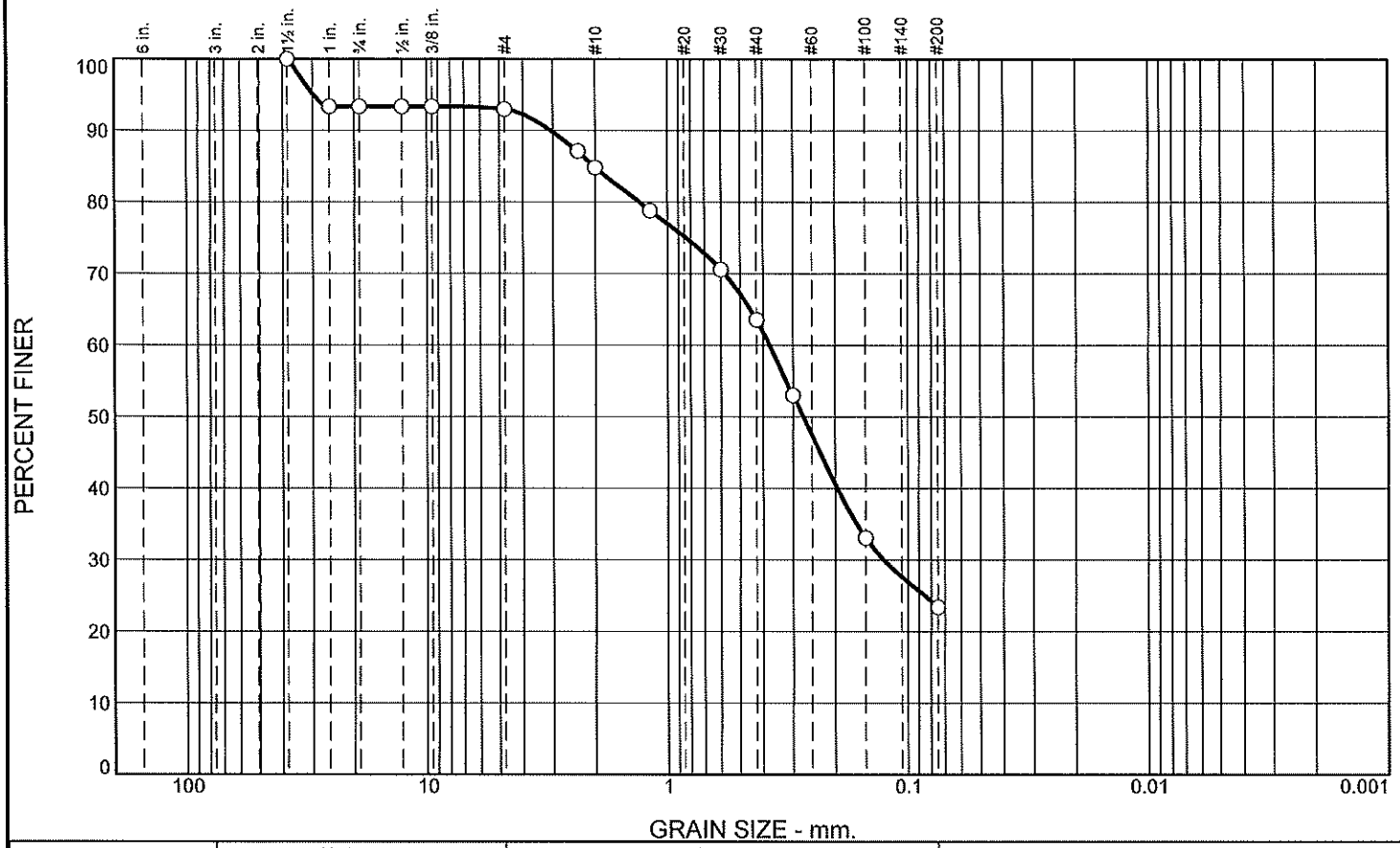
GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

Client: Frank Funes
Project: 1850 Lousetown Road
Project No: 28752-8N **Figure** 4

Tested By: Casey Mull **Checked By:** CM

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.7	0.3	8.2	21.3	40.1	23.4	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	93.3		
.75	93.3		
.5	93.3		
.375	93.3		
#4	93.0		
#8	87.1		
#10	84.8		
#16	78.8		
#30	70.6		
#40	63.5		
#50	53.0		
#100	33.1		
#200	23.4		

* (no specification provided)

Soil Description

Dark Brown clayey sand

Atterberg Limits

PL= 23 LL= 48 PI= 25

Coefficients

D_{90}= 3.0675 D_{85}= 2.0351 D_{60}= 0.3752
D_{50}= 0.2716 D_{30}= 0.1266 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO= A-2-7(1)

