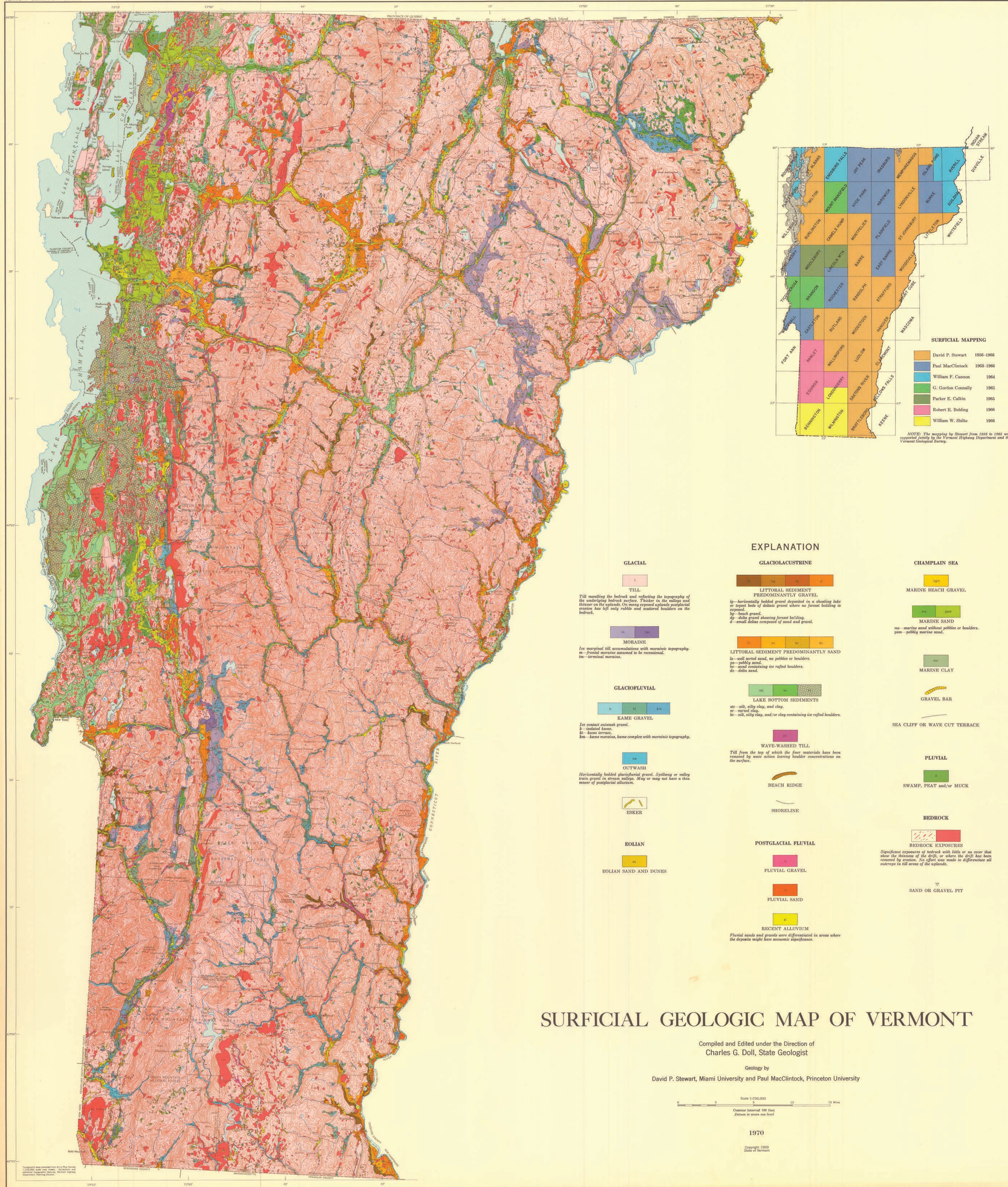
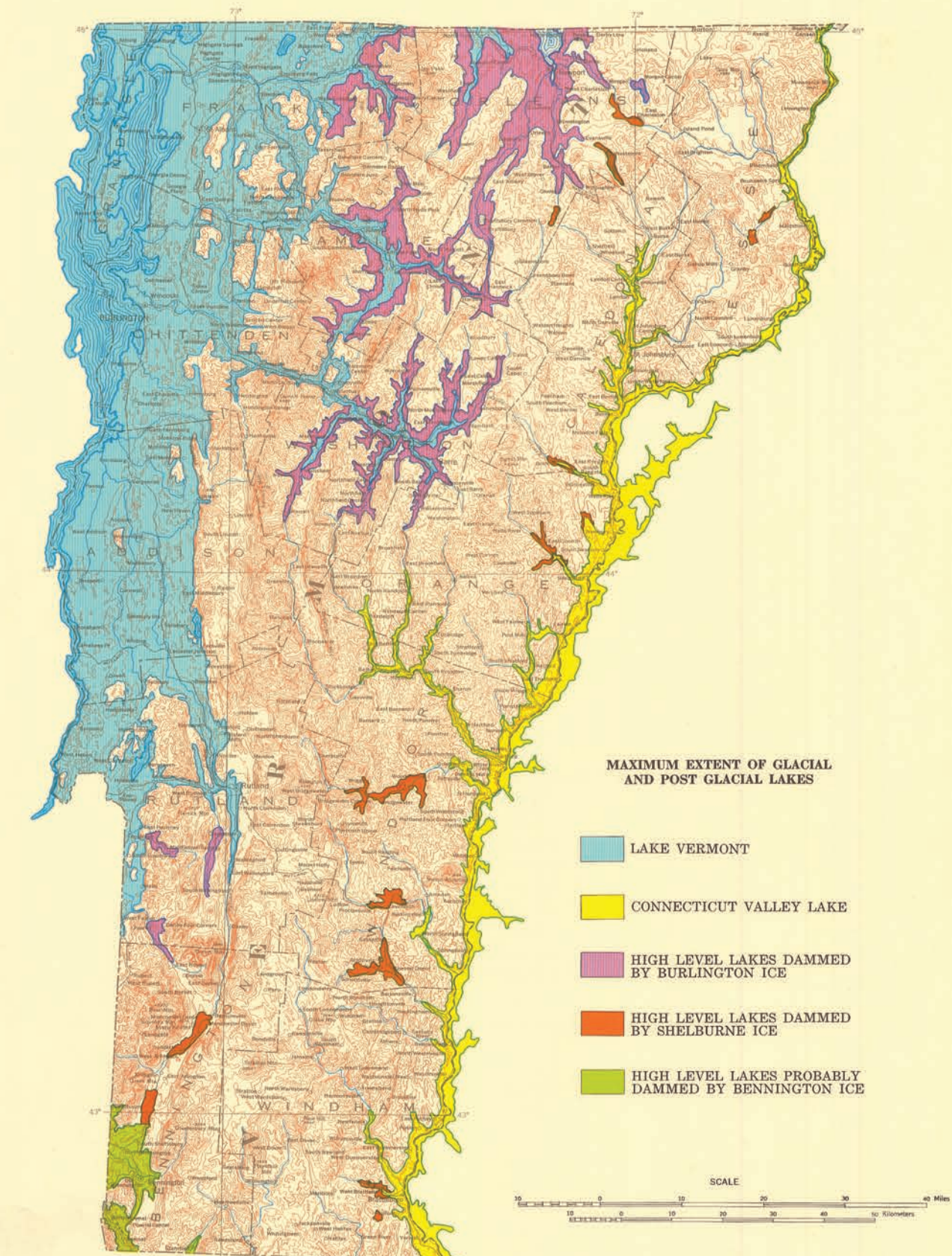
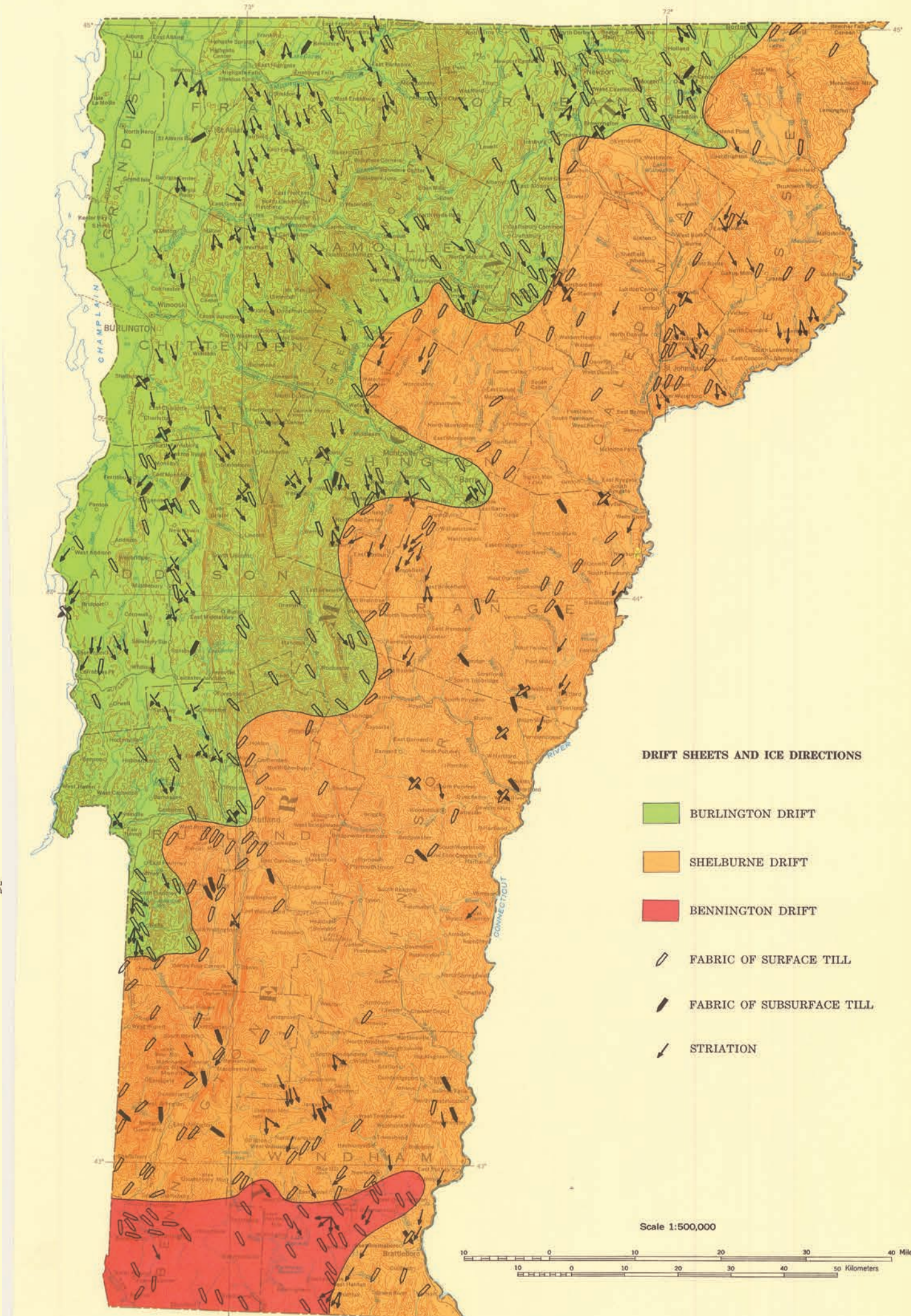




SURFICIAL GEOLOGIC MAP OF VERMONT

Compiled and Edited under the Direction of
Charles G. Doll, State GeologistGeology by
David P. Stewart, Miami University and Paul MacClintock, Princeton UniversityScale 1:500,000
Contour interval 100 feet
Distances in miles and feet

1970

Copyright 1969
State of Vermont

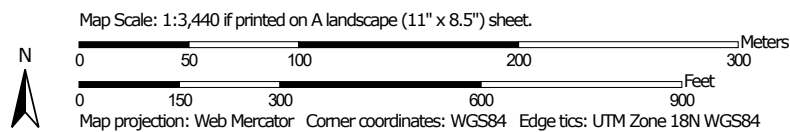
APPENDIX E

USDA NRCS WEB SOIL SURVEY DATA

Soil Map—Windsor County, Vermont
(Jewell Brook Site No. 3)



Soil Map may not be valid at this scale.



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

1/10/2020
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Windsor County, Vermont

Survey Area Data: Version 23, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 17, 2012—Mar 29, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11E	Marlow fine sandy loam, 35 to 60 percent slopes, very stony	3.0	7.3%
17C	Peru, Skerry, and Colonel soils, 8 to 15 percent slopes	3.2	7.6%
18C	Peru, Skerry, and Colonel soils, 8 to 15 percent slopes, very stony	1.3	3.0%
28	Udorthents and Udipsamments	14.8	35.2%
31B	Cabot silt loam, 0 to 8 percent slopes, very stony	0.7	1.7%
54D	Tunbridge-Lyman complex, 15 to 25 percent slopes, rocky	0.5	1.3%
68C	Monadnock and Berkshire soils, 8 to 15 percent slopes	3.1	7.5%
68D	Monadnock and Berkshire soils, 15 to 25 percent slopes	1.1	2.5%
70C	Adams loamy sand, 8 to 15 percent slopes	3.5	8.4%
W	Water	10.7	25.6%
Totals for Area of Interest		42.0	100.0%

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named, soils that are similar to the named components, and some minor components that differ in use and management from the major soils.

Most of the soils similar to the major components have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Some minor components, however, have properties and behavior characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description

Windsor County, Vermont

11E—Marlow fine sandy loam, 35 to 60 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty5v

Elevation: 660 to 2,100 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 48 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Marlow, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marlow, Very Stony**Setting**

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
E - 5 to 8 inches: fine sandy loam
Bs1 - 8 to 15 inches: fine sandy loam
Bs2 - 15 to 19 inches: fine sandy loam
BC - 19 to 33 inches: gravelly fine sandy loam
Cd - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 35 to 60 percent
Percent of area covered with surface fragments: 1.1 percent
Depth to restrictive feature: 20 to 41 inches to densic material
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components**Peru, very stony**

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Mountainflank, side slope

Microfeatures of landform position: Open depressions, open depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Tunbridge, very stony

Percent of map unit: 4 percent

Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Berkshire, very stony

Percent of map unit: 4 percent

Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Pillsbury, very stony

Percent of map unit: 2 percent

Landform: Hills, mountains

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Mountainflank, side slope

Microfeatures of landform position: Open depressions, open depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

17C—Peru, Skerry, and Colonel soils, 8 to 15 percent slopes**Map Unit Setting**

National map unit symbol: 2w9qy

Elevation: 750 to 2,000 feet

Mean annual precipitation: 31 to 65 inches

Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Peru and similar soils: 55 percent

Skerry and similar soils: 20 percent

Colonel and similar soils: 15 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru**Setting**

Landform: Hills, mountains

Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Mountainflank, mountainbase, side slope, nose slope, interflue

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy lodgment till derived from granite and/or mica schist and/or phyllite

Typical profile

Ap - 0 to 6 inches: fine sandy loam

Bhs - 6 to 8 inches: fine sandy loam

Bs1 - 8 to 12 inches: fine sandy loam

Bs2 - 12 to 18 inches: fine sandy loam

Bs3 - 18 to 21 inches: fine sandy loam

BC - 21 to 24 inches: fine sandy loam

Cd - 24 to 65 inches: sandy loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 20 to 39 inches to densic material

Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 16 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C/D

Hydric soil rating: No

Description of Skerry**Setting**

Landform: Mountains, hills

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank, mountainbase, side slope, nose slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy lodgment till derived from granite and gneiss and/or schist over sandy lodgment till derived from granite and gneiss and/or schist

Typical profile

Ap - 0 to 6 inches: fine sandy loam
Bs1 - 6 to 20 inches: gravelly fine sandy loam
Bs2 - 20 to 25 inches: gravelly fine sandy loam
Cd1 - 25 to 34 inches: gravelly loamy sand
Cd2 - 34 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 21 to 43 inches to densic material
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 17 to 34 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Description of Colonel**Setting**

Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase, mountainflank, side slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy lodgment till derived from granite and/or mica schist and/or phyllite

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bs1 - 7 to 9 inches: fine sandy loam
Bs2 - 9 to 12 inches: fine sandy loam
BC - 12 to 18 inches: gravelly fine sandy loam
Cd - 18 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 10 to 20 inches to densic material
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components**Cabot**

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Mountainbase, mountainflank, nose slope, side slope, interfluvium
Microfeatures of landform position: Closed depressions, closed depressions, open depressions, open depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Marlow

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, mountainflank, side slope, nose slope, interfluvium
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

18C—Peru, Skerry, and Colonel soils, 8 to 15 percent slopes, very stony**Map Unit Setting**

National map unit symbol: 2w9r1
Elevation: 750 to 2,260 feet
Mean annual precipitation: 31 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Peru, very stony, and similar soils: 55 percent

Skerry, very stony, and similar soils: 20 percent

Colonel, very stony, and similar soils: 15 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru, Very Stony**Setting**

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase, mountainflank, side slope, nose slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy lodgment till derived from granite and/or mica schist and/or phyllite

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 5 inches: fine sandy loam

E - 5 to 6 inches: fine sandy loam

Bs1 - 6 to 7 inches: fine sandy loam

Bs2 - 7 to 13 inches: fine sandy loam

Bs3 - 13 to 18 inches: fine sandy loam

BC - 18 to 21 inches: fine sandy loam

Cd1 - 21 to 37 inches: fine sandy loam

Cd2 - 37 to 65 inches: fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.1 percent

Depth to restrictive feature: 21 to 43 inches to densic material

Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 17 to 34 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C/D

Hydric soil rating: No

Description of Skerry, Very Stony

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank,
mountainbase, side slope, nose slope, interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy lodgment till derived from granite and
gneiss and/or schist over sandy lodgment till derived from
granite and gneiss and/or schist

Typical profile

Oa - 0 to 2 inches: highly decomposed plant material

E - 2 to 4 inches: fine sandy loam

Bhs - 4 to 6 inches: fine sandy loam

Bs1 - 6 to 20 inches: gravelly fine sandy loam

Bs2 - 20 to 25 inches: gravelly fine sandy loam

Cd1 - 25 to 34 inches: gravelly loamy sand

Cd2 - 34 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.1 percent

Depth to restrictive feature: 21 to 43 inches to densic material

Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 17 to 34 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C/D

Hydric soil rating: No

Description of Colonel, Very Stony

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainbase,
mountainflank, nose slope, side slope, interfluve

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Loamy lodgment till derived from granite and/or
mica schist and/or phyllite

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material

E - 1 to 2 inches: fine sandy loam

Bhs - 2 to 3 inches: fine sandy loam

Bs1 - 3 to 9 inches: fine sandy loam

Bs2 - 9 to 12 inches: fine sandy loam

BC - 12 to 18 inches: gravelly fine sandy loam

Cd - 18 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.1 percent

Depth to restrictive feature: 11 to 25 inches to densic material

Natural drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components**Marlow, very stony**

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, side slope, nose slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Cabot, very stony

Percent of map unit: 3 percent

Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainflank, mountainbase, side slope, nose slope, interfluve

Microfeatures of landform position: Open depressions, closed depressions, closed depressions, open depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Tunbridge, very stony

Percent of map unit: 3 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainbase, mountainflank, side slope, nose slope, interfluvium

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

28—Udorthents and Udipsamments**Map Unit Setting**

National map unit symbol: 9hnn

Elevation: 280 to 2,000 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 37 to 52 degrees F

Frost-free period: 90 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 43 percent

Udipsamments and similar soils: 42 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents**Setting**

Down-slope shape: Convex, concave, linear

Across-slope shape: Convex, concave

Parent material: Human transported material

Typical profile

H1 - 0 to 65 inches: gravelly sandy loam

Properties and qualities

Depth to restrictive feature: More than 80 inches

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.20 to 6.00 in/hr)

Depth to water table: About 24 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydrologic Soil Group: A

Hydric soil rating: No

Description of Udipsamments**Setting**

Down-slope shape: Convex, linear, concave

Across-slope shape: Convex, concave

Parent material: Human transported material

Typical profile

H1 - 0 to 65 inches: sand

Properties and qualities

Depth to restrictive feature: More than 80 inches

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 99.90 in/hr)

Depth to water table: About 24 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components**Water**

Percent of map unit: 4 percent

Landform: Depressions

Hydric soil rating: Unranked

Rock outcrop

Percent of map unit: 4 percent

Hydric soil rating: Unranked

Aquents

Percent of map unit: 4 percent

Landform: Depressions

Hydric soil rating: Yes

Udifuvents

Percent of map unit: 3 percent

Landform: Flood plains

Hydric soil rating: No

31B—Cabot silt loam, 0 to 8 percent slopes, very stony**Map Unit Setting**

National map unit symbol: 2qgwf

Elevation: 750 to 2,100 feet

Mean annual precipitation: 31 to 95 inches

Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 70 to 135 days

Farmland classification: Not prime farmland

Map Unit Composition

Cabot, very stony, and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cabot, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Mountainbase, base slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Loamy lodgment till derived from mica schist
and/or loamy lodgment till derived from limestone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 9 inches: silt loam

Bg - 9 to 14 inches: silt loam

BCg - 14 to 17 inches: channery silt loam

Cdg1 - 17 to 22 inches: channery fine sandy loam

Cdg2 - 22 to 65 inches: channery silt loam

Properties and qualities

Slope: 0 to 8 percent

Percent of area covered with surface fragments: 1.5 percent

Depth to restrictive feature: 10 to 22 inches to densic material

Natural drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very
low to moderately high (0.00 to 1.42 in/hr)

Depth to water table: About 0 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: Yes

Minor Components

Colonel, very stony

Percent of map unit: 6 percent

Landform: Hills, mountains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainbase, base slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

Peacham, very stony

Percent of map unit: 6 percent
Landform: Hills, mountains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Mountainbase, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Buckland, very stony

Percent of map unit: 3 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainbase, base slope
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Peru, very stony

Percent of map unit: 3 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainbase, base slope
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Wonsqueak, very stony

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Mountainbase, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

54D—Tunbridge-Lyman complex, 15 to 25 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2trpm
Elevation: 520 to 1,770 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 60 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Tunbridge, rocky, and similar soils: 50 percent
Lyman, rocky, and similar soils: 33 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tunbridge, Rocky**Setting**

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Mountainflank, mountaintop, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 5 inches: highly decomposed plant material
E - 5 to 8 inches: fine sandy loam
Bhs - 8 to 11 inches: fine sandy loam
Bs - 11 to 26 inches: fine sandy loam
BC - 26 to 28 inches: fine sandy loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Lyman, Rocky**Setting**

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainflank, mountaintop, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components**Peru, rocky**

Percent of map unit: 10 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Mountainflank, mountaintop, side slope, crest
Microfeatures of landform position: Open depressions, open depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Cabot, rocky

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Mountainflank, mountaintop, side slope, crest

Microfeatures of landform position: Open depressions, open depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 1 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainflank, mountaintop, side slope, crest

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: Unranked

Berkshire, rocky

Percent of map unit: 1 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, summit, backslope

Landform position (three-dimensional): Mountainflank, mountaintop, side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

68C—Monadnock and Berkshire soils, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wlm1

Elevation: 390 to 1,770 feet

Mean annual precipitation: 31 to 95 inches

Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 90 to 150 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Monadnock and similar soils: 45 percent

Berkshire and similar soils: 40 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Monadnock

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainflank, mountainbase, interfluvium, side slope, nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist over sandy and gravelly supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam

Bs1 - 7 to 9 inches: fine sandy loam

Bs2 - 9 to 19 inches: gravelly fine sandy loam

BC - 19 to 22 inches: gravelly fine sandy loam

2C1 - 22 to 42 inches: gravelly loamy sand

2C2 - 42 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 15 to 30 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Hydric soil rating: No

Description of Berkshire

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainflank, mountainbase, side slope, nose slope, interflue

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam

Bs1 - 7 to 13 inches: fine sandy loam

Bs2 - 13 to 21 inches: fine sandy loam

BC1 - 21 to 28 inches: fine sandy loam

BC2 - 28 to 33 inches: fine sandy loam

C - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components**Skerry**

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase,
mountainflank, interflue, side slope, nose slope

Microfeatures of landform position: Closed depressions, open
depressions, open depressions, closed depressions

Down-slope shape: Convex, concave

Across-slope shape: Linear, concave

Hydric soil rating: No

Marlow

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope, summit

Landform position (three-dimensional): Mountainflank,
mountainbase, interflue, nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Tunbridge

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainflank,
mountainbase, side slope, nose slope, interflue

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Colonel

Percent of map unit: 2 percent

Landform: Hills, mountains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainbase,
mountainflank, interfluvium, nose slope, side slope

Microfeatures of landform position: Open depressions, open
depressions, closed depressions, closed depressions

Down-slope shape: Linear, concave

Across-slope shape: Concave

Hydric soil rating: No

68D—Monadnock and Berkshire soils, 15 to 25 percent slopes**Map Unit Setting**

National map unit symbol: 2wlmv

Elevation: 560 to 1,870 feet

Mean annual precipitation: 31 to 95 inches

Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 90 to 150 days

Farmland classification: Not prime farmland

Map Unit Composition

Monadnock and similar soils: 45 percent

Berkshire and similar soils: 40 percent

Minor components: 15 percent

*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Monadnock**Setting**

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainflank, side slope,
nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial meltout till derived from
phyllite and/or granite and gneiss and/or mica schist over sandy
and gravelly supraglacial meltout till derived from phyllite and/or
granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam

Bs1 - 7 to 9 inches: fine sandy loam

Bs2 - 9 to 19 inches: gravelly fine sandy loam

BC - 19 to 22 inches: gravelly fine sandy loam

2C1 - 22 to 42 inches: gravelly loamy sand

2C2 - 42 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 15 to 30 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Hydric soil rating: No

Description of Berkshire**Setting**

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainflank, side slope, nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam

Bs1 - 7 to 13 inches: fine sandy loam

Bs2 - 13 to 21 inches: fine sandy loam

BC1 - 21 to 28 inches: fine sandy loam

BC2 - 28 to 33 inches: fine sandy loam

C - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Marlow

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope, summit

Landform position (three-dimensional): Mountainflank, nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Peru

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank, nose slope, side slope

Microfeatures of landform position: Open depressions, open depressions

Down-slope shape: Convex, concave

Across-slope shape: Convex, concave

Hydric soil rating: No

Tunbridge

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, summit, backslope

Landform position (three-dimensional): Mountainflank, nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Colonel

Percent of map unit: 2 percent

Landform: Hills, mountains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainflank, nose slope, side slope

Microfeatures of landform position: Open depressions, open depressions

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

Hydric soil rating: No

70C—Adams loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wqn8

Elevation: 10 to 2,000 feet

Mean annual precipitation: 31 to 95 inches

Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Adams and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adams

Setting

Landform: Outwash terraces

Landform position (two-dimensional): Backslope, summit

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: loamy sand

Bs - 7 to 21 inches: sand

BC - 21 to 27 inches: sand

C - 27 to 65 inches: sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (1.42 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components**Colton**

Percent of map unit: 8 percent
Landform: Outwash terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Croghan

Percent of map unit: 3 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Nicholville

Percent of map unit: 2 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sheepscot

Percent of map unit: 2 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

W—Water**Map Unit Setting**

National map unit symbol: 9hsv
Mean annual precipitation: 35 to 59 inches
Mean annual air temperature: 37 to 52 degrees F
Frost-free period: 60 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Data Source Information

Soil Survey Area: Windsor County, Vermont
Survey Area Data: Version 23, Sep 16, 2019

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).



Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
11E--Marlow fine sandy loam, 35 to 60 percent slopes, very stony														
Marlow, very stony	85	C	0-2	Slightly decomposed plant material	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			2-5	Fine sandy loam, loam, sandy loam, silt loam	SM	A-5	0- 0- 17	0- 0- 25	42-87-87	40-87-87	30-75-83	15-45-54	0-45 -76	NP-2 -5
			5-8	Fine sandy loam, silt loam, loam, sandy loam	SM	A-4	0- 0- 13	0- 0- 20	53-92-92	52-92-92	39-79-87	20-47-57	0-20 -30	NP-1 -6
			8-15	Fine sandy loam, loam, sandy loam, very fine sandy loam	SM	A-4	0- 0- 16	0- 0- 24	44-89-89	42-88-88	32-76-82	16-45-52	0-34 -47	NP-2 -5
			15-19	Sandy loam, fine sandy loam, very fine sandy loam, loam	SM	A-4	0- 0- 15	0- 0- 23	48-85-90	46-84-90	35-72-84	18-43-53	0-23 -38	NP-2 -5
			19-33	Gravelly fine sandy loam, very fine sandy loam, loam, sandy loam	SM	A-4	0- 0- 13	0- 0- 20	53-77-92	52-76-92	39-66-85	20-39-54	0-18 -25	NP-2 -6
			33-65	Fine sandy loam, loam, sandy loam	SM	A-4	0- 0- 12	0- 0- 18	55-83-93	53-83-93	40-72-86	20-43-55	0-18 -23	NP-3 -6

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
17C—Peru, Skerry, and Colonel soils, 8 to 15 percent slopes														
Peru	55	C/D	0-6	Fine sandy loam, sandy loam, silt loam, loam	ML	A-4	0- 0- 0	0- 0- 0	83-91-100	83-91-100	66-80-96	40-55-69	0-33 -49	NP-3 -5
			6-8	Loam, sandy loam, fine sandy loam, very fine sandy loam	ML	A-4	0- 0- 0	0- 4- 53	49-93-93	47-92-92	37-81-87	21-54-58	0-37 -47	NP-3 -5
			8-12	Sandy loam, very fine sandy loam, loam, fine sandy loam	ML	A-4	0- 0- 0	0- 4- 51	51-93-93	49-93-93	37-79-84	22-51-58	0-0 -43	NP-0 -5
			12-18	Fine sandy loam, loam, sandy loam, very fine sandy loam	ML	A-4	0- 0- 0	0- 4- 50	52-93-93	50-93-93	38-79-85	22-51-58	0-0 -34	NP-0 -6
			18-21	Sandy loam, loam, very fine sandy loam, fine sandy loam	SM	A-4	0- 0- 0	0- 6- 50	52-85-92	50-84-92	38-71-83	23-49-58	0-0 -34	NP-0 -6
			21-24	Loam, very fine sandy loam, fine sandy loam, sandy loam	SM	A-4	0- 0- 0	0- 4- 43	59-88-94	57-88-94	44-75-86	24-47-57	0-0 -25	NP-0 -6

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			24-65	Fine sandy loam, sandy loam, loam, very fine sandy loam	SM	A-4	0- 0- 0	0- 4- 39	62-90-95	61-90-95	44-71-83	22-38-51	0-0 -23	NP-0 -6
Skerry	20	C/D	0-6	Fine sandy loam, sandy loam, gravelly fine sandy loam	SM	A-4	0- 0- 0	0- 5- 44	57-90-94	56-89-94	45-76-84	28-49-55	0-33 -50	NP-3 -5
			6-20	Gravelly fine sandy loam, fine sandy loam, sandy loam	SC-SM	A-4	0- 1- 50	0- 7- 50	52-79-93	50-78-92	40-66-82	25-43-54	0-26 -34	NP-5 -6
			20-25	Gravelly fine sandy loam, fine sandy loam, sandy loam	SM	A-4	0- 1- 50	0- 7- 50	52-71-92	50-69-91	41-59-84	26-38-57	0-0 -34	NP-0 -6
			25-34	Fine sandy loam, sandy loam, gravelly loamy sand, loamy fine sand, loamy coarse sand	SM	A-2-4	0- 1- 50	0- 5- 50	52-72-94	50-71-94	38-56-77	13-21-30	0-0 -18	NP-0 -2
			34-65	Fine sandy loam, sandy loam, loamy coarse sand, gravelly loamy sand, loamy fine sand	SM	A-2-4	0- 1- 50	0- 5- 50	52-72-94	50-71-94	38-56-77	13-21-30	0-0 -18	NP-0 -2
Colonel	15	D	0-7	Very fine sandy loam, loam, fine sandy loam, sandy loam	SM	A-4	0- 0- 0	0- 8- 43	58-91-96	56-91-95	44-78-88	24-48-58	0-0 -49	NP-0 -5
			7-9	Sandy loam, loam, fine sandy loam, very fine sandy loam	SM	A-4	0- 0- 0	0-10- 50	51-89-94	49-88-94	38-76-87	21-46-57	0-0 -43	NP-0 -5

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			9-12	Very fine sandy loam, fine sandy loam, loam, sandy loam	SM	A-4	0- 0- 0	0-10- 50	52-89-94	50-88-94	39-76-87	21-46-57	0-0 -34	NP-0 -6
			12-18	Loam, sandy loam, gravelly fine sandy loam, very fine sandy loam	SM	A-4	0- 0- 0	0- 7- 42	59-84-94	57-83-94	44-72-88	25-44-57	0-0 -25	NP-0 -6
			18-65	Loam, gravelly fine sandy loam, sandy loam, very fine sandy loam	SM	A-4	0- 0- 0	0- 6- 44	57-86-95	55-85-95	44-75-91	22-41-55	0-0 -23	NP-0 -6

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
18C--Peru, Skerry, and Colonel soils, 8 to 15 percent slopes, very stony														
Peru, very stony	55	C/D	0-1	Moderately decomposed plant material	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			1-5	Silt loam, loam, sandy loam, fine sandy loam	OL	A-5	0- 2- 18	0- 2- 56	64-97-97	27-91-91	22-80-87	13-55-63	0-46 -76	NP-2 -5
			5-6	Fine sandy loam, loam, very fine sandy loam, sandy loam	ML	A-4	0- 1- 14	0- 1- 43	70-98-98	40-95-95	31-83-88	17-53-58	0-0 -36	NP-0 -6
			6-7	Fine sandy loam, very fine sandy loam, sandy loam, loam	ML	A-4	0- 2- 17	0- 4- 53	65-97-97	31-95-95	23-80-86	14-52-59	0-33 -43	NP-3 -5
			7-13	Loam, fine sandy loam, very fine sandy loam, sandy loam	ML	A-4	0- 2- 16	0- 4- 50	67-98-98	33-95-95	25-81-87	15-52-59	0-0 -34	NP-0 -6
			13-18	Sandy loam, very fine sandy loam, fine sandy loam, loam	ML	A-4	0- 2- 16	0- 4- 50	67-98-98	33-95-95	25-80-86	15-55-60	0-0 -34	NP-0 -6
			18-21	Very fine sandy loam, loam, fine sandy loam, sandy loam	ML	A-4	0- 1- 14	0- 3- 43	70-98-98	40-96-96	31-82-88	17-51-58	0-0 -25	NP-0 -6
			21-37	Loam, very fine sandy loam, fine sandy loam, sandy loam	ML	A-4	0- 1- 13	0- 2- 39	72-98-98	44-97-97	34-82-89	19-52-58	0-0 -23	NP-0 -6

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			37-65	Fine sandy loam, very fine sandy loam, loam, sandy loam	ML	A-4	0- 1- 13	0- 2- 39	72-98-98	44-97-97	34-82-89	19-52-58	0-0 -23	NP-0 -6
Skerry, very stony	20	C/D	0-2	Highly decomposed plant material, slightly decomposed plant material, moderately decomposed plant material	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			2-4	Fine sandy loam, sandy loam, gravelly fine sandy loam, loamy sand	ML	A-4	0- 1- 43	0- 4- 43	58-90-95	57-89-95	48-78-89	30-50-59	0-0 -36	NP-0 -6
			4-6	Fine sandy loam, sandy loam, gravelly fine sandy loam	SM	A-4	0- 2- 52	0- 6- 52	49-86-93	47-85-92	38-72-82	24-47-54	0-33 -43	NP-4 -5
			6-20	Gravelly fine sandy loam, fine sandy loam, sandy loam	SC-SM	A-4	0- 1- 50	0- 7- 50	52-79-93	50-78-92	40-66-82	25-43-54	0-26 -34	NP-5 -6
			20-25	Fine sandy loam, sandy loam, gravelly fine sandy loam	SM	A-4	0- 1- 50	0- 7- 50	52-71-92	50-69-91	41-59-84	26-38-57	0-0 -34	NP-0 -6
			25-34	Loamy fine sand, gravelly loamy sand, loamy coarse sand, fine sandy loam, sandy loam	SM	A-2-4	0- 1- 50	0- 5- 50	52-72-94	50-71-94	38-56-77	13-21-30	0-0 -18	NP-0 -2
			34-65	Gravelly loamy sand, loamy fine sand, loamy coarse sand, fine sandy loam, sandy loam	SM	A-2-4	0- 1- 50	0- 5- 50	52-72-94	50-71-94	38-56-77	13-21-30	0-0 -18	NP-0 -2
 Natural Resources Conservation Service				coarse sand, fine sandy loam, sandy loam	Web Soil Survey National Cooperative Soil Survey								1/10/2020 Page 10 of 19	

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
Colonel, very stony	15	D	0-1	Highly decomposed plant material	PT	A-8	0- 0- 0	0- 5- 10	—	—	—	—	—	—
			1-2	Very fine sandy loam, sandy loam, loam, fine sandy loam	SM	A-4	0- 0- 0	0- 8- 43	59-91-96	57-91-96	44-79-88	25-48-58	0-0 -34	NP-0 -6
			2-3	Very fine sandy loam, loam, fine sandy loam, sandy loam	SM	A-4	0- 0- 0	0-11- 53	49-88-94	47-87-93	36-75-86	20-46-57	0-0 -60	NP-0 -5
			3-9	Fine sandy loam, sandy loam, very fine sandy loam, loam	SM	A-4	0- 0- 0	0-10- 50	51-89-94	49-88-94	38-76-87	21-46-57	0-0 -43	NP-0 -5
			9-12	Sandy loam, loam, fine sandy loam, very fine sandy loam	SM	A-4	0- 0- 0	0-10- 50	52-89-94	50-88-94	39-76-87	21-46-57	0-0 -34	NP-0 -6
			12-18	Sandy loam, gravelly fine sandy loam, very fine sandy loam, loam	SM	A-4	0- 0- 0	0- 7- 42	59-84-94	57-83-94	44-72-88	25-44-57	0-0 -25	NP-0 -6
			18-65	Loam, gravelly fine sandy loam, sandy loam, very fine sandy loam	SM	A-4	0- 0- 0	0- 6- 44	57-86-95	55-85-95	44-75-91	22-41-55	0-0 -23	NP-0 -6
28—Udorthents and Udipsamments														
Udorthents	43	A	0-65	Gravelly sandy loam	GM, GP, ML, SM	A-1, A-2-4, A-3, A-4	—	0-10- 30	25-80-100	20-60-100	10-50-90	2-41- 80	0-18 -35	NP-5 -10
Udipsamments	42	A	0-65	Sand, gravelly sand	SP	A-1, A-3	—	0- 1- 2	85-93-100	50-80-100	25-58-90	0- 3- 5	0-7 -14	NP