Remarks

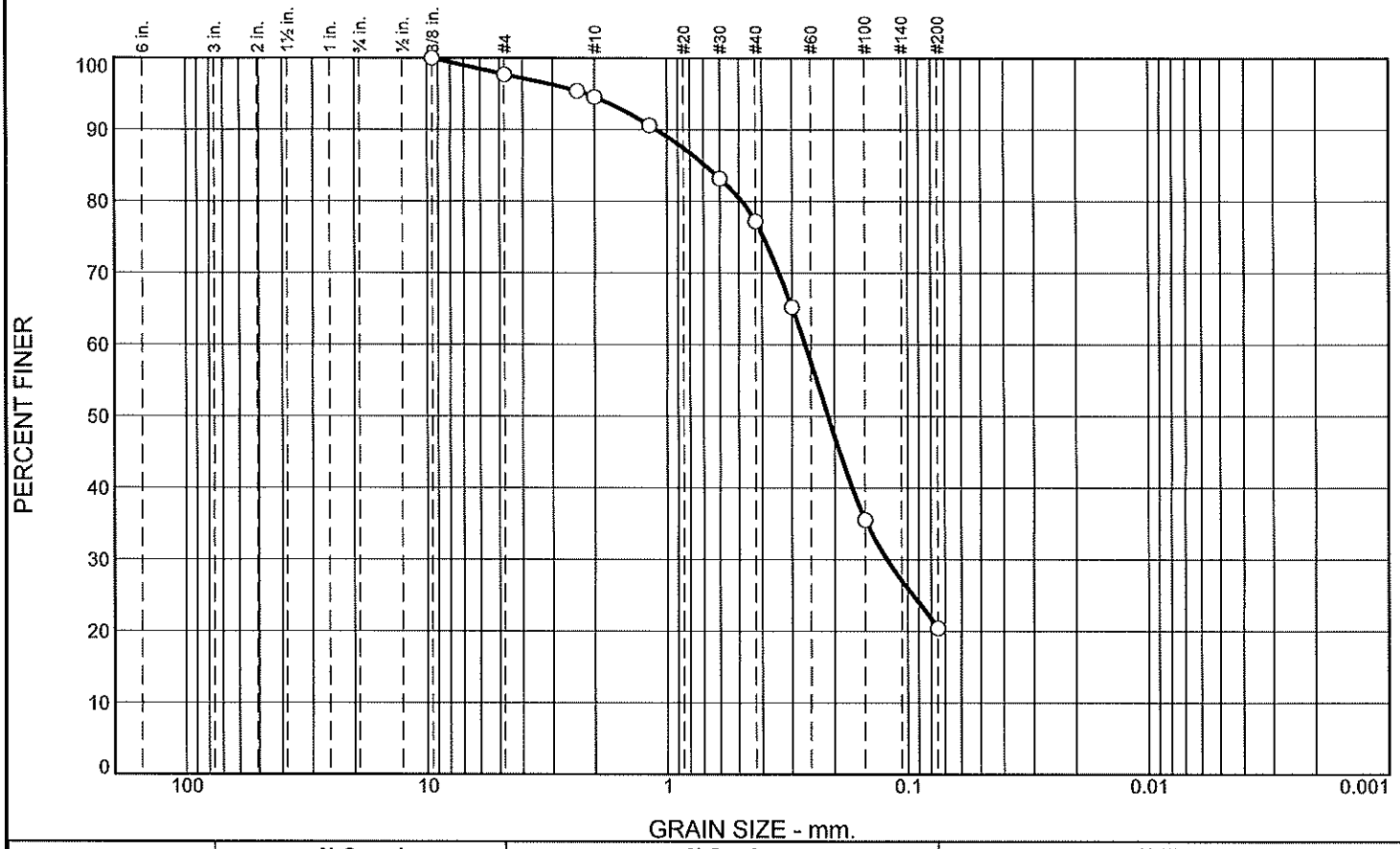
Source of Sample: Test Pit 2 **Depth:** 2'-3'
Sample Number: GI **Date:** 4/27/23

NORTECH
GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

Client: Frank Funes
Project: 1850 Lousetown Road
Project No: 28752-8N **Figure** 5

Tested By: Casey Mull **Checked By:** CM

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.3	3.2	17.3	56.8	20.4	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	97.7		
#8	95.4		
#10	94.5		
#16	90.6		
#30	83.2		
#40	77.2		
#50	65.2		
#100	35.5		
#200	20.4		

* (no specification provided)

Soil Description

Medium Brown silty sand

Atterberg Limits

PL= NP LL= NV PI=

Coefficients

D_{90}= 1.1076 D_{85}= 0.6884 D_{60}= 0.2645
D_{50}= 0.2129 D_{30}= 0.1223 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Source of Sample: Test Pit 2 **Depth:** 4'-5'
Sample Number: GI **Date:** 4/27/23

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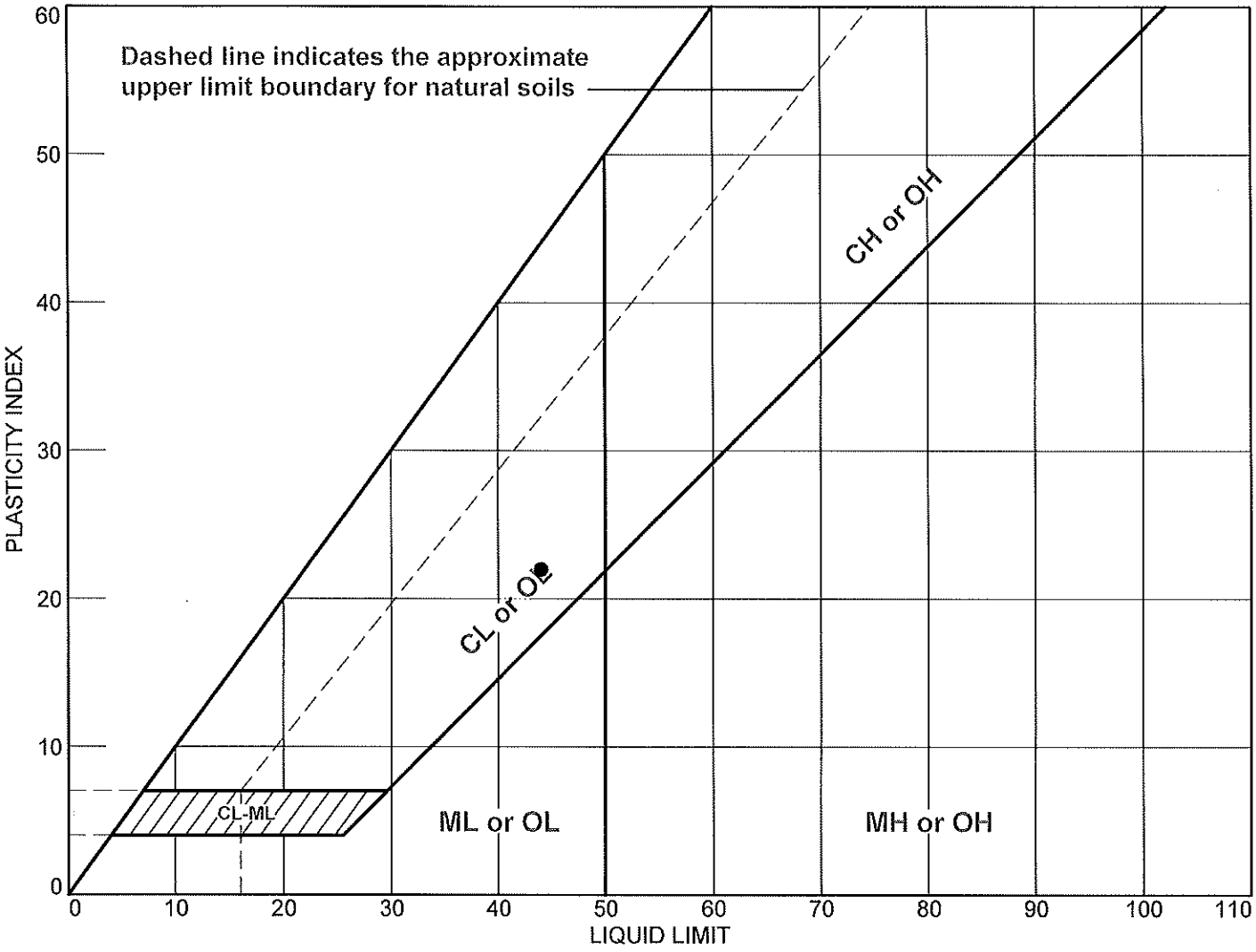
GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