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
31B—Cabot silt loam, 0 to 8 percent slopes, very stony														
Cabot, very stony	80	D	0-1	Slightly decomposed plant material	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			1-9	Fine sandy loam, silt loam, gravelly silt loam, loam	SC-SM, ML, CL-ML	A-4, A-2	0- 0- 0	0- 2- 8	71-94-94	42-89-89	34-81-88	23-64-71	0-40 -69	NP-5 -9
			9-14	Loam, fine sandy loam, silt loam, gravelly silt loam	ML, SC-SM, CL-ML	A-4, A-2	0- 1- 4	0- 3- 13	71-93-95	41-88-93	33-80-92	22-63-74	0-22 -34	NP-5 -9
			14-17	Fine sandy loam, silt loam, channery silt loam, loam	ML, CL-ML, SC-SM	A-2, A-4	0- 1- 4	0-12- 37	65-91-95	38-87-95	30-80-94	20-62-75	0-18 -29	NP-3 -9
			17-22	Silt loam, loam, channery fine sandy loam, fine sandy loam	ML, SC-SM, SM, CL-ML	A-2, A-4	0- 1- 3	0-14- 32	64-90-96	36-87-95	29-79-95	14-43-63	0-17 -27	NP-2 -9
			22-65	Fine sandy loam, channery silt loam, silt loam, loam	ML, CL-ML, SC-SM	A-2, A-4	0- 1- 3	0-14- 32	64-90-96	36-87-95	29-79-94	19-61-75	0-17 -27	NP-2 -9

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
54D--Tunbridge-Lyman complex, 15 to 25 percent slopes, rocky														
Tunbridge, rocky	50	C	0-3	Moderately decomposed plant material	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			3-5	Highly decomposed plant material	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			5-8	Loam, fine sandy loam, sandy loam, very fine sandy loam	SM	A-4	0- 0- 0	0- 8- 24	53-91-96	51-91-96	37-75-87	19-45-55	0-23 -33	NP-1 -6
			8-11	Sandy loam, very fine sandy loam, loam, fine sandy loam	SM	A-4	0- 0- 0	0- 4- 30	43-78-90	41-77-90	30-64-81	15-38-52	0-40 -76	NP-3 -5
			11-26	Sandy loam, fine sandy loam, loam, very fine sandy loam	SM	A-4	0- 0- 0	0- 6- 30	43-78-91	41-77-90	30-64-82	15-38-52	0-31 -61	NP-1 -5
			26-28	Fine sandy loam, sandy loam, very fine sandy loam, loam	SM	A-4	0- 0- 0	0- 0- 25	52-91-91	50-91-91	36-75-83	19-45-53	0-21 -30	NP-1 -6

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			28-38	Bedrock	—	—	—	—	—	—	—	—	—	—
Lyman, rocky	33	D	0-1	Moderately decomposed plant material, highly decomposed plant material, slightly decomposed plant material	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			1-3	Loam, fine sandy loam, sandy loam, very fine sandy loam	ML	A-4	0- 0- 28	0- 0- 18	55-100-100	53-100-100	38-82-90	22-55-62	0-35 -65	NP-3 -5
			3-5	Fine sandy loam, sandy loam, very fine sandy loam, loam	SM	A-4	0- 0- 22	0- 0- 14	64-84-98	63-84-98	46-69-89	23-41-57	0-23 -33	NP-1 -6
			5-7	Fine sandy loam, sandy loam, very fine sandy loam, loam	SM	A-4	0- 0- 28	0- 0- 18	77-89-99	53-77-97	38-64-88	22-42-60	0-40 -76	NP-3 -5
			7-11	Loam, fine sandy loam, sandy loam, very fine sandy loam	SM	A-4	0- 0- 27	0- 0- 18	77-89-99	53-77-97	38-64-88	22-42-60	0-34 -61	NP-3 -5
			11-18	Channery loam, fine sandy loam, sandy loam, very fine sandy loam	SM	A-4	0- 0- 25	0-14- 30	52-84-99	50-83-99	36-69-89	21-46-61	0-26 -36	NP-3 -6
			18-28	Bedrock	—	—	—	—	—	—	—	—	—	—

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
68C--Monadnock and Berkshire soils, 8 to 15 percent slopes														
Monadnock	45	B	0-7	Fine sandy loam, sandy loam, gravelly fine sandy loam, silt loam	SM	A-4	0- 0- 0	0- 6- 48	66-91-100	65-91-100	55-79-94	32-46-58	0-0 -43	NP-0 -6
			7-9	Gravelly fine sandy loam, fine sandy loam, coarse sandy loam, loam	SM	A-4	0- 0- 0	0- 6- 24	59-89-100	57-88-100	49-77-94	28-45-58	0-0 -43	NP-0 -5
			9-19	Gravelly fine sandy loam, loam, coarse sandy loam	SM	A-4	0- 0- 0	0- 5- 23	61-72-100	60-71-100	51-62-94	29-36-58	0-0 -34	NP-0 -6
			19-22	Loam, fine sandy loam, gravelly fine sandy loam, sandy loam	SM	A-2-4	0- 0- 0	0- 7- 20	67-70-100	65-68-100	55-60-94	32-35-58	0-0 -25	NP-0 -6
			22-42	Loamy fine sand, gravelly loamy sand, loamy sand, loamy coarse sand	SM	A-2-4	0- 0- 0	0- 7- 23	38-71-94	35-69-94	28-56-76	11-21-30	0-0 -14	NP

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			42-65	Loamy fine sand, gravelly loamy sand, loamy sand, loamy coarse sand	SM	A-2-4	0- 0- 0	0- 7- 23	38-71-94	35-69-94	28-56-76	11-21-30	0-0 -14	NP
Berkshire	40	B	0-7	Fine sandy loam, gravelly fine sandy loam, sandy loam, loam	SM	A-4	0- 0- 0	0- 0- 0	54-92-92	52-92-92	45-80-87	26-47-54	0-0 -43	NP-0 -5
			7-13	Gravelly fine sandy loam, fine sandy loam, sandy loam, loam	SM	A-4	0- 0- 0	0- 0- 0	45-89-89	43-89-89	37-77-84	22-45-52	0-0 -43	NP-0 -5
			13-21	Loam, gravelly fine sandy loam, fine sandy loam, sandy loam	SM	A-4	0- 0- 0	0- 0- 0	47-90-90	44-89-89	38-78-85	22-45-53	0-0 -34	NP-0 -6
			21-28	Gravelly fine sandy loam, fine sandy loam, sandy loam, loam	SM	A-4	0- 0- 0	0- 0- 0	53-92-92	51-91-91	44-80-87	26-47-54	0-0 -27	NP-0 -6
			28-33	Sandy loam, loam, gravelly fine sandy loam, fine sandy loam	SM	A-4	0- 0- 0	0- 0- 0	53-92-92	52-92-92	44-80-87	26-47-54	0-0 -25	NP-0 -6
			33-65	Gravelly fine sandy loam, sandy loam, loam, fine sandy loam	SM	A-4	0- 0- 0	0- 0- 0	54-85-92	52-84-92	45-73-87	26-43-54	0-0 -23	NP-0 -6

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
68D--Monadnock and Berkshire soils, 15 to 25 percent slopes														
Monadnock	45	B	0-7	Fine sandy loam, sandy loam, silt loam, gravelly fine sandy loam	SM	A-4	0- 0- 0	0- 6- 48	66-91-100	65-91-100	55-79-94	32-46-58	0-0 -43	NP-0 -6
			7-9	Loam, gravelly fine sandy loam, coarse sandy loam, fine sandy loam	SM	A-4	0- 0- 0	0- 6- 24	59-89-100	57-88-100	49-77-94	28-45-58	0-0 -43	NP-0 -5
			9-19	Gravelly fine sandy loam, loam, coarse sandy loam	SM	A-4	0- 0- 0	0- 5- 23	61-72-100	60-71-100	51-62-94	29-36-58	0-0 -34	NP-0 -6
			19-22	Gravelly fine sandy loam, sandy loam, loam, fine sandy loam	SM	A-2-4	0- 0- 0	0- 7- 20	67-70-100	65-68-100	55-60-94	32-35-58	0-0 -25	NP-0 -6
			22-42	Loamy sand, loamy coarse sand, gravelly loamy sand, loamy fine sand	SM	A-2-4	0- 0- 0	0- 7- 23	38-71-94	35-69-94	28-56-76	11-21-30	0-0 -14	NP

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			42-65	Loamy coarse sand, loamy sand, loamy fine sand, gravelly loamy sand	SM	A-2-4	0- 0- 0	0- 7- 23	38-71-94	35-69-94	28-56-76	11-21-30	0-0 -14	NP
Berkshire	40	B	0-7	Gravelly fine sandy loam, sandy loam, loam, fine sandy loam	SM	A-4	0- 0- 0	0- 0- 0	54-92-92	52-92-92	45-80-87	26-47-54	0-0 -43	NP-0 -5
			7-13	Fine sandy loam, gravelly fine sandy loam, sandy loam, loam	SM	A-4	0- 0- 0	0- 0- 0	45-89-89	43-89-89	37-77-84	22-45-52	0-0 -43	NP-0 -5
			13-21	Sandy loam, loam, gravelly fine sandy loam, fine sandy loam	SM	A-4	0- 0- 0	0- 0- 0	47-90-90	44-89-89	38-78-85	22-45-53	0-0 -34	NP-0 -6
			21-28	Fine sandy loam, sandy loam, loam, gravelly fine sandy loam	SM	A-4	0- 0- 0	0- 0- 0	53-92-92	51-91-91	44-80-87	26-47-54	0-0 -27	NP-0 -6
			28-33	Gravelly fine sandy loam, fine sandy loam, sandy loam, loam	SM	A-4	0- 0- 0	0- 0- 0	53-92-92	52-92-92	44-80-87	26-47-54	0-0 -25	NP-0 -6
			33-65	Loam, gravelly fine sandy loam, fine sandy loam, sandy loam	SM	A-4	0- 0- 0	0- 0- 0	54-85-92	52-84-92	45-73-87	26-43-54	0-0 -23	NP-0 -6

Engineering Properties--Windsor County, Vermont														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
70C—Adams loamy sand, 8 to 15 percent slopes														
Adams	85	A	0-7	Loamy fine sand, loamy sand	SM	A-2-4, A-2	0- 0- 0	0- 0- 0	90-94-100	80-89-100	67-76-88	22-27-32	0-23 -28	NP-2 -3
			7-21	Loamy fine sand, loamy sand, sand	SM	A-2, A-2-4	0- 0- 0	0- 0- 0	90-94-100	81-90-100	67-75-85	18-21-25	0-0 -23	NP-0 -2
			21-27	Sand, fine sand, loamy sand	SM	A-2-4, A-2	0- 0- 0	0- 0- 0	84-93-100	72-87-100	57-70-83	13-17-21	0-0 -19	NP-0 -1
			27-65	Gravelly coarse sand, sand	SW-SM, SP-SM	A-3, A-2-4, A-2	0- 0- 0	0- 0- 8	84-91-100	68-83-100	53-65-81	8-11- 15	0-0 -14	NP

Data Source Information

Soil Survey Area: Windsor County, Vermont
 Survey Area Data: Version 23, Sep 16, 2019

APPENDIX F
SEISMIC DATA

[← Latest Earthquakes](#)

M 6.5 - Central New Hampshire

1638-06-11 19:00:00 (UTC) | 43.400°N 71.600°W | - depth

Overview

Tops of chimneys were thrown down and dishes were knocked from shelves in the Salem-Lynn area, north of Boston, and at Plymouth, on the coast about 55 km southeast of Boston. At Plymouth, people had to hold on to posts to keep from falling. Ships near the coast reportedly were shaken. Also felt in Connecticut and Rhode Island. Aftershocks continued for 20 days. (Ref. 38, 59, 76.)

Interactive Map

Regional Information

Maximum observed Modified Mercalli Intensity (MMI) IX

Impact

From *Seismicity of the United States, 1568-1599 (Revised)*, by Carl W. Stover and Jerry L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington, 1993.

The earthquake was also felt strongly at Trois-Rivières, Quebec.

Felt Report - Tell Us!

Adapted from *Earthquake History of the United States*, by Jerry L. Coffman, Carl A. von Hake and Carl W. Stover, National Oceanic and Atmospheric Administration and U.S. Geological Survey, Publication 41-1, Revised Edition, Reprinted with Supplement 1982, United States Government Printing Office, Washington, 1982.

Technical

Note that the original location for this event in the St. Lawrence Valley given by source USHS has been determined to be incorrect. Also, contemporary accounts of the event say it occurred about 1-2 PM local time, which corresponds to a UTC time of about 1900, instead of 0700 given by USHS.

Origin

[← Latest Earthquakes](#)

M 4.7 - New York

1931-04-20 19:54:30 (UTC) | 43.471°N 73.785°W | 5.0 km depth

Maximum observed Modified Mercalli Intensity (MMI) VII

Overview

[← Latest Earthquakes](#)

M 4.5 - New Hampshire

1982-01-19 00:14:42 (UTC) | 43.500°N 71.600°W | 8.0 km depth

Overview

Interactive Map

Regional Information

Impact

ShakeMap

Catalog	MMI	Source	Description
✓ ATLAS	V	ATLAS ²	1 km NW of Sanbornton, New Hampshire
US	VI	ATLAS ²	Shakemap Atlas v4

Felt Report - Tell Us!

ShakeMap

Slight damage (VI) at Bristol, Canaan, Danbury and Laconia, New Hampshire, also North Hartland and White River Junction, Vermont. Felt throughout most of New England, northeastern New York and as far as southern Quebec and northeastern Ontario.

Maximum observed Modified Mercalli Intensity (MMI) VI

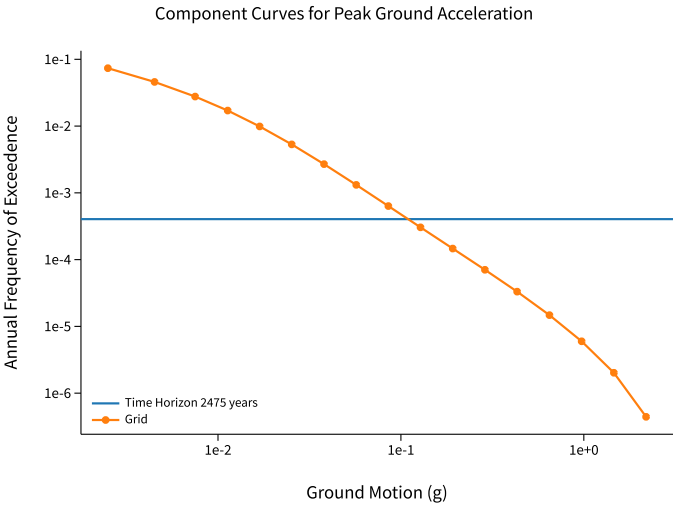
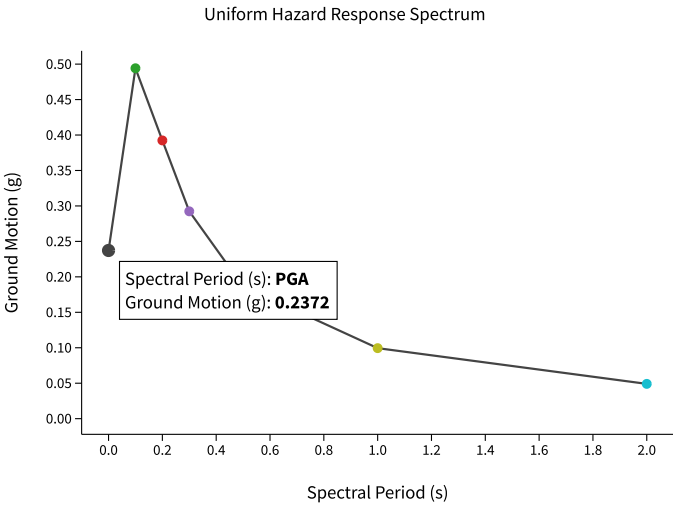
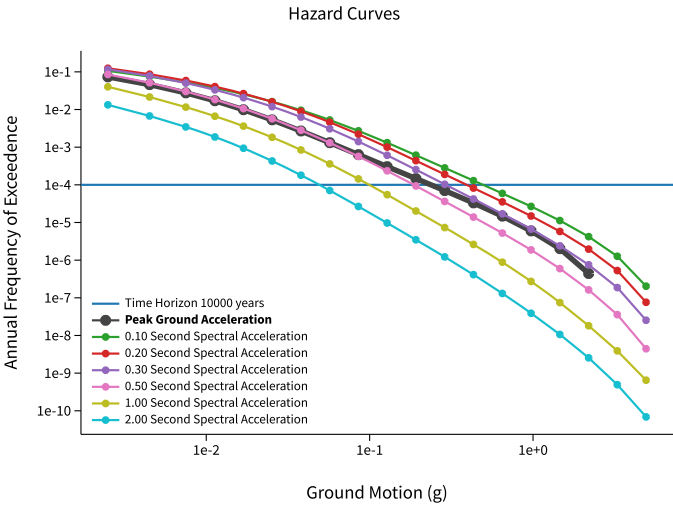
Unified Hazard Tool

 Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the [U.S. Seismic Design Maps web tools](#) (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

^ Input

Edition Dynamic: Conterminous U.S. 2014 (update) (v4.2.0)	Spectral Period Peak Ground Acceleration
Latitude Decimal degrees 43.392	Time Horizon Return period in years 10000
Longitude Decimal degrees, negative values for western longitudes -72.712	
Site Class 760 m/s (B/C boundary)	

^ Hazard Curve

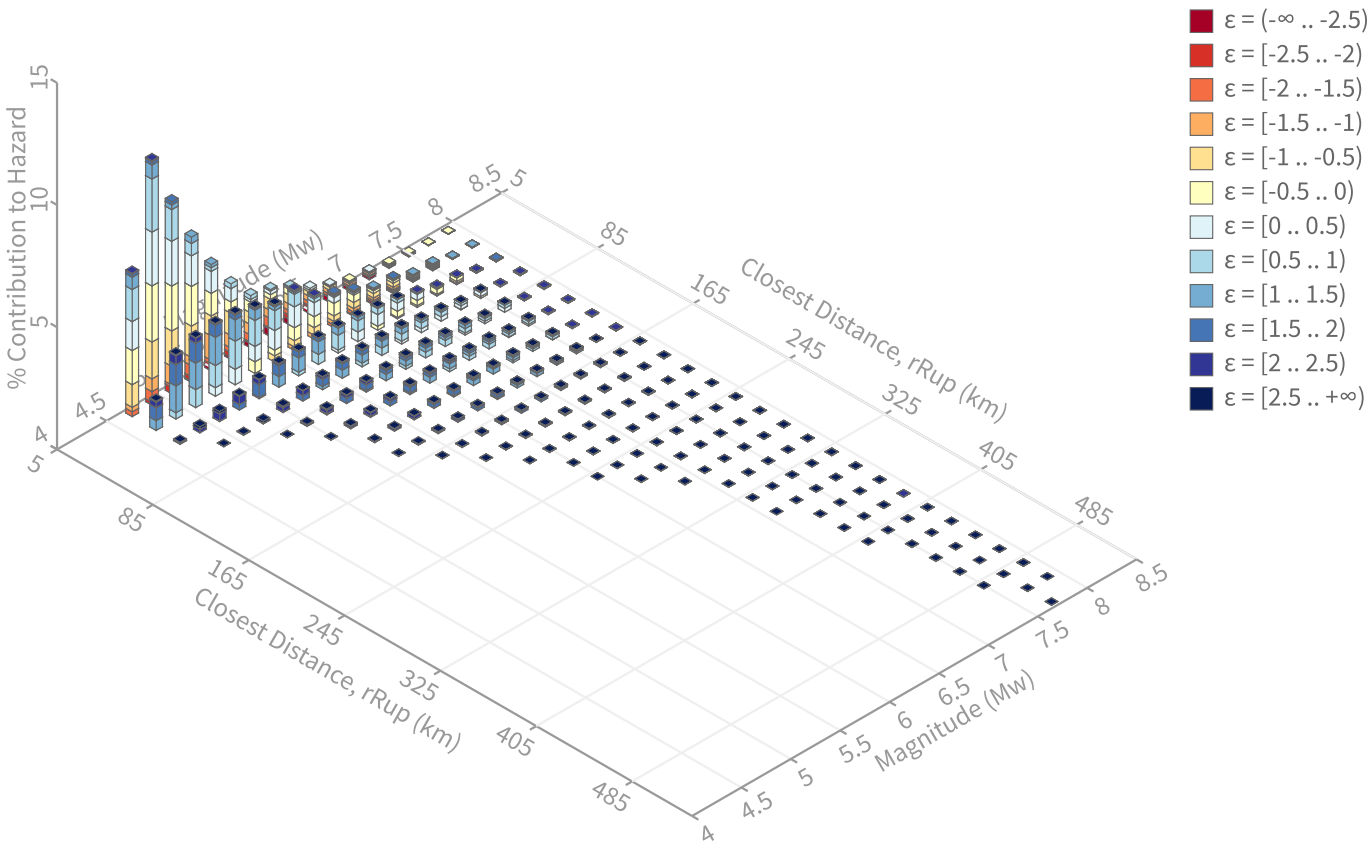


[View Raw Data](#)

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 10000 yrs
Exceedance rate: 0.0001 yr⁻¹
PGA ground motion: 0.23719268 g

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.83 %

Mode (largest m-r bin)

m: 4.9
r: 11.92 km
ε_m: -0.01 σ
Contribution: 10 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Recovered targets

Return period: 9989.4957 yrs
Exceedance rate: 0.00010010515 yr⁻¹

Mean (over all sources)

m: 5.77
r: 37.13 km
ε_m: 0.32 σ

Mode (largest m-r-ε_m bin)

m: 4.9
r: 11.1 km
ε_m: -0.21 σ
Contribution: 2.3 %

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
USGS Fixed Smoothing Zone 2 (opt)		Grid							32.96
	PointSourceFinite: -72.712, 43.504		13.12	5.29	-0.23	72.712°W	43.504°N	0.00	5.33
	PointSourceFinite: -72.712, 43.549		17.60	5.41	0.13	72.712°W	43.549°N	0.00	4.10
	PointSourceFinite: -72.712, 43.459		8.86	5.21	-0.73	72.712°W	43.459°N	0.00	3.50
	PointSourceFinite: -72.712, 43.594		22.10	5.54	0.37	72.712°W	43.594°N	0.00	3.06
	PointSourceFinite: -72.712, 43.639		26.57	5.67	0.53	72.712°W	43.639°N	0.00	2.37
	PointSourceFinite: -72.712, 43.684		31.00	5.81	0.65	72.712°W	43.684°N	0.00	2.23
	PointSourceFinite: -72.712, 43.414		5.57	5.16	-1.25	72.712°W	43.414°N	0.00	2.17
	PointSourceFinite: -72.712, 43.729		35.39	5.94	0.73	72.712°W	43.729°N	0.00	1.15
	PointSourceFinite: -72.712, 43.819		44.20	6.17	0.85	72.712°W	43.819°N	0.00	1.06
	PointSourceFinite: -72.712, 43.774		39.79	6.06	0.79	72.712°W	43.774°N	0.00	1.01
SSCn Fixed Smoothing Zone 4 (opt)		Grid							32.15
	PointSourceFinite: -72.712, 43.504		13.12	5.29	-0.23	72.712°W	43.504°N	0.00	5.33
	PointSourceFinite: -72.712, 43.549		17.60	5.41	0.13	72.712°W	43.549°N	0.00	4.10
	PointSourceFinite: -72.712, 43.459		8.86	5.21	-0.73	72.712°W	43.459°N	0.00	3.50
	PointSourceFinite: -72.712, 43.594		22.10	5.54	0.37	72.712°W	43.594°N	0.00	3.06
	PointSourceFinite: -72.712, 43.639		26.57	5.67	0.53	72.712°W	43.639°N	0.00	2.37
	PointSourceFinite: -72.712, 43.684		31.00	5.81	0.65	72.712°W	43.684°N	0.00	2.23
	PointSourceFinite: -72.712, 43.414		5.57	5.16	-1.25	72.712°W	43.414°N	0.00	2.17
	PointSourceFinite: -72.712, 43.729		35.39	5.94	0.73	72.712°W	43.729°N	0.00	1.15
USGS Adaptive Smoothing Zone 2 (opt)		Grid							17.05
	PointSourceFinite: -72.712, 43.504		13.12	5.29	-0.23	72.712°W	43.504°N	0.00	2.40
	PointSourceFinite: -72.712, 43.549		17.60	5.41	0.13	72.712°W	43.549°N	0.00	1.83
	PointSourceFinite: -72.712, 43.459		8.86	5.21	-0.73	72.712°W	43.459°N	0.00	1.55
	PointSourceFinite: -72.712, 43.594		22.10	5.54	0.37	72.712°W	43.594°N	0.00	1.35
	PointSourceFinite: -72.712, 43.684		31.00	5.81	0.65	72.712°W	43.684°N	0.00	1.06
	PointSourceFinite: -72.712, 43.639		26.57	5.67	0.53	72.712°W	43.639°N	0.00	1.06
SSCn Adaptive Smoothing Zone 4 (opt)		Grid							16.63
	PointSourceFinite: -72.712, 43.504		13.12	5.29	-0.23	72.712°W	43.504°N	0.00	2.40
	PointSourceFinite: -72.712, 43.549		17.60	5.41	0.13	72.712°W	43.549°N	0.00	1.83
	PointSourceFinite: -72.712, 43.459		8.86	5.21	-0.73	72.712°W	43.459°N	0.00	1.55
	PointSourceFinite: -72.712, 43.594		22.10	5.54	0.37	72.712°W	43.594°N	0.00	1.35
	PointSourceFinite: -72.712, 43.684		31.00	5.81	0.65	72.712°W	43.684°N	0.00	1.06
	PointSourceFinite: -72.712, 43.639		26.57	5.67	0.53	72.712°W	43.639°N	0.00	1.06

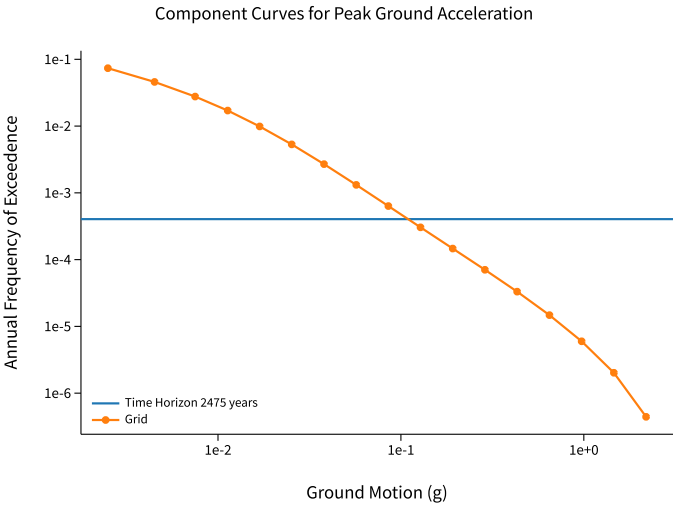
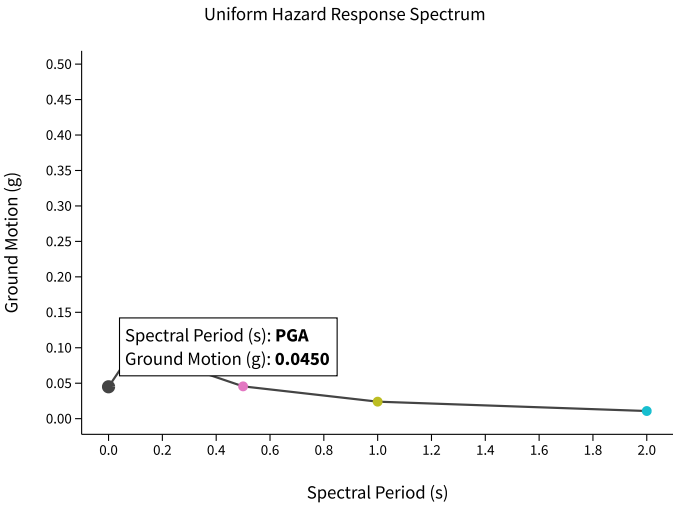
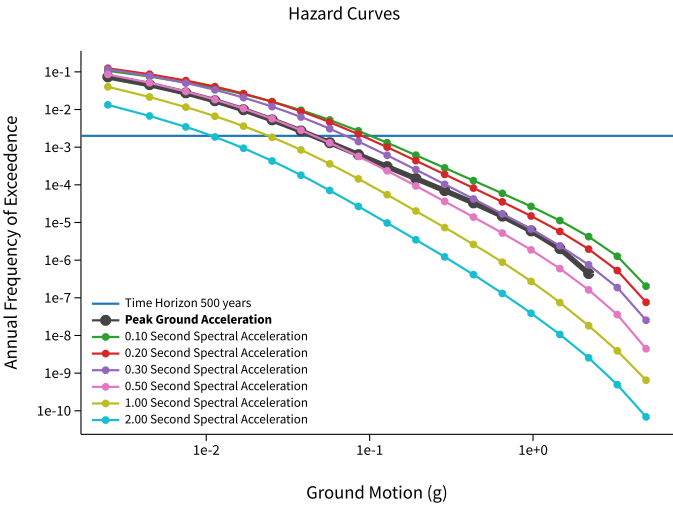
Unified Hazard Tool

 Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the [U.S. Seismic Design Maps web tools](#) (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

^ Input

Edition Dynamic: Conterminous U.S. 2014 (update) (v4.2.0)	Spectral Period Peak Ground Acceleration
Latitude Decimal degrees 43.392	Time Horizon Return period in years 500
Longitude Decimal degrees, negative values for western longitudes -72.712	
Site Class 760 m/s (B/C boundary)	

^ Hazard Curve

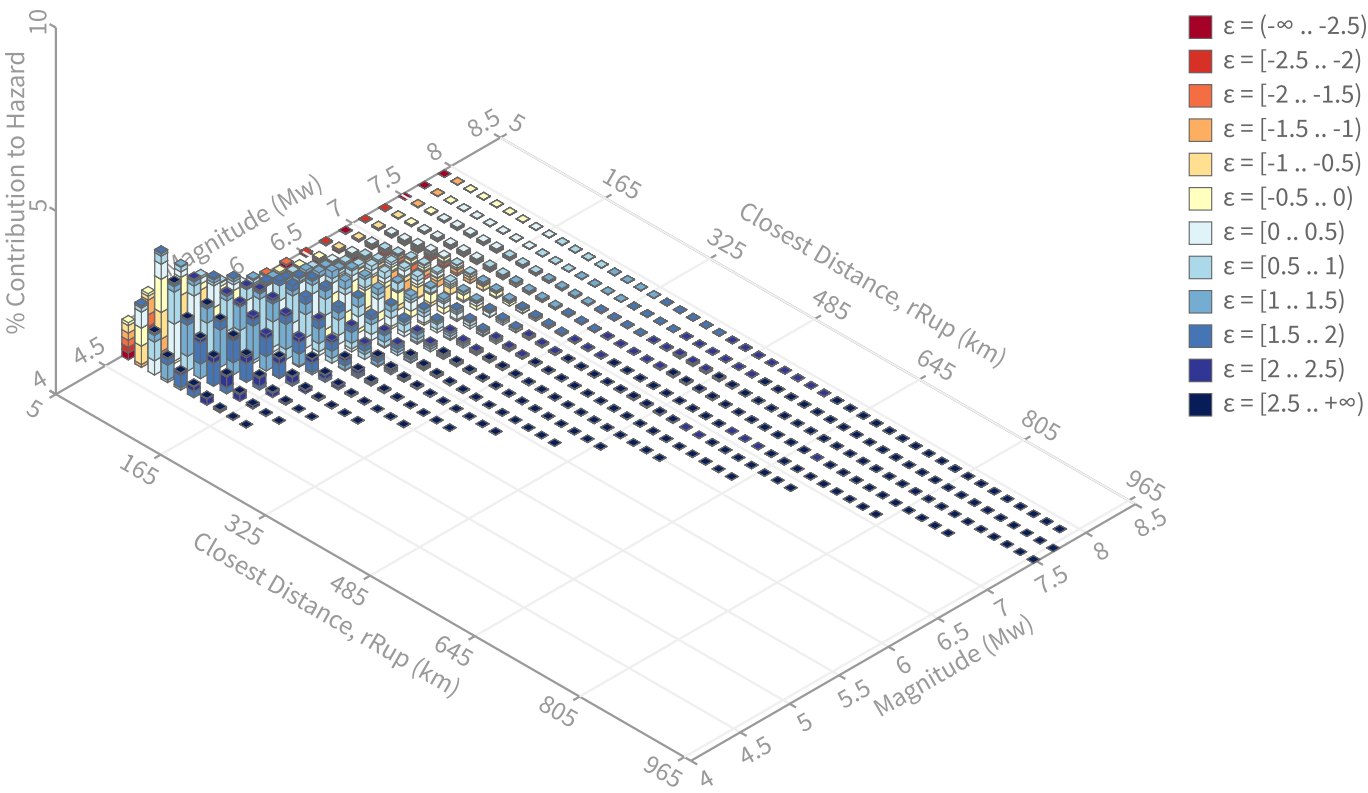


[View Raw Data](#)

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 500 yrs
Exceedance rate: 0.002 yr⁻¹
PGA ground motion: 0.044971868 g

Totals

Binned: 100 %
Residual: 0 %
Trace: 1.79 %

Mode (largest m-r bin)

m: 4.9
r: 30.19 km
ε_m: -0.37 σ
Contribution: 2.81 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Recovered targets

Return period: 498.38773 yrs
Exceedance rate: 0.00200647 yr⁻¹

Mean (over all sources)

m: 5.76
r: 106.16 km
ε_m: 0.22 σ

Mode (largest m-r-ε_m bin)

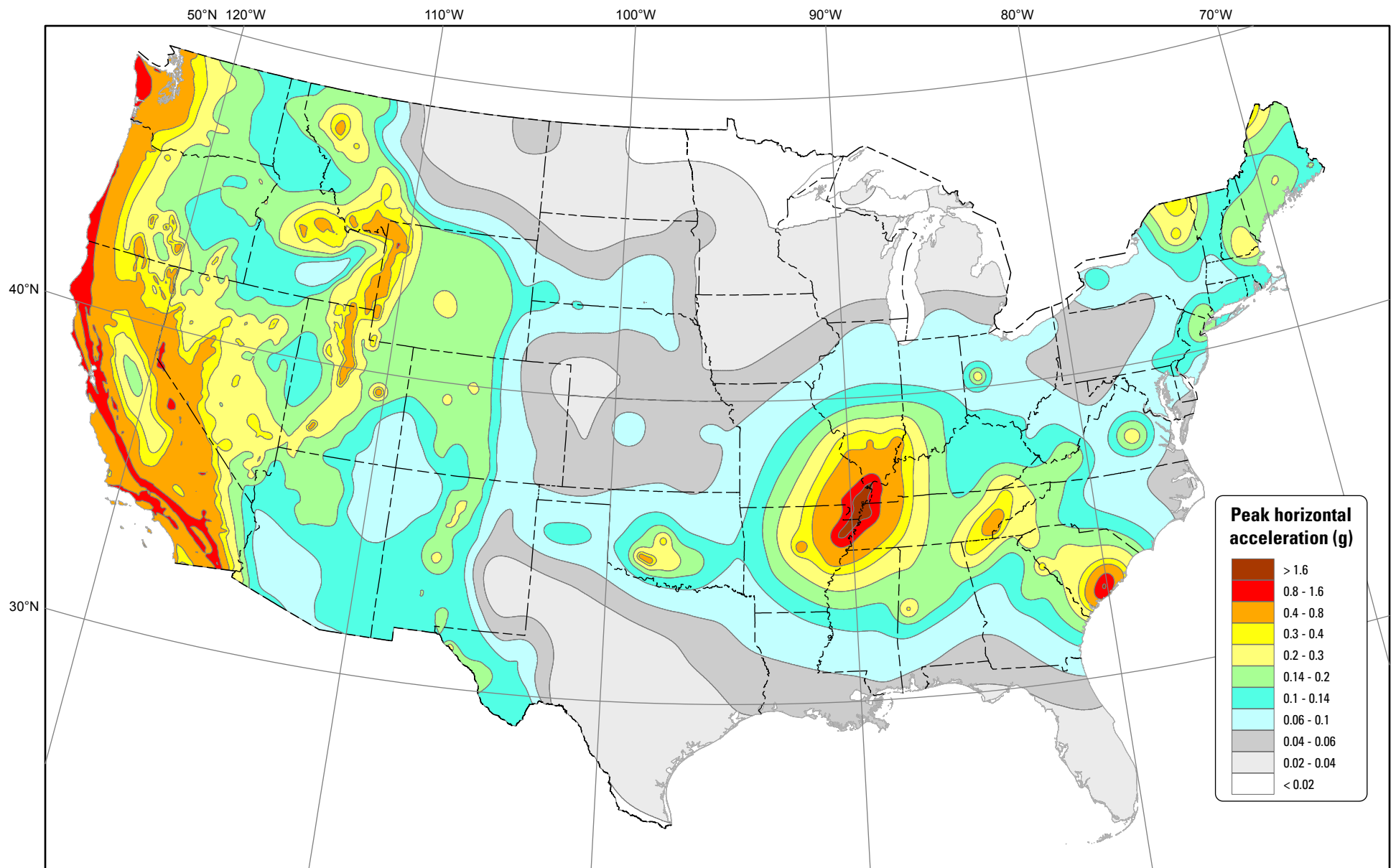
m: 5.09
r: 51.11 km
ε_m: 0.26 σ
Contribution: 1.06 %

Epsilon keys

- ε0:** [-∞ .. -2.5)
- ε1:** [-2.5 .. -2.0)
- ε2:** [-2.0 .. -1.5)
- ε3:** [-1.5 .. -1.0)
- ε4:** [-1.0 .. -0.5)
- ε5:** [-0.5 .. 0.0)
- ε6:** [0.0 .. 0.5)
- ε7:** [0.5 .. 1.0)
- ε8:** [1.0 .. 1.5)
- ε9:** [1.5 .. 2.0)
- ε10:** [2.0 .. 2.5)
- ε11:** [2.5 .. +∞]

Deaggregation Contributors

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
USGS Fixed Smoothing Zone 2 (opt)		Grid							29.27
	PointSourceFinite: -72.712, 43.684		32.52	5.25	-0.68	72.712°W	43.684°N	0.00	1.22
	PointSourceFinite: -72.712, 43.819		47.15	5.37	-0.15	72.712°W	43.819°N	0.00	1.11
SSCn Fixed Smoothing Zone 4 (opt)		Grid							27.28
	PointSourceFinite: -72.712, 43.684		32.52	5.25	-0.68	72.712°W	43.684°N	0.00	1.22
	PointSourceFinite: -72.712, 43.819		47.15	5.37	-0.15	72.712°W	43.819°N	0.00	1.03
USGS Adaptive Smoothing Zone 2 (opt)		Grid							20.16
SSCn Adaptive Smoothing Zone 4 (opt)		Grid							19.29
SSCn Fixed Smoothing Zone 7 (opt)		Grid							2.06



2018 National Seismic Hazard Model for the conterminous United States

Peak horizontal acceleration
with a 2% probability of exceedance in 50 years
NEHRP site class B/C ($V_{s30} = 760$ m/s)

APPENDIX G

SPT N-VALUE CORRELATION

By: <u>QDW</u>	Date: <u>03/27/20</u>	Subject: <u>Characterization of Soil Strength</u>	Sheet No.: <u> </u> of <u>12</u>
Chkd By: <u>ZSG</u>	Date: <u>04/28/20</u>	<u>Jewell Brook Watershed Site No. 3</u>	Proj. No.: <u>172719-17</u>

N:\2017\172719-17 - Jewell Pond Watershed Plan\Jewell Site 3\[SPT N-Value Correlation.xlsx]JB3-19-1

Characterization of Soil Strength Using SPT Correlation
Jewell Brook Watershed Site No. 3
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Purpose

The purpose of this calculation is to estimate the effective shear strength (i.e. friction angle ϕ' and cohesion c') of soils within the embankment, foundation, and auxiliary spillway at Jewell Brook Watershed Site No. 3 in Ludlow, Windsor County, Vermont. The calculation uses three methods to correlate standard penetration tests (SPTs) blow counts to friction angle values. The calculation is based on SPT results from nine borings that were drilled by DDK.