Client: Frank Funes
Project: 1850 Lousetown Road
Project No: 28752-8N **Figure** 6

Tested By: Casey Mull **Checked By:** CM

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Test Pit 1	GI	3'-4'		22	44	22	SC

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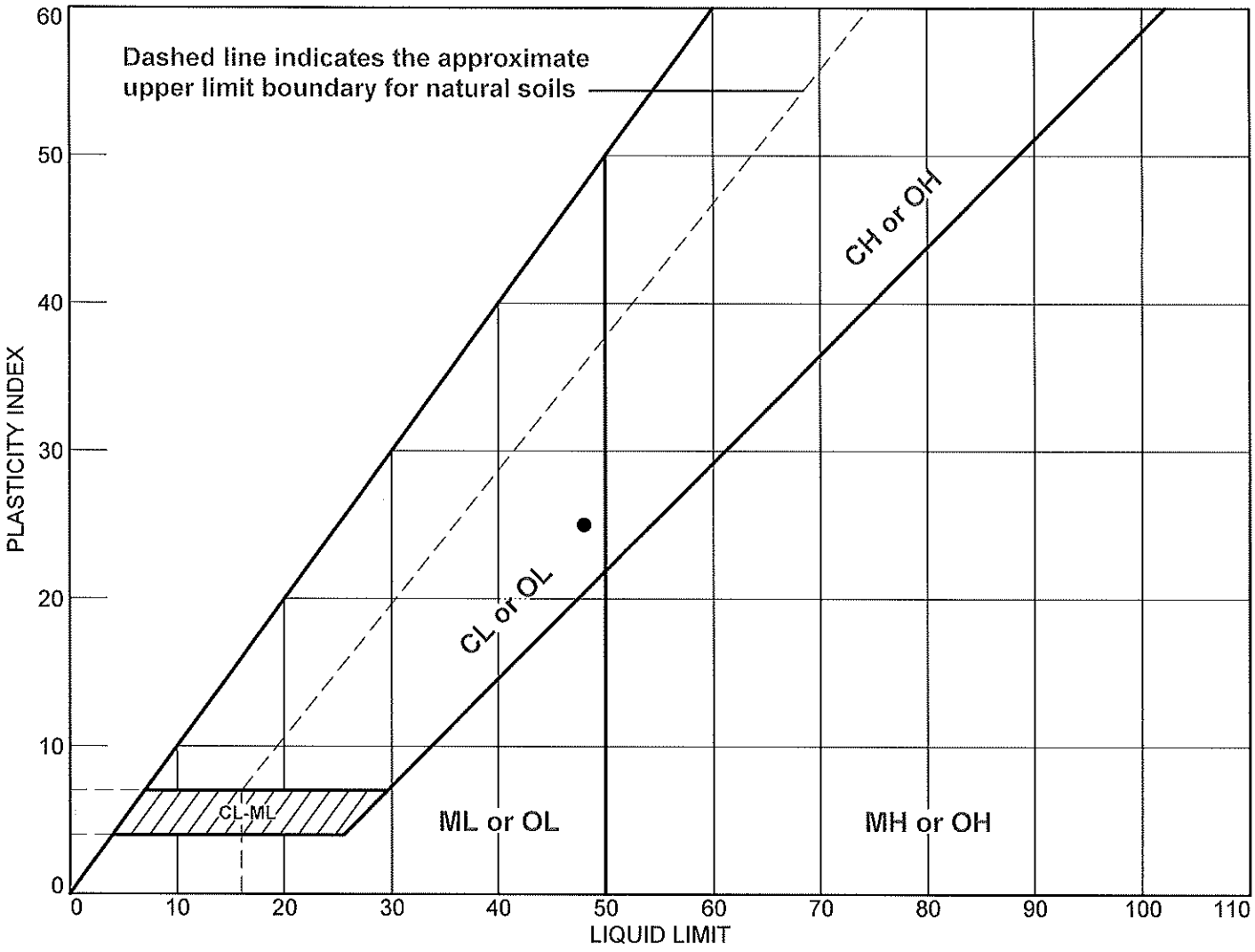
Client: Frank Funes
Project: 1850 Lousetown Road

Project No.: 28752-8N **Figure** 7

Tested By: AM **Checked By:** CM

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Test Pit 2	GI	2'-3'		23	48	25	SC

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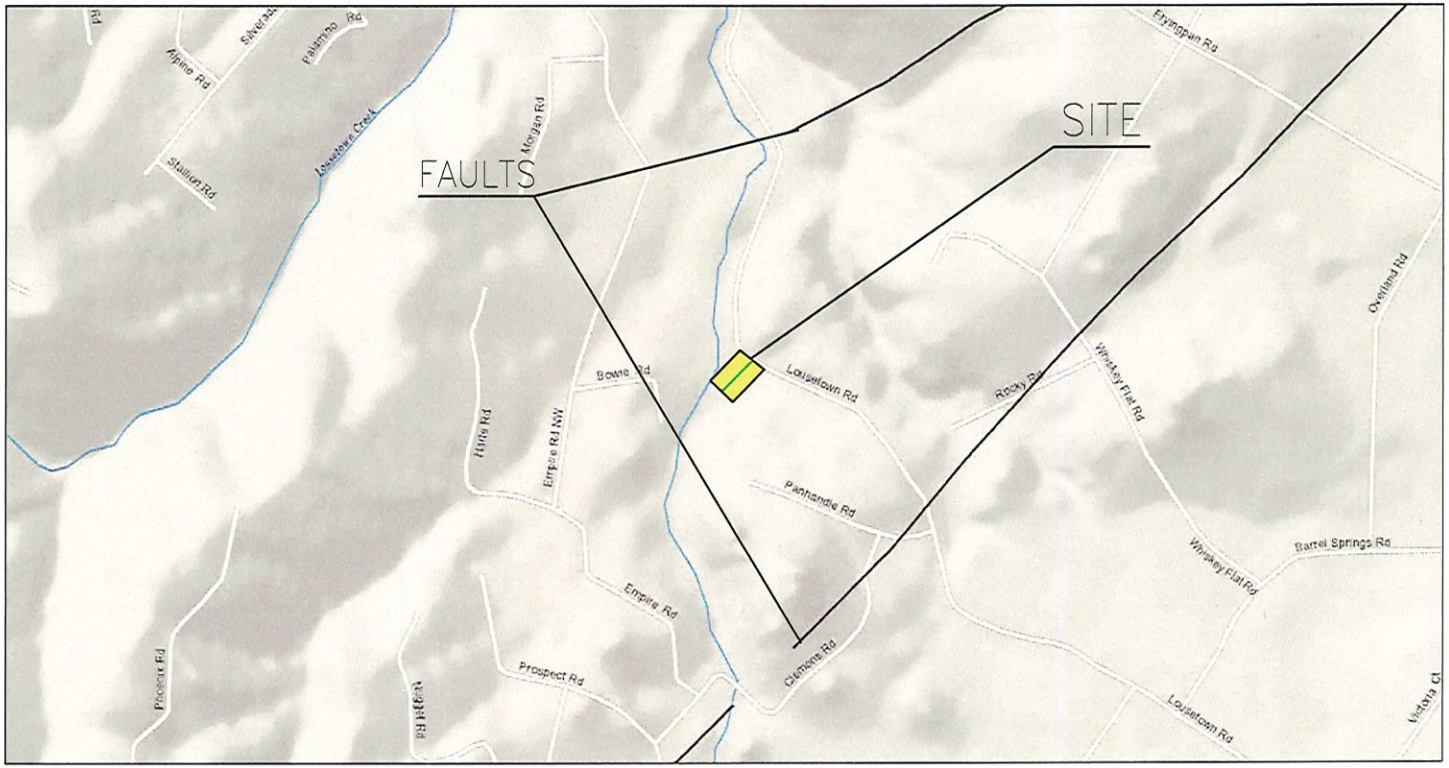
Client: Frank Funes
Project: 1850 Lousetown Road

Project No.: 28752-8N **Figure** 8

Tested By: Andrew Mayse **Checked By:** CM

U.S. Geological Survey Quaternary Faults



4/27/2023, 1:34:23 PM

Fault Areas
- Class B
- historic
- late Quaternary
- latest Quaternary
- middle and late Quaternary

National Database
- Historic (< 150 years), well constrained location
- Historic (< 150 years), moderately constrained location
- Historic (< 150 years), inferred location
- Latest Quaternary (<15,000 years), well constrained location
- Latest Quaternary (<15,000 years), moderately constrained location
- Latest Quaternary (<15,000 years), inferred location
- Late Quaternary (< 130,000 years), well constrained location
- Late Quaternary (< 130,000 years), moderately constrained location
- Late Quaternary (< 130,000 years), inferred location
- Middle and late Quaternary (< 750,000 years), well constrained location
- Middle and late Quaternary (< 750,000 years), moderately constrained location
- Middle and late Quaternary (< 750,000 years), inferred location
- Undifferentiated Quaternary (< 1.6 million years), well constrained location
- Undifferentiated Quaternary (< 1.6 million years), moderately constrained location
- Undifferentiated Quaternary (< 1.6 million years), inferred location

1:9,028

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 Km

National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

USGS

National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp. | USGS |

REFERENCE:
UNITED STATES GEOLOGICAL SURVEY

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GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