References

1. Das, B. 2011. *Principles of Foundation Engineering*. Stamford, CT: Cengage Learning.
2. *Manual on Estimating Soil Properties for Foundation Design*. Cornell University, Ithaca, New York.
3. Tan, C.K., Et al. *Geotechnical Engineering: Engineering Manual for Shallow Foundations*. Virginia Tech, Blacksburg, Virginia.
With information from: US Department of Navy (1982), *NAVFAC DM- 7.1-- Soil Mechanics*, Naval Facilities Engineering Command, VA, 348 pp. and Meyerhof G.G. (1956), *Penetration Tests and Bearing Capacity of Cohesionless Soils*, Proc., Journal of Soil Mechanics and Foundation Engineering, ASCE, Vol. 82, No. SM1, pp 1-11.

Correlation Between SPT Number and Friction Angle

Three methods were used to correlate the SPT number and friction angle and are outlined below.

Variables:

- N = measured penetration number
- N₆₀ = standard penetration number corrected for field conditions
- (N₁)₆₀ = standardized value of N₆₀
- C_N = correction factor
- η_H = hammer efficiency (%)
- η_B = correction for borehole diameter
- η_S = sampler correction
- η_R = correction for rod length
- φ' = friction angle
- σ'_{vo} = effective overburden pressure to the center of each layer (psf)
- p_a = atmospheric pressure (2000 psf)

$$N_{60} = \frac{N \eta_H \eta_B \eta_S \eta_R}{60}$$

$$C_N = \sqrt{\frac{1}{\frac{\sigma'_{vo}}{p_a}}}$$

$$(N_1)_{60} = C_N N_{60}$$

$$\phi'_1 = 27.1 + 0.3(N_1)_{60} - 0.00054[(N_1)_{60}]^2$$

Peck, Hanson, and Thornburn (1974)

$$\phi'_2 = \tan^{-1} \left[\frac{N_{60}}{12.2 + 20.3 \left(\frac{\sigma'_{vo}}{p_a} \right)} \right]^{0.24}$$

Schmertmann (1975)

$$\phi'_3 = \sqrt{20(N_1)_{60}} + 20$$

Hatanaka and Uchida (1996)

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
 Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

Sheet No.: of 12
 Proj. No.: 172719-17

N:\2017\172719-17 - Jewell Pond Watershed Plan\Jewell Site 3\SPT N-Value Correlation.xlsx\JB3-19-1

JB3-19-1

Soil Properties

$\gamma = 125$ pcf = 0.0625 tons/cf
 $\gamma_{sat} = 130$ pcf = 0.0650 tons/cf
 $\gamma_{H2O} = 62.4$ pcf = 0.0312 tons/cf
 $\gamma' = 67.6$ pcf = 0.0338 tons/cf

Water Table Depth = 45.6 ft

Correction Factors (Reference 1)

$\eta_H = 60$
 $\eta_B = 1$
 $\eta_S = 1$
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	2.0	1.00	12	0.06	4.00	0.75	9.00	36.00	37.2	41.1	46.8
2.0	4.0	3.00	37	0.19	2.31	0.75	27.75	64.09	44.1	50.3	55.8
4.0	6.0	5.00	38	0.31	1.79	0.75	28.50	50.98	41.0	49.2	51.9
6.0	8.0	7.00	35	0.44	1.51	0.75	26.25	39.69	38.2	47.1	48.2
8.0	10.0	9.00	33	0.56	1.33	0.75	24.75	33.00	36.4	45.5	45.7
10.0	12.0	11.00	52	0.69	1.21	0.75	39.00	47.04	40.0	48.9	50.7
12.0	14.0	13.00	81	0.81	1.11	0.75	60.75	67.40	44.9	52.2	56.7
14.0	16.0	15.00	24	0.94	1.03	0.85	20.40	21.07	33.2	40.9	40.5
16.0	18.0	17.00	51	1.06	0.97	0.85	43.35	42.06	38.8	47.4	49.0
18.0	20.0	19.00	29	1.19	0.92	0.85	24.65	22.62	33.6	41.2	41.3
20.0	22.0	21.00	32	1.31	0.87	0.95	30.40	26.54	34.7	42.6	43.0
22.0	24.0	23.00	51	1.44	0.83	0.95	48.45	40.41	38.3	46.5	48.4
24.0	26.0	25.00	47	1.56	0.80	0.95	44.65	35.72	37.1	45.2	46.7
26.0	28.0	27.00	40	1.69	0.77	0.95	38.00	29.25	35.4	43.0	44.2
28.0	30.0	29.00	41	1.81	0.74	0.95	38.95	28.93	35.3	42.8	44.1
30.0	32.0	31.00	68	1.94	0.72	0.95	64.60	46.41	39.9	47.2	50.5
32.0	33.8	32.90	108	2.06	0.70	1.00	108.00	75.32	46.6	51.7	58.8
34.0	36.0	35.00	42	2.19	0.68	1.00	42.00	28.40	35.2	42.1	43.8
36.0	38.0	37.00	55	2.31	0.66	1.00	55.00	36.17	37.2	44.3	46.9
38.0	40.0	39.00	33	2.44	0.64	1.00	33.00	21.14	33.2	39.0	40.6
40.0	42.0	41.00	33	2.56	0.62	1.00	33.00	20.61	33.1	38.6	40.3
42.0	44.0	43.00	20	2.69	0.61	1.00	20.00	12.20	30.7	33.6	35.6
44.0	46.0	45.00	6	2.81	0.60	1.00	6.00	3.58	28.2	23.5	28.5
46.0	48.0	47.00	4	2.90	0.59	1.00	4.00	2.35	27.8	20.6	26.9
48.0	50.0	49.00	1	2.96	0.58	1.00	1.00	0.58	27.3	13.1	23.4
50.0	52.0	51.00	17	3.03	0.57	1.00	17.00	9.76	30.0	31.3	34.0
52.0	54.0	53.00	19	3.10	0.57	1.00	19.00	10.79	30.3	32.1	34.7
54.0	56.0	55.00	3	3.17	0.56	1.00	3.00	1.69	27.6	18.4	25.8
56.0	58.0	57.00	6	3.24	0.56	1.00	6.00	3.34	28.1	22.7	28.2
Average =								29.6	35.3	39.4	42.4

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
 Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

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JB3-19-2

Soil Properties

$\gamma =$ 125 pcf = 0.0625 tons/cf
 $\gamma_{\text{sat}} =$ 130 pcf = 0.0650 tons/cf
 $\gamma_{\text{H2O}} =$ 62.4 pcf = 0.0312 tons/cf
 $\gamma' =$ 67.6 pcf = 0.0338 tons/cf

Water Table Depth = 41.3 ft

Correction Factors (Reference 1)

$\eta_H =$ 60
 $\eta_B =$ 1
 $\eta_S =$ 1
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	2.0	1.00	9	0.06	4.00	0.75	6.75	27.00	34.8	38.3	43.2
2.0	4.0	3.00	27	0.19	2.31	0.75	20.25	46.77	39.9	47.3	50.6
4.0	6.0	5.00	21	0.31	1.79	0.75	15.75	28.17	35.1	43.4	43.7
6.0	8.0	7.00	44	0.44	1.51	0.75	33.00	49.89	40.7	49.3	51.6
8.0	10.0	9.00	22	0.56	1.33	0.75	16.50	22.00	33.4	41.5	41.0
10.0	12.0	11.00	30	0.69	1.21	0.75	22.50	27.14	34.8	43.5	43.3
12.0	14.0	13.00	67	0.81	1.11	0.75	50.25	55.75	42.1	50.4	53.4
14.0	16.0	15.00	14	0.94	1.03	0.85	11.90	12.29	30.7	35.8	35.7
16.0	18.0	17.00	27	1.06	0.97	0.85	22.95	22.26	33.5	41.2	41.1
18.0	20.0	19.00	19	1.19	0.92	0.85	16.15	14.82	31.4	37.2	37.2
20.0	22.0	21.00	29	1.31	0.87	0.95	27.55	24.05	34.0	41.7	41.9
22.0	24.0	23.00	34	1.44	0.83	0.95	32.30	26.94	34.8	42.6	43.2
24.0	26.0	25.00	22	1.56	0.80	0.95	20.90	16.72	32.0	37.8	38.3
26.0	28.0	27.00	41	1.69	0.77	0.95	38.95	29.98	35.6	43.3	44.5
28.0	30.0	29.00	41	1.81	0.74	0.95	38.95	28.93	35.3	42.8	44.1
30.0	32.0	31.00	31	1.94	0.72	0.95	29.45	21.16	33.2	39.6	40.6
34.0	36.0	35.00	20	2.19	0.68	1.00	20.00	13.52	31.1	35.1	36.4
36.0	38.0	37.00	43	2.31	0.66	1.00	43.00	28.28	35.2	41.9	43.8
38.0	40.0	39.00	44	2.44	0.64	1.00	44.00	28.18	35.1	41.7	43.7
40.0	42.0	41.00	33	2.56	0.62	1.00	33.00	20.61	33.1	38.6	40.3
42.0	44.0	43.00	43	2.64	0.62	1.00	43.00	26.47	34.7	40.9	43.0
44.0	46.0	45.00	18	2.71	0.61	1.00	18.00	10.94	30.3	32.6	34.8
46.0	48.0	47.00	18	2.77	0.60	1.00	18.00	10.81	30.3	32.4	34.7
48.0	50.0	49.00	11	2.84	0.59	1.00	11.00	6.53	29.0	28.1	31.4
50.0	52.0	51.00	17	2.91	0.59	1.00	17.00	9.97	30.0	31.6	34.1
52.0	53.9	52.95	57	2.98	0.58	1.00	57.00	33.05	36.4	42.6	45.7

Average = 24.7 34.1 40.0 41.6

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
 Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

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JB3-19-3

Soil Properties

$\gamma =$ 125 pcf = 0.0625 tons/cf
 $\gamma_{sat} =$ 130 pcf = 0.0650 tons/cf
 $\gamma_{H2O} =$ 62.4 pcf = 0.0312 tons/cf
 $\gamma' =$ 67.6 pcf = 0.0338 tons/cf

Water Table Depth = Dry

Correction Factors (Reference 1)

$\eta_H =$ 60
 $\eta_B =$ 1
 $\eta_S =$ 1
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	1.6	0.80	12	0.05	4.47	0.75	9.00	40.25	38.3	41.3	48.4
Average =								40.2	38.3	41.3	48.4

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
 Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

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JB3-19-4

Soil Properties

$\gamma =$ 125 pcf = 0.0625 tons/cf
 $\gamma_{sat} =$ 130 pcf = 0.0650 tons/cf
 $\gamma_{H2O} =$ 62.4 pcf = 0.0312 tons/cf
 $\gamma' =$ 67.6 pcf = 0.0338 tons/cf

Water Table Depth = Dry

Correction Factors (Reference 1)

$\eta_H =$ 60
 $\eta_B =$ 1
 $\eta_S =$ 1
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	2.0	1.00	10	0.06	4.00	0.75	7.50	30.00	35.6	39.3	44.5
2.0	4.0	3.00	26	0.19	2.31	0.75	19.50	45.03	39.5	46.9	50.0
4.0	6.0	5.00	34	0.31	1.79	0.75	25.50	45.62	39.7	48.1	50.2
6.0	8.0	7.00	39	0.44	1.51	0.75	29.25	44.22	39.3	48.2	49.7
8.0	10.0	9.00	60	0.56	1.33	0.75	45.00	60.00	43.2	51.2	54.6
10.0	12.0	11.00	44	0.69	1.21	0.75	33.00	39.80	38.2	47.3	48.2
12.0	14.0	13.00	55	0.81	1.11	0.75	41.25	45.76	39.7	48.5	50.3
14.0	16.0	15.00	27	0.94	1.03	0.85	22.95	23.70	33.9	42.0	41.8
16.0	18.0	17.00	24	1.06	0.97	0.85	20.40	19.79	32.8	40.1	39.9
18.0	20.0	19.00	17	1.19	0.92	0.85	14.45	13.26	31.0	36.2	36.3
20.0	22.0	21.00	26	1.31	0.87	0.95	24.70	21.56	33.3	40.6	40.8
22.0	24.0	23.00	59	1.44	0.83	0.95	56.05	46.75	39.9	48.0	50.6
24.0	25.7	24.85	51	1.55	0.80	0.95	48.45	38.88	37.9	46.0	47.9
Average =								36.5	37.2	44.8	46.5

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
 Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

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JB3-19-201

Soil Properties

$\gamma =$ 125 pcf = 0.0625 tons/cf
 $\gamma_{sat} =$ 130 pcf = 0.0650 tons/cf
 $\gamma_{H2O} =$ 62.4 pcf = 0.0312 tons/cf
 $\gamma' =$ 67.6 pcf = 0.0338 tons/cf

Water Table Depth = 15.4 ft

Correction Factors (Reference 1)

$\eta_H =$ 60
 $\eta_B =$ 1
 $\eta_S =$ 1
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	2.0	1.00	25	0.06	4.00	0.75	18.75	75.00	46.6	48.2	58.7
2.0	4.0	3.00	12	0.19	2.31	0.75	9.00	20.78	33.1	39.4	40.4
4.0	6.0	5.00	7	0.31	1.79	0.75	5.25	9.39	29.9	33.1	33.7
6.0	8.0	7.00	7	0.44	1.51	0.75	5.25	7.94	29.4	31.9	32.6
8.0	10.0	9.00	10	0.56	1.33	0.75	7.50	10.00	30.0	34.1	34.1
10.0	12.0	11.00	27	0.69	1.21	0.75	20.25	24.42	34.1	42.5	42.1
12.0	14.0	13.00	29	0.81	1.11	0.75	21.75	24.13	34.0	42.3	42.0
14.0	16.0	15.00	11	0.94	1.03	0.85	9.35	9.66	29.9	33.6	33.9
16.0	18.0	17.00	18	1.02	0.99	0.85	15.30	15.17	31.5	37.6	37.4
18.0	20.0	19.00	11	1.08	0.96	0.85	9.35	8.98	29.8	32.8	33.4
20.0	22.0	21.00	16	1.15	0.93	0.95	15.20	14.16	31.2	36.8	36.8
22.0	23.7	22.85	61	1.21	0.91	0.95	57.95	52.59	41.4	49.4	52.4
Average =								22.7	33.4	38.5	39.8

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
 Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

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JB3-19-202

Soil Properties

$\gamma =$ 125 pcf = 0.0625 tons/cf
 $\gamma_{sat} =$ 130 pcf = 0.0650 tons/cf
 $\gamma_{H2O} =$ 62.4 pcf = 0.0312 tons/cf
 $\gamma' =$ 67.6 pcf = 0.0338 tons/cf

Water Table Depth = 15.1 ft

Correction Factors (Reference 1)

$\eta_H =$ 60
 $\eta_B =$ 1
 $\eta_S =$ 1
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	2.0	1.00	13	0.06	4.00	0.75	9.75	39.00	38.0	41.9	47.9
2.0	4.0	3.00	42	0.19	2.31	0.75	31.50	72.75	46.1	51.5	58.1
4.0	6.0	5.00	35	0.31	1.79	0.75	26.25	46.96	40.0	48.4	50.6
6.0	8.0	7.00	26	0.44	1.51	0.75	19.50	29.48	35.5	44.2	44.3
8.0	10.0	9.00	25	0.56	1.33	0.75	18.75	25.00	34.3	42.8	42.4
10.0	12.0	11.00	10	0.69	1.21	0.75	7.50	9.05	29.8	33.2	33.5
12.0	14.0	13.00	14	0.81	1.11	0.75	10.50	11.65	30.5	35.4	35.3
14.0	16.0	15.00	16	0.94	1.03	0.85	13.60	14.05	31.2	37.0	36.8
16.0	18.0	17.00	16	1.01	1.00	0.85	13.60	13.55	31.1	36.6	36.5
18.0	20.0	19.00	33	1.08	0.96	0.85	28.05	27.05	34.8	43.1	43.3
Average =								28.9	35.1	41.4	42.9

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
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JB3-19-203

Soil Properties

$\gamma =$ 125 pcf = 0.0625 tons/cf
 $\gamma_{sat} =$ 130 pcf = 0.0650 tons/cf
 $\gamma_{H2O} =$ 62.4 pcf = 0.0312 tons/cf
 $\gamma' =$ 67.6 pcf = 0.0338 tons/cf

Water Table Depth = Dry

Correction Factors (Reference 1)

$\eta_H =$ 60
 $\eta_B =$ 1
 $\eta_S =$ 1
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	2.0	1.00	23	0.06	4.00	0.75	17.25	69.00	45.2	47.4	57.1
Average =								69.0	45.2	47.4	57.1

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
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JB3-19-203A

Soil Properties

$\gamma = 125$ pcf = 0.0625 tons/cf
 $\gamma_{sat} = 130$ pcf = 0.0650 tons/cf
 $\gamma_{H2O} = 62.4$ pcf = 0.0312 tons/cf
 $\gamma' = 67.6$ pcf = 0.0338 tons/cf

Water Table Depth = 8.7 ft

Correction Factors (Reference 1)

$\eta_H = 60$
 $\eta_B = 1$
 $\eta_S = 1$
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
8.0	10.0	9.00	43	0.55	1.34	0.75	32.25	43.33	39.1	48.1	49.4
12.0	14.0	13.00	15	0.69	1.20	0.75	11.25	13.55	31.1	36.9	36.5
14.0	16.0	15.00	24	0.76	1.15	0.85	20.40	23.45	33.8	42.1	41.7
16.0	18.0	17.00	58	0.82	1.10	0.85	49.30	54.30	41.8	50.2	53.0
18.0	19.8	18.90	60	0.89	1.06	0.85	51.00	54.11	41.8	50.1	52.9
Average =								37.7	37.5	45.5	46.7

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
 Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

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JB3-19-204

Soil Properties

$\gamma =$ 125 pcf = 0.0625 tons/cf
 $\gamma_{sat} =$ 130 pcf = 0.0650 tons/cf
 $\gamma_{H2O} =$ 62.4 pcf = 0.0312 tons/cf
 $\gamma' =$ 67.6 pcf = 0.0338 tons/cf

Water Table Depth = 5.1 ft

Correction Factors (Reference 1)

$\eta_H =$ 60
 $\eta_B =$ 1
 $\eta_S =$ 1
 $\eta_R =$ Varies (see below)

Depth (feet)			N	σ'_{vo}/p_a (tsf)	C_N	η_R	N_{60}	$(N_1)_{60}$	Friction Angle ($^\circ$)		
Start	End	Center							ϕ'_1	ϕ'_2	ϕ'_3
0.0	2.0	1.00	6	0.06	4.00	0.75	4.50	18.00	32.3	34.6	39.0
2.0	4.0	3.00	49	0.19	2.31	0.75	36.75	84.87	48.7	53.0	61.2
4.0	6.0	5.00	53	0.31	1.79	0.75	39.75	71.11	45.7	52.3	57.7
6.0	8.0	7.00	19	0.38	1.62	0.75	14.25	23.03	33.7	41.7	41.5
8.0	10.0	9.00	40	0.45	1.49	0.75	30.00	44.69	39.4	48.3	49.9
10.0	12.0	11.00	20	0.52	1.39	0.75	15.00	20.84	33.1	41.0	40.4
12.0	14.0	13.00	22	0.59	1.31	0.75	16.50	21.56	33.3	41.3	40.8
14.0	16.0	15.00	21	0.65	1.24	0.85	17.85	22.08	33.5	41.5	41.0
16.0	18.0	17.00	36	0.72	1.18	0.85	30.60	36.04	37.2	46.3	46.8
18.0	20.0	19.00	42	0.79	1.13	0.85	35.70	40.20	38.3	47.3	48.4
20.0	22.0	21.00	33	0.86	1.08	0.95	31.35	33.88	36.6	45.6	46.0
22.0	24.0	23.00	50	0.92	1.04	0.95	47.50	49.42	40.6	49.2	51.4
24.0	26.0	25.00	27	0.99	1.00	0.95	25.65	25.76	34.5	42.7	42.7
26.0	28.0	27.00	51	1.06	0.97	0.95	48.45	47.08	40.0	48.5	50.7
28.0	30.0	29.00	47	1.13	0.94	0.95	44.65	42.07	38.8	47.3	49.0
30.0	32.0	31.00	40	1.19	0.92	0.95	38.00	34.77	36.9	45.4	46.4
Average =								38.5	37.7	45.4	47.1

DDK Engineering - JV

By: QDW Date: 03/27/20 Subject: Characterization of Soil Strength
Chkd By: ZSG Date: 04/28/20 Jewell Brook Watershed Site No. 3

Sheet No.: of 12
Proj. No.: 172719-17

N:\2017\172719-17 - Jewell Pond Watershed Plan\Jewell Site 3\[SPT N-Value Correlation.xlsx]JB3-19-1

Summary of Results

Calculation of Friction Angle - Correlation to Standard Penetration Tests (SPTs)							
				Estimated Friction Angle From SPTs ⁽²⁾			
Boring No.	G.S. Elevation ⁽¹⁾	Depth Range (ft)	Average (N ₁) ₆₀	ϕ'_1	ϕ'_2	ϕ'_3	Average
JB3-19-1	1251.6	0.0-58.0	29.6	35.3	39.4	42.4	39.0
JB3-19-2	1251.8	0.0-53.9	24.7	34.1	40.0	41.6	38.6
JB3-19-3	1190.8	0.0-1.6	40.2	38.3	41.3	48.4	42.6
JB3-19-4	1251.1	0.0-25.7	36.5	37.2	44.8	46.5	42.9
JB3-19-201	1232.5	0.0-23.7	22.7	33.4	38.5	39.8	37.2
JB3-19-202	1241.8	0.0-20.0	28.9	35.1	41.4	42.9	39.8
JB3-19-203	1241.6	0.0-2.0	69.0	45.2	47.4	57.1	49.9
JB3-19-203A	1242.0	8.0-19.8	37.7	37.5	45.5	46.7	43.2
JB3-19-204	1240.0	0.0-32.0	38.5	37.7	45.4	47.1	43.4

Notes:

⁽¹⁾ Represents the approx. elev. at the time the boring was advanced.

⁽²⁾ Friction angles estimated using 3 different methods:

ϕ'_1 Peck, Hanson, and Thornburn (1974)

ϕ'_2 Schmertmann (1975)

ϕ'_3 Hatanaka and Uchida (1996)

Max	57.1
Min	33.4
Average	41.9
Std. Dev.	5.3

APPENDIX H

SITES MATERIAL INPUT PARAMETERS CALCULATIONS

SITES MATERIAL INPUT PARAMETERS – SOIL

DDK Engineering - JV

By: ZSG Date: 4/29/2020 Subject: Jewell Brook Watershed Site No. 3 Sheet No.: 1 of 7
Chkd. By: QDW Date: 5/12/2020 SITES Material Properties - Soil Proj. No.: 172719-17
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SITES Material Input Parameters - Soil
Supplemental Watershed Plan and Environmental Document
Jewell Brook Watershed Site No. 3
Ludlow, Windsor County, Vermont

INTRODUCTION

The purpose of this calculation is to estimate the material input parameters to be used in the SITES analyses for the Jewell Brook Watershed Site No. 3 (Jewell Brook #3) located in Ludlow, Windsor County, Vermont. The material parameters are estimated based on empirical and historical data, subsurface exploration data, and results of laboratory tests performed on soil samples retrieved during the subsurface exploration performed by DDK Engineering - JV (DDK) in October 2019.

Borings JB3-19-201 through JB3-19-204 and offset borings JB3-19-203A and JB3-19-204A were performed in the auxiliary spillway at Jewell Brook #3. Borings were advanced to collect in-situ samples of spillway material for laboratory testing and classification. Borings JB3-19-1 through JB3-19-4 will not be considered in this calculation since they are outside of the auxiliary spillway area. Due to the topsoil layer being very thin or nonexistent, no estimation of material parameters for topsoil was performed.

REFERENCES

- 1) Carter, Michael and Bentley, Stephen P., "Correlations of Soil Properties", John Wiley & Sons, Ltd., 2016
- 2) Das, Braja M., "Principles of Geotechnical Engineering (8th Ed.)", Cengage, 2010.
- 3) NRCS National Engineering Handbook Part 628, Chapter 52 "Field Procedures Guide for the Headcut Erodibility Index", (2001).
- 4) "SITES 2005 Water Resource Site Analysis Computer Program: User Guide", NRCS, October 2007.
- 5) "SPT Average N-Value Correlation", D'Appolonia, April 2020.

DDK Engineering - JV

By: ZSG Date: 4/29/2020 Subject: Jewell Brook Watershed Site No. 3 Sheet No.: 2 of 7
Chkd. By: QDW Date: 5/12/2020 SITES Material Properties - Soil Proj. No.: 172719-17
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SITES Input Parameters

Unit Weights of Soils

The unit weight of existing auxiliary spillway soils at Jewell Brook #3 were estimated using laboratory testing of disturbed (SpT) samples, as well as assumed void ratios for each soil type (Ref. 1 & 2). The approximated dry unit weight is used for all layers.

		Approximated		
Layer	USCS Class.	Avg. $G_s^{(1)}$	Void Ratio $(e)^{(2)}$	Dry Unit Weight (lb./cu. Ft.)
1	SM	2.63	0.5	109.2
2	GM	2.71	0.5	112.7
3	ML	2.72	0.5	113.0

⁽¹⁾ From Laboratory Index Testing Data

⁽²⁾ Based on values presented in Reference No. 2, Table 3.2

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By: ZSG Date: 4/29/2020 Subject: Jewell Brook Watershed Site No. 3 Sheet No.: 3 of 7
 Chkd. By: QDW Date: 5/12/2020 SITES Material Properties - Soil Proj. No.: 172719-17
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Plasticity Index

The plasticity index of each soil type was estimated using average values from laboratory index testing data.

Layer	Boring	Sample ID	Atterberg Limits		
			USCS Symbol ⁽¹⁾	LL (%)	PI (%)
1	JB3-19-201	SpT-2/3	Non-Plastic		
2	JB3-19-203	SpT-1/2	Non-Plastic		
	JB3-19-204	SpT-2/3	Non-Plastic		
3	201	SpT-4	Non-Plastic		
	201	SpT-6/7	Non-Plastic		
	201	SpT-9/10	Non-Plastic		
	JB3-19-202	SpT-4/5	Non-Plastic		
	202	SpT-6/7	Non-Plastic		
	202	SpT-9/10	Non-Plastic		
	JB3-19-203A	SpT-2/3	Non-Plastic		
	203A	SpT-5/6	Non-Plastic		
	203A	SpT-8	Non-Plastic		
	204	SpT-4/5	Non-Plastic		
	204	SpT-7/8	Non-Plastic		
	204	SpT-11/12	Non-Plastic		
	204	SpT-13/14	Non-Plastic		
	204	SpT-15/16	Non-Plastic		

Layer	Avg. PI (%)
1	N.P.
2	N.P.
3	N.P.

⁽¹⁾ This denotes the USCS symbol for the fines portion of each sample.

Clay Content (%)

The clay content of each soil type was determined using the average sieve and hydrometer results of each soil type from the laboratory index testing data.

Layer	Boring	Sample No.	USCS Class.	Clay Content (%)
2	203	SpT-1/2	SM	0.89
3	201	SpT-4	SM	2.76
		SpT-6/7	ML	1.45
	202	SpT-4/5	ML	3.16
	203A	SpT-5/6	ML	1.77
	204	SpT-4/5	SM	1.68
		SpT-13/14	ML	7.25

Layer	Avg. Clay Content (%)
1	2.00
2	0.89
3	3.01

(1) Since no samples in Layer 1 underwent hydrometer testing, it was assumed that the clay content for Layer 1 is approximately halfway between that of Layers 2 and 3.

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By: ZSG Date: 4/29/2020 Subject: Jewell Brook Watershed Site No. 3 Sheet No.: 4 of 7
 Chkd. By: QDW Date: 5/12/2020 SITES Material Properties - Soil Proj. No.: 172719-17
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Headcut Erodibility Index

The headcut erodibility index was estimated using the procedures and typical values described in NRCS Part 628, Chapter 52 of the National Engineering Handbook. For factors which use soil characteristics (IDM, UCS, LL), this calculation uses the average value for each layer. (Ref. 3)

The equation given for the headcut erodibility index is:

$$K_h = M_s \times K_b \times K_d \times J_s \quad [52-1]$$

where:

M_s = material strength number of the earth material

K_b = block or particle size number

K_d = discontinuity or interparticle bond shear strength number

J_s = relative ground structure number

For cohesionless soil:

$$M_s = 1.7(\text{IDM})^{0.832} \quad (\text{MPa})$$

$$K_b = 1 \quad \text{Using cohesionless soil with } D < 0.1 \text{ m}$$

$$K_d = \tan(\Phi'_r) \quad \text{where:}$$

$$\Phi'_r = 169.58(\text{LL})^{-0.4925} \quad \text{For soils with clay content } < 20\%$$

$$J_s = 1 \quad \text{Intact soil}$$

Table 52-2 Material strength number, M_s , for cohesionless soil ^{1/}

Relative density	Field identification tests	SPT ^{2/} N (blows/0.3 m) ^{4/}	In situ deformation modulus (IDM) (MPa) ^{2/}	M_s ^{2/}
Very loose	Particles loosely packed. High percentage of voids. Very easily dislodged by hand. Matrix crumbles easily when scraped with point of geologic pick. Raveling often occurs on excavated faces.	< 5	< 0.005	< 0.02
Loose	Particles loosely packed. Some resistance to being dislodged by hand. Large number of voids. Matrix shows low resistance to penetration by point of geologic pick.	5 - 10	0.005 - 0.01	0.02 - 0.05
Medium dense	Particles closely packed. Difficult to dislodge individual particles by hand. Voids less apparent. Matrix has considerable resistance to penetration by point of geologic pick.	10 - 30	0.01 - 0.03	0.05 - 0.10
Dense	Particles very closely packed and occasionally very weakly cemented. Cannot dislodge individual particles by hand. The mass has very high resistance to penetration by point of geologic pick. Requires many blows of geologic pick to dislodge particles.	30 - 50	0.03 - 0.08	0.10 - 0.20
Very dense	Particles very densely packed and usually cemented together. Mass has high resistance to repeated blows of geologic pick. Requires power tools for excavation.	> 50	0.08 - 0.2	0.20 - 0.45

^{1/} Cohesionless soil is a material with a plasticity index (PI) less than or equal to 10. Use table 52-3 for cohesive soils.

^{2/} Standard Penetration Test, SPT (ASTM D 1586) used for most sandy-type cohesionless soils. In situ deformation modulus (IDM) (ASTM D 1194) used for most gravel-type soils and coarse detritus.

^{3/} M_s of a cohesionless soil is approximately determined from results of IDM testing by the following relationship:

$$M_s = 1.7 (\text{IDM})^{0.832} \text{ for IDM in MPa}$$

^{4/} Cohesionless soils in which blow counts are greater than 50 or IDM is greater than 200 kPa to be taken as rock, for which the hardness may be obtained from table 52-4.

^{5/} Correlation between SPT and IDM should be used as a guide only as results may vary in different geologic areas. Lab strength tests are recommended on soil materials to support SPT or field assessment tests.

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By: ZSG Date: 4/29/2020 Subject: Jewell Brook Watershed Site No. 3 Sheet No.: 5 of 7
 Chkd. By: QDW Date: 5/12/2020 SITES Material Properties - Soil Proj. No.: 172719-17
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For cohesive soil:

$$M_s = 0.78(UCS)^{1.09} \quad (\text{MPa}) \quad \text{For UCS } (<= 10)$$

$$M_s = UCS \quad (\text{MPa}) \quad \text{For UCS } (>10)$$

$$K_b = 1 \quad \text{Massed cohesive soil}$$

$$K_d = \tan(\Phi'_r) \quad \text{where:}$$

$$\Phi'_r = 169.58(LL)^{-0.4925} \quad \text{For soils with clay content } <20\%$$

$$J_s = 1 \quad \text{Intact soil}$$

Table 52-3 Material strength number, M_s , for cohesive soil

Consistency	Field identification tests	SPT (blows/0.3 m)	Unconfined compressive strength (UCS) (kPa)	M_s
Very soft	Exudes between fingers when squeezed in hand.	< 2	< 40	< 0.02
Soft	Easily molded with fingers. Point of geologic pick easily pushed into shaft of handle.	2 - 4	40 - 80	0.02 - 0.05
Firm	Penetrated several centimeters by thumb with moderate pressure. Molded by fingers with some pressure.	4 - 8	80 - 150	0.05 - 0.10
Stiff	Indented by thumb with great effort. Point of geologic pick can be pushed in up to 1 centimeter. Very difficult to mold with fingers. Just penetrated with hand spade.	8 - 15	150 - 300	0.10 - 0.20
Very stiff	Indented only by thumbnail. Slight indentation by pushing point of geologic pick. Requires hand pick for excavation.	15 - 30	300 - 625	0.20 - 0.45

- Notes:**
1. Cohesive soil is material with a plasticity index (PI) greater than 10. Use table 52-2 for cohesionless soils.
 2. 1 kPa equals 1 kN/m².
 3. Vane shear strength (ASTM D 2573, field; ASTM D 4648, lab) also may be used for unconfined compressive strength (ASTM D 2166).
 4. Cohesive soils in which blow counts are greater than 30 or strengths greater than 625 kPa are to be taken as rock, for which the hardness can be obtained from table 52-4.
 5. Cohesive soils must be evaluated for hardness in the saturated condition.
 6. M_s of a cohesive soil also can be determined as the product of unconfined compressive strength (in MPa) times its coefficient of relative density. For most cohesive soils, M_s is approximately determined by:

$$M_s = 0.78(UCS)^{1.09} \text{ for } UCS \leq 10 \text{ MPa, and } M_s = UCS \text{ for } UCS > 10 \text{ MPa.}$$
 7. Correlation between SPT and UCS should only be used as a guide, as results may vary in geologic areas. Lab strength tests are recommended on soil materials to support SPT or field assessment tests. Vane shear strength values also are applicable in the lower strength ranges.

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By: ZSG Date: 4/29/2020 Subject: Jewell Brook Watershed Site No. 3 Sheet No.: 6 of 7
 Chkd. By: QDW Date: 5/12/2020 SITES Material Properties - Soil Proj. No.: 172719-17
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For Rock:

$$M_s = 0.78(UCS)^{1.09} \quad (\text{MPa}) \quad \text{For UCS } (<= 10)$$

$$M_s = UCS \quad (\text{MPa}) \quad \text{For UCS } (>10)$$

Table 52-4 Material strength number, M_s , for rock

Rock material hardness ^{1/}	Uniaxial compressive strength (MPa) ^{2/}	Field identification tests	M_s ^{3/}
Very soft rock or Hard, soil-like material	0.6 - 1.25	Scratched with fingernail. Slight indentation produced by light blow of point of geologic pick. Requires power tools for excavation. Peels with pocket knife.	0.45 - 1.0
Soft rock	1.25 - 5.0	Hand-held specimen crumbles under firm blows with point of geologic pick.	1.0 - 4.5
Moderately soft rock	5.0 - 12.5	Shallow indentations (1 to 3 mm) produced by light blows with point of geologic pick. Peels with pocket knife with difficulty.	4.5 - 12.5
Moderately hard rock	12.5 - 50.0	Cannot be scraped or peeled with pocket knife. Intact hand-held specimen breaks with single blow of geologic hammer. Can be distinctly scratched with 20d common steel nail.	12.5 - 50
Hard rock	50.0 - 100.0	Intact hand-held specimen requires more than one hammer blow to break it. Can be faintly scratched with 20d common steel nail.	50 - 100
Very hard rock	100.0 - 250.0	Intact specimen breaks only by repeated, heavy blows with geologic hammer. Cannot be scratched with 20d common steel nail.	100 - 250
Extremely hard rock	> 250.0	Intact specimen can only be chipped, not broken, by repeated, heavy blows of geologic hammer.	> 250

1/ Hardness categories are based solely on hardness characteristics, not geologic origin. For example, a highly weathered shale may classify as firm cohesive soil, and a partially lithified recent soil may classify as moderately soft rock. The transition, however, generally occurs within the 0.60 to 1.25 MPa range.