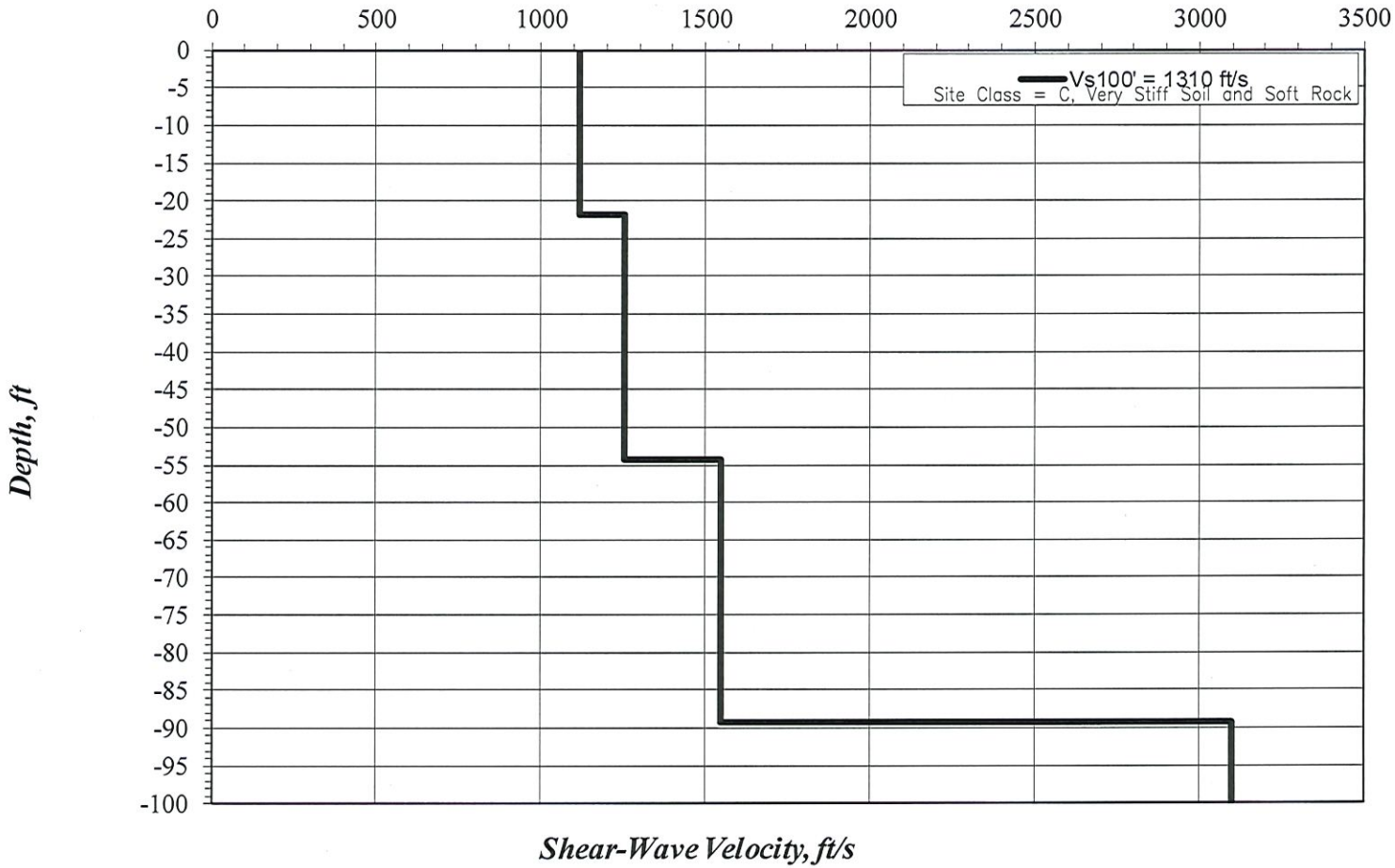
Job No. 28752-8N
Appr. /nsv
Date 4/27/23

USGS FAULT MAP

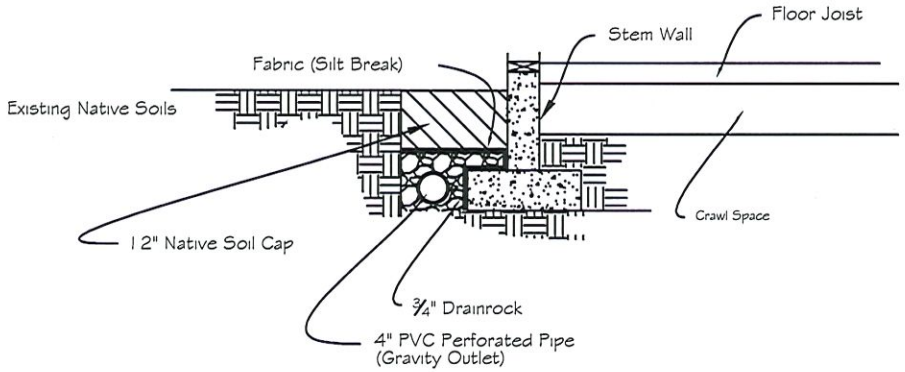
1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE
9

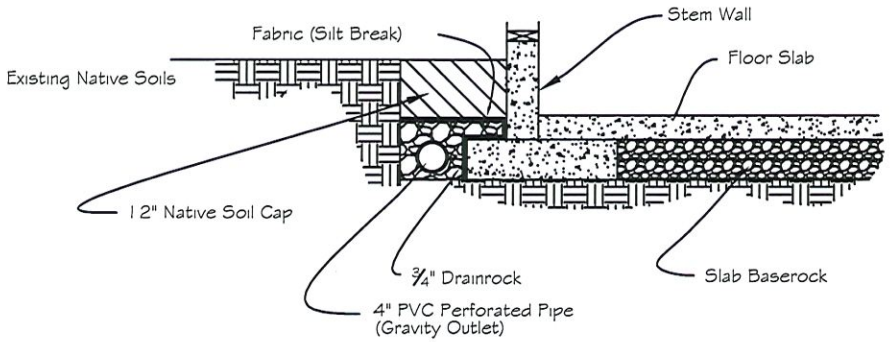
1850 Lousetown Road: Vs Model



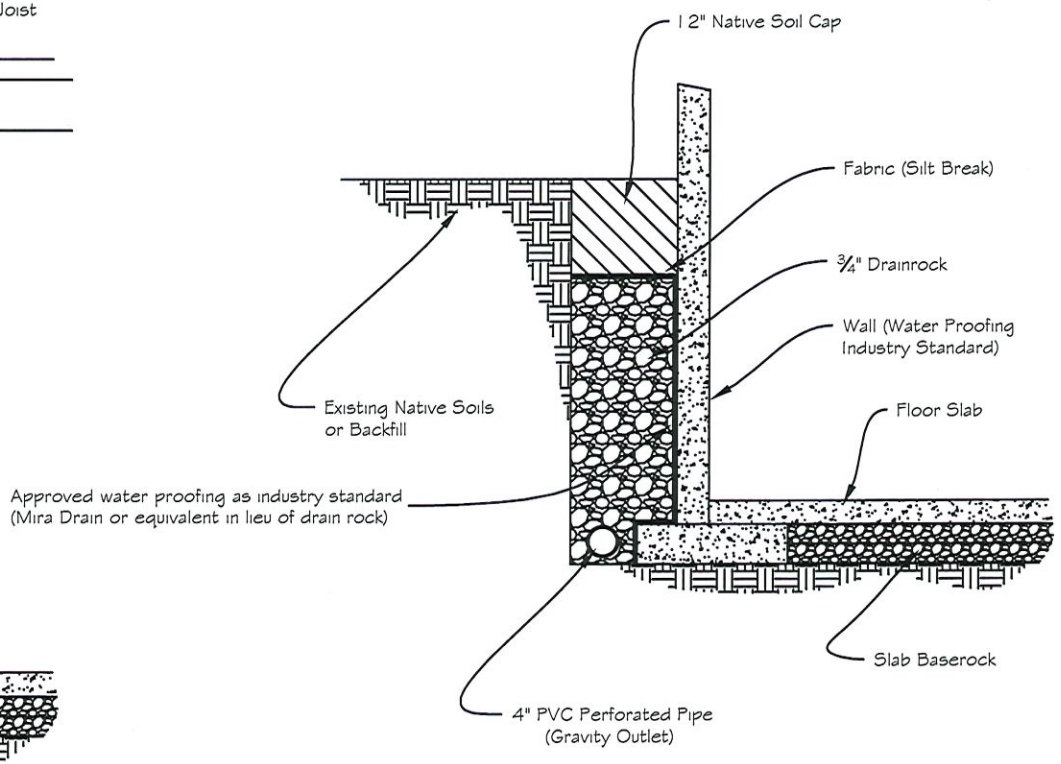
NORTECH GEOTECHNICAL/CIVIL CONSULTANTS, LTD.	Job No. 28752-8N Appr. /nsv Date 04/27/23	**Vs30 SHEAR WAVE ANALYSIS** 1850 LOUSETOWN ROAD STOREY COUNTY, NEVADA	PLATE 10



FOUNDATION – CRAWL SPACE SYSTEM



FOUNDATION – FLOOR SLAB SYSTEM



FOUNDATION – RETAINING WALL SYSTEM

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Date 04/27/23

FOUNDATION DRAIN DETAILS

1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

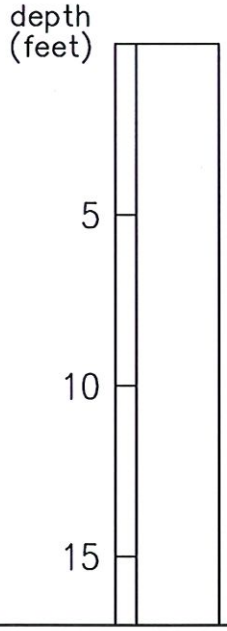
PLATE
11

TEST PIT NO.:	1	SET UP:	4/19/23
TEST NO.:	A	RUN:	4/20/23
DIMENSIONS:	6" Wide X 12" Deep	TIME:	12:00 PM
SOIL TESTED:	Brown Sandy Clay (SC)	FIELD TECH:	Mat

LOG

RELATIVE TIME (hours: minutes)	MEASURED DROP (inches)	REMARKS
0:00	0.00	Initial Water Added
0:00	0.00	Level Constant, Pre-soak completed
0:00	0.00	Adjust Water level to 6"
12:15	1-1/8	Proceed, IAW NAC 444.796.
12:45	1	
1:15	3/4	
1:45	3/4	
2:15	3/4	
2:45	3/4	Terminate
		PERCOLATION RATE: 40 Minutes Per Inch
		DEPTH TEST PERFORMED: 2 Feet
		PIT EVALUATED BY: N. VESTBIE





BROWN SILTY SAND (SM)
Dry, >40% fines content

No Free Water Encountered

Bottom of Pit at 10' Depth

TEST PIT LOCATION:
LATITUDE: 38.3760
LONGITUDE: -116.6412
Estimated Error: 5 to 6' radius from mid point

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Job # 28752-8N
Appr. /nsv
Date: 04/21/23

PERCOLATION TEST RECORD

1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE
1A

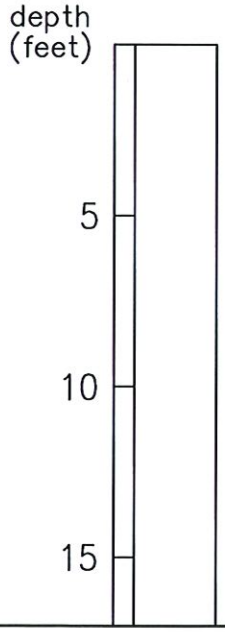
TEST PIT NO.:	1	SET UP:	4/19/23
TEST NO.:	B	RUN:	4/20/23
DIMENSIONS:	6" Wide X 12" Deep	TIME:	12:00 PM
SOIL TESTED:	Brown Sandy Clay (SC)	FIELD TECH:	Mat

LOG

RELATIVE TIME (hours: minutes)	MEASURED DROP (inches)	REMARKS
0:00	0.00	Initial Water Added
0:00	0.00	Level Constant, Pre-soak completed
0:00	0.00	Adjust Water level to 6"
12:16	1-1/8	Proceed, IAW NAC 444.796.
12:46	1	
1:16	3/4	
1:46	3/4	
2:16	3/4	
2:46	3/4	Terminate
		PERCOLATION RATE: 40 Minutes Per Inch
		DEPTH TEST PERFORMED: 4 Feet
		PIT EVALUATED BY: N. VESTBIE

PROFESSIONAL ENGINEER - STATE OF NEVADA
NICHOLAS S. VESTBIE
Exp. 6-30-24
CIVIL
No. 5173

TEST PIT LOCATION:
LATITUDE: 38.3760
LONGITUDE: -116.6412
Estimated Error: 5 to 6' radius from mid point



BROWN SILTY SAND (SM)
Dry, >40% fines content

No Free Water Encountered

Bottom of Pit at 10' Depth

NORTECH
GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

Job # 28752-8N
Appr. /nsv
Date: 04/21/23

PERCOLATION TEST RECORD

1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE
1B

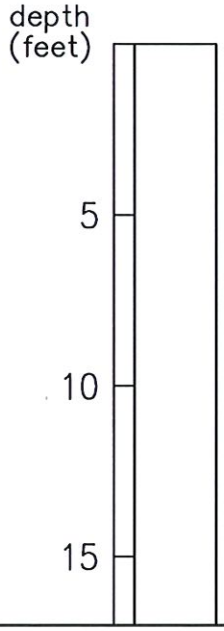
TEST PIT NO.:	2	SET UP:	4/19/23
TEST NO.:	A	RUN:	4/20/23
DIMENSIONS:	6" Wide X 12" Deep	TIME:	12:00 PM
SOIL TESTED:	Brown Sandy Clay (SC)	FIELD TECH:	Mat