2/ 1.0 MPa approximately equals 145 pounds per square inch, or 10.4 tons per square foot.

3/ M_s is equal to the product of uniaxial compressive strength, UCS (ASTM D 2938), and coefficient of relative density. For most rock or rock-like materials, M_s is approximately determined by:

$$M_s = 0.78 (UCS)^{1.09} \text{ for } UCS \leq 10 \text{ MPa, and } M_s = UCS \text{ for } UCS > 10 \text{ MPa.}$$

52-6

(210-VI-NEH, August 1997)

Layer	M_s	K_b	$K_d^{(1)(2)}$	J_s	Headcut Erodibility Index
1	0.072	1	0.625	1	0.045
2	0.082	1	0.675	1	0.055
3	0.079	1	0.625	1	0.049

⁽¹⁾ K_d for Layers 2 and 3 were calculated using friction angle values from Table 6.3, 6.4, and 6.5 of Ref. 1.

⁽²⁾ K_d for Layer 1 corresponds to the minimum average friction angle value in Ref. 5.

DDK Engineering - JV

By: ZSG Date: 4/29/2020 Subject: Jewell Brook Watershed Site No. 3 Sheet No.: 7 of 7
Chkd. By: QDW Date: 5/12/2020 SITES Material Properties - Soil Proj. No.: 172719-17
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Representative Diameter

The representative diameter was taken as the average diameter in which 75% of soil particles are equal to or smaller in diameter (D_{75}) for each soil layer. (Ref. 4)

Layer	Average D_{75} (in.)
1	0.152
2	0.142
3	0.013

SITES Material Input Parameters - Soil
Jewell Brook Watershed Site No. 3
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Project No. 172719-17

Layer	Avg. USCS	Dry Density (lb/cu.ft.)	Plasticity Index	Clay Content (%)	Head Cut Index	Representative Diameter (in.)
1	SM	109.2	N.P.	2.00	0.045	0.152
2	GM	112.7	N.P.	0.89	0.055	0.142
3	ML	113.0	N.P.	3.01	0.049	0.013

Sample Information																
Layer	Boring	Sample ID	Blows				N-Value ⁽¹⁾	Avg. N-Value	Avg. IDM (Mpa)	Avg. UCS (Mpa)	PI	Φ _r ⁽²⁾ (deg)	Use Φ _r ⁽³⁾ (deg)	D75 (in)	Avg. D75 (in)	
			1	2	3	4										
1	201	SpT-1	2	12	13	5	25	22.33333	0.022333	N/A	-	40.3	32	-	0.152	
		SpT-2	4	7	5	6	12				0			0.0079		
		SpT-3	2	3	4	5	7									
	202	SpT-1	1	3	10	13	13				-	46.9		-		
		SpT-2	8	18	24	30	42				-			0.2953		
		SpT-3	12	17	18	13	35									
2	203	SpT-1	1	3	20	16	23	26	0.026	N/A	0	49.9	34	0.1969	0.142	
		SpT-2	11	12	50/0.4		-				-			-		
		SpT-3	9	36	50/0.1		-				-			-		
	203A	SpT-1	8	30	50/0.4		-				-	-		-		
		204	SpT-1	1	2	4	7				6	-		47.2		-
			SpT-2	42	21	28	52				49	0				0.0866
			SpT-3	8	17	36	15				53					

Sample Information															
Layer	Boring	Sample ID	Blows				N-Value ⁽¹⁾	Avg. N-Value	Avg. IDM (Mpa)	Avg. UCS (Mpa)	PI	Φ _r ⁽²⁾ (deg)	Use Φ _r ⁽³⁾ (deg)	D75 (in)	Avg. D75 (in)
			1	2	3	4									
3	201	SpT-4	1	3	4	5	7	24.93333	0.024933	N/A	0	36.2	32	0.0106	0.013
		SpT-5	4	5	5	9	10				-			-	
		SpT-6	9	12	15	16	27				0			0.0035	
		SpT-7	12	11	18	17	29				-			-	
		SpT-8	5	6	5	7	11				0			0.0394	
		SpT-9	11	10	8	8	18				-			-	
		SpT-10	3	6	5	8	11				-			-	
		SpT-11	6	7	9	18	16				-			-	
		SpT-12	15	22	39	50/0.2	61				-			-	
	202	SpT-4	10	12	14	13	26				0	36.7		0.0024	
		SpT-5	8	12	13	11	25				0			0.0047	
		SpT-6	5	5	5	4	10				-			-	
		SpT-7	2	7	7	8	14				0			0.0043	
		SpT-8	5	9	7	8	16				-			-	
		SpT-9	3	7	9	13	16				0			0.0126	
		SpT-10	11	15	18	27	33				-			-	
	203A	SpT-2	18	41	50/0.2		-				0	43.2		0.0098	
		SpT-3	14	24	19	18	43				-			-	
		SpT-4	50/0.1				-				0			-	
		SpT-5	8	8	7	8	15				0			0.0154	
		SpT-6	11	11	13	16	24				-			-	
		SpT-7	23	26	32	35	58				0			0.0201	
	204	SpT-4	9	10	9	16	19				0	42.5		-	
		SpT-5	8	15	25	17	40				-			-	
		SpT-6	7	10	10	11	20				0			0.0512	
		SpT-7	9	10	12	17	22				-			-	
		SpT-8	10	10	11	13	21				-			-	
		SpT-9	7	19	17	23	36				0			0.0016	
		SpT-10	37	26	16	19	42				-			-	
		SpT-11	8	13	20	24	33				0			0.0022	
		SpT-12	15	21	29	56	50				0			0.0020	
		SpT-13	10	12	15	19	27				-			-	
		SpT-14	21	23	28	31	51				-			-	
		SpT-15	12	22	25	23	47				-			-	
	SpT-16	6	16	24	32	40	-				-				
	SpT-17	52	50/0.1			-	-				-				

⁽¹⁾ N-Values over 50 were taken as refusal.

⁽²⁾ Φ'_r calculated using SpT N-Value Correlation from Reference 5.

⁽³⁾ Assumed value for friction angle from table 6.3, 6.4, and 6.5 of Reference 1.

SITES MATERIAL INPUT PARAMETERS – ROCK

DDK Engineering - JV

By: ZSG Date: 04/29/20 Subject: Jewell Brook Watershed Site 3 Sheet No.: 1 of 8
Chkd. By: QDW Date: 05/12/20 SITES Material Properties - Rock Proj. No.: 172719-17
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SITES Material Input Parameters - Rock
Supplemental Watershed Plan and Environmental Document
Jewell Brook Watershed Site No. 3
Ludlow, Windsor County, Vermont

Project No. 172719-17

INTRODUCTION

The purpose of this calculation is to estimate the material input parameters for bedrock to be used in the SITES analyses for the Jewell Brook Watershed Site No. 3 (Jewell Brook #3) located in Ludlow, Windsor County, Vermont. The material parameters are estimated based on empirical data and subsurface exploration data.

Borings JB3-19-201 through JB3-19-204 were performed in the auxiliary spillway and Borings JB3-19-1 through JB3-19-4 were performed along the embankment crest and toe at Jewell Brook #3. Rock coring was performed in Borings JB3-19-2, JB3-19-3, and JB3-19-204A. The SITES analyses only considers the rock samples taken from borings in the auxiliary spillway; therefore, only Boring JB3-19-204A is considered in this calculation.

REFERENCES

- 1) NRCS National Engineering Handbook Part 628, Chapter 52 "Field Procedures Guide for the Headcut Erodibility Index", (2001).
- 2) "SITES 2005 Water Resource Site Analysis Computer Program: User Guide", NRCS, October 2007.
- 3) "Excavation Handbook", Church, Horace K., 1981.

DDK Engineering - JV

By: ZSG Date: 04/29/20 Subject: Jewell Brook Watershed Site 3 Sheet No.: 2 of 8
Chkd. By: QDW Date: 05/12/20 SITES Material Properties - Rock Proj. No.: 172719-17
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SITES Input Parameters

Unit Weight of Rock

As indicated on the boring log for JB3-19-204A, bedrock in the area of the auxiliary spillway consists of schist. The unit weight of rock within the existing auxiliary spillway was taken from Lab testing performed on a sample obtained from Boring JB3-19-204A.

Material	Specific Gravity	Unit Weight of Water (lb./cu. Ft.)	Unit Weight (lb./cu. Ft.)
Schist	2.80	62.4	174.9

Use 170.0

Rounding down to account for fractures in rock, use: Dry Unit Weight = 170 pcf.

Plasticity Index

In accordance with Reference 2, the plasticity index of all rock layers is assumed equal to zero.

Clay Content (%)

In accordance with Reference 2, the percent clay of all rock layers is assumed equal to zero.

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Date: 05/12/20

Subject: Jewell Brook Watershed Site 3
SITES Material Properties - Rock

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Headcut Erodibility Index

The headcut erodibility index was estimated using the procedures and typical values described in NRCS Part 628, Chapter 52 of the National Engineering Handbook (Reference 1).

The equation given for the headcut erodibility index is:

$$K_s = M_s \times K_b \times K_d \times J_s \quad [52-1]$$

where:

M_s = material strength number of the earth material

K_b = block or particle size number

K_d = discontinuity or interparticle bond shear strength number

J_s = relative ground structure number

For rock:

$$\begin{aligned} M_s &= \text{UCS} & (\text{MPa}) & & \text{For UCS} > 10 \text{ MPa} \\ K_b &= \text{RQD}/J_n \\ K_d &= J_r/J_a \\ J_s & \end{aligned}$$

Table 52-4 Material strength number, M_s , for rock

Rock material hardness 1/	Uniaxial compressive strength (MPa) 2/	Field identification tests	M_s 3/
Very soft rock or Hard, soil-like material	0.6 - 1.25	Scratched with fingernail. Slight indentation produced by light blow of point of geologic pick. Requires power tools for excavation. Peels with pocket knife.	0.45 - 1.0
Soft rock	1.25 - 5.0	Hand-held specimen crumbles under firm blows with point of geologic pick.	1.0 - 4.5
Moderately soft rock	5.0 - 12.5	Shallow indentations (1 to 3 mm) produced by light blows with point of geologic pick. Peels with pocket knife with difficulty.	4.5 - 12.5
Moderately hard rock	12.5 - 50.0	Cannot be scraped or peeled with pocket knife. Intact hand-held specimen breaks with single blow of geologic hammer. Can be distinctly scratched with 20d common steel nail.	12.5 - 50
Hard rock	50.0 - 100.0	Intact hand-held specimen requires more than one hammer blow to break it. Can be faintly scratched with 20d common steel nail.	50 - 100
Very hard rock	100.0 - 250.0	Intact specimen breaks only by repeated, heavy blows with geologic hammer. Cannot be scratched with 20d common steel nail.	100 - 250
Extremely hard rock	> 250.0	Intact specimen can only be chipped, not broken, by repeated, heavy blows of geologic hammer.	> 250

1/ Hardness categories are based solely on hardness characteristics, not geologic origin. For example, a highly weathered shale may classify as firm cohesive soil, and a partially lithified recent soil may classify as moderately soft rock. The transition, however, generally occurs within the 0.60 to 1.25 MPa range.

2/ 1.0 MPa approximately equals 145 pounds per square inch, or 10.4 tons per square foot.

3/ M_s is equal to the product of uniaxial compressive strength, UCS (ASTM D 2938), and coefficient of relative density. For most rock or rock-like materials, M_s is approximately determined by:

$$M_s = 0.78 (\text{UCS})^{1.09} \text{ for } \text{UCS} \leq 10 \text{ MPa, and } M_s = \text{UCS for } \text{UCS} > 10 \text{ MPa.}$$

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By: ZSG Date: 04/29/20 Subject: Jewell Brook Watershed Site 3 Sheet No.: 4 of 8
 Chkd. By: QDW Date: 05/12/20 SITES Material Properties - Rock Proj. No.: 172719-17
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Boring	Sample Number	Depth (ft)	Rock Type	Unconfined Compression Strength (PSI)	Description
JB3-19-204A	R-1	34.0-39.0	Schist	6,180	Moderately Hard
	R-2	39.0-44.0	Schist	-	Moderately Hard

For schist use UCS = 42.6 MPa
 Use M_s = 42.0

Table 52-5 Joint set number, J_n

Intact; no or few joints	1.00
One joint set	1.22
One joint set plus random	1.50
Two joint sets	1.83
Two joint sets plus random	2.24
Three joint sets	2.73
Three joint sets plus random	3.34
Four joint sets	4.09
More than four joint sets	5.00

Boring	Run	Rock Type	Length (ft)	RQD (%)	RQD (ft)
JB3-19-204A	R-1	Schist	5.0	54	2.7
	R-2		5.0	0	0

Overall RQD (%) = 27.0

Use RQD (%) = 27.0
 Since number of joint sets is unknown, use J_n = 5.00
 K_b = 5.4

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Table 52-8 Joint roughness number, J_r

Joint separation	Joint roughness condition (Intermediate scale; small scale)	J_r ^{1/}
Joints are tight or become closed during hydraulic flow	Discontinuous joints; stepped	4.0
	Rough/irregular; undulating (e.g., tension joints, rough sheeting joints, rough bedding)	3.0
	Smooth; undulating (e.g., smooth sheeting, nonplanar foliation and bedding)	2.0
	Slickensided; undulating	1.5
	Rough/irregular; planar	1.5
	Smooth; planar (e.g., planar sheeting joints, planar foliation and bedding)	1.0
	Slickensided; planar	0.5
Joints are open and remain open during hydraulic flow ^{2/}	Joints are either open or contain relatively soft gouge of sufficient thickness to prevent wall contact during hydraulic flow	1.0
	Joints contain swelling clays	1.0

^{1/} For intact, cohesive material $J_r = 3.0$.

^{2/} Consider joints open when aperture width exceeds amplitude of asperities (Intermediate scale roughness) of joint faces.

Conservatively assume that joints are open. Use $J_r = 1.0$

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Table 52-9 Joint alteration number, J_a

Field identification of gouge (infilling)	----- J_a for aperture width -----			Typical ϕ_r^*
	< 1.0 mm ^{1/}	1.0 - 5.0 mm ^{2/}	≥ 5.0 mm ^{3/}	
Joint tightly healed with hard, nonsoftening, impermeable mineral filling, e.g., quartz, calcite, or epidote.	0.75	1.0	1.5	---
Clean, open joint with fresh or discolored (unweathered) walls only; no infilling.	1.0	1.5	2.0	---
Discolored to disintegrated joint walls; infilling is sand or gravel with < 15% cohesionless fines in matrix; with or without disintegrated or crushed rock fragments.	2.0	4.0	6.0	(25 - 30)
Discolored to disintegrated joint walls; cohesionless, nonswelling, low to nonplastic fines in matrix; with or without disintegrated or crushed rock fragments.	3.0 ^{4/}	6.0 ^{4/}	10.0 ^{4/}	(15 - 24)
Disintegrated to decomposed joint walls; nonswelling, lean clay or clay matrix, or low friction clays, such as chlorite, talc, mica, serpentine, gypsum, graphite, kaolinite, or other sheet silicates; with or without disintegrated or crushed rock fragments.	4.0 ^{4/}	8.0 ^{4/ 5/}	13.0 ^{4/ 5/}	(10 - 14)
Disintegrated to decomposed joint walls; fat clay, swelling clay, such as montmorillonite, or clay matrix, with or without disintegrated or crushed rock fragments.	5.0 ^{4/}	10.0 ^{4/ 5/}	18.0 ^{4/ 5/}	(6 - 9)

1/ Joint walls effectively in contact.

2/ Joint walls come into contact after approximately 100 mm shear.

3/ Joint walls do not come into contact at all upon shear. Use this column to determine J_a for intact, cohesive granular materials, for which $J_r = 3.0$. Alternatively, $\tan \phi_r$ can be substituted for the quotient J_r/J_a where ϕ_r is the equivalent residual (minimum) friction angle.

4/ Values added to Barton et al. (1974) data.

5/ Also applies when disintegrated or crushed rock fragments occur in clay matrix without wall contact.

Based on information contained on the boring log, joints are classified using Table 52-9 with "Clean, open joint with fresh or discolored (unweathered) walls only; no infilling" and an aperture width greater than 5 mm.

Use $J_a = 2.0$

$K_d = 0.500$

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Table 52-12 Relative ground structure number, J_s

Dip direction ^{1/} of least favor- able joint set (degrees)	Effective dip angle of least favorable joint set ^{2/} (degrees)	Ratio of joint spacing, r ----			
		1:1	1:2	1:4	1:8

With flow:

180/0	90	1.00	1.00	1.00	1.00
0	85	0.72	0.67	0.62	0.56
0	80	0.63	0.57	0.50	0.45
0	70	0.52	0.45	0.41	0.38
0	60	0.49	0.44	0.41	0.37
0	50	0.49	0.46	0.43	0.40
0	40	0.53	0.49	0.46	0.44
0	30	0.63	0.59	0.55	0.53
0	20	0.84	0.77	0.71	0.68
0	10	1.22	1.10	0.99	0.93
0	5	1.33	1.20	1.09	1.03
0/180	0	1.00	1.00	1.00	1.00

Against flow:

180	5	0.72	0.81	0.86	0.90
180	10	0.63	0.70	0.76	0.81
180	20	0.52	0.57	0.63	0.67
180	30	0.49	0.53	0.57	0.59
180	40	0.49	0.52	0.54	0.56
180	50	0.53	0.56	0.58	0.60
180	60	0.63	0.67	0.71	0.73
180	70	0.84	0.91	0.97	1.01
180	80	1.22	1.32	1.40	1.46
180	85	1.33	1.39	1.45	1.50
180/0	90	1.00	1.00	1.00	1.00

- 1/ Use dip direction of least favorable joint set with respect to direction of spillway flow.
2/ Using the true dip angle (of least favorable joint set in vertical plane containing direction of streamflow), make corrections for apparent dip and the slope of stream channel to obtain effective dip using formulas 52-8, 52-9, and 52-10.
Note: For granular materials, $J_s = 1.00$.
For values of r less than 1:8, take J_s as for r = 1:8.

Note: Assume against flow. Assume 40 degree dip in schist. Assume 1:1 joint spacing ratio.

Use $J_s =$ **0.49**

Layer	M_s	K_b	K_d	J_s	Headcut Erodibility Index
Schist	42.0	5.4	0.500	0.49	55.57

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By: ZSG
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Date: 04/29/20
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Representative Diameter

Boring	Run	Rock Type	Length (ft)	REC (%)	REC (ft)
JB3-19-204A	R-1	Schist	5.0	100	5
	R-2		5.0	100	5

Average Recovery (%) = 100.0

The representative diameter is the diameter in which 75% of the material is equal to or smaller in diameter (D_{75}) for each layer (Ref. 2).

Based on the average RQD of 27% the majority of the rock is smaller than 4 inches in length. Considering the average recovery of a run is 100%, assume very little amount of small rock is lost during drilling, therefore assume a D_{75} (in) value of approximately 2.0.

D_{75} (in) = 2.0

SITES Material Input Parameters - Rock
Jewell Brook Watershed Site No. 3
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Project No. 172719-17

Allen Dam					
Layer	Dry Density (lb/cu.ft.)	Plasticity Index	Clay Content (%)	Head Cut Index	Representative Diameter (in.)
Schist	170	0	0.00	55.57	2.0

Report of Detailed Geologic Investigation – Rev. 1

**Supplemental Watershed Plan and Environmental Document
Jewell Brook Watershed Site No. 5
Ludlow, Windsor County, Vermont
National Inventory of Dams ID: VT00017
May 24, 2021**



Jewell Brook Watershed Site No. 5

Submitted to:



**United States
Department of
Agriculture**

Natural Resources Conservation Service

USDA is an equal opportunity provider, employer, and lender.

Vermont State Office
365 Mountain Drive
Colchester, Vermont 05446

Submitted by:



28 North Main Street
Randolph, VT 05060

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Appendix A – Boring Logs

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1.0 INTRODUCTION

DDK Engineering – JV (DDK) completed a subsurface investigation and developed geotechnical recommendations for Site No. 5 of the Jewell Brook Watershed (Jewell Brook No. 5) as part of the Supplemental Watershed Plan and Environmental Document. The Jewell Brook Watershed is located in Ludlow, Windsor County, Vermont and includes four independent high hazard earthen flood control dams, denoted as Jewell Brook No. 1, No. 2, No. 3, and No. 5 (there is no No. 4). Refer to Figure 1 for the location of Jewell Brook No. 5, as well as the locations of Jewell Brook No. 1, No. 2, and No. 3 for reference. The subsurface investigation consisted of advancing six borings within the dam embankment, five borings in the left auxiliary spillway, and eight borings in the right auxiliary spillway. Refer to Figure 2 for boring locations. Borings were not advanced in other ancillary areas, such as borrow areas, as part of this subsurface investigation.

DDK is under contract with the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) as the Architect-Engineer (A-E) to prepare a combined Supplemental Watershed Plan and Environmental Document for the Jewell Brook Watershed. The NRCS authorized DDK to perform the services described herein via Order No. 12FPC219F0156 dated September 23, 2019. DDK performed the services in general accordance with the Statement of Work Exhibit #2 – Geologic and Geotechnical Investigation Statement of Work provided by NRCS dated July 10, 2019 and our Revised Price Proposal dated September 12, 2019. This Report of Detailed Geologic Investigation for Jewell Brook No. 5 is the instrument of service for the Geologic and Geotechnical Investigation completed as part of Phase 1 – Identify Problems and Determine Objectives of the Supplemental Watershed Plan and Environmental Document. This report is only for Jewell Brook No. 5. Similar reports for Jewell Brook #1, #2, and #3 have been prepared under a separate cover for each.

Jewell Brook No. 5 (National Inventory of Dams ID VT00017 and Vermont Dam ID 117.05) is located on Sanders Brook, a tributary of Jewell Brook, approximately 1.5 miles southwest of the Town of Ludlow, Vermont. The latitude and longitude in decimal degrees to the center of the project site is 43.3805 and -72.7226, respectively. Jewell Brook No. 5 is a zoned earthen embankment with an approximate height of 112 feet and length of 655 feet. The average upstream and downstream slopes of the embankment are 2.8 horizontal to 1 vertical (2.8H:1V) and 2.5H:1V, respectively. The normal pool, auxiliary spillways, and top of dam are located at El. 1445.9, 1489.5, and 1495.0, respectively. All elevations are based on a topographic survey completed by DDK in 2019 in the North American Vertical Datum of 1988 (NAVD88). The principal spillway consists of a cast-in-place concrete intake riser, 488-foot long and 30-inch diameter reinforced concrete pipe. The principal spillway pipe discharges into a riprap armored stilling basin which discharges into Sanders Brook. The normal pool is controlled by principal spillway concrete intake riser crest at El. 1445.9. The dam has two auxiliary spillways, one located on the left abutment and one located on the right abutment, which are both 150-foot wide (bottom width), vegetated, trapezoidal earthen channels. The side slopes of the left auxiliary spillway range from 3H:1V to 3.5H:1V and the side slopes of the right auxiliary spillway range from 2.5H:1V to 3H:1V. Jewell Brook No. 5 is currently classified as a Class 1 (High Hazard Class) dam; therefore, the structure

falls within the Group A structure site classification as described in Chapter 2 of Part 631 of the National Engineering Handbook.

The subsurface investigation was completed to explore and verify embankment and foundation conditions for the dam embankment and to characterize subsurface conditions within the auxiliary spillways to support evaluations of their stability and erodibility. This report summarizes DDK's subsurface investigation and laboratory testing program, describes observed subsurface conditions, provides DDK's evaluation of site conditions as they pertain to the project, and provides recommendations concerning geotechnical aspects based on the findings of the subsurface investigation. This report also includes recommended parameters for use in the NRCS SITES analyses, evaluations of site seismic hazards and liquefaction potential, and discussion on the feasibility of using previously identified borrow areas as future sources of borrow material.

1.1 General

DDK performed subsurface investigation activities at Jewell Brook No. 5 between October 21, 2019 and November 7, 2019. Nineteen borings were completed as part of this investigation. Borings JB5-19-1, JB5-19-2, JB5-19-2A, JB5-19-2B, JB5-19-3, and JB5-19-4 were advanced to verify subsurface conditions related to the dam embankment and to support the evaluation of the seepage conditions and stability of the existing dam. Borings JB5-19-201N, JB5-19-201NA, JB5-19-202N, JB5-19-203N, and JB5-19-204N were completed to verify subsurface conditions related to the left auxiliary spillway and to support the evaluation of the existing auxiliary spillway stability and erodibility. Borings JB5-19-205S, JB5-19-206S, JB5-19-207S, JB5-19-208S, JB5-19-209S, JB5-19-210S, JB5-19-210SA and JB5-19-210SB were completed to verify subsurface conditions related to the right auxiliary spillway and to support the evaluation of the existing auxiliary spillway stability and erodibility. The subsurface exploration plan, included as Figure 2, presents the locations of the borings recently completed by DDK as well as the approximate locations of previously completed borings and test pits indicated on the NRCS As-Built drawings for the Jewell Brook No. 5 dam. Offset borings are denoted with an "A" after the boring number. Due to difficult drilling conditions a second offset boring, denoted with a "B" after the boring number, was completed for Borings JB5-19-2 and JB5-19-210S. All offset borings are not shown on Figure 2 for clarity.

The purpose of the borings is to characterize the soil, rock, and groundwater conditions at their locations, obtain samples for geotechnical laboratory testing, and support the development of geotechnical design parameters for the performance of analyses. The borings were surveyed in the Vermont State Plane North American Datum of 1983 (NAD83) and the North American Vertical Datum of 1988 (NAVD88). The surveyed coordinates and elevations of the borings are summarized in Table 1.

DDK subcontracted drilling services required to complete the borings to New England Boring Contractors (NEBC) out of Derry, New Hampshire. A DDK representative approved by the NRCS with knowledge of conducting geological investigations was on-site full-time during subsurface investigation activities. NEBC completed the borings using a Mobile B57 track-mounted ATV drill rig. The borings

were advanced through soil using either 3.25-inch inside diameter (ID), 8-inch outside diameter (OD), hollow stem augers or using the drive and wash method with 4-inch ID, 4.5-inch OD, flush joint casing with a side discharging roller bit and water or drilling mud to remove the cuttings. At the dam embankment borings, water was only used when coring through a large obstruction as approved by the NRCS. Difficult drilling conditions were encountered in multiple borings which led to early termination of some borings. These difficult drilling conditions either led to refusal of the drill tooling at a relatively shallow depth or caused the drill tooling to become out of plumb to the extent that drilling could no longer be continued at the borehole. The difficult drilling conditions, specifically those in the embankment borings using either hollow stem augers or the drive and wash method prevented the advancement of the borings to the target depths. For instance, below the depth at which casing refusal was encountered at Boring JB5-19-2B, rock coring methods were implemented to sample through the obstruction using a NX size rock core barrel with water to flush the cuttings. After sampling through the obstruction with rock coring methods, the casing was advanced through the obstruction but soon became out of plumb due to encountering the obstruction, which resulted in termination of the boring. No bedrock was cored at Jewell Brook No. 5.

Disturbed soil samples were collected using a 2-inch OD split-barrel sampler and the standard penetration test (SPT) method with an automatic hammer drop system in accordance with ASTM D1586. Disturbed soil samples were used for field classification, estimation of consistency, and for laboratory testing.

All borings were backfilled with a cement/bentonite grout mix using the tremie method. The boreholes were backfilled with grout to within 12 inches of the ground surface, and natural soil material was placed above the grout to the approximate existing ground surface to facilitate revegetation. Tremie pipe was installed to the final depth in boreholes located in the auxiliary spillway upon completion, and boreholes within the auxiliary spillway were left open a minimum of 24 hours and until the static water level stabilized. A water level measurement was taken in the auxiliary spillway borings after the 24 hours (minimum). The side walls in all borings completed in the auxiliary spillways except for Boring JB5-19-204N fell in after the drill tooling was removed. Water level readings recorded after the side walls fell in may be inaccurate and not reflect the actual groundwater conditions at the boring location. Embankment boreholes were backfilled upon completion. The approximate volume of grout used to backfill each boring is recorded on the boring logs, which are included in Appendix A. Boring locations and other areas disturbed during the subsurface investigation were raked and ruts were smoothed as practical by DDK and NEBC.

A DDK field representative classified all soils that were encountered based on split-barrel samples and visual observations of the cuttings. DDK's field representative documented observed subsurface conditions and the results of drilling activities on the boring logs in Appendix A.

DDK subcontracted geotechnical laboratory testing on soil samples collected in the borings to Geotechnics, Inc. of East Pittsburgh, Pennsylvania. The complete laboratory test results are included as Appendix B. The laboratory index test results are summarized in Table 2. Partial laboratory index test

results for soil samples are also shown on the boring logs in Appendix A. The geotechnical laboratory testing program consisted of:

- ▶ Moisture Content (ASTM D2216),
- ▶ Sieve Analysis (ASTM D6913),
- ▶ Hydrometer Analysis (ASTM D7928),
- ▶ Atterberg Limits (ASTM D4318),
- ▶ Unified Soil Classification System (ASTM D2487), and
- ▶ Specific Gravity (ASTM D854).

DDK intended on completing Crumb Test (ASTM D6572) to estimate potential dispersive characteristics of clayey soils, but based on the hydrometer and Atterberg limits test results ASTM D6572 was not applicable to the subject soils.

1.2 Geology and Physiography

Jewell Brook No. 5 is located near the boundary of the Green Mountain and New England Upland, also known as the Vermont Piedmont, physiographic subdivisions of the New England physiographic province. The Green Mountain physiographic subdivision is characterized by steep, rugged mountains with average summit elevations of 2,000 feet. The New England Upland physiographic subdivision, the largest physiographic region in the state, is described as a plateau dissected by streams and subdued by glaciation and is characterized by rolling hills and valleys with isolated mountains known as monadnocks that are generally comprised of granitic rocks. Bedrock throughout these physiographic subdivisions is generally comprised of metamorphic and sedimentary rocks. More specifically, bedrock beneath Jewell Brook No. 5 is classified as metasedimentary rock.

Bedrock beneath Jewell Brook No. 5 is comprised of the chlorite-muscovite phyllite and schist member of the Tyson Formation, which is Lower Cambrian to Neoproterozoic in age. The chlorite-muscovite phyllite and schist member of the Tyson Formation is described as pale greenish-gray to yellowish-greenish-gray, chlorite-muscovite-quartz phyllite and schist containing beds of pebbly metawacke and magnetite phyllite. The quartz-pebble phyllite and wacke member of the Tyson Formation borders the phyllite and schist member east of the site, and the quartz and schist gneiss of the Washington Gneiss and Wilcox formation is mapped to the west.

Surficial deposits at Jewell Brook No. 5 are mapped as glacial till. The glacial till is described as generally reflecting the topography of the underlying bedrock surface and thinning when moving away from the center of the valley as described on the Surficial Geology Map of Vermont by Stewart and MacClintock (1970). Site-specific surficial and bedrock geologic maps derived from available published geology maps are presented on Figures 3 and 4. Available published geologic maps are included in Appendix C.

The USDA NRCS Web Soil Survey indicates that surficial soils at Jewell Brook No. 5, excluding human transported material, consist of Marlow fine sandy loam; Peru, Skerry, and Colonel soils; and Monadnock

and Berkshire soils. Marlow fine sandy loam, mapped to the north of the site, are found on the slopes of hills and mountains on glaciated uplands and have a parent material of loamy lodgment till derived from granite, mica schist, and/or phyllite. Peru, Skerry, and Colonel soils are mapped to the north, south, and west of the site and are generally deposited on the slopes of hills and mountains on glaciated uplands. The parent material of Peru, Skerry, and Colonel soils is generally described as loamy lodgment till derived from granite, mica schist, and/or phyllite. Monadnock and Berkshire soils, mainly located on the eastern side of the site, are found on hills and mountains on glaciated uplands and have a parent material of loamy supraglacial meltout till overlying sandy and gravelly supraglacial meltout till which are derived from phyllite, granite, gneiss, and/or mica schist. The Web Soil Survey Map, Map Unit Description, and Engineering Properties Table are included as Appendix D.

2.0 SUBSURFACE GEOLOGY

The following section presents a summary of subsurface conditions based on the information collected from the borings completed as part of this subsurface investigation. Refer to Figure 2 for specific boring locations referenced herein. The subsurface conditions encountered in the borings are described in the boring logs included as Appendix A and are generalized in geotechnical profiles and cross sections presented on Figures 5, 6, 7, and 8. Figure 6 also includes information from borings and test pits completed during previous subsurface investigations performed by others. A limited summary of the subsurface conditions within previously identified borrow areas based on the NRCS As-Built drawings is also included in this section. Refer to the boring logs in Appendix A for ground water levels recorded in the borings during drilling. Large variations in recorded ground water levels on the boring logs are likely attributed to drilling methods used to complete each boring. The ground water levels recorded in borings completed using the drive and wash method or borings where rock was cored introduced water or drilling mud to the borehole which likely influenced the recorded ground water levels.

2.1 Embankment and Foundation

DDK completed Borings JB5-19-1, JB5-19-2, JB5-19-2A, JB5-19-2B, JB5-19-3, and JB5-19-4 to characterize subsurface conditions in the dam embankment. All borings were advanced through the embankment crest. In total, forty-three (43) disturbed SPT samples were collected in the borings. The locations of these borings are shown on Figure 2, and the boring logs are presented in Appendix A.

In Borings JB5-19-1, JB5-19-2, JB5-19-3, and JB5-19-4, 0.1 to 0.3 feet of brown to dark brown topsoil was encountered directly below the ground surface. The topsoil is underlain by embankment fill generally described as compact to dense, dry to moist, fine-grained, silty sand with gravel (SM) and occasional cobbles. Isolated zones with the embankment fill were classified as loose. The silty sand embankment fill generally alternates with depth between grayish brown, orangish brown, and olive gray colors. Due to the difficult drilling conditions, no borings were advanced through the entire embankment and into foundation material. Borings JB5-19-2, JB5-19-2A, JB5-19-2B, JB5-19-3, and JB5-19-4 all encountered difficult drilling conditions between depths of 10 and 15 feet which led to early termination of these borings prior to reaching the target depths. As confirmed by the sample obtained with rock coring methods in Boring JB5-19-2B, these difficult drilling conditions were likely due to the presence of cobbles and boulders within the top zone of the embankment fill. Encountering the cobbles and boulders either led to refusal of the drill tooling, or caused the drill tooling to be out of plumb to the point at which drilling could no longer be continued at the borehole.

Laboratory testing results indicate that the embankment fill that was able to be sampled by the split spoon at Jewell Brook No. 5 has a USCS classification of SM, average moisture content of 10.9%, average fines content of 38.3%, average specific gravity of 2.69, and non-plastic fines. The following ranges apply to these laboratory testing results for embankment fill: moisture contents between 8.1% and 15.1%, fines contents between 19.8% and 46.8%, and specific gravities between 2.66 and 2.71. Refer to Table 2 for the results of the geotechnical testing.

A geology report from the original design of Jewell Brook No. 5 was not made available to DDK; therefore, the results of geotechnical laboratory testing previously performed by the NRCS cannot be summarized in this report.

2.2 Left Auxiliary Spillway

DDK completed Borings JB5-19-201N, JB5-19-201NA, JB5-19-202N, JB5-19-203N, and JB5-19-204N to characterize subsurface conditions in the left auxiliary spillway. In total, fifty-three (53) disturbed SPT samples were collected from the borings in the left auxiliary spillway. The locations of these borings are shown on Figure 2, and the boring logs are presented in Appendix A.

Subsurface conditions encountered at the left auxiliary spillway consist of 0.3 to 0.4 feet thick dark brown topsoil overlying glacial till. The glacial till encountered beneath the topsoil at the borings typically classifies as silty sand with gravel (SM). The silty sand with gravel (SM) is generally described as compact to very dense, dry to moist, and fine to medium-grained with occasional cobbles. At Boring JB5-19-201NA, the glacial till between 8 and 20 feet is described a silty gravel with sand (GM). The silty gravel with sand (GM) is described as very dense, subrounded to subangular, dry to moist, and fine to coarse. At Boring JB5-19-204N, the silty sand extended to approximately 33 feet and was underlain by more glacial till which is classified as sandy silty with gravel (ML). The sandy silt with gravel is described as very dense, moist to wet, and non-plastic with occasional cobbles. JB5-19-204N was terminated within the sandy silt layer. Borings JB5-19-201N, JB5-19-201NA, JB5-19-202N and JB5-19-203N were terminated within the silty sand/gravel and did not encounter the sandy silt layer. No borings completed within the left auxiliary spillway were advanced to bedrock.

Laboratory testing results for soil samples collected within the left auxiliary spillway indicate typical USCS classifications of SM with three samples collected in JB5-19-204 classifying as ML. Moisture contents ranged from 7.1% to 21.1% with an average value of 11.6%. Fines contents ranged from 22.2% to 77.3% with an average value of 40.6%. All samples tested had non-plastic fines. All specific gravities for soils within the auxiliary spillway are between 2.67 and 2.70 and have an average value of 2.69.

2.3 Right Auxiliary Spillway

DDK completed Borings JB5-19-205S, JB5-19-206S, JB5-19-207S, JB5-19-208S, JB5-19-209S, JB5-19-210S, JB5-19-210SA, and JB5-19-210SB to characterize subsurface conditions in the right auxiliary spillway. In total, seventy-seven (77) disturbed SPT samples were collected from the borings in the right auxiliary spillway. The locations of these borings are shown on Figure 2, and the boring logs are presented in Appendix A.

Subsurface conditions encountered at the right auxiliary spillway generally consist of 0.3 to 2.5 feet thick brown to dark brown topsoil overlying glacial till. The glacial till mainly classified as silty sand with gravel (SM) with some zones classifying as silty gravel with sand (GM). The silty sand with gravel (SM) is generally described as compact to very dense, dry to moist, and fine to medium-grained with isolated cobbles. The silty gravel with sand (GM) zones were encountered between approximate depths of 2 and

19 feet in JB5-19-208S, 36 to 42 feet in JB5-19-208S, and 8 to 19 feet in JB5-19-209S and are generally described as dense to very dense and fine to coarse with cobbles and varying moisture contents. At Boring JB5-19-209S, a glacial outwash layer was encountered beneath the silty gravel at an approximate depth of 19 feet. The glacial outwash is described as very dense, wet, fine to coarse-grained silty sand (SM) with minimal amounts of gravel. Boring JB5-19-209S was terminated within the glacial outwash Borings JB5-19-205S, JB5-19-206S, JB5-19-207S, JB5-19-208S, JB5-19-210S, JB5-19-210SA, and JB5-19-210SB were terminated within silty sand glacial till. No borings completed within the right auxiliary spillway were advanced to bedrock.

Laboratory testing results for soil samples collected within the auxiliary spillway indicate typical USCS classifications of SM with three samples classifying as GM. Moisture contents ranged from 7.1% to 21.3% with an average value of 11.0%. Fines contents ranged from 28.4% to 48.3% with an average value of 39.5%. All right auxiliary spillway samples tested had non-plastic fines. Specific gravities for soils within the right auxiliary spillway ranged from 2.59 to 2.71 with an average value of 2.69.

2.4 Borrow Areas

As shown on Sheet 5 of the NRCS As-Built drawings, the borrow source for Zone 1 earth fill is listed as the auxiliary spillways, and the borrow source for Zone 2 is listed as “required excavations.” The material from the auxiliary spillways to be used as borrow material is described on the NRCS As-Built drawings as silty sand (SM) similar to TP-202 2’-10.5’ and silty sand (SM) similar to TP-208 10’-13’. Compaction curves based on laboratory testing results for samples 202.1 and 208.2 are presented on Sheet 23 of the NRCS As-Built drawings and are assumed to be representative of the material used as Zone 1 earth fill. The material to be used in Zone 2 is described as “selected pervious borrow.” The NRCS As-Built drawings indicate that the volume of fill required for construction is 235,000 cubic yards. No additional documentation containing information regarding borrow materials, such as laboratory testing data or available quantities, was provided to DDK.

3.0 INTERPRETATIONS AND CONCLUSIONS (FOR IN-SERVICE USE ONLY)

3.1 Interpretations

Using the information obtained from DDK's subsurface investigation, information from the NRCS As-Built drawings and results of geotechnical laboratory testing, DDK estimated engineering properties in Appendix G for the soil within the auxiliary spillways for use in the NRCS SITES analyses. Blow count values provided in the NRCS As-Built drawings for borings completed during previous subsurface explorations were excluded from the development of the recommended properties for the SITES analyses since the confining pressure in some zones has substantially changed as a result of excavation in the auxiliary spillway. Blow count values for SPT samples collected during DDK's subsurface investigation that were clearly influenced by coarse gravel, cobbles, and boulders were excluded from the development of the recommended properties for the SITES analyses. Recommended properties of site soils for the SITES analyses of the auxiliary spillways, including dry density, plasticity index, clay content, headcut erodibility index, and representative diameter, are calculated in Appendix G and summarized in Table 3. Subsurface profiles of the auxiliary spillways are presented on Figures 7 and 8. DDK also performed a seismotectonic evaluation and seismic hazard assessment, assessed the liquefaction potential at the site, and evaluated the feasibility of using previously identified borrow areas. The results of these analyses are described in the following sections.

3.1.1 Seismotectonic Evaluation and Seismic Hazard Assessment

In accordance with Technical Release 210-60, "Earth Dams and Reservoirs" (TR-60), DDK compiled data from available resources on magnitude 4 or greater earthquakes and any active or capable faults within 62 miles (100 kilometers) of Jewell Brook No. 5. The USGS U.S. Quaternary Faults Map shows no active faults within 62 miles of Jewell Brook No. 5, and the NOAA Natural Hazards Database lists no significant earthquake within 62 miles of the site. Based on information presented by Wheeler (2006), no seismic/fault zones are located within 62 miles of the site have produced earthquakes with a magnitude of 4 or greater. The USGS Earthquake Hazards Program Map shows three documented earthquakes with a magnitude of 4 or greater within 62 miles of the site. The earliest recorded event occurred in 1638 and is listed as a magnitude (M) 6.5 earthquake with an approximate epicenter location of central New Hampshire. The earthquake had a maximum observed Modified Mercalli Intensity (MMI) of IX and was felt in the Boston area as well as Connecticut, Rhode Island, and Quebec. The second event, a M 4.7 earthquake with a maximum observed MMI of VII, occurred in New York in 1931. The most recent earthquake located within 62 miles of Jewell Brook No. 5 occurred in 1982 in New Hampshire. This M 4.5 earthquake had a maximum observed MMI of VI and was felt throughout the New England region, northeastern New York, southern Quebec, and northeastern Ontario. The approximate epicenter locations of these earthquakes are presented on Figure 9, and the data for each earthquake obtained from the USGS Earthquake Hazards Program is included in Appendix E.

The resources listed above are compiled from thousands of sources and include data on specific events dating back as far as 2150 B.C. Because it is impossible to have information on every major earthquake

and active fault of the Quaternary, which consists of the past 1.6 million years, the existing data cannot definitively evaluate the existence of Quaternary active faults. These resources have made a fair attempt to compile all available information on earthquakes and active faults for incorporation into seismic hazard analyses. Therefore, the existing data, while not definitive, is considered suitable to evaluate the existence of active faults at the site for design purposes. While three seismic events were identified within 62 miles of the site, a deterministic seismic hazard assessment (DSHA) to determine ground motions from these events cannot be performed since these events are not knowingly connected to a defined, specific seismic source or fault zone. Instead, a probabilistic seismic hazard assessment (PSHA) was used to estimate peak ground accelerations at the site as described in the following paragraph.

In accordance with Part 4 of TR-60, probabilistic seismic hazard curves were generated using the USGS Earthquake Hazards Program Unified Hazard Tool for the site based on return periods of 10,000 and 500 years. The input data, generated hazard curves, and deaggregation output are included in Appendix E. The peak ground accelerations at the site are 0.2354g for a return period of 10,000 years (0.5% probability of exceedance in 50 years) and 0.0448g for a return period of 500 years (10% probability of exceedance in 50 years) as presented on the seismic hazard curves. The Unified Hazard Tool assumes a default Site Class at the B/C boundary and does not provide values for other Site Classes. Jewell Brook No. 5 is assumed to fall within Site Class C based on average properties in the top 100 feet similar to very dense soil and soft rock. The ASCE 7 Hazard Tool (ASCE 7-16) provides an amplification factor (F_a) of 1.3 for the site assuming a classification of Site Class C. The corrected peak ground accelerations using the amplification factor are 0.3060g for a return period of 10,000 years and 0.0582g for a return period of 500 years.

3.1.2 Liquefaction Potential

Since the probable ground acceleration with 2 percent probability of exceedance in 50 years is between 10 and 20 percent of gravity (%g), the hazard class is high, and the effective dam height is greater than 20 feet, necessary information has been summarized below to evaluate the liquefaction potential of the site in accordance with 210-VI-NEH, Part 631, Chapter 2, Section 631.0207. Available information indicates no historic occurrences of liquefaction in the area of Jewell Brook No. 5. The distribution of surficial geologic units and soils at the site is presented on the USDA NRCS Web Soil Survey Soil Map in Appendix D and on the surficial geologic map in Figure 3. Active depositional areas at Jewell Brook No. 5 include the areas where Sanders Brook enters the reservoir. Surficial geologic units that are within active or recently active depositional areas are generally more prone to liquefaction because they are typically unconsolidated and have a higher likelihood of being saturated or becoming saturated. The peak ground acceleration for a 500-year return period (10 % percent probability of exceedance in 50 years) obtained from the USGS Earthquake Hazards Program is 0.0448g which is less than 0.1g. Therefore, per 210-VI-NEH, Part 631, Chapter 2, Section 631.0207, preliminary assessments to document the presence of unconsolidated sediments in active depositional environments, moderately consolidated Holocene-age sediments in inactive depositional environments, or late Pleistocene-age deposits that are approximately 15,000 to 12,000 years old are not required.

Since SPTs were performed as part of the geologic investigation and are acceptable as an initial screening for liquefaction potential, correlations were prepared using the SPT results to initially assess if subsurface conditions at the site generally do not exhibit liquefaction potential. See Appendix F for the SPT N-value correlation. Based on case-history data (Seed and Harder, 1990; Castro, 1995; Wride et al., 1999), flow slides resulting from large earthquakes have only occurred where $N_{1,60}$ (SPT blow count, or N-value, corrected for field procedures and overburden pressure) values were 13 or lower; thus, it is generally accepted that sand-like materials with $N_{1,60}$ values greater than 15 are not susceptible to strength loss. At Jewell Brook No. 5, the average $N_{1,60}$ values are above 15 for all borings. A total of eight individual $N_{1,60}$ values from borings completed within the embankment were below 15, and seven of the eight $N_{1,60}$ values were for samples between 4 and 12 feet. Based on this information and only a limited number of $N_{1,60}$ values falling below 15 within the embankment fill, liquefaction of embankment fill is not likely and strength loss within the embankment fill does not need to be considered in slope stability analyses. It is important to note that no borings performed within the embankment were able to be advanced through the entire embankment and into foundation materials due to encountering difficult drilling conditions, and an assessment of the liquefaction potential of foundation soils using SPT results from the exploration cannot be completed. Only two individual $N_{1,60}$ values from borings within the auxiliary spillways were below 15. The one SPT was performed in Boring JB5-19-205S between 4 and 6 feet, and the other was performed in Boring JB5-19-206S between 2 and 4 feet. Soils encountered in the auxiliary spillway borings are likely not susceptible to strength loss.

3.1.3 Feasibility of Borrow Areas

Since no documentation containing information about available quantities of borrow materials was provided to DDK, the amount of borrow material remaining within the original borrow areas cannot be determined. Use of the auxiliary spillways as sources of material for any structural rehabilitation alternatives is not considered feasible unless the design of the alternative takes into account the removal of material from the auxiliary spillways and does not compromise the stability and structural integrity of the dam. If the auxiliary spillways are considered as potential sources of material, additional investigation and testing should be performed on the soils within the auxiliary spillways to calculate engineering parameters and estimate the volume of fill material available.

3.2 Conclusions (Recommendations)

Based on the subsurface conditions observed during the subsurface investigation described herein, our current design assumptions and understanding of the project, and the interpretations described in the previous section, DDK has developed the following conclusions that relate to key geotechnical features of the project.

- ▶ This Geologic Investigation generally confirmed consistent subsurface conditions within the auxiliary spillways as presented on the NRCS As-Built drawings.
- ▶ Future subsurface explorations should consider alternative drilling methods to advance borings through the dam embankment and into the foundation soils. Based on this subsurface

investigation it is apparent that the use of hollow stem augers and the drive and wash method are not suitable for the subsurface materials encountered within the dam embankment. Alternative drilling methods may include sonic drilling. While sonic drilling will not provide SPT blow counts, the sonic drilling method provides a continuous soil sample and usually is able to advance through cobbles/boulders or very dense till material without issues. Sonic drilling can be completed without the use of water.

- ▶ SITES analyses shall be performed using the recommended properties of site soils as calculated in Appendix G and as presented in Table 3 as applicable.
- ▶ Based on the results of the Seismotectonic Evaluation and Seismic Hazard Assessment, special seismic studies are not required.
- ▶ Soils encountered in the embankment and auxiliary spillway borings are likely not susceptible to strength loss. However, no borings performed within the embankment were advanced into foundation materials due to encountering difficult drilling conditions therefore an assessment of the liquefaction potential of foundation soils could not be completed. It is recommended that borings using sonic methods be employed to assess liquefaction potential of foundation soils.
- ▶ Using the auxiliary spillways as sources of borrow material is not considered feasible unless the design of the alternative takes into account the removal of material from the auxiliary spillways and does not compromise the stability and structural integrity of the dam. If considered, additional investigation and testing should be performed on the soils within the auxiliary spillways to calculate engineering parameters and estimate the volume of fill material available.
- ▶ Additional geotechnical investigations using sonic drilling methods should be performed as necessary for the design of the rehabilitation plan after a rehabilitation alternative is selected and verified. The investigations should include proposed borrow areas and the foundation soils of the dam. Additional geotechnical investigations in the auxiliary spillway should include borings that extend the minimum depth required by Part 531 of Title 210 – National Engineering Manual and the Geologic Report.
- ▶ Future geotechnical investigations should consider or include the installation of piezometers to monitor ground water and phreatic conditions of the dam, especially since moist soils and spongy conditions have been previously observed.
- ▶ If new structures for the dam rehabilitation are proposed that are susceptible to settlement, consolidation analyses should be performed on applicable soils to support the design.
- ▶ The NRCS reported that the toe drains are in poor condition based on an external inspection. The toe drains should be inspected, and repairs made, if necessary, as part of the rehabilitation design.
- ▶ As part of additional geotechnical investigations, an investigation should be performed regarding the condition of the relief wells as reported in the NRCS 2013 Inspection Report.

- ▶ An inspection of the crest drain should be performed to assess its condition since NRCS Inspection Reports from 2014 and 2017 indicated the presence of minor erosion and a puddle in the area.

4.0 REPORT LIMITATIONS

DDK prepared this report for the exclusive use for and specific application to the Supplemental Watershed Plan and Environmental Document project for the Jewell Brook Watershed Site No. 5 located in Ludlow, Windsor County, Vermont. DDK is not responsible for use or interpretation of this report by any parties. The evaluation and recommendations contained in this report are based on the data obtained from the referenced subsurface investigation. The borings indicate subsurface conditions only at the specific locations and times, and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between such locations. The validity of the recommendations is based in part on assumptions about the stratigraphy between borings made by the geotechnical engineer. Such assumptions shall be confirmed during earthwork as part of construction. If subsurface conditions different from those described herein are noted during construction, recommendations in this report must be reevaluated. DDK must observe earthwork construction, particularly borrow area and fill areas, to confirm that our assumptions and recommendations are valid, or to modify them accordingly. DDK cannot assume responsibility or liability for the adequacy of recommendations if it does not observe construction.

If any changes in the nature, design, or location of the structure are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by DDK. DDK is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analyses without the express written authorization of DDK.

Our scope of services excludes testing or engineering evaluations associated with environmental conditions at the site, including the investigation or detection of the presence of any “biological pollutants” in or around the site where the phrase “biological pollutants” includes but is not limited to: molds, spores, fungi, bacteria and viruses, and the byproducts of any such biological organisms.

5.0 REFERENCES

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6.0 CLOSING

In preparing this report, the professional services of DDK has been performed, findings obtained, and recommendations prepared per generally accepted engineering principles and practices. This statement is instead of all warranties, either expressed or implied.

If you have questions, please call.

Respectfully Submitted,
DDK ENGINEERING – JV



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TABLES

Table 1
As-Drilled Boring Locations
Jewell Brook Watershed Site No. 5
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Boring	Northing	Easting	Approximate Ground Surface Elevation	Depth (ft)
JB5-19-1	320847.9	1581130.2	1496.8	44.0
JB5-19-2	320987.0	1581236.5	1496.8	15.0
JB5-19-2A	320980.9	1581231.2	1496.9	10.0
JB5-19-2B	320993.0	1581239.4	1496.8	13.0
JB5-19-3	321106.5	1581326.1	1496.3	14.0
JB5-19-4	321036.6	1581271.8	1496.9	12.0
JB5-19-201N	321084.5	1581737.3	1476.5	7.9
JB5-19-201NA	321087.8	1581732.6	1476.5	20.0
JB5-19-202N	321168.9	1581602.0	1485.5	20.0
JB5-19-203N	321314.6	1581547.9	1489.1	20.0
JB5-19-204N	321346.9	1581408.5	1487.7	51.1
JB5-19-205S	320341.4	1581452.4	1479.5	18.1
JB5-19-206S	320465.9	1581358.1	1481.6	20.0
JB5-19-207S	320397.3	1581176.9	1485.7	20.0
JB5-19-208S	320552.1	1580987.4	1488.7	50.7
JB5-19-209S	320545.8	1580846.1	1486.3	22.0
JB5-19-210S	320727.8	1580889.2	1483.2	10.0
JB5-19-210SA	320721.1	1580887.4	1483.5	21.3
JB5-19-210SB	320719.9	1580895.1	1483.4	8.0

Notes:

- 1) Horizontal Datum: North American Datum of 1983 (NAD83) Vermont State Plane
- 2) Vertical Datum: North American Vertical Datum of 1988 (NAVD 88)
- 3) Boring locations surveyed using a Trimble GNSS System.

Table 2
Summary of Laboratory Index Test Results
Jewell Brook Watershed Site No. 5
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Sample Information				Test Results										
Boring	Sample ID	Depth		Water Content	Sieve Analysis						Atterberg Limits			Specific Gravity
		From	To		USCS Symbol	USCS Name	<#4	<#40	<#200	<0.002mm	USCS Symbol (of fines)	LL	PI	
		(ft)	(ft)	(%)			(%)	(%)	(%)	(%)		(%)	(%)	
JB5-19-1	SpT-2	2.0	4.0	8.6	-	-	-	-	-	-	-	-	-	-
	SpT-6/7	10.0	14.0	11.1	SM	Silty Sand	87.35	77.29	46.75	9.48	Non-Plastic			2.69
	SpT-10	18.0	20.0	10.9	-	-	-	-	-	-	-	-	-	-
	SpT-13/14	24.0	26.9	10.6	SM	Silty Sand	89.77	70.49	40.80	9.74	Non-Plastic			-
	SpT-17/18	32.0	36.0	8.1	SM	Silty Sand	87.90	70.78	42.84	-	Non-Plastic			2.71
	SpT-20/21	38.0	42.0	9.3	SM	Silty Sand w/ Gravel	80.76	66.40	40.38	-	Non-Plastic			-
JB5-19-2	SpT-2/3	2.0	6.0	11.3	SM	Silty Sand	87.31	48.65	19.77	-	Non-Plastic			2.69
	SpT-6/7	10.0	14.0	11.8	SM	Silty Sand w/ Gravel	80.84	64.82	36.55	9.07	Non-Plastic			-
JB5-19-3	SpT-3/4	4.0	8.0	13.6	SM	Silty Sand w/ Gravel	80.97	66.77	37.61	-	Non-Plastic			2.70
	SpT-6/7	10.0	14.0	15.1	SM	Silty Sand	85.37	69.02	36.79	7.43	Non-Plastic			-
JB5-19-4	SpT-3/4	4.0	8.0	9.4	SM	Silty Sand	86.10	69.21	39.68	10.82	Non-Plastic			-
	SpT-5/6	8.0	11.4	10.8	SM	Silty Sand	89.48	73.47	41.45	-	Non-Plastic			2.66
JB5-19-201N	SpT-1	0.0	2.0	15.8	SM	Silty Sand w/ Gravel	70.86	60.18	31.55	-	Non-Plastic			-
	SpT-2/3	2.0	6.0	13.9	SM	Silty Sand w/ Gravel	79.75	67.41	38.48	6.59	Non-Plastic			2.68
JB5-19-201NA	SpT-1/2	8.0	11.4	8.5	SM	Silty Sand	89.04	69.97	43.27	11.27	Non-Plastic			2.70
	SpT-6	18.0	20.0	7.4	SM	Silty Sand w/ Gravel	80.65	66.50	43.93	-	Non-Plastic			-
JB5-19-202N	SpT-1/3	0.0	6.0	14.4	SM	Silty Sand w/ Gravel	82.40	67.96	38.22	5.73	Non-Plastic			2.67
	SpT-4/5	6.0	10.0	10.1	SM	Silty Sand	91.11	75.61	46.01	-	Non-Plastic			2.69
	SpT-7/8	12.0	16.0	9.1	SM	Silty Sand	94.50	74.89	41.97	11.37	Non-Plastic			-
	SpT-10	18.0	20.0	7.5	SM	Silty Sand	93.79	71.49	39.46	-	Non-Plastic			-
JB5-19-203N	SpT-1/2	0.0	4.0	7.1	SM	Silty Sand w/ Gravel	67.75	44.94	22.21	-	Non-Plastic			-
	SpT-4/5	6.0	10.0	9.1	SM	Silty Sand w/ Gravel	69.73	52.38	28.64	6.92	Non-Plastic			-
	SpT-6/7	10.0	13.4	10.9	SM	Silty Sand	92.06	76.25	37.85	-	Non-Plastic			-
	SpT-9/10	16.0	20.0	7.9	SM	Silty Sand w/ Gravel	76.20	58.38	28.96	6.02	Non-Plastic			-

Table 2
Summary of Laboratory Index Test Results
Jewell Brook Watershed Site No. 5
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Sample Information				Test Results										
Boring	Sample ID	Depth		Water Content	Sieve Analysis						Atterberg Limits			Specific Gravity
		From	To		USCS Symbol	USCS Name	<#4	<#40	<#200	<0.002mm	USCS Symbol (of fines)	LL	PI	
		(ft)	(ft)	(%)			(%)	(%)	(%)	(%)		(%)	(%)	
JB5-19-204N	SpT-1	0.0	2.0	19.1	SM	Silty Sand	87.78	75.10	39.15	-	Non-Plastic			-
	SpT-2/3/4	2.0	8.0	8.6	SM	Silty Sand	90.28	67.09	37.20	9.15	Non-Plastic			-
	SpT-6/7	10.0	12.9	7.2	SM	Silty Sand	92.92	62.92	32.60	-	Non-Plastic			2.69
	SpT-8/9	14.0	17.8	8.9	SM	Silty Sand	90.85	73.74	44.62	13.63	Non-Plastic			-
	SpT-11/12	20.0	22.9	9.5	SM	Silty Sand w/ Gravel	80.75	64.08	37.28	-	Non-Plastic			2.70
	SpT-15	28.0	29.8	19.2	ML	Silt w/ Sand	98.60	91.99	77.31	-	Non-Plastic			-
	SpT-16/17	30.5	33.4	21.1	sm	Silty Sand	98.94	96.65	43.94	-	-	-	-	-
	SpT-20	38.0	40.0	11.1	SM	Silty Sand w/ Gravel	81.59	65.95	38.38	-	Non-Plastic			-
	SpT-22	45.0	46.4	14.7	ML	Sandy Silt	96.05	79.89	50.48	-	Non-Plastic			-
	SpT-23	50.0	51.1	14.6	ML	Sandy Silt	90.63	75.26	51.19	-	Non-Plastic			-
JB5-19-205S	SpT-1/2	0.0	4.0	21.3	sm	Silty Sand w/ Gravel	71.88	59.69	30.94	-	-	-	-	-
	SpT-4/5	6.0	10.0	8.9	SM	Silty Sand	85.99	69.73	43.45	12.30	Non-Plastic			2.70
	SpT-6/7	10.0	13.7	10.1	SM	Silty Sand	90.67	74.73	45.87	-	Non-Plastic			2.70
	SpT-9	16.0	17.3	8.3	SM	Silty Sand	87.55	70.32	44.10	11.88	Non-Plastic			-
JB5-19-206S	SpT-1	0.0	2.0	21.3	SM	Silty Sand	95.62	77.97	39.36	-	Non-Plastic			2.59
	SpT-4/5	6.0	10.0	9.7	SM	Silty Sand	90.82	75.28	46.01	13.88	Non-Plastic			-
	SpT-7/8	12.0	15.8	7.1	SM	Silty Sand w/ Gravel	74.84	58.53	35.13	10.05	Non-Plastic			-
	SpT-10	18.0	20.0	8.9	SM	Silty Sand	87.61	72.74	45.00	-	Non-Plastic			2.68
JB5-19-207S	SpT-1/2	0.0	4.0	8.3	SM	Silty Sand w/ Gravel	70.23	56.93	34.63	9.71	Non-Plastic			2.69
	SpT-4	6.0	8.0	7.8	SM	Silty Sand	87.34	68.31	40.83	-	Non-Plastic			-
	SpT-7/8	12.0	16.0	8.4	SM	Silty Sand	85.93	69.54	41.79	-	Non-Plastic			2.70
	SpT-9/10	16.0	20.0	8.6	SM	Silty Sand w/ Gravel	70.33	57.18	34.87	9.96	Non-Plastic			-

Table 2
Summary of Laboratory Index Test Results
Jewell Brook Watershed Site No. 5
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Sample Information				Test Results										
Boring	Sample ID	Depth		Water Content	Sieve Analysis						Atterberg Limits			Specific Gravity
		From	To		USCS Symbol	USCS Name	<#4	<#40	<#200	<0.002mm	USCS Symbol (of fines)	LL	PI	
		(ft)	(ft)	(%)			(%)	(%)	(%)	(%)		(%)	(%)	
JB5-19-208S	SpT-1	0.0	2.0	17.0	sm	Silty Sand w/ Gravel	72.06	60.99	33.27	-	-	-	-	
	SpT-4/5	6.0	10.0	8.5	GM	Silty Gravel w/ Sand	67.22	53.97	35.36	10.30	Non-Plastic		-	
	SpT-6/7	10.0	14.0	10.5	GM	Silty Gravel w/ Sand	59.38	44.85	28.36	-	Non-Plastic		2.71	
	SpT-10	18.0	20.0	11.2	SM	Silty Sand w/ Gravel	83.49	67.32	42.65	-	Non-Plastic		-	
	SpT-11	20.0	22.0	8.0	SM	Silty Sand w/ Gravel	79.87	62.19	39.44	-	Non-Plastic		-	
	SpT-15/16	28.0	32.0	8.4	SM	Silty Sand w/ Gravel	82.18	65.61	41.05	11.52	Non-Plastic		-	
	SpT-17/18	32.0	36.0	7.9	SM	Silty Sand w/ Gravel	84.92	69.58	45.61	-	Non-Plastic		2.70	
	SpT-21	40.0	40.9	10.0	GM	Silty Gravel w/ Sand	62.80	48.94	30.59	-	Non-Plastic		-	
	SpT-22	42.0	44.0	10.9	SM	Silty Sand	98.09	77.52	48.34	-	Non-Plastic		-	
	SpT-24	46.0	47.4	11.6	SM	Silty Sand	87.30	72.91	44.60	-	Non-Plastic		-	
JB5-19-209S	SpT-1	0.0	2.0	20.7	SM	Silty Sand	85.48	72.51	39.91	1.72	Non-Plastic		-	
	SpT-3/4	4.0	8.0	9.7	SM	Silty Sand	87.70	71.84	47.85	12.45	Non-Plastic		2.70	
	SpT-7/8	12.2	16.0	7.5	SM	Silty Sand w/ Gravel	76.27	56.69	34.72	-	Non-Plastic		2.68	
	SpT-10/11	18.0	22.0	9.2	sm	Silty Sand	87.59	59.81	29.65	-	-	-	-	
JB5-19-210S	SpT-1	0.0	2.0	20.9	SM	Silty Sand	95.74	81.09	43.40	0.70	Non-Plastic		-	
	SpT-3/4	4.0	8.0	8.9	SM	Silty Sand w/ Gravel	71.32	58.10	36.46	8.91	Non-Plastic		2.69	
JB5-19-210SA	SpT-2/3	12.0	14.9	10.7	SM	Silty Sand w/ Gravel	75.54	62.00	40.35	-	Non-Plastic		2.68	
	SpT-6	20.5	21.3	10.2	SM	Silty Sand	90.42	73.29	40.58	-	Non-Plastic		-	

Notes:

⁽¹⁾ Laboratory assumed Unified Soil Classification System (USCS) symbols for samples with sieve analysis testing but without Atterberg limits testing are shown as lowercase.

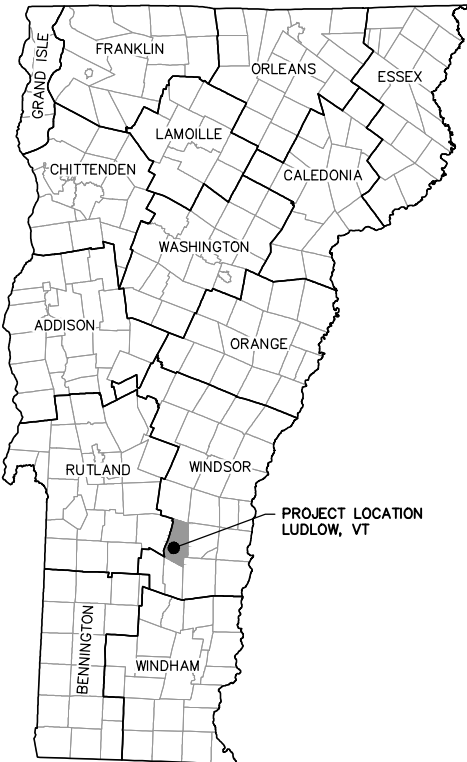
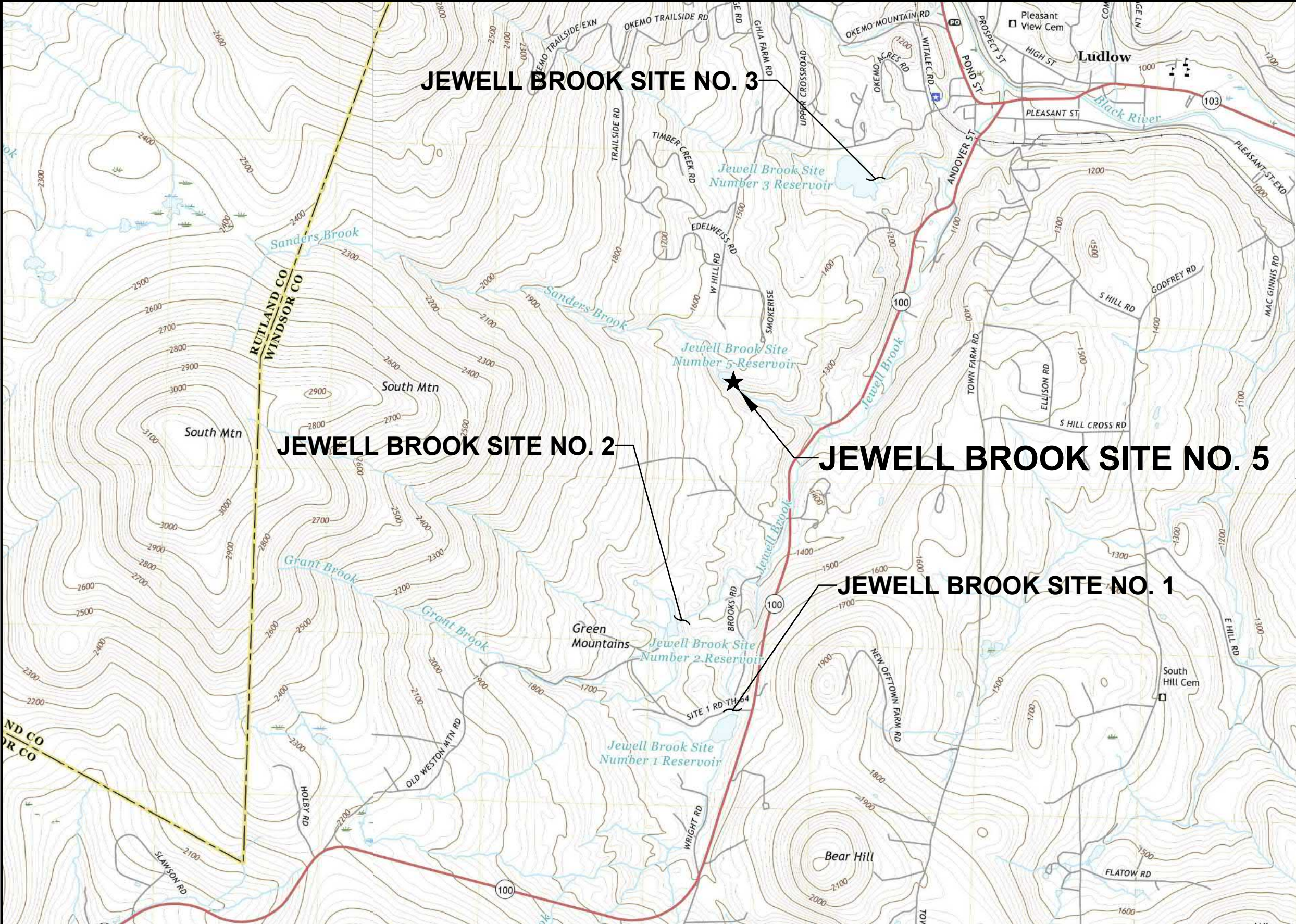
Table 3
Summary of Recommended Properties of Site Soils for SITES Analyses
Jewell Brook Watershed Site No. 5
Natural Resources Conservation Service
Ludlow, Windsor County, Vermont

Layer	Avg. USCS	Dry Density (lb/cu.ft.)	Plasticity Index	Clay Content (%)	Head Cut Index	Representative Diameter (in.)
1N	SM	111.5	N.P.	7.16	0.044	0.181
2N	SM	120.2	N.P.	9.84	0.304	0.070
3N	ML	120.3	N.P.	9.84	0.281	0.036
1S	SM	111.2	N.P.	8.52	0.042	0.162
2S	SM	120.0	N.P.	10.74	0.304	0.175

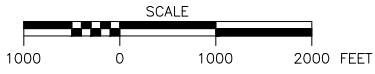
FIGURES

Thursday, July 9, 2020 11:22:13 AM

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STATE MAP
1"=20 MILES



NOTES / REVISIONS

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		3				
		2				
		1				

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PROJECT NUMBER: 172719-17
FILE NAME: 1 - Project Location Plan.dwg



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CHECKED BY: AA
DATE: 6/10/2020
DATE: 6/12/2020

JEWELL BROOK WATERSHED
LUDLOW, WINDSOR COUNTY, VERMONT

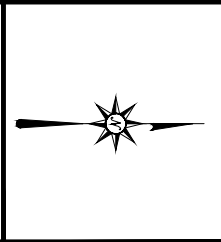
JEWELL BROOK SITE NO. 5
FIGURE 1
PROJECT LOCATION PLAN

SCALE: AS SHOWN
FIGURE 1
REV 0



NOTES / REVISIONS					
1. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83). VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).					
2. THE AUXILIARY SPILLWAY ALIGNMENT AND DAM ALIGNMENT LOCATIONS FROM THE NRCS 1969 AS-BUILT DRAWINGS ARE APPROXIMATE.					
3. EXISTING CONDITIONS TOPOGRAPHIC MAPPING FROM OCTOBER 2019 DDK SURVEY.					
4. EXISTING GROUND CONTOURS OUTSIDE OF DDK SURVEY BOUNDARY OBTAINED FROM: VT CENTER FOR GEOGRAPHIC INFORMATION, VERMONT OPEN GEODATA PORTAL. DATE OF LIDAR SURVEY: 2016.					
5. AERIAL IMAGERY OBTAINED FROM: VT CENTER FOR GEOGRAPHIC INFORMATION, VERMONT OPEN GEODATA PORTAL. DATE OF IMAGERY: 04/14/2016.					
ISSUED FOR	DATE	REV.	REVISION DESCRIPTION	MADE BY	CHKD BY
		4			
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		2			
		1			

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PROJECT NUMBER: 172719-17
FILE NAME: 2 - Site 5 Subsurface Exploration Plan.dwg

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CHECKED BY: AA

DATE: 6/10/2020
DATE: 6/12/2020

JEWELL BROOK WATERSHED
LUDLOW, WINDSOR COUNTY, VERMONT

JEWELL BROOK SITE NO. 5
FIGURE 2
SUBSURFACE INVESTIGATION PLAN

SCALE: AS SHOWN
FIGURE 2
REVO

Thursday, July 9, 2020 11:29:56 AM

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4

3

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MADE BY

CHKD BY

DATE

NOTES / REVISIONS

1. SURFICIAL GEOLOGY BOUNDARIES OBTAINED FROM THE VERMONT OPEN GEODATA PORTAL PREPARED BY THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION.

2. SURFICIAL GEOLOGY DESCRIPTIONS AND SYMBOLS OBTAINED FROM: STEWART, D.P. AND MACCLINTOCK, P., (1970), "SURFICIAL GEOLOGIC MAP OF VERMONT," VERMONT GEOLOGICAL SURVEY, DEPARTMENT OF WATER RESOURCES, SCALE 1:250,000.