LOG

RELATIVE TIME (hours: minutes)	MEASURED DROP (inches)	REMARKS
0: 00	0.00	Initial Water Added
0: 00	0.00	Level Constant, Pre-soak completed
0: 00	0.00	Adjust Water level to 6"
12: 20	1-1/8	Proceed, IAW NAC 444.796.
12: 50	1	
1: 20	3/4	
1: 50	3/4	
2: 20	3/4	
2: 50	3/4	Terminate
		PERCOLATION RATE: 40 Minutes Per Inch
		DEPTH TEST PERFORMED: 1 Feet
		PIT EVALUATED BY: N. VESTBIE



TEST PIT LOCATION:
LATITUDE: 38.3760
LONGITUDE: -116.6412
Estimated Error: 5 to 6' radius from mid point



BROWN SILTY SAND (SM)
Dry, >40% fines content

No Free Water Encountered

Bottom of Pit at 10' Depth

NORTECH
GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

Job # 28752-8N
Appr. /nsv
Date: 04/21/23

PERCOLATION TEST RECORD

1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE
2A

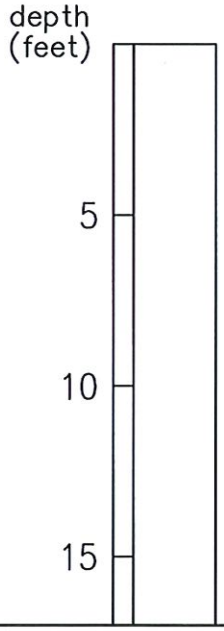
TEST PIT NO.:	2	SET UP:	4/19/23
TEST NO.:	A	RUN:	4/20/23
DIMENSIONS:	6" Wide X 12" Deep	TIME:	12:00 PM
SOIL TESTED:	Brown Sandy Clay (SC)	FIELD TECH:	Mat

LOG

RELATIVE TIME (hours: minutes)	MEASURED DROP (inches)	REMARKS
0: 00	0.00	Initial Water Added
0: 00	0.00	Level Constant, Pre-soak completed
0: 00	0.00	Adjust Water level to 6"
12: 22	1-1/8	Proceed, IAW NAC 444.796.
12: 52	1	
1: 22	3/4	
1: 52	3/4	
2: 22	3/4	
2: 52	3/4	Terminate
		PERCOLATION RATE: 40 Minutes Per Inch
		DEPTH TEST PERFORMED: 1 Feet
		PIT EVALUATED BY: N. VESTBIE



TEST PIT LOCATION:
LATITUDE: 38.3760
LONGITUDE: -116.6412
Estimated Error: 5 to 6' radius from mid point



BROWN SILTY SAND (SM)
Dry, >40% fines content

No Free Water Encountered

Bottom of Pit at 10' Depth

NORTECH
GEOTECHNICAL/CIVIL CONSULTANTS, LTD.

Job # 28752-8N
Appr. /nsv
Date: 04/21/23

PERCOLATION TEST RECORD

1850 LOUSETOWN ROAD
STOREY COUNTY, NEVADA

PLATE
2A

Bruce MacKay Pump & Well Service, Inc.
8175 S. Virginia Street STE 850
PMB#407
Reno, NV 89511
(775) 851-1600

Invoice 69039
Invoice Date 5/24/2022
Completed Date 6/7/2022

Billing Address
Funes, Frank & Monica
1850 Lousetown Road
Reno, NV 89521 USA

Job Address
Funes, Frank & Monica
1850 Lousetown Road
Reno, NV 89521 USA

Description of Work

Task #	Description	Quantity	Your Price	Your Total
WQ/AUDIT	Water Quality	1.00	$255.00	$255.00
WELDER	Welder/ Genset Rental	1.00	$65.00	$65.00
RENT	Rental equipment-pump jobs	1.00	$500.00	$500.00
1LABOR1RENO1	One Man Hourly Labor	3.00	$150.00	$450.00

Paid On	Type	Memo	Amount
6/16/2022	Credit Card		$1,270.00

Sub-Total	$1,270.00
Tax	$0.00
Total Due	$1,270.00
Payment	$1,270.00
Balance Due	$0.00

Thank you for choosing Bruce MacKay Pump & Well Service, Inc.

This invoice is agreed and acknowledged.
Payment is due upon receipt. Upon buyer's failure to pay in full within 10 days, buyer agrees to pay a Finance Charge of 2% per month, 24% per annum, PLUS any other collection costs incurred including attorney fees. There is a $25.00 charge for returned checks and a credit card processing may apply. Balance due on invoice is CASH or CHECK. Seller for security purposes retains title to described goods until PAID IN FULL. In case of Buyer's default in payment, Seller or his agents may take possession of, and remove described goods from Buyer's premises without notice. Buyer waives all right of action for trespass damages or other cause resulting from repossession.

Payment may be available from the Residential Construction Recovery Fund if you are damaged financially by a project preformed on your residence. For more information contact State Contractors Board (775) 688-1141.

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6/7/2022
I find and agree that all work performed by Bruce MacKay Pump & Well Service, Inc. has been completed in a satisfactory and workmanlike manner. I have been given the opportunity to address concerns and/or discrepancies in the work provided, and I either have no such concerns or have found no discrepancies or they have been addressed to my satisfaction. My signature here signifies my full and final acceptance of all work performed by the contractor.

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6/7/2022

ESTIMATE

Ryan's Rock And Hoe
P.O Box 876
Virginia City, NV 89440

ryansrockandhoe@gmail.com
+1 (775) 772-7378
http://ryansrocks.com

Frank Funes

Bill to
Frank Funes
1850 Lousetown

Ship to
Frank Funes
1850 Lousetown

Estimate details

Estimate no.: 1362
Estimate date: 03/14/2024

#	Date	Product or service	Description	SKU	Qty	Rate	Amount
1.		**1,000 gal septic tank, D-box, Risers, Pipe, Fittings**			1	$4,380.00	$4,380.00
2.		**1.5" Septic Gravel**	price is by the ton		100	$35.00	$3,500.00
3.		**Linkbelt 135 excavator**	to excavate tank hole and leach lines		16	$220.00	$3,520.00
4.		**ST45 Tracked Skid Steer**	to move excavated material and backfill septic system		16	$150.00	$2,400.00
5.		**Labor**	for grade setting and septic system installation		24	$135.00	$3,240.00
6.		**Equipment Transport**			2	$250.00	$500.00

Subtotal	$17,540.00
Sales tax	$266.00
Total	**$17,806.00**

Note to customer

This is an estimate for the excavation and installation of a new leach line septic system. This is only an estimate and may be subject to change if the property owner changes plans, material prices change and if excavation becomes more difficult than expected. Thank you for your business.