SEAL:

DDK

Engineering-JV

PROJECT NUMBER: 172719-17

FILE NAME: 3 - Surficial Geologic Map.dwg

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DATE: 6/12/2020

JEWELL BROOK WATERSHED

LUDLOW, WINDSOR COUNTY, VERMONT

JEWELL BROOK SITE NO. 5

FIGURE 3

SURFICIAL GEOLOGIC MAP

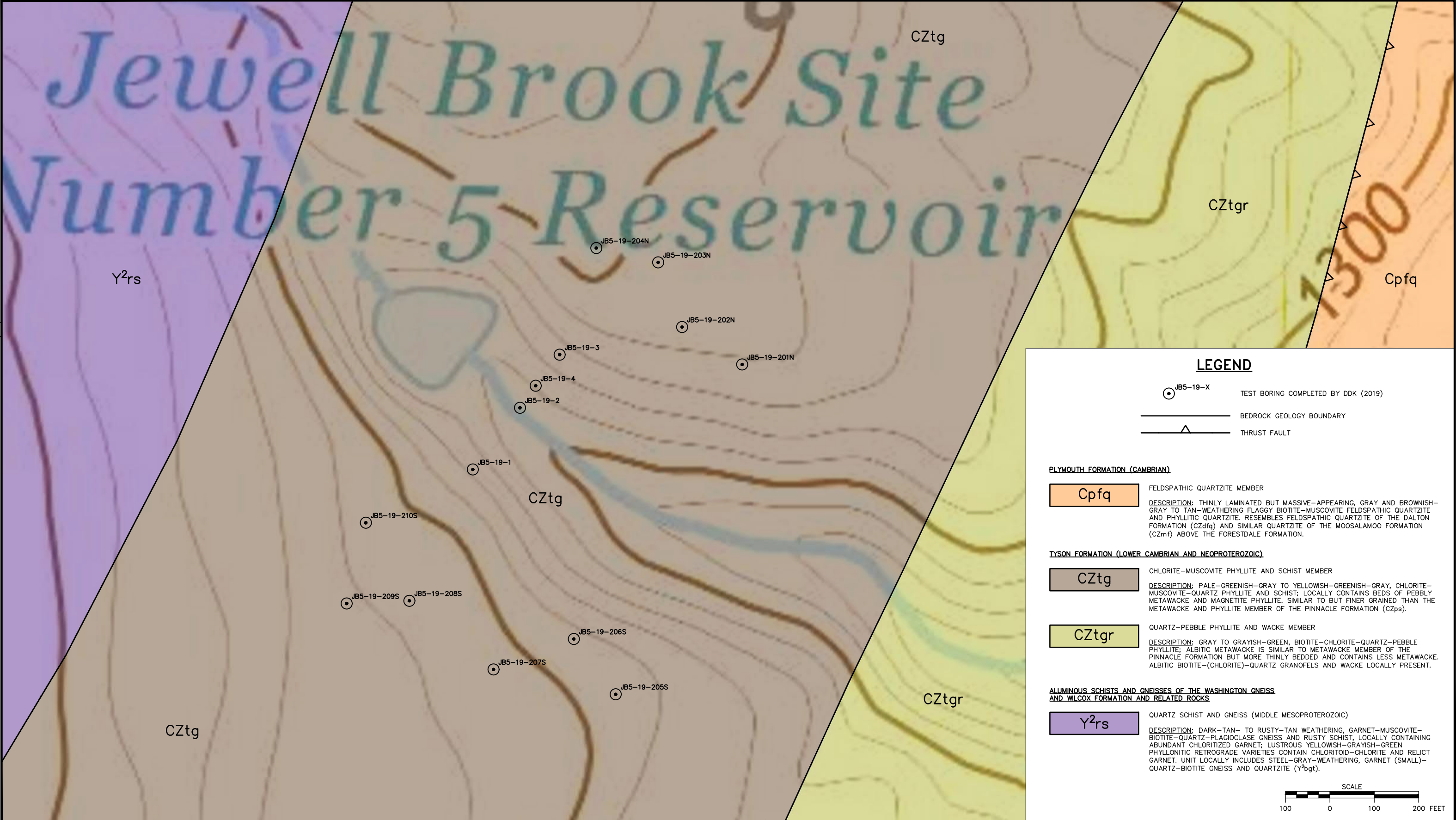
SCALE: AS SHOWN

FIGURE 3

REV 0

Thursday, July 9, 2020 11:31:40 AM

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REVISION DESCRIPTION

MADE BY

CHKD BY

DATE

NOTES / REVISIONS

1. BEDROCK GEOLOGY BOUNDARIES OBTAINED FROM THE VERMONT OPEN GEODATA PORTAL PREPARED BY THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION.

2. BEDROCK GEOLOGY DESCRIPTIONS AND SYMBOLS OBTAINED FROM: NATURAL RESOURCES ATLAS, VERMONT AGENCY OF NATURAL RESOURCES, VERMONT.GOV. RATCLIFFE, N.M., STANLEY, R.S., GALE, M.H., THOMPSON, P.J., AND WALSH, G.J., 2011, BEDROCK GEOLOGIC MAP OF VERMONT: U.S. GEOLOGICAL SURVEY SCIENTIFIC INVESTIGATIONS MAP 3184, 3 SHEETS, SCALE 1:100,000.

SEAL:

DDK

Engineering-JV

PROJECT NUMBER: 172719-17

FILE NAME: 4 - Bedrock Geologic Map.dwg

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CHECKED BY: AA

DATE: 6/10/2020

DATE: 6/12/2020

JEWELL BROOK WATERSHED

LUDLOW, WINDSOR COUNTY, VERMONT

JEWELL BROOK SITE NO. 5

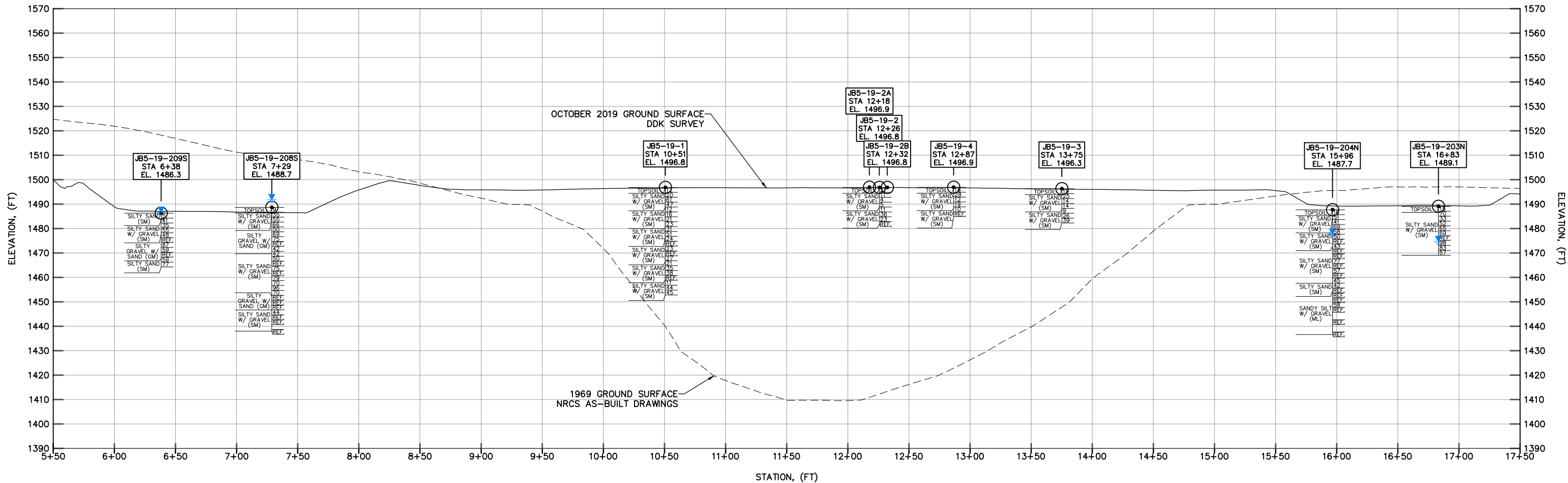
FIGURE 4

BEDROCK GEOLOGIC MAP

SCALE: AS SHOWN

FIGURE 4

REV 0



EMBANKMENT PROFILE



LEGEND

- JB5-19-X TEST BORING COMPLETED BY DDK (2019)
- SOLID LINE EXISTING GROUND SURFACE (OCTOBER 2019 DDK SURVEY)
- DASHED LINE PRE-CONSTRUCTION GROUND SURFACE (NRCS 1969 AS-BUILT DRAWINGS)
- Blue Arrow WATER LEVEL IN BORING RECORDED BY DDK DURING DRILLING
- REF. REFUSAL

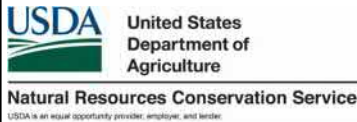
- NOTES / REVISIONS
- HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83). VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 - ALL ELEVATION DATA ON THIS DRAWING THAT WAS OBTAINED FROM THE NRCS 1969 AS-BUILT DRAWINGS HAS BEEN CONVERTED FROM THE NATIONAL GEODETIC DATUM OF 1929 (NGVD29) TO NAVD88. ELEVATION 0.0 IN NGVD29 IS EQUAL TO ELEVATION -0.3' IN NAVD88.

ISSUED FOR	DATE	REV.	REVISION DESCRIPTION	MADE BY	CHKD BY	DATE
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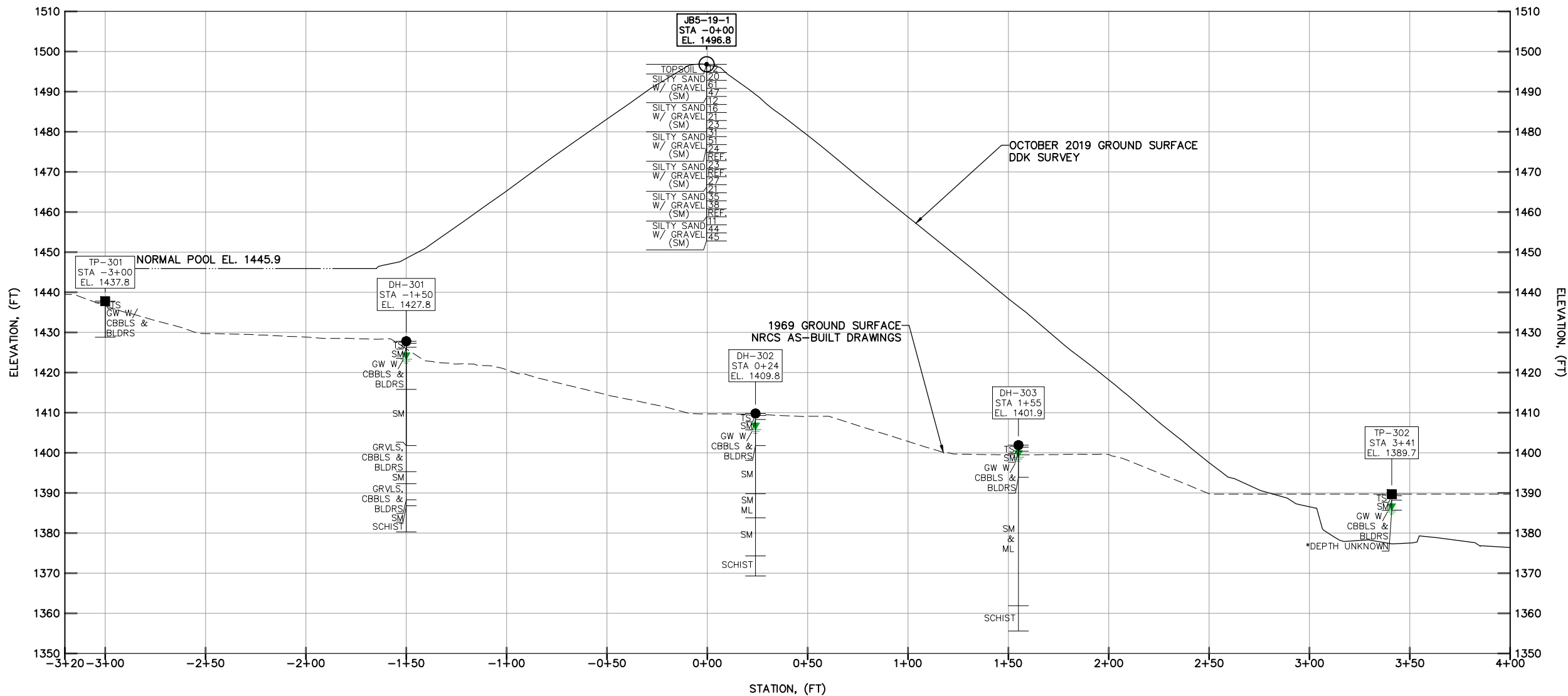
JEWELL BROOK WATERSHED
LUDLOW, WINDSOR COUNTY, VERMONT

JEWELL BROOK SITE NO. 5
FIGURE 5
EMBANKMENT PROFILE

SCALE: AS SHOWN
FIGURE 5
REV 0

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NOTES / REVISIONS

- HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83). VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- ALL ELEVATION DATA ON THIS DRAWING THAT WAS OBTAINED FROM THE NRCS 1969 AS-BUILT DRAWINGS HAS BEEN CONVERTED FROM THE NATIONAL GEODETIC DATUM OF 1929 (NGVD29) TO NAVD88. ELEVATION 0.0 IN NGVD29 IS EQUAL TO ELEVATION -0.3' IN NAVD88.
- BORING AND TEST PIT LOCATIONS AND LITHOLOGY FROM THE NRCS 1969 AS-BUILT DRAWINGS ARE APPROXIMATE.

SEAL:



JEWELL BROOK WATERSHED
LUDLOW, WINDSOR COUNTY, VERMONT

JEWELL BROOK SITE NO. 5
FIGURE 6
EMBANKMENT SECTION

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DATE: 6/12/2020

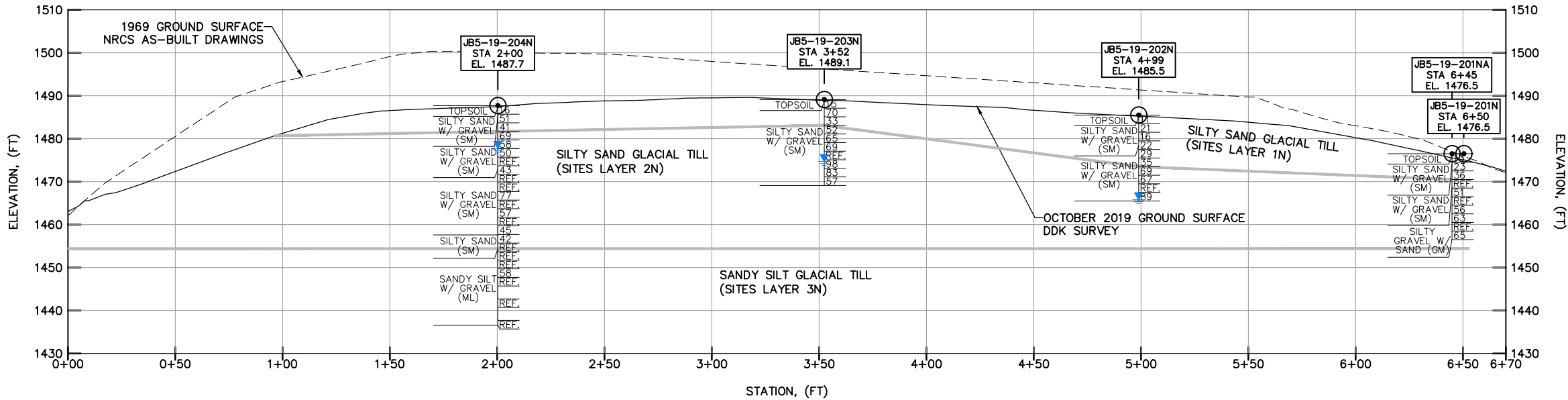
SCALE: AS SHOWN

FIGURE 6

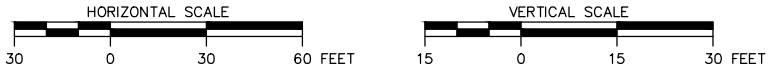
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LEFT AUXILIARY SPILLWAY PROFILE



LEGEND

- JB5-19-X TEST BORING COMPLETED BY DDK (2019)
- SOLID LINE EXISTING GROUND SURFACE (OCTOBER 2019 DDK SURVEY)
- DASHED LINE PRE-CONSTRUCTION GROUND SURFACE (NRCS 1969 AS-BUILT DRAWINGS)
- THICK SOLID LINE SITES ANALYSIS BOUNDARIES
- BLUE TRIANGLE WATER LEVEL IN BORING RECORDED BY DDK DURING DRILLING
- REF. REFUSAL

NOTES / REVISIONS
1. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83). VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. ALL ELEVATION DATA ON THIS DRAWING THAT WAS OBTAINED FROM THE NRCS 1969 AS-BUILT DRAWINGS HAS BEEN CONVERTED FROM THE NATIONAL GEODETIC DATUM OF 1929 (NGVD29) TO NAVD88. ELEVATION 0.0 IN NGVD29 IS EQUAL TO ELEVATION -0.3' IN NAVD88.

SEAL:



**JEWELL BROOK WATERSHED
LUDLOW, WINDSOR COUNTY, VERMONT**

JEWELL BROOK SITE NO. 5
FIGURE 7
LEFT AUXILIARY SPILLWAY PROFILE

ISSUED FOR	DATE	REV.	REVISION DESCRIPTION	MADE BY	CHKD BY	DATE
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PROJECT NUMBER: 172719-17

FILE NAME: 5-8 - Profiles and Sections.dwg

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CHECKED BY: AA

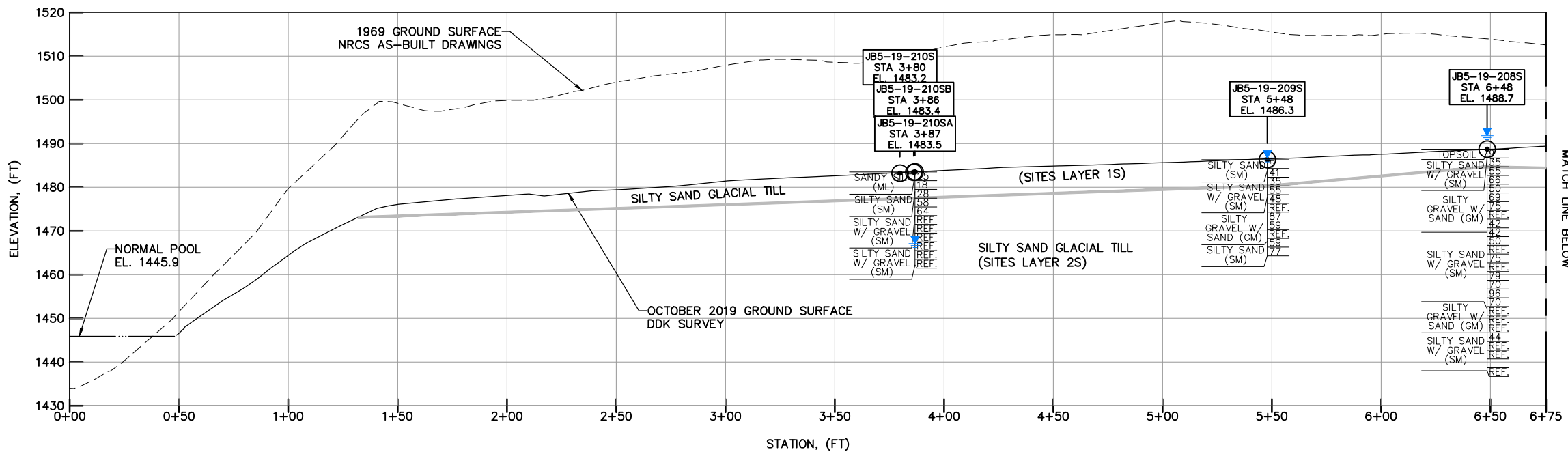
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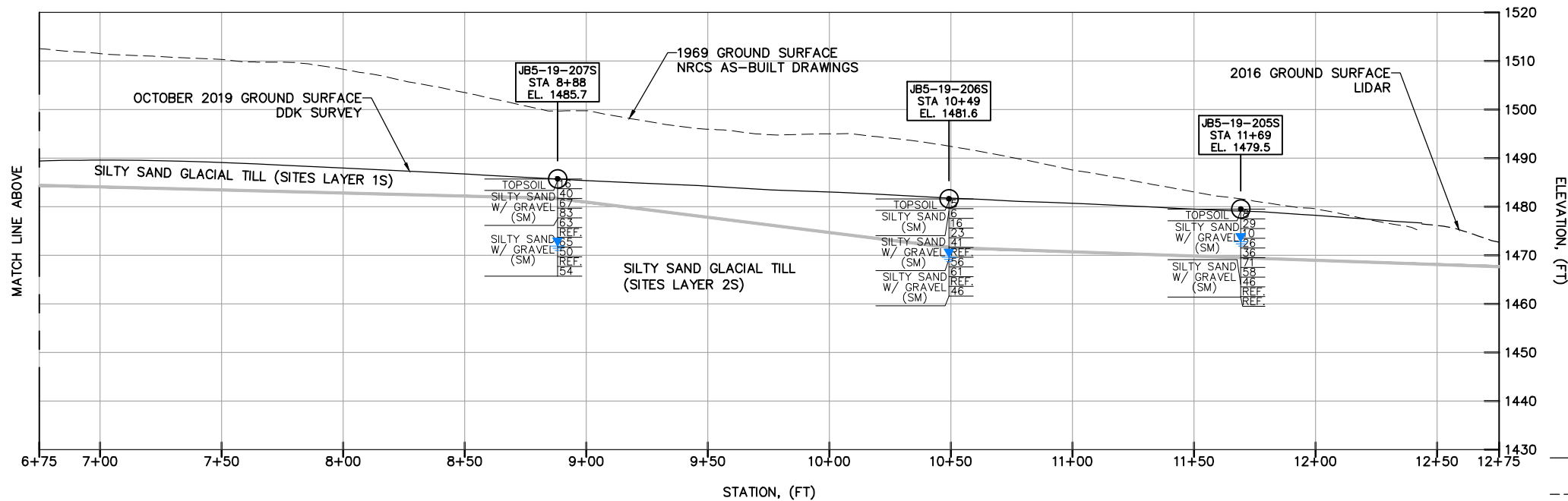
SCALE: AS SHOWN

FIGURE 7

REV 0



RIGHT AUXILIARY SPILLWAY PROFILE (STA 0+00 TO 6+75)



RIGHT AUXILIARY SPILLWAY PROFILE (STA 6+75 TO 12+75)



LEGEND

- JB5-19-X TEST BORING COMPLETED BY DDK (2019)
- EXISTING GROUND SURFACE (OCTOBER 2019 DDK SURVEY)
- EXISTING GROUND SURFACE (2016 LIDAR)
- PRE-CONSTRUCTION GROUND SURFACE (NRCS 1969 AS-BUILT DRAWINGS)
- SITES ANALYSIS BOUNDARIES
- WATER LEVEL IN BORING RECORDED BY DDK DURING DRILLING
- REF. REFUSAL

- NOTES / REVISIONS**
- HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83). VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 - ALL ELEVATION DATA ON THIS DRAWING THAT WAS OBTAINED FROM THE NRCS 1969 AS-BUILT DRAWINGS HAS BEEN CONVERTED FROM THE NATIONAL GEODETIC DATUM OF 1929 (NGVD29) TO NAVD88. ELEVATION 0.0 IN NGVD29 IS EQUAL TO ELEVATION -0.3' IN NAVD88.
 - EXISTING GROUND SURFACE OUTSIDE OF DDK SURVEY OBTAINED FROM: VT CENTER FOR GEOGRAPHIC INFORMATION, VERMONT OPEN GEODATA PORTAL. DATE OF LIDAR SURVEY: 2016

ISSUED FOR	DATE	REV.	REVISION DESCRIPTION	MADE BY	CHKD BY	DATE
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PROJECT NUMBER: 172719-17
FILE NAME: 5-8 - Profiles and Sections.dwg



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DATE: 6/12/2020

JEWELL BROOK WATERSHED
LUDLOW, WINDSOR COUNTY, VERMONT

JEWELL BROOK SITE NO. 5
FIGURE 8
RIGHT AUXILIARY SPILLWAY PROFILE

SCALE: AS SHOWN
FIGURE 8
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NOTES / REVISIONS						
REFERENCE: ANSS COMPREHENSIVE EARTHQUAKE CATALOG (COMCAT), UNITED STATES GEOLOGICAL SURVEY, USGS EARTHQUAKE HAZARDS PROGRAM, ACCESSED 1/14/2020.						
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		3				
		2				
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ISSUED FOR	DATE	REV.	REVISION DESCRIPTION	MADE BY	CHKD BY	DATE

SEAL:

PROJECT NUMBER: 172719-17
FILE NAME: 9 - Earthquake and Fault Map.dwg

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DATE: 6/10/2020
DATE: 6/12/2020

JEWELL BROOK WATERSHED
LUDLOW, WINDSOR COUNTY, VERMONT

JEWELL BROOK SITE NO. 5
FIGURE 9
EARTHQUAKE AND FAULT MAP

SCALE: AS SHOWN
FIGURE 9
REV 0

APPENDIX A
BORING LOGS

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-1**

PAGE 1 OF 2

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**DATE STARTED:** 11/04/2019**DRILLING CONTRACTOR:** NEBC**DATE COMPLETED:** 11/04/2019**DRILLER:** Manlea Thompson**LOGGED BY:** QDW**DRILLING METHOD:** 3-1/4" ID HSA, 2" OD SBS (8")**CHECKED BY:** AA**CORING METHOD:** N/A**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1496.8 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,847.88**END OF DRILLING:** Dry**EASTING:** 1,581,130.21**AFTER DRILLING:** N/A

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0			0.2' Topsoil , Brown, Moist								
	SpT-1		Silty Sand, (SM) , With Gravel, Fine To Medium, Compact To Dense, Brown To Brownish Gray, Dry, [Embankment Fill], (0-30% Gravel), (0-15% Cobbles)		1.8 (90)	4-5-7-9 (12)					
	SpT-2		2.0'-2.3': Sand (SP)		1.6 (80)	9-9-11-10 (20)					
5	SpT-3		4.6'-4.9': Cobble		1.2 (60)	8-50-11-8 (61)					
	SpT-4		7.0'-8.0': Multiple Cobbles		1.2 (60)	10-10-37-34 (47)					
	SpT-5		Silty Sand, (SM) , With Gravel, Fine, Compact, Olive Gray And Brown, Dry To Moist, [Embankment Fill], (0-20% Gravel)		0.5 (25)	5-6-6-11 (12)					
10	SpT-6			SM	1.7 (85)	7-9-7-10 (16)					
	SpT-7				1.8 (90)	12-11-10-11 (21)					
15	SpT-8				1.2 (60)	9-8-15-16 (23)					
	SpT-9		16.8'		1.7 (85)	16-18-13-17 (31)					
	SpT-10		Silty Sand, (SM) , With Gravel, Fine To Medium, Dense, Brown To Brownish Gray, Dry, [Embankment Fill], (15-40% Gravel)		1.3 (65)	17-19-32-17 (51)					
20	SpT-11		20.6'		1.9 (95)	10-11-13-12 (24)					
	SpT-12		Silty Sand, (SM) , With Gravel, Fine, Compact, Olive Gray To Grayish Brown, Dry, [Embankment Fill], (10-30% Gravel), (0-20% Cobbles)		0.6 (75)	19-50/0.3'					
			22.8'-23.6': Multiple Cobbles								
25	SpT-13			SM	1.8 (90)	11-9-14-13 (23)					
	SpT-14				0.9 (100)	17-50/0.4'					
			26.9'-27.4': Cobble								
30	SpT-15				0.9 (45)	6-14-13-19 (27)					
	SpT-16		30.6'		0.9 (45)	2-8-13-11 (21)					
	SpT-17		Silty Sand, (SM) , With Gravel, Fine, Compact To Dense, Grayish Brown To Orangeish Brown, Dry To Moist, [Embankment Fill], (10-30% Gravel)		2.0 (100)	7-19-16-21 (35)					
35				SM	2.0	9-15-23-24					

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

(Continued Next Page)

DDK ENGINEERING

(a small business joint venture)

28 North Main Street

Randolph, VT 05060

VISUAL CLASSIFICATION LOG**JB5-19-1**

PAGE 2 OF 2

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**DATE STARTED:** 11/04/2019 **DRILLING CONTRACTOR:** NEBC**DATE COMPLETED:** 11/04/2019 **DRILLER:** Manlea Thompson**LOGGED BY:** QDW**DRILLING METHOD:** 3-1/4" ID HSA, 2" OD SBS (8")**CHECKED BY:** AA**CORING METHOD:** N/A**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1496.8 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,847.88**END OF DRILLING:** Dry**EASTING:** 1,581,130.21**AFTER DRILLING:** N/A

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
35								PL	MC	LL	
								20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
35	SpT-18		Silty Sand, (SM) , With Gravel, Fine, Compact To Dense, Grayish Brown To Orangeish Brown, Dry To Moist, [Embankment Fill], (10-30% Gravel) Perched Water At ~36.5'		(100)	(38)					
	SpT-19				0.7 (54)	22-28-50/0.3'					
			38.0	1458.8							
40	SpT-20		Silty Sand, (SM) , With Gravel, Fine, Dense, Olive Gray, Dry To Moist, [Embankment Fill], (0-20% Gravel) 38.0'-39.0' & 40.0'-40.5': Drilling Rods Dropped From Above And Fell Through Sample Zones	SM	1.3 (65)	0-0-11-13 (11)					
	SpT-21				1.4 (70)	0-20-24-21 (44)					
	SpT-22		44.0	1452.8	0.8 (40)	8-22-23-31 (45)					
			Augers Out Of Plumb								
45			Bottom of Boring at 44.0 feet. 100 Gal. Grout Used								
50											
55											
60											
65											
70											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-2**

PAGE 1 OF 1

DATE STARTED: 11/06/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 11/06/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 4" Casing, 2" OD SBS (4.5")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1496.8 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,986.98**END OF DRILLING:** N/A**EASTING:** 1,581,236.50**AFTER DRILLING:** N/A

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0			0.3' Topsoil , Dark Brown, Moist								
	SpT-1		Silty Sand, (SM) , With Gravel, Fine To Medium, Very Loose To Compact, Brown To Orangeish Brown, Dry To Moist, [Embankment Fill], (10-20% Gravel), (<0.5' Thick Layers Of Medium To Coarse Sand With Gravel Throughout)	SM	1.4 (70)	6-11-10-9 (21)					
	SpT-2				1.0 (50)	9-6-5-5 (11)					
5	SpT-3				0.9 (45)	2-2-2-6 (4)					
	SpT-4				0.7 (35)	4-2-3-4 (5)					
	SpT-5		Silty Sand, (SM) , With Gravel, Fine, Compact, Olive Gray And Orangeish Brown, Dry To Moist, [Embankment Fill], (10-20% Gravel)	SM	0.5 (25)	2-5-6-6 (11)					
10	SpT-6				0.7 (35)	28-23-13-10 (36)					
	SpT-7				1.2 (60)	9-11-12-12 (23)					
	SpT-8				0.0 (0)	50/0.3'					
15			15.0								
			Casing Refusal at 15 feet. Bottom of Boring at 15.0 feet. 15 Gal. Grout Used								
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-2A**

PAGE 1 OF 1

DATE STARTED: 11/06/2019 DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 11/06/2019 DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA (8")

CHECKED BY: AA

CORING METHOD: N/A

LOCATION:

GROUND WATER LEVELS:

ELEVATION: 1496.9 ft

TIME OF DRILLING: N/A

NORTHING: 320,980.95

END OF DRILLING: Dry

EASTING: 1,581,231.17

AFTER DRILLING: N/A

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
0								20	40	60	80
5											
10			Augers Out Of Plumb After Encountering Cobbles/Boulders Between 7.0' and 9.0'								
15			Bottom of Boring at 10.0 feet. 20 Gal. Grout Used								
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-2B**

PAGE 1 OF 1

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**DATE STARTED:** 11/07/2019 **DRILLING CONTRACTOR:** NEBC**DATE COMPLETED:** 11/07/2019 **DRILLER:** Manlea Thompson**LOGGED BY:** QDW**DRILLING METHOD:** 4" Casing (4.5")**CHECKED BY:** AA**CORING METHOD:** NX (Cuttings Rem. w/Water)**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1496.8 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,992.98**END OF DRILLING:** N/A**EASTING:** 1,581,239.45**AFTER DRILLING:** N/A

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
0								20	40	60	80
5											
10											
			11.3 Advanced Casing To 11.3' Without Sampling	1485.5							
	R-1		12.2 Quartzite Boulder	1484.6	0.9 (100)						
			Casing Out Of Plumb After Advancing Through Boulder								
15			Bottom of Boring at 13.0 feet. 15 Gal. Grout Used								
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-3**

PAGE 1 OF 1

DATE STARTED: 11/05/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 11/05/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 4" Casing, 2" OD SBS (4.5")

CHECKED BY: AA

CORING METHOD: N/A

LOCATION:

GROUND WATER LEVELS:

ELEVATION: 1496.3 ft

TIME OF DRILLING: N/A

NORTHING: 321,106.50

END OF DRILLING: N/A

EASTING: 1,581,326.14

AFTER DRILLING: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
								20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0			0.2' Topsoil , Dark Brown, Moist								
	SpT-1		Silty Sand, (SM) , With Gravel, Fine, Compact, Brown, Dry To Moist, [Embankment Fill], (10-25% Gravel)		1.6 (80)	3-10-9-8 (19)					
	SpT-2		SpT-2: Wood Fibers		1.1 (55)	8-8-17-16 (25)					
5	SpT-3			SM	1.3 (65)	23-7-7-6 (14)					
	SpT-4				0.7 (35)	5-7-7-5 (14)					
	SpT-5		8.6' Silty Sand, (SM) , With Gravel, Fine, Compact To Dense, Olive Gray, Moist, [Embankment Fill], (10-35% Gravel)		1.1 (55)	8-4-5-12 (9)					
10	SpT-6			SM	1.0 (50)	22-10-16-24 (26)					
	SpT-7		12.0'-12.6': Brown		1.0 (50)	20-20-19-19 (39)					
			14.0' Casing Out Of Plumb								
15			Bottom of Boring at 14.0 feet. 10 Gal. Grout Used								
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-4**

PAGE 1 OF 1

DATE STARTED: 11/06/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 11/06/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

LOCATION:

GROUND WATER LEVELS:

ELEVATION: 1496.9 ft

TIME OF DRILLING: N/A

NORTHING: 321,036.60

END OF DRILLING: Dry

EASTING: 1,581,271.82

AFTER DRILLING: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
								20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0			0.1' Topsoil , Dark Brown, Dry								
	SpT-1		Silty Sand, (SM) , With Gravel, Fine, Compact, Brown, Dry To Moist, [Embankment Fill], (10-30% Gravel)		0.2 (10)	5-9-9-9 (18)					
	SpT-2				0.1 (5)	10-15-13-12 (28)					
5	SpT-3			SM	1.4 (70)	5-6-6-12 (12)					
	SpT-4				1.5 (75)	8-10-9-9 (19)					
	SpT-5		8.7' Silty Sand, (SM) , With Gravel, Fine, Loose, Olive Gray And Orangeish Brown, Dry To Moist, [Embankment Fill], (0-20% Gravel)	SM	1.3 (65)	5-5-5-4 (10)					
10	SpT-6		11.4'-11.9': Cobble		1.2 (86)	4-12-50/0.4'					
			12.0' Augers Out Of Plumb After Encountering Cobble								
			1488.2								
			1484.9								
			Bottom of Boring at 12.0 feet. 25 Gal. Grout Used								
15											
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-201N**

PAGE 1 OF 1

DATE STARTED: 10/29/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/29/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1476.5 ft**TIME OF DRILLING:** N/A**NORTHING:** 321,084.49▼ **END OF DRILLING:** Dry**EASTING:** 1,581,737.31▼ **65hrs AFTER DRILLING:** 0.5 ft (Overtopped Pipe)

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0											
	SpT-1		0.4' Topsoil , Brown, Moist	SM	1.3 (65)	2-5-8-10 (13)					
	SpT-2		2.3' Silty Sand (SM) , With Gravel, Fine, Compact, Orangeish Brown To Brown, Moist, (0-30% Gravel)	SM	1.6 (80)	12-10-13-11 (23)					
5	SpT-3		Silty Sand (SM) , With Gravel, Fine, Compact To Dense, Gray To Grayish Brown, Dry To Moist, [Glacial Till], (20-40% Gravel)		1.4 (70)	12-15-21-17 (36)					
	SpT-4		4.0'-7.2': Multiple Cobbles		0.3 (100)	50/0.3'					
			7.9' Cobble/Boulder Encountered At 7.2'								
10			Auger Refusal at 7.9 feet. Bottom of Boring at 7.9 feet. 20 Gal. Grout Used								
15											
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-201NA**

PAGE 1 OF 1

DATE STARTED: 10/29/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/29/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1476.5 ft**TIME OF DRILLING:** N/A**NORTHING:** 321,087.78▼ **END OF DRILLING:** Dry**EASTING:** 1,581,732.56▼ **64hrs AFTER DRILLING:** 0.2 ft (Overtopped Pipe)

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
0								20	40	60	80
5											
8.0			Advanced Augers To 8.0' Without Sampling								
10	SpT-1		Silty Gravel, (GM) , With Sand, Fine To Coarse, Subrounded To Subangular, Very Dense, Olive Gray To Light Brown, Dry To Moist, [Glacial Till], (10-50% Gravel), (0-30% Cobbles)	SM	1.1 (55)	13-18-33-24 (51)					
	SpT-2				1.4 (100)	12-19-50/0.4'					
	SpT-3				2.0 (100)	10-32-24-31 (56)					
15	SpT-4				0.7 (35)	48-28-35-36 (63)					
	SpT-5				0.4 (57)	50-50/0.2'					
20	SpT-6			SM	2.0 (100)	15-34-31-31 (65)					
20.0			Bottom of Boring at 20.0 feet. 25 Gal. Grout Used								
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-202N**

PAGE 1 OF 1

DATE STARTED: 10/30/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/29/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

LOCATION:

GROUND WATER LEVELS:

ELEVATION: 1485.5 ft

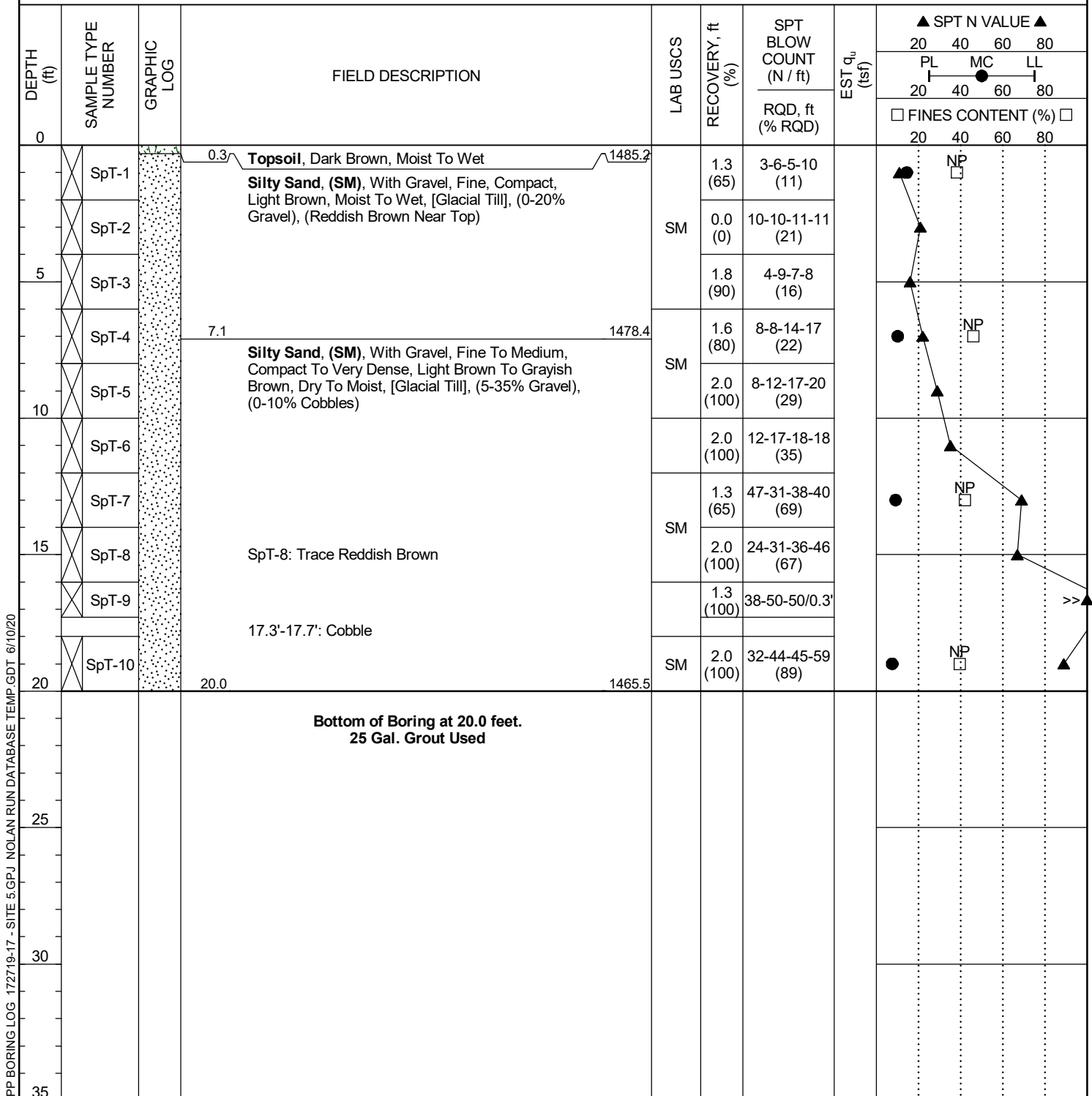
TIME OF DRILLING: N/A

NORTHING: 321,168.86

END OF DRILLING: Dry

EASTING: 1,581,602.03

47hrs AFTER DRILLING: 19.7 ft / El. 1465.8 ft

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**Notes:** Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DDK ENGINEERING

(a small business joint venture)

28 North Main Street

Randolph, VT 05060

VISUAL CLASSIFICATION LOG**JB5-19-203N**

PAGE 1 OF 1

DATE STARTED: 10/30/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/30/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1489.1 ft**TIME OF DRILLING:** N/A**NORTHING:** 321,314.57▼ **END OF DRILLING:** Dry**EASTING:** 1,581,547.86▼ **28hrs AFTER DRILLING:** 14.4 ft / El. 1474.7 ft

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0			0.4' Topsoil , Dark Brown, Moist								
	SpT-1		Silty Sand, (SM) , With Gravel, Fine To Medium, Dense To Very Dense, Light Brown To Orangeish Brown, Dry To Moist, [Glacial Till], (5-35% Gravel), (0-10% Cobbles), (Less Silt With Depth)	SM	1.7 (85)	1-5-10-22 (15)		●	▲	NP	
	SpT-2				1.6 (80)	20-33-37-46 (70)					
5	SpT-3		Perched Water At ~4.5'		1.8 (90)	21-16-17-18 (33)		▲			
	SpT-4				1.7 (85)	20-23-29-34 (52)		●	NP		
10	SpT-5			SM	1.6 (80)	21-31-34-41 (65)					
	SpT-6				1.7 (85)	25-32-37-35 (69)		●	NP		
	SpT-7				1.4 (100)	41-44-50/0.4'					>>
15	SpT-8				1.2 (60)	22-48-50-45 (98)					
	SpT-9			SM	1.4 (70)	28-42-41-41 (83)		●	NP		
	SpT-10				1.2 (60)	11-24-33-33 (57)					
20			20.0								
			Bottom of Boring at 20.0 feet. 25 Gal. Grout Used								
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-204N**

PAGE 1 OF 2

DATE STARTED: 10/30/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/31/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1487.7 ft

TIME OF DRILLING: Dry

NORTHING: 321,346.85

END OF DRILLING: 9.9 ft / El. 1477.8 ft

EASTING: 1,581,408.51**AFTER DRILLING:** N/A

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0											
	SpT-1		0.4' Topsoil , Dark Brown, Moist To Wet	SM	1.7 (85)	1-6-10-11 (16)			NP		
	SpT-2		2.3' Silty Sand (SM) , With Gravel, Fine, Compact, Dark Brown To Reddish Brown, Moist, (10-20% Gravel)		2.0 (100)	9-25-26-22 (51)			NP		
5	SpT-3		Silty Sand (SM) , With Gravel, Fine, Dense To Very Dense, Light Brown To Grayish Brown, Dry To Moist, [Glacial Till], (5-25% Gravel)	SM	2.0 (100)	11-18-23-23 (41)					
	SpT-4				2.0 (100)	26-34-35-40 (69)					
	SpT-5				1.9 (95)	15-30-28-22 (58)					
10	SpT-6			SM	2.0 (100)	12-21-29-46 (50)			NP		
	SpT-7		Perched Water At ~11'		0.8 (89)	39-50/0.4'					>>
15	SpT-8		14.9' Silty Sand (SM) , With Gravel, Fine, Dense To Very Dense, Brownish Gray To Olive Brown, Dry To Moist, [Glacial Till], (0-30% Gravel), (0-30% Cobbles/Boulders)	SM	2.0 (100)	16-22-21-23 (43)			NP		
	SpT-9		17.7'-18.5': Cobble		1.5 (83)	25-36-35- 50/0.3'					>>
20	SpT-10				1.2 (86)	19-25-50/0.4'					>>
	SpT-11			SM	1.7 (85)	22-41-36-36 (77)			NP		
	SpT-12		22.9'-23.2': Cobble		0.6 (67)	29-50/0.4'					>>
25	SpT-13				1.2 (60)	17-28-29-47 (57)					>>
	SpT-14		26.4'-26.7': Cobble		0.3 (75)	50/0.4'					>>
	SpT-15		28.5'-29.5': Varved Silt	ML	1.2 (67)	27-21-24- 50/0.3'			NP		>>
30	SpT-16		30.1' Silty Sand (SM) , Fine, Dense, Tan To Light Brown, Moist To Wet	sm	1.3 (87)	14-20-22 (42)					
	SpT-17		33.3'		1.4 (100)	19-25-50/0.4'					>>
35	SpT-18		33.4'-33.8': Cobble		1.4	26-27-50/0.4'					>>

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

(Continued Next Page)

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-204N**

PAGE 2 OF 2

DATE STARTED: 10/30/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/31/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

LOCATION:

GROUND WATER LEVELS:

ELEVATION: 1487.7 ft

TIME OF DRILLING: Dry

NORTHING: 321,346.85

END OF DRILLING: 9.9 ft / El. 1477.8 ft

EASTING: 1,581,408.51

AFTER DRILLING: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
35								PL	MC	LL	
								20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
35					(100)						
	SpT-19		Sandy Silt, (ML), With Gravel, Non Plastic, Very Dense, Light Brown To Grayish Brown, Moist To Wet, [Glacial Till], (0-30% Gravel), (0-20% Cobbles) 35.4'-36.0': Cobble 40.7'-44.0': Multiple Cobbles		0.7 (88)	62-50/0.3'					
40	SpT-20			SM	1.8 (90)	27-23-35-50 (58)					
	SpT-21				0.7 (100)	30-50/0.2'					
45											
	SpT-22			ML	1.2 (86)	16-45-50/0.4'					
50											
	SpT-23			ML	1.0 (91)	24-45-50/0.1'					
51.1			Auger Refusal at 18 feet. Bottom of Boring at 51.1 feet. 45 Gal. Grout Used								
55											
60											
65											
70											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street

Randolph, VT 05060

VISUAL CLASSIFICATION LOG**JB5-19-205S**

PAGE 1 OF 1

DATE STARTED: 10/21/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/21/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

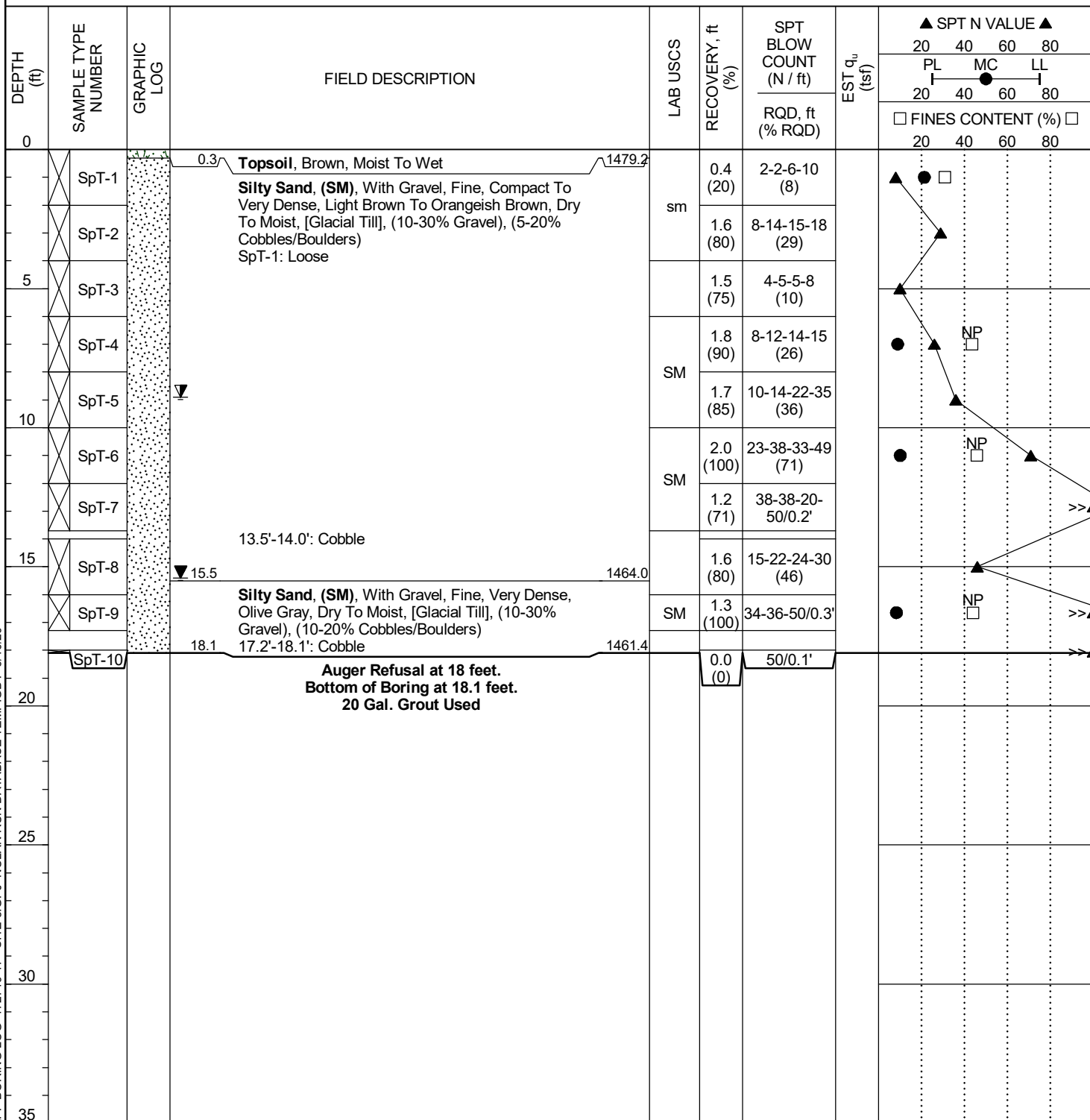
DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1479.5 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,341.41▼ **END OF DRILLING:** 15.4 ft / El. 1464.1 ft**EASTING:** 1,581,452.36▼ **66hrs AFTER DRILLING:** 6.7 ft / El. 1472.8 ft

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/2020



Notes: Layer USCS Classification Based On ASTM D2487
 Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-206S**

PAGE 1 OF 1

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**DATE STARTED:** 10/29/2019**DRILLING CONTRACTOR:** NEBC**DATE COMPLETED:** 10/29/2019**DRILLER:** Manlea Thompson**LOGGED BY:** QDW**DRILLING METHOD:** 3-1/4" ID HSA, 2" OD SBS (8")**CHECKED BY:** AA**CORING METHOD:** N/A**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1481.6 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,465.92**END OF DRILLING:** Dry**EASTING:** 1,581,358.09**72hrs AFTER DRILLING:** 12.0 ft / El. 1469.6 ft

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0											
	SpT-1		0.5' Topsoil , Dark Brown, Moist To Wet	SM	1.3 (65)	1-2-3-2 (5)				NP	
	SpT-2		2.5' Silty Sand, (SM) , Fine To Medium, Loose, Tan To Brown, Moist To Wet		1.1 (55)	2-2-4-5 (6)					
5	SpT-3		Silty Sand, (SM) , With Gravel, Fine, Compact To Dense, Brown To Grayish Brown, Moist, [Glacial Till], (10-30% Gravel), (0-20% Cobbles)		1.1 (55)	3-11-5-8 (16)					
	SpT-4			SM	1.8 (90)	9-9-14-20 (23)				NP	
	SpT-5				2.0 (100)	13-20-21-47 (41)					
10	SpT-6		9.9'-10.2': Cobble 10.7'-11.0': Cobble		0.2 (67)	50/0.3'					>>
	SpT-7		Silty Sand, (SM) , With Gravel, Fine To Medium, Dense To Very Dense, Grayish Olive To Brownish Gray, Dry To Moist, [Glacial Till], (10-40% Gravel), (0-30% Cobbles/Boulders)	SM	1.9 (95)	14-26-30-38 (56)				NP	
15	SpT-8				1.8 (100)	19-25-36- 50/0.3'					>>
	SpT-9		15.8'-17.0': Multiple Cobbles		0.0 (0)	50/0.1'					>>
20	SpT-10			SM	2.0 (100)	17-19-27-38 (46)				NP	
20.0			Bottom of Boring at 20.0 feet. 25 Gal. Grout Used								
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street

Randolph, VT 05060

VISUAL CLASSIFICATION LOG**JB5-19-207S**

PAGE 1 OF 1

DATE STARTED: 10/21/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/22/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****ELEVATION:** 1485.7 ft**NORTHING:** 320,397.27**EASTING:** 1,581,176.85**GROUND WATER LEVELS:**

TIME OF DRILLING: Dry

END OF DRILLING: Dry

49hrs AFTER DRILLING: 13.8 ft / El. 1471.9 ft

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0			0.3' Topsoil , Dark Brown, Wet								
	SpT-1		Silty Sand, (SM) , With Gravel, Fine, Compact To Very Dense, Gray To Olive Brown, Moist, [Glacial Till], (10-30% Gravel), (0-10% Cobbles)	SM	1.0 (50)	2-5-11-20 (16)					
	SpT-2				1.5 (75)	24-17-23-29 (40)					
5	SpT-3				1.6 (80)	15-38-29-20 (67)					
	SpT-4		Silty Sand, (SM) , With Gravel, Fine, Very Dense, Gray To Brownish Gray, Dry To Moist, [Glacial Till], (10-40% Gravel), (10-20% Cobbles)	SM	1.5 (75)	40-42-41-37 (83)					
	SpT-5				2.0 (100)	12-26-37-36 (63)					
10	SpT-6			SM	0.8 (89)	22-50/0.4'					
	SpT-7				1.9 (95)	13-27-38-39 (65)					
15	SpT-8		10.7'-11.0': Cobble	SM	2.0 (100)	8-23-27-50 (50)					
	SpT-9				1.4 (100)	38-36-50/0.4'					
				SM							
	SpT-10		17.1'-17.7': Cobble		1.2 (60)	15-20-34-41 (54)					
20			20.0								
			Bottom of Boring at 20.0 feet. 35 Gal. Grout Used								
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-208S**

PAGE 1 OF 2

DATE STARTED: 10/23/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/28/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1488.7 ft

TIME OF DRILLING: -1.1 ft / El. 1489.8 ft

NORTHING: 320,552.14**END OF DRILLING:** N/A**EASTING:** 1,580,987.41

AFTER DRILLING: -3.1 ft / El. 1491.8 ft

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0											
	SpT-1		0.4' Topsoil , Brown, Moist To Wet	sm	1.2 (60)	1-2-7-7 (9)					
	SpT-2		1.8' Silty Sand (SM) , With Gravel, Fine To Medium, Loose, Reddish Brown, Moist, (10-30% Gravel)		1.5 (75)	11-18-17-29 (35)					
5	SpT-3		Silty Gravel (GM) , With Sand, Fine To Coarse, Dense To Very Dense, Olive Gray To Grayish Brown, Dry To Moist, [Glacial Till], (20-50% Gravel), (5-25% Cobbles) Top Of SpT-3: Wet		1.0 (50)	15-31-24-75 (55)					
	SpT-4			GM	1.5 (75)	22-21-45-22 (66)			NP		
10	SpT-5		11.0'-12.0': Multiple Cobbles		1.6 (80)	14-25-25-24 (50)					
	SpT-6			GM	1.3 (65)	12-21-48-49 (69)			NP		
	SpT-7		14.0'-14.6': Cobble		1.5 (75)	27-30-45-44 (75)					
15	SpT-8				0.0 (0)	50/0.1'					>>
	SpT-9		19.0' Silty Sand (SM) , With Gravel, Fine, Very Dense, Olive Gray To Brownish Gray, Moist To Wet, [Glacial Till], (10-40% Gravel), (0-20% Cobbles)		0.3 (15)	10-20-22-29 (42)					
20	SpT-10			SM	1.0 (50)	25-23-19-20 (42)			NP		
	SpT-11			SM	1.4 (70)	7-22-28-32 (50)			NP		
	SpT-12				0.3 (75)	50/0.4'					>>
25	SpT-13				0.7 (35)	11-26-49-56 (75)					
	SpT-14				0.4 (100)	50/0.4'					>>
30	SpT-15		SpT-16: Less Silt	SM	1.6 (80)	14-32-47-50 (79)			NP		
	SpT-16				0.9 (45)	18-37-33-38 (70)					
	SpT-17			SM	1.8 (95)	26-46-50- 50/0.4'			NP		>>
35					1.5	38-29-41-45					

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

(Continued Next Page)

DDK ENGINEERING

(a small business joint venture)

28 North Main Street

Randolph, VT 05060

VISUAL CLASSIFICATION LOG**JB5-19-208S**

PAGE 2 OF 2

DATE STARTED: 10/23/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/28/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1488.7 ft

TIME OF DRILLING: -1.1 ft / El. 1489.8 ft

NORTHING: 320,552.14**END OF DRILLING:** N/A**EASTING:** 1,580,987.41

AFTER DRILLING: -3.1 ft / El. 1491.8 ft

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q _u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
35	SpT-18				(75)	(70)					
	SpT-19		36.5		0.8 (100)	38-50/0.3'					>>▲
	SpT-20		Silty Gravel, (GM) , With Sand, Fine To Coarse, Subrounded, Dense To Very Dense, Olive Gray To Brownish Gray, Moist To Wet, [Glacial Till], (35-50% Gravel), (10-20% Cobbles) 38.4'-38.9': Cobble		0.4 (100)	50/0.4'					>>▲
40	SpT-21		40.9'-41.3': Cobble	GM	0.8 (89)	18-50/0.4'		●	NP		>>▲
	SpT-22		Silty Sand, (SM) , With Gravel, Fine To Medium, Very Dense, Olive Gray To Brownish Gray, Moist To Wet, [Glacial Till], (0-20% Gravel)	SM	2.0 (100)	12-22-22-36 (44)		●	NP		>>▲
45	SpT-23		44.5'-44.7': Sandy Clay		0.7 (100)	16-50/0.2'					>>▲
	SpT-24		48.0'-49.4': Boulder Crimped Casing While Advancing Through Boulder	SM	1.1 (79)	25-46-50/0.4'		●	NP		>>▲
50	SpT-25		50.7		0.7 (100)	46-50/0.2'					>>▲
			Auger Refusal at 14 feet. Bottom of Boring at 50.7 feet. 45 Gal. Grout Used								
55											
60											
65											
70											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-209S**

PAGE 1 OF 1

DATE STARTED: 10/22/2019

DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/22/2019

DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA, 2" OD SBS (8")

CHECKED BY: AA

CORING METHOD: N/A

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1486.3 ft

TIME OF DRILLING: 13.3 ft / El. 1473.0 ft

NORTHING: 320,545.77

END OF DRILLING: 6.8 ft / El. 1479.5 ft

EASTING: 1,580,846.06

46hrs AFTER DRILLING: -0.4 ft / El. 1486.7 ft

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
						RQD, ft (% RQD)		20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0											
	SpT-1		Silty Sand, (SM) , Fine, Loose, Brown, Moist To Wet, [Topsoil], (0-15% Gravel), (Roots Throughout)	SM	1.2 (60)	1-2-3-4 (5)					
			2.5								
	SpT-2		Silty Sand, (SM) , With Gravel, Fine, Dense To Very Dense, Gray To Brownish Gray, Moist, [Glacial Till], (10-30% Gravel)		1.5 (75)	5-18-23-20 (41)					
5	SpT-3				1.5 (75)	12-16-19-22 (35)					
	SpT-4			SM	1.7 (85)	24-23-32-26 (55)					
			8.5								
	SpT-5		Silty Gravel, (GM) , With Sand, Dense To Very Dense, Gray To Brownish Gray, Dry To Moist, [Glacial Till], (25-60% Gravel)		1.0 (50)	21-20-28-35 (48)					
10	SpT-6		10.0'-11.0': Boulder		0.0 (0)	50/0.1'					
			11.9'-12.2': Cobble								
	SpT-7		12.7'-13.1': Cobble		1.2 (67)	6-58-29- 21/0.3'					
15	SpT-8			SM	1.5 (75)	6-19-40-57 (59)					
	SpT-9				0.1 (33)	50/0.3'					
			18.7								
	SpT-10		SpT-10: More Silt		1.5 (75)	19-30-29-41 (59)					
20			Silty Sand, (SM) , Fine To Coarse, Very Dense, Grayish Brown, Wet, [Glacial Outwash], (0-15% Gravel)	sm	2.0 (100)	25-37-40-45 (77)					
	SpT-11										
			22.0								
			Bottom of Boring at 22.0 feet. 30 Gal. Grout Used								
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-210S**

PAGE 1 OF 1

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**DATE STARTED:** 10/22/2019 **DRILLING CONTRACTOR:** NEBC**DATE COMPLETED:** 10/22/2019 **DRILLER:** Manlea Thompson**LOGGED BY:** QDW**DRILLING METHOD:** 3-1/4" ID HSA, 2" OD SBS (8")**CHECKED BY:** AA**CORING METHOD:** N/A**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1483.2 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,727.79▼ **END OF DRILLING:** Dry**EASTING:** 1,580,889.19▼ **44hrs AFTER DRILLING:** 4.6 ft / El. 1478.6 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft)	EST q _u (tsf)	▲ SPT N VALUE ▲			
						RQD, ft (% RQD)		20	40	60	80
								PL	MC	LL	
								20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0											
	SpT-1		0.7 Sandy Silt, (ML) , Firm To Stiff, Dark Brown To Reddish Brown, Moist To Wet, [Topsoil], (5-10% Gravel) 1482.5	SM	1.4 (70)	1-5-20-6 (25)	0.50 1.75		NP	NP	
	SpT-2		Silty Sand, (SM) , Fine, Compact, Dark Brown To Reddish Brown, Moist, (0-10% Gravel)		0.2 (10)	6-7-11-7 (18)					
5	SpT-3		4.5 Silty Sand, (SM) , With Gravel, Fine, Compact To Very Dense, Gray To Brownish Gray, Dry To Moist, [Glacial Till], (10-30% Gravel) 1478.7	SM	1.4 (70)	5-11-17-28 (28)					
	SpT-4				1.8 (90)	49-26-32-34 (58)					
	SpT-5				1.5 (83)	9-27-37- 50/0.3'					
10		10.0 1473.2	Auger Refusal at 10 feet. Bottom of Boring at 10.0 feet. 18 Gal. Grout Used								
15											
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DDK ENGINEERING

(a small business joint venture)

28 North Main Street

Randolph, VT 05060

VISUAL CLASSIFICATION LOG**JB5-19-210SA**

PAGE 1 OF 1

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS**DATE STARTED:** 10/22/2019 **DRILLING CONTRACTOR:** NEBC**DATE COMPLETED:** 10/23/2019 **DRILLER:** Manlea Thompson**LOGGED BY:** QDW**DRILLING METHOD:** 3-1/4" ID HSA, 2" OD SBS (8")**CHECKED BY:** AA**CORING METHOD:** N/A**LOCATION:****GROUND WATER LEVELS:****ELEVATION:** 1483.5 ft**TIME OF DRILLING:** N/A**NORTHING:** 320,721.15**END OF DRILLING:** N/A**EASTING:** 1,580,887.37**▼ AFTER DRILLING:** 16.4 ft / El. 1467.1 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
0								20	40	60	80
5											
10			10.0 Advanced Augers To 10.0' Without Sampling 1473.5								
	SpT-1		Silty Sand, (SM) , With Gravel, Fine, Very Dense, Gray To Brownish Gray, Moist To Wet, [Glacial Till], (10-40% Gravel), (10-30% Cobbles/Boulders) 10.2'-11.5': Boulder		0.3 (100)	50/0.3'					>>▲
	SpT-2			SM	1.4 (100)	20-30-50/0.4'		●	NP	□	>>▲
15	SpT-3				0.9 (100)	24-50/0.4'					>>▲
	SpT-4				0.7 (88)	10-50/0.3'					>>▲
	SpT-5	▼			0.3 (100)	50/0.3'					>>▲
20			18.3'-19.4': Boulder								
	SpT-6		20.0'-20.4': Cobble Augers Out Of Plumb	SM	0.8 (100)	35-50/0.3'		●	NP	□	>>▲
21.3			21.3								
			Bottom of Boring at 21.3 feet. 35 Gal. Grout Used								
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

DDK ENGINEERING

(a small business joint venture)

28 North Main Street
Randolph, VT 05060**VISUAL CLASSIFICATION LOG****JB5-19-210SB**

PAGE 1 OF 1

DATE STARTED: 10/23/2019 DRILLING CONTRACTOR: NEBC

DATE COMPLETED: 10/23/2019 DRILLER: Manlea Thompson

LOGGED BY: QDW

DRILLING METHOD: 3-1/4" ID HSA (8")

CHECKED BY: AA

CORING METHOD: N/A

LOCATION:

GROUND WATER LEVELS:

ELEVATION: 1483.4 ft

TIME OF DRILLING: N/A

NORTHING: 320,719.94

END OF DRILLING: Dry

EASTING: 1,580,895.12

24hrs AFTER DRILLING: 7.3 ft / El. 1476.1 ft

PROJECT: Jewell Brook Watershed Site No. 5**PROJECT NUMBER:** 172719-17**LOCATION:** Ludlow, Windsor County, VT**CLIENT:** NRCS

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	FIELD DESCRIPTION	LAB USCS	RECOVERY, ft (%)	SPT BLOW COUNT (N / ft) RQD, ft (% RQD)	EST q_u (tsf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
0								20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
5											
			Encountered Cobble/Boulder At 7.9' Advanced Augers To 8.0' Without Sampling								
10			Auger Refusal at 8 feet. Bottom of Boring at 8.0 feet. 20 Gal. Grout Used								
15											
20											
25											
30											
35											

Notes: Layer USCS Classification Based On ASTM D2487
Layer Density Based On Field SPT N-Values

NRCS - DAPP BORING LOG 172719-17 - SITE 5.GPJ NOLAN RUN DATABASE TEMP.GDT 6/10/20

APPENDIX B
LABORATORY TEST RESULTS

MOISTURE CONTENT

ASTM D 2216-10

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001

Lab ID:	-129	-130	-131	-132	-133
Boring No.:	JB5-19-1	JB5-19-1	JB5-19-1	JB5-19-1	JB5-19-1
Depth (ft):	2.0-4.0	10.0-14.0	18.0-20.0	24.0-26.9	32.0-36.0
Sample No.:	SpT-2	SpT-6/7	SpT-10	SpT-13/14	SpT-17/18
Tare Number	42	40	35	2	9
Wt. of Tare & Wet Sample (g)	85.11	24.19	79.81	29.14	27.23
Wt. of Tare & Dry Sample (g)	79.04	22.62	72.82	27.15	25.80
Weight of Tare (g)	8.46	8.44	8.46	8.32	8.22
Weight of Water (g)	6.07	1.57	6.99	1.99	1.43
Weight of Dry Sample (g)	70.58	14.18	64.36	18.83	17.58
Water Content (%)	8.6	11.1	10.9	10.6	8.1

Lab ID	-134	-135	-136	-137	-138
Boring No.	JB5-19-1	JB5-19-2	JB5-19-2	JB5-19-3	JB5-19-3
Depth (ft)	38.0-42.0	2.0-6.0	10.0-14.0	4.0-8.0	10.0-14.0
Sample No.	SpT-20/21	SpT-2/3	SpT-6/7	SpT-3/4	SpT-6/7
Tare Number	37	36	34	19	8
Wt. of Tare & Wet Sample (g)	44.10	28.60	30.46	41.89	37.44
Wt. of Tare & Dry Sample (g)	41.05	26.56	28.14	37.87	33.62
Weight of Tare (g)	8.33	8.46	8.42	8.29	8.32
Weight of Water (g)	3.05	2.04	2.32	4.02	3.82
Weight of Dry Sample (g)	32.72	18.10	19.72	29.58	25.30
Water Content (%)	9.3	11.3	11.8	13.6	15.1

Notes :

Tested By SG Date 1/27/20 Checked By JLK Date 1/28/20

MOISTURE CONTENT

ASTM D 2216-10

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001

Lab ID:	-139	-140	-141	-142	-143
Boring No.:	JB5-19-4	JB5-19-4	JB5-19-201N	JB5-19-201N	JB5-19-201NA
Depth (ft):	4.0-8.0	8.0-11.4	0.0-2.0	2.0-6.0	8.0-11.4
Sample No.:	SpT-3/4	SpT-5/6	SpT-1	SpT-2/3	SpT-1/2
Tare Number	39	20	50	13	47
Wt. of Tare & Wet Sample (g)	33.64	27.93	24.03	30.22	44.45
Wt. of Tare & Dry Sample (g)	31.48	26.03	21.91	27.54	41.62
Weight of Tare (g)	8.45	8.45	8.46	8.31	8.41
Weight of Water (g)	2.16	1.90	2.12	2.68	2.83
Weight of Dry Sample (g)	23.03	17.58	13.45	19.23	33.21
Water Content (%)	9.4	10.8	15.8	13.9	8.5

Lab ID	-144	-145	-146	-147	-148
Boring No.	JB5-19-201NA	JB5-19-202N	JB5-19-202N	JB5-19-202N	JB5-19-202N
Depth (ft)	18.0-20.0	0.0-6.0	6.0-10.0	12.0-16.0	18.0-20.0
Sample No.	SpT-6	SpT-1/3	SpT-4/5	SpT-7/8	SpT-10
Tare Number	22	5	14	18	32
Wt. of Tare & Wet Sample (g)	45.59	28.23	31.62	25.79	24.00
Wt. of Tare & Dry Sample (g)	43.01	25.72	29.49	24.35	22.91
Weight of Tare (g)	8.34	8.30	8.49	8.46	8.44
Weight of Water (g)	2.58	2.51	2.13	1.44	1.09
Weight of Dry Sample (g)	34.67	17.42	21.00	15.89	14.47
Water Content (%)	7.4	14.4	10.1	9.1	7.5

Notes :

Tested By SG Date 1/27/20 Checked By JLK Date 1/28/20

MOISTURE CONTENT

ASTM D 2216-10

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001

Lab ID:	-149	-150	-151	-152	-153
Boring No.:	JB5-19-203N	JB5-19-203N	JB5-19-203N	JB5-19-203N	JB5-19-204N
Depth (ft):	0.0-4.0	6.0-10.0	10.0-13.4	16.0-20.0	0.0-2.0
Sample No.:	SpT-1/2	SpT-4/5	SpT-6/7	SpT-9/10	SpT-1
Tare Number	3	22	34	2	30
Wt. of Tare & Wet Sample (g)	56.48	49.76	38.41	42.45	24.38
Wt. of Tare & Dry Sample (g)	53.30	46.29	35.46	39.95	21.84
Weight of Tare (g)	8.46	8.33	8.43	8.30	8.57
Weight of Water (g)	3.18	3.47	2.95	2.50	2.54
Weight of Dry Sample (g)	44.84	37.96	27.03	31.65	13.27
Water Content (%)	7.1	9.1	10.9	7.9	19.1

Lab ID	-154	-155	-156	-157	-158
Boring No.	JB5-19-204N	JB5-19-204N	JB5-19-204N	JB5-19-204N	JB5-19-204N
Depth (ft)	2.0-8.0	10.0-12.9	14.0-17.8	20.0-22.9	28.0-29.8
Sample No.	SpT-2/3/4	SpT-6/7	SpT-8/9	SpT-11/12	SpT-15
Tare Number	21	31	35	19	39
Wt. of Tare & Wet Sample (g)	30.87	51.75	50.40	55.79	27.27
Wt. of Tare & Dry Sample (g)	29.08	48.84	46.98	51.68	24.24
Weight of Tare (g)	8.33	8.33	8.45	8.26	8.48
Weight of Water (g)	1.79	2.91	3.42	4.11	3.03
Weight of Dry Sample (g)	20.75	40.51	38.53	43.42	15.76
Water Content (%)	8.6	7.2	8.9	9.5	19.2

Notes :

Tested By SG Date 1/30/20 Checked By JLK Date 1/31/20

MOISTURE CONTENT

ASTM D 2216-10

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001

Lab ID:	-159	-160	-161	-162	-163
Boring No.:	JB5-19-204N	JB5-19-204N	JB5-19-204N	JB5-19-204N	JB5-19-205S
Depth (ft):	30.5-33.4	38.0-40.0	45.0-46.4	50.0-51.1	0.0-4.0
Sample No.:	SpT-16/17	SpT-20	SpT-22	SpT-23	SpT-1/2
Tare Number	20	40	5	26	28
Wt. of Tare & Wet Sample (g)	26.04	32.11	35.44	39.02	32.40
Wt. of Tare & Dry Sample (g)	22.97	29.75	31.97	35.13	28.16
Weight of Tare (g)	8.45	8.43	8.32	8.44	8.28
Weight of Water (g)	3.07	2.36	3.47	3.89	4.24
Weight of Dry Sample (g)	14.52	21.32	23.65	26.69	19.88
Water Content (%)	21.1	11.1	14.7	14.6	21.3

Lab ID	-164	-165	-166	-167	-168
Boring No.	JB5-19-205S	JB5-19-205S	JB5-19-205S	JB5-19-206S	JB5-19-206S
Depth (ft)	6.0-10.0	10.0-13.7	16.0-17.3	0.0-2.0	6.0-10.0
Sample No.	SpT-4/5	SpT-6/7	SpT-9	SpT-1	SpT-4/5
Tare Number	45	12	29	46	43
Wt. of Tare & Wet Sample (g)	46.16	50.93	34.42	32.57	54.58
Wt. of Tare & Dry Sample (g)	43.09	47.02	32.44	28.34	50.50
Weight of Tare (g)	8.45	8.46	8.47	8.45	8.51
Weight of Water (g)	3.07	3.91	1.98	4.23	4.08
Weight of Dry Sample (g)	34.64	38.56	23.97	19.89	41.99
Water Content (%)	8.9	10.1	8.3	21.3	9.7

Notes :

Tested By SG Date 1/30/20 Checked By JLK Date 1/31/20

MOISTURE CONTENT

ASTM D 2216-10

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001

Lab ID:	-169	-170	-171	-172	-173
Boring No.:	JB5-19-206S	JB5-19-206S	JB5-19-207S	JB5-19-207S	JB5-19-207S
Depth (ft):	12.0-15.8	18.0-20.0	0.0-4.0	6.0-8.0	12.0-16.0
Sample No.:	SpT-7/8	SpT-10	SpT-1/2	SpT-4	SpT-7/8
Tare Number	46	40	20	26	31
Wt. of Tare & Wet Sample (g)	41.42	26.41	47.38	36.61	42.12
Wt. of Tare & Dry Sample (g)	39.24	24.94	44.38	34.57	39.50
Weight of Tare (g)	8.44	8.41	8.44	8.45	8.35
Weight of Water (g)	2.18	1.47	3.00	2.04	2.62
Weight of Dry Sample (g)	30.80	16.53	35.94	26.12	31.15
Water Content (%)	7.1	8.9	8.3	7.8	8.4

Lab ID	-174	-175	-176	-177	-178
Boring No.	JB5-19-207S	JB5-19-208S	JB5-19-208S	JB5-19-208S	JB5-19-208S
Depth (ft)	16.0-20.0	0.0-2.0	6.0-10.0	10.0-14.0	18.0-20.0
Sample No.	SpT-9/10	SpT-1	SpT-4/5	SpT-6/7	SpT-10
Tare Number	35	39	3	22	34
Wt. of Tare & Wet Sample (g)	36.72	20.37	45.05	43.18	28.40
Wt. of Tare & Dry Sample (g)	34.47	18.64	42.19	39.88	26.39
Weight of Tare (g)	8.42	8.44	8.45	8.31	8.40
Weight of Water (g)	2.25	1.73	2.86	3.30	2.01
Weight of Dry Sample (g)	26.05	10.20	33.74	31.57	17.99
Water Content (%)	8.6	17.0	8.5	10.5	11.2

Notes :

Tested By SG Date 1/31/20 Checked By JLK Date 2/3/20

MOISTURE CONTENT

ASTM D 2216-10

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001

Lab ID:	-179	-180	-181	-182	-183
Boring No.:	JB5-19-208S	JB5-19-208S	JB5-19-208S	JB5-19-208S	JB5-19-208S
Depth (ft):	20.0-22.0	28.0-32.0	32.0-36.0	40.0-40.9	42.0-44.0
Sample No.:	SpT-11	SpT-15/16	SpT-17/18	SpT-21	SpT-22
Tare Number	40	20	26	31	29
Wt. of Tare & Wet Sample (g)	25.66	38.93	43.28	35.16	29.87
Wt. of Tare & Dry Sample (g)	24.39	36.58	40.74	32.73	27.76
Weight of Tare (g)	8.43	8.45	8.53	8.46	8.46
Weight of Water (g)	1.27	2.35	2.54	2.43	2.11
Weight of Dry Sample (g)	15.96	28.13	32.21	24.27	19.30
Water Content (%)	8.0	8.4	7.9	10.0	10.9