Nevada Analytical Services
WATER AND SOIL TESTING LABORATORY

5580 Mill Street, Suite 100, Reno, NV 89502 | Phone: 775.284.3970 | Fax: 866.755.7619
NV Laboratory ID :NV00923 | EPA Laboratory ID: NV00923

Nevada Analytical Services
5580 Mill Street, Suite 100
Reno, NV, 89502

Laboratory Report Identification: 0622055
Submission Date: 6/8/2022

Tuesday, June 14, 2022

Bruce MacKay Pump & Well
Tom Drilk
7465 Longley Lane
Reno, NV 89511

Dear Tom:

Results for the analytical test(s) submitted on the date above are detailed in the following report.

Unless it is otherwise noted in the following analytical report(s), all samples submitted for analysis were received within their acceptable hold times, properly preserved, and in acceptable condition for their respective analyses.

Thank you for choosing NAS for your analytical testing requirements.

Report Comments: None.

Sincerely,

6/14/2022

Michael R. Genova
Technical Director

Date

References

mg/L: Milligrams/Liter (ppm)
mg/kg: Milligrams/Kilogram (ppm)
ppm: Parts per million
* Contract Laboratory

ND: Not Detected at RL
RL: Reporting Limit (calculation: RL = DF * DL)
DL: Detection Limit
DF: Dilution Factor

UL: Under Laboratory Established Limits
OL: Over Laboratory Established Limits

Reported analytical results relate only to the item(s) tested or to the sample(s) as received by the laboratory.

Nevada Analytical Services
WATER AND SOIL TESTING LABORATORY

5580 Mill Street, Suite 100, Reno, NV 89502 | Phone: 775.284.3970 | Fax: 866.755.7619
NV Laboratory ID :NV00923 | EPA Laboratory ID: NV00923

Laboratory Report Identification: 0622055

Company/Client: Bruce MacKay Pump & Well
Contact: Tom Drilk
Address: 7465 Longley Lane
City: Reno
State: NV
Zip: 89511
Phone:
Email:

Submission Date: 6/8/2022
Sampling Site: Well Head
Project: N/A
Reference Number: N/A
PO Number: N/A
Sampled By: Client

Client Sample Identification: 1850 Lousetown Road
Laboratory Sample Identification: 0622055-1
Sampling Date: 6/7/2022
Matrix: Aqueous

Water Panel

General Chemistry	Results	Units	EPA Limits		Laboratory RL	Method	Analysis Date
pH (at 25 °C)	7.18	S.I.U.	6.50 - 8.50		~	SM 4500H+ B	6/8/2022
Conductivity (at 25 °C)	1100	umhos/cm	~		~	SM 2510 B	6/8/2022
Color	10	cu	~		5	SM 2120B	6/8/2022
Turbidity	ND	NTU	~		0.5	SM2130 B	6/8/2022
Alkalinity (as CaCO3)	222	mg/L	~		2.0	SM 2320 B	6/8/2022
Hardness (as CaCO3)	596	mg/L	~		0.1	Calculation	~
Total Dissolved Solids (TDS)	977	mg/L	1000		3.7	Calculation	~
Anions							
Bicarbonate	271	mg/L	~		2.4	SM 2310 B	6/8/2022
Fluoride	ND	mg/L	4.0		0.50	EPA 300.0	6/9/2022
Chloride	47.5	mg/L	400		0.10	EPA 300.0	6/9/2022
Nitrate as Nitrogen	ND	mg/L	10.0		0.10	EPA 300.0	6/9/2022
Sulfate	367	mg/L	500		0.10	EPA 300.0	6/9/2022
Silicate	11.3	mg/L	~		0.50	EPA 200.7	6/10/2022
Cations							
Sodium	70.2	mg/L	~		0.05	EPA 200.7	6/10/2022
Potassium	1.50	mg/L	~		0.05	EPA 200.7	6/10/2022
Calcium	161	mg/L	~		0.05	EPA 200.7	6/10/2022
Magnesium	47.2	mg/L	150		0.05	EPA 200.7	6/10/2022
Trace Metals							
Arsenic	ND	mg/L	0.010		0.010	EPA 200.7	6/10/2022
Barium	ND	mg/L	2.00		0.05	EPA 200.7	6/10/2022
Copper	ND	mg/L	1.00		0.05	EPA 200.7	6/10/2022
Iron	11.10	mg/L	0.60	Over Limit	0.05	EPA 200.7	6/10/2022
Manganese	0.15	mg/L	0.10	Over Limit	0.05	EPA 200.7	6/10/2022
Zinc	ND	mg/L	5.00		0.05	EPA 200.7	6/10/2022
Boron	ND	mg/L	~		0.05	EPA 200.7	6/10/2022
Lead	ND	mg/L	0.015		0.015	EPA 200.7	6/10/2022
Microbiology (Present/Absent)							
Total Coliform	Absent	P/A	~			SM9221D	6/8/2022
E Coli	Absent	P/A	~			SM9221D	6/8/2022

Bicarbonate	4.440	meq/L
Chloride	1.342	meq/L
Sulfate	7.646	meq/L
Silicate	0.188	meq/L
Total Anion (meq/L)	**13.616**	
Sodium	3.052	meq/L
Potassium	0.038	meq/L
Calicum	8.050	meq/L
Manganesium	3.933	meq/L
Total Cation (meq/L)	**15.074**	

Anion/Cation Ion Balance **0.949**

Your water meets EPA primary and secondary standards unless otherwise noted.
This report is to be used for informational purposes only (not to be used for compliance purposes).

References

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* Contract Laboratory

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