Lab ID	-184	-185	-186	-187	-188
Boring No.	JB5-19-209S	JB5-19-209S	JB5-19-209S	JB5-19-209S	JB5-19-209S
Depth (ft)	46.0-47.4	0.0-2.0	4.0-8.0	12.2-16.0	18.0-22.0
Sample No.	SpT-24	SpT-1	SpT-3/4	SpT-7/8	SpT-10/11
Tare Number	12	43	5	28	45
Wt. of Tare & Wet Sample (g)	27.65	22.09	51.47	47.17	51.26
Wt. of Tare & Dry Sample (g)	25.66	19.75	47.64	44.46	47.66
Weight of Tare (g)	8.45	8.46	8.32	8.27	8.46
Weight of Water (g)	1.99	2.34	3.83	2.71	3.60
Weight of Dry Sample (g)	17.21	11.29	39.32	36.19	39.20
Water Content (%)	11.6	20.7	9.7	7.5	9.2

Notes :

Tested By SG Date 2/3/20 Checked By JLK Date 2/4/20

MOISTURE CONTENT

ASTM D 2216-10

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001

Lab ID:	-189	-190	-191	-192
Boring No.:	JB5-19-210S	JB5-19-210S	JB5-19-210SA	JB5-19-210SA
Depth (ft):	0.0-2.0	4.0-8.0	12.0-14.9	20.5-21.3
Sample No.:	SpT-1	SpT-3/4	SpT-2/3	SpT-6
Tare Number	19	2	30	21
Wt. of Tare & Wet Sample (g)	21.89	49.56	41.29	35.19
Wt. of Tare & Dry Sample (g)	19.54	46.20	38.11	32.71
Weight of Tare (g)	8.27	8.29	8.46	8.34
Weight of Water (g)	2.35	3.36	3.18	2.48
Weight of Dry Sample (g)	11.27	37.91	29.65	24.37
Water Content (%)	20.9	8.9	10.7	10.2

Notes :

Tested By SG Date 2/3/20 Checked By JLK Date 2/4/20

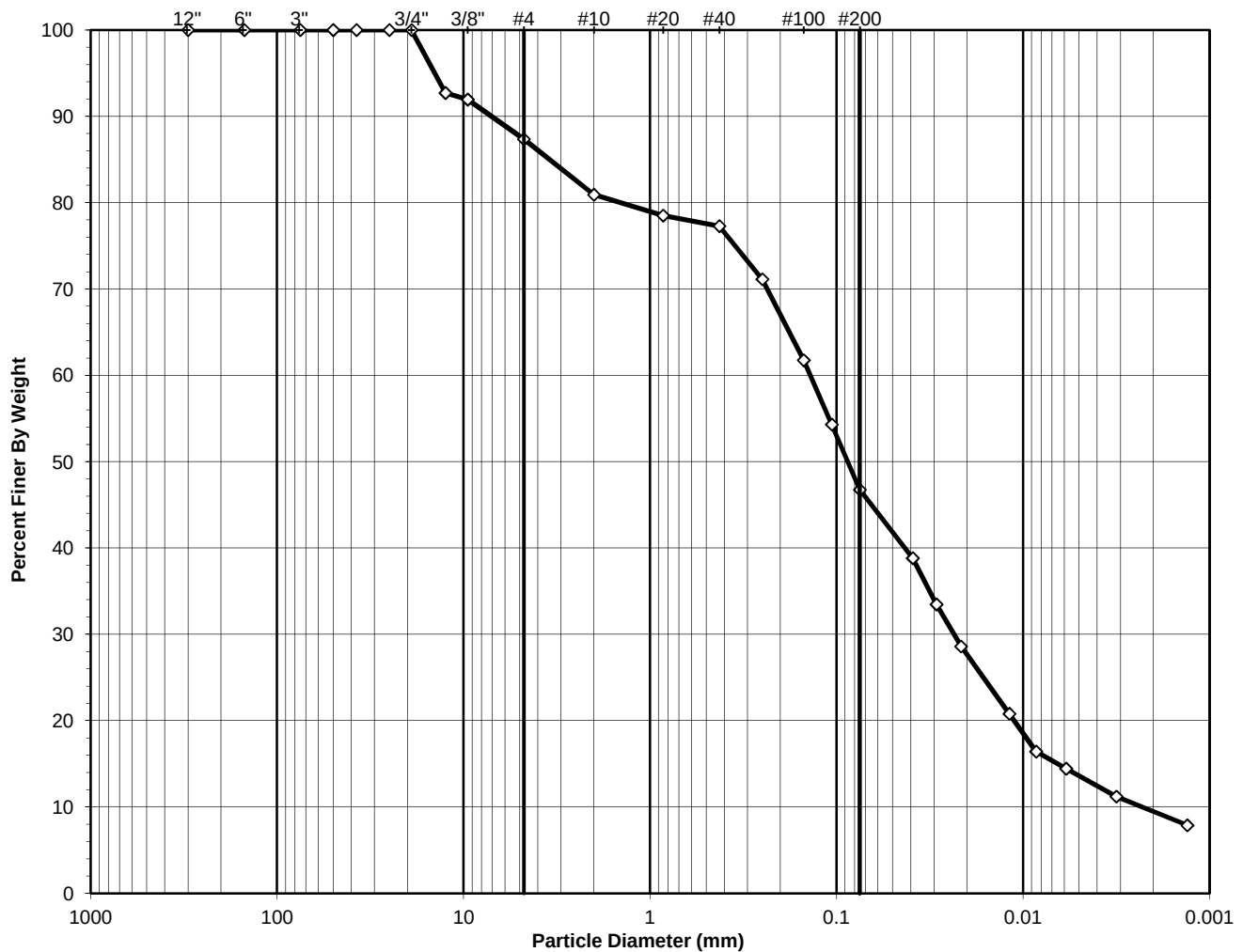
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-130

Boring No.: JB5-19-1
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.09

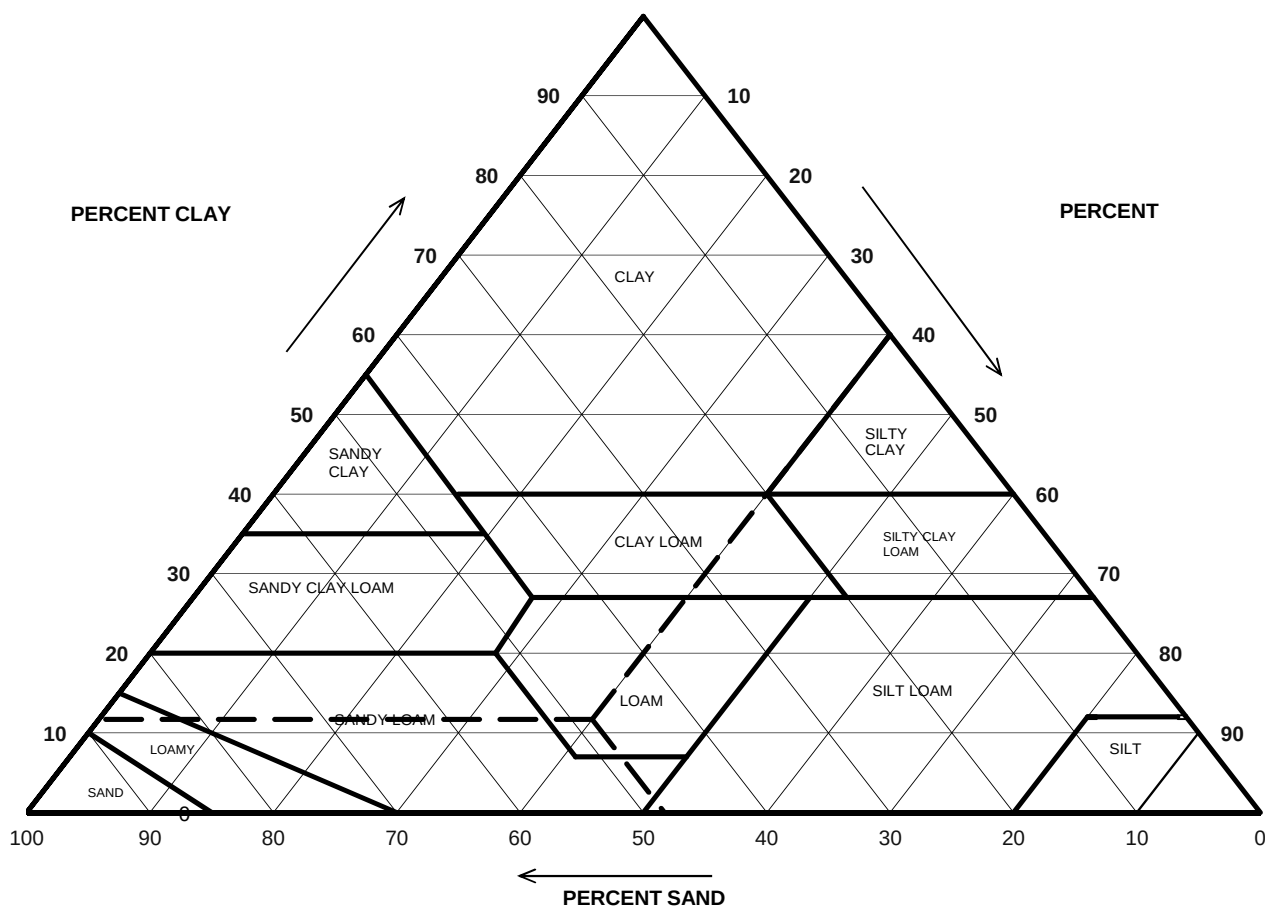
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/4/20 Checked By JLK Date 2/6/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-130

Boring No.: JB5-19-1
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	19.07	
2	80.93	Sand	39.09	48.31
0.05	41.84	Silt	32.36	39.98
0.002	9.48	Clay	9.48	11.71

USDA Classification: LOAM

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-130

Boring No.: JB5-19-1
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1495	Tare No.:	NA	Tare No.:	1495	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	435.73	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	435.73	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	435.73	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	435.73	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.74	Weight of Tare (g):	NA	Weight of Tare (g):	146.74	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	288.99	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	288.99	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	288.99	Total Dry Weight of Sample (g):	288.99	Dry Weight of Sample (g):	288.99	Total Dry Weight of Sample (g):	288.99
Tare No. (Sub-Specimen)	1495	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1495	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	435.73	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	435.73	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	146.74	Dry Weight of - 3/4" Sample (g):	288.99	Weight of Tare (g):	146.74	Dry Weight of - 3/4" Sample (g):	288.99
Sub-Specimen Wet Weight (g):	288.99	Dry Weight -3/4" +3/8" Sample (g):	23.27	Sub-Specimen Wet Weight (g):	288.99	Dry Weight -3/4" +3/8" Sample (g):	23.27
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	265.72	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	265.72
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	21.07	(**) 7.29	7.29	92.71	93
3/8"	9.5	2.20	0.76	8.05	91.95	92
#4	4.75	13.28	4.60	12.65	87.35	87
#10	2	18.56	6.42	19.07	80.93	81
#20	0.85	7.00	(**) 2.42	21.49	78.51	79
#40	0.425	3.53	1.22	22.71	77.29	77
#60	0.25	17.79	6.16	28.87	71.13	71
#100	0.15	27.11	9.38	38.25	61.75	62
#140	0.106	21.51	7.44	45.69	54.31	54
#200	0.075	21.83	7.55	53.25	46.75	47
Pan	-	135.11	46.75	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/4/20 Checked By JLK Date 2/6/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-1
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-14.0
Project No.:	2020-002-001	Sample No.:	SpT-6/7
Lab ID:	2020-002-001-130	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	45.5	22.7	5.63	8.7	0.0390	83.1	38.8
2	40.0	22.7	5.63	9.7	0.0291	71.6	33.5
4	35.0	22.7	5.63	10.6	0.0215	61.2	28.6
15	27.0	22.7	5.63	12.1	0.0118	44.5	20.8
31	22.5	22.7	5.63	12.9	0.0085	35.1	16.4
67	20.5	22.6	5.67	13.2	0.0059	30.9	14.4
240	17.0	23.1	5.48	13.9	0.0032	24.0	11.2
1440	13.5	23.3	5.41	14.5	0.0013	16.9	7.9

Soil Specimen Data

Tare No.:	2343	Percent Finer than # 200:	46.75
Wt. of Tare & Dry Material (g):	144.46		
Weight of Tare (g):	91.89	Specific Gravity:	2.69 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	47.57		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/4/20	Checked By	JLK	Date	2/6/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-130

Boring No.: JB5-19-1
Depth (ft): 10.0-14.0
Sample No.: SpT-6/7
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	40
Wt. of Tare & Wet Sample (g)	24.19
Wt. of Tare & Dry Sample (g)	22.62
Weight of Tare (g)	8.44
Weight of Water (g)	1.57
Weight of Dry Sample (g)	14.18

Water Content (%) **11.1**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *1/30/20* *Checked By* *JLK* *Date* *1/30/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-1
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-14.0
Project No.:	2020-002-001	Sample No.:	SpT-6/7
Lab ID:	2020-002-001-130	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.22	749
Temperature (°C):	26.1	26.3
Weight of Pycnometer & Water (g):	683.84	684.36
Tare Number:	687	922
Weight of Tare & Dry Soil (g):	195.3	200.12
Weight of Tare (g):	94.71	98.44
Weight of Dry Soil (g):	100.59	101.68
Specific Gravity of Soil @ Measured Temperature:	2.633	2.745
Specific Gravity of Water @ Measured Temperature:	0.99677	0.99671
Conversion Factor for Measured Temperature:	0.99856	0.99850
Specific Gravity @ 20° Celsius:	2.637	2.749

Average Specific Gravity @ 20° Celsius	2.69

Tested By TO Date 1/31/20 Checked By BRB Date 2/4/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

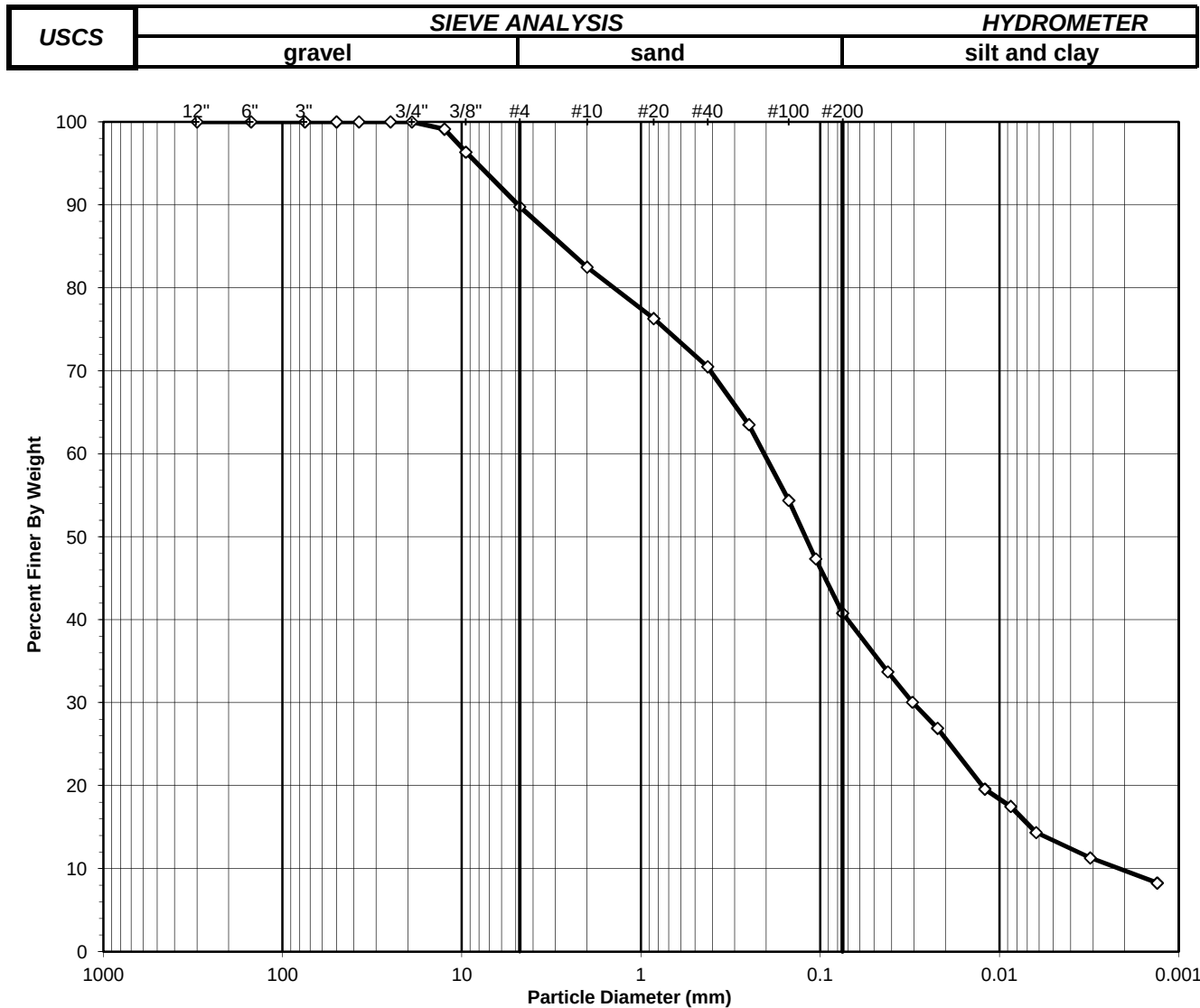
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SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-132

Boring No.: JB5-19-1
 Depth (ft): 24.0-26.9
 Sample No.: SpT-13/14
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.12

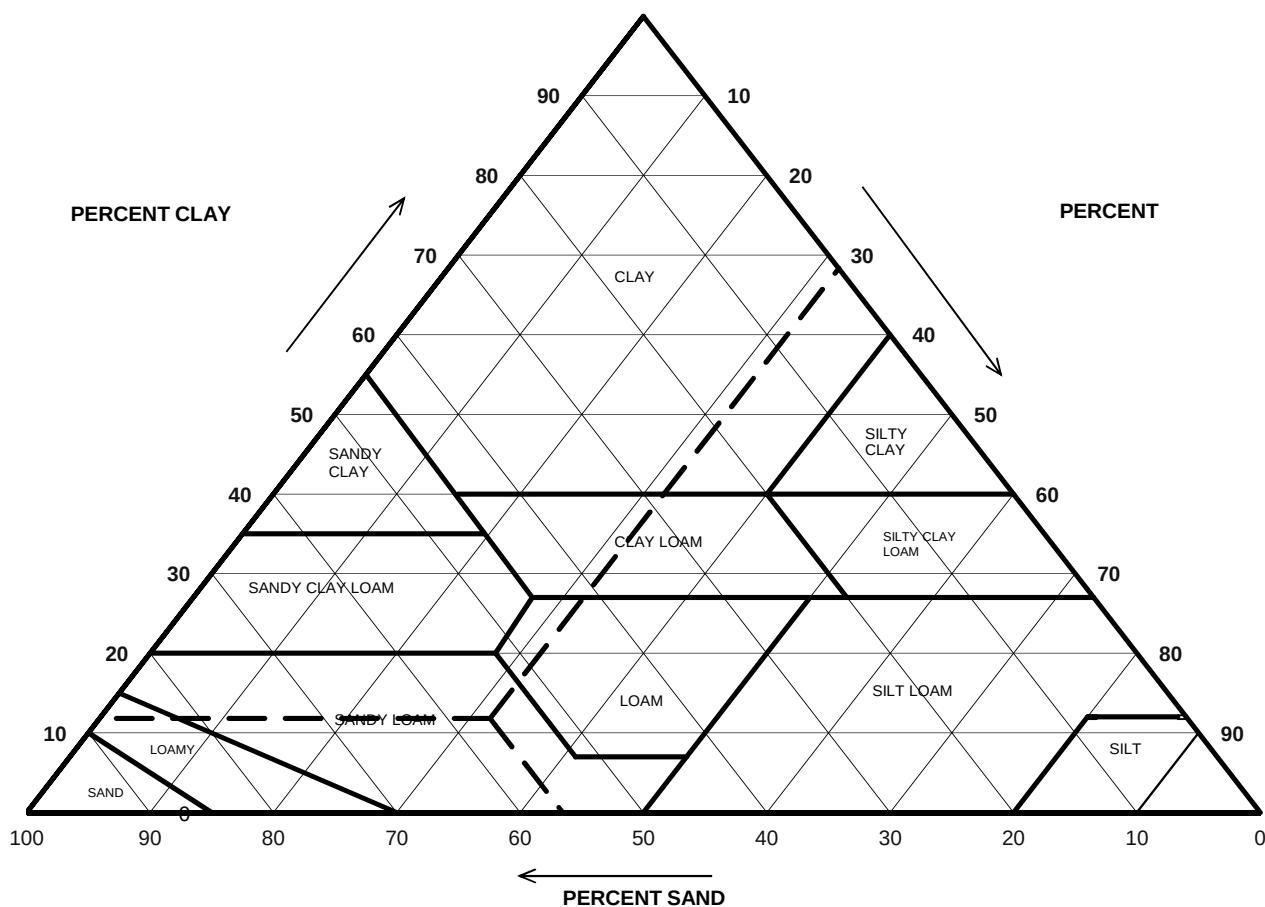
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-132

Boring No.: JB5-19-1
 Depth (ft): 24.0-26.9
 Sample No.: SpT-13/14
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	17.50	
2	82.50	Sand	46.65	56.54
0.05	35.85	Silt	26.12	31.66
0.002	9.74	Clay	9.74	11.80

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-132

Boring No.: JB5-19-1
 Depth (ft): 24.0-26.9
 Sample No.: SpT-13/14
 Soil Color: Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1540	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	475.49	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	443.98	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.92	Weight of Tare (g):	NA
Weight of Water (g):	31.51	Weight of Water (g):	NA
Weight of Dry Soil (g):	297.06	Weight of Dry Soil (g):	NA
Moisture Content (%):	10.6	Moisture Content (%):	0.0
Dry Weight of Sample (g):	297.06	Total Dry Weight of Sample (g):	297.06
Tare No. (Sub-Specimen)	1540	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	475.49	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	146.92	Dry Weight of - 3/4" Sample (g):	297.06
Sub-Specimen Wet Weight (g):	328.57	Dry Weight -3/4" +3/8" Sample (g):	10.84
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	286.22
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	2.59	(**)	0.87	99.13	99
3/8"	9.5	8.25		3.65	96.35	96
#4	4.75	19.55		10.23	89.77	90
#10	2	21.60		17.50	82.50	82
#20	0.85	18.43	(**)	23.71	76.29	76
#40	0.425	17.23		29.51	70.49	70
#60	0.25	20.74		36.49	63.51	64
#100	0.15	27.11		45.61	54.39	54
#140	0.106	20.94		52.66	47.34	47
#200	0.075	19.43		59.20	40.80	41
Pan	-	121.19		100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-132

Boring No.: JB5-19-1
 Depth (ft): 24.0-26.9
 Sample No.: SpT-13/14
 Soil Color: Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	38.0	22.3	5.78	10.1	0.0420	82.7	33.7
2	34.5	22.3	5.78	10.7	0.0306	73.7	30.1
4	31.5	22.3	5.78	11.3	0.0222	66.0	26.9
15	24.5	22.3	5.78	12.5	0.0121	48.0	19.6
30	22.5	22.3	5.78	12.9	0.0087	42.9	17.5
60	19.5	22.3	5.78	13.4	0.0063	35.2	14.4
250	16.5	22.5	5.71	14.0	0.0031	27.7	11.3
1440	13.5	22.8	5.60	14.5	0.0013	20.3	8.3

Soil Specimen Data

Tare No.:	927	Percent Finer than # 200:	40.80
Wt. of Tare & Dry Material (g):	139.88		
Weight of Tare (g):	96.34	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	38.54		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	1/30/20	Checked By	JLK	Date	2/3/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-132

Boring No.: JB5-19-1
Depth (ft): 24.0-26.9
Sample No.: SpT-13/14
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	2
Wt. of Tare & Wet Sample (g)	29.14
Wt. of Tare & Dry Sample (g)	27.15
Weight of Tare (g)	8.32
Weight of Water (g)	1.99
Weight of Dry Sample (g)	18.83

Water Content (%)	10.6

NON - PLASTIC MATERIAL

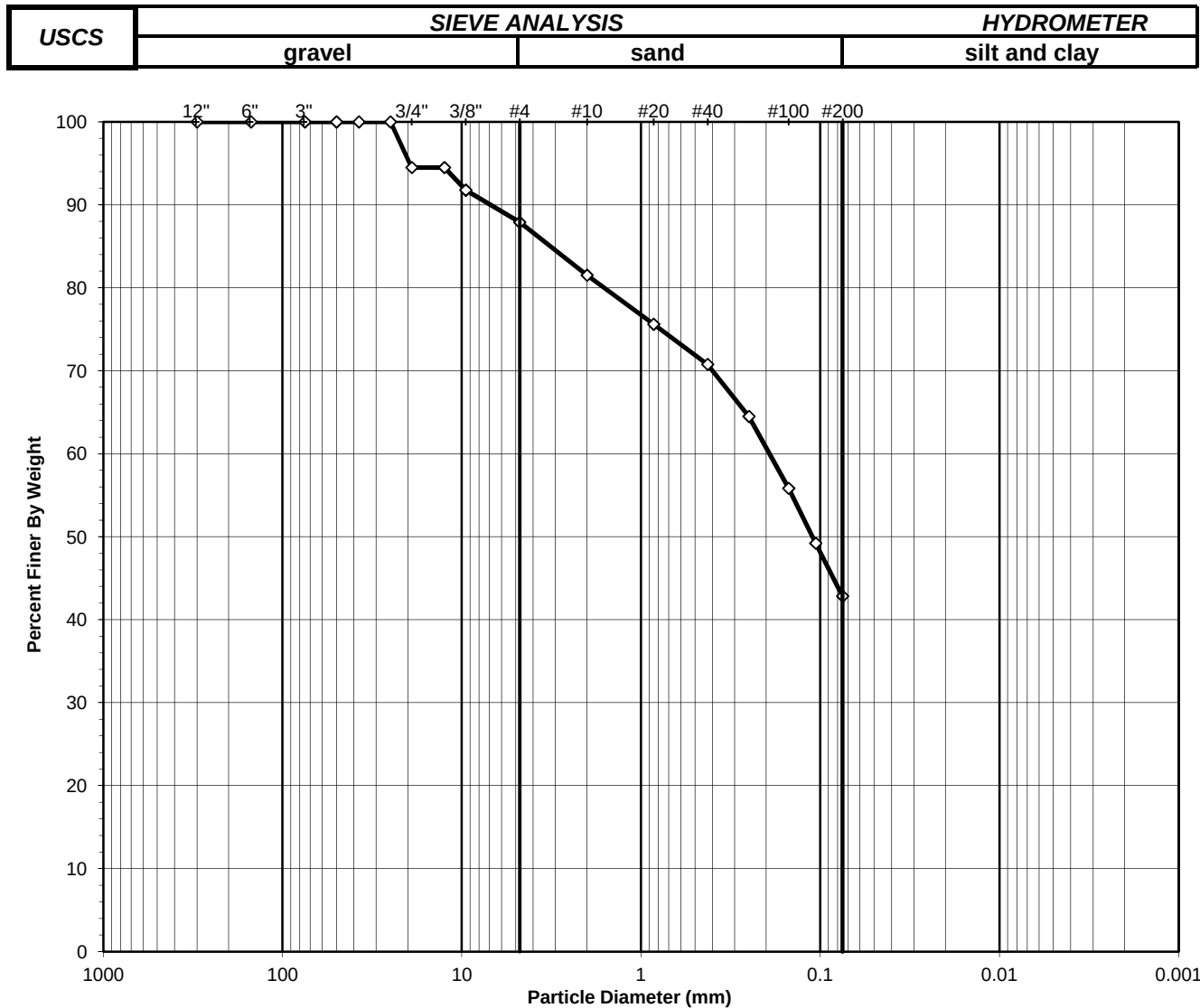
Tested By	TO	Date	1/29/20	Checked By	BRB	Date	1/29/20

SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-133

Boring No.: JB5-19-1
 Depth (ft): 32.0-36.0
 Sample No.: SpT-17/18
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.11

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/30/20 Checked By JLK Date 1/31/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-133

Boring No.: JB5-19-1
 Depth (ft): 32.0-36.0
 Sample No.: SpT-17/18
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1485	Tare No.:	NA	Tare No.:	1485	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	355.88	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	355.88	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	336.42	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	336.42	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.68	Weight of Tare (g):	NA	Weight of Tare (g):	147.68	Weight of Tare (g):	NA
Weight of Water (g):	19.46	Weight of Water (g):	NA	Weight of Water (g):	19.46	Weight of Water (g):	NA
Weight of Dry Soil (g):	188.74	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	188.74	Weight of Dry Soil (g):	NA
Moisture Content (%):	10.3	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	188.74	Total Dry Weight of Sample (g):	188.74	Dry Weight of Sample (g):	188.74	Total Dry Weight of Sample (g):	188.74
Tare No. (Sub-Specimen)	1485	Wet Weight of +3/4" Sample (g):	11.45	Tare No. (Sub-Specimen)	1485	Wet Weight of +3/4" Sample (g):	11.45
Wt. of Tare & Wet Sub-Specimen (g):	355.88	Dry Weight of + 3/4" Sample (g):	10.38	Wt. of Tare & Wet Sub-Specimen (g):	355.88	Dry Weight of + 3/4" Sample (g):	10.38
Weight of Tare (g):	147.68	Dry Weight of - 3/4" Sample (g):	178.36	Weight of Tare (g):	147.68	Dry Weight of - 3/4" Sample (g):	178.36
Sub-Specimen Wet Weight (g):	208.20	Dry Weight -3/4" +3/8" Sample (g):	5.14	Sub-Specimen Wet Weight (g):	208.20	Dry Weight -3/4" +3/8" Sample (g):	5.14
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	173.50	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	173.50
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	10.38	5.50	5.50	94.50	95
1/2"	12.5	0.00	(**) 0.00	5.50	94.50	95
3/8"	9.5	5.14	2.72	8.22	91.78	92
#4	4.75	7.32	3.88	12.10	87.90	88
#10	2	12.03	6.37	18.48	81.52	82
#20	0.85	11.15	(**) 5.91	24.38	75.62	76
#40	0.425	9.13	4.84	29.22	70.78	71
#60	0.25	11.85	6.28	35.50	64.50	65
#100	0.15	16.35	8.66	44.16	55.84	56
#140	0.106	12.50	6.62	50.78	49.22	49
#200	0.075	12.04	6.38	57.16	42.84	43
Pan	-	80.85	42.84	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/30/20 Checked By JLK Date 1/31/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-133

Boring No.: JB5-19-1
Depth (ft): 32.0-36.0
Sample No.: SpT-17/18
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	9
Wt. of Tare & Wet Sample (g)	27.23
Wt. of Tare & Dry Sample (g)	25.80
Weight of Tare (g)	8.22
Weight of Water (g)	1.43
Weight of Dry Sample (g)	17.58

Water Content (%) **8.1**

NON - PLASTIC MATERIAL

Tested By *TO* *Date* *1/29/20* *Checked By* *BRB* *Date* *1/29/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-1
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	32.0-36.0
Project No.:	2020-002-001	Sample No.:	SpT-17/18
Lab ID:	2020-002-001-133	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	727.73	730.18
Temperature (°C):	24.9	29.3
Weight of Pycnometer & Water (g):	683.99	683.94
Tare Number:	679	653
Weight of Tare & Dry Soil (g):	164.5	165
Weight of Tare (g):	93.06	93.5
Weight of Dry Soil (g):	71.44	71.50
Specific Gravity of Soil @ Measured Temperature:	2.579	2.831
Specific Gravity of Water @ Measured Temperature:	0.99708	0.99586
Conversion Factor for Measured Temperature:	0.99887	0.99765
Specific Gravity @ 20° Celsius:	2.582	2.838

Average Specific Gravity @ 20° Celsius

2.71

Tested By TO Date 1/30/20 Checked By JLK Date 1/31/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

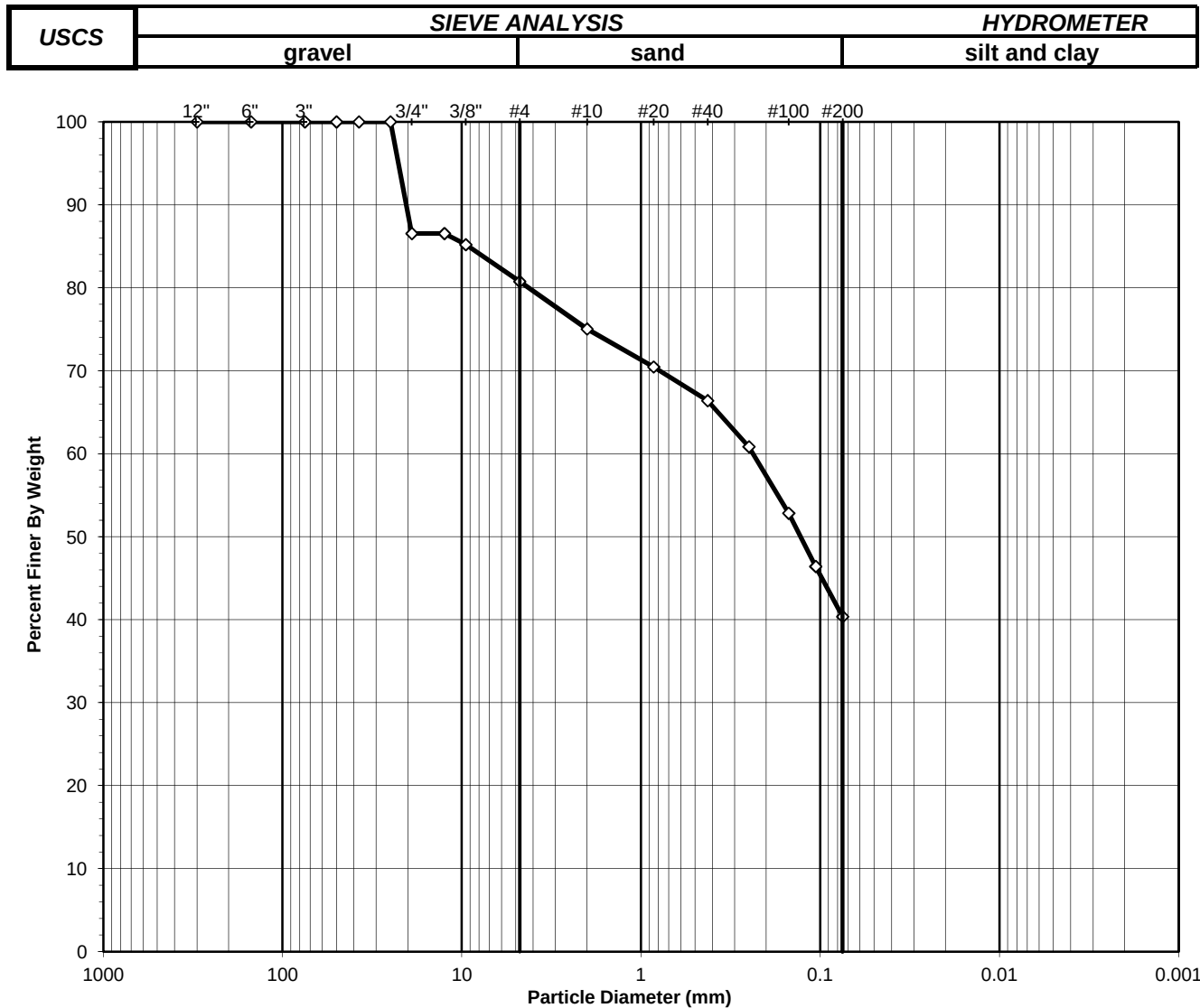
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SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-134

Boring No.: JB5-19-1
 Depth (ft): 38.0-42.0
 Sample No.: SpT-20/21
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.13

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 1/31/20 Checked By JLK Date 1/31/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-134

Boring No.: JB5-19-1
 Depth (ft): 38.0-42.0
 Sample No.: SpT-20/21
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1467	Tare No.:	NA	Tare No.:	1467	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	531.65	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	531.65	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	501.92	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	501.92	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.28	Weight of Tare (g):	NA	Weight of Tare (g):	146.28	Weight of Tare (g):	NA
Weight of Water (g):	29.73	Weight of Water (g):	NA	Weight of Water (g):	29.73	Weight of Water (g):	NA
Weight of Dry Soil (g):	355.64	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	355.64	Weight of Dry Soil (g):	NA
Moisture Content (%):	8.4	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	355.64	Total Dry Weight of Sample (g):	355.64	Dry Weight of Sample (g):	355.64	Total Dry Weight of Sample (g):	355.64
Tare No. (Sub-Specimen)	1467	Wet Weight of +3/4" Sample (g):	51.86	Tare No. (Sub-Specimen)	1467	Wet Weight of +3/4" Sample (g):	51.86
Wt. of Tare & Wet Sub-Specimen (g):	531.65	Dry Weight of + 3/4" Sample (g):	47.86	Wt. of Tare & Wet Sub-Specimen (g):	531.65	Dry Weight of + 3/4" Sample (g):	47.86
Weight of Tare (g):	146.28	Dry Weight of - 3/4" Sample (g):	307.78	Weight of Tare (g):	146.28	Dry Weight of - 3/4" Sample (g):	307.78
Sub-Specimen Wet Weight (g):	385.37	Dry Weight -3/4" +3/8" Sample (g):	4.76	Sub-Specimen Wet Weight (g):	385.37	Dry Weight -3/4" +3/8" Sample (g):	4.76
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	303.66	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	303.66
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	47.86	13.46	13.46	86.54	87
1/2"	12.5	0.00	(**) 0.00	13.46	86.54	87
3/8"	9.5	4.76	1.34	14.80	85.20	85
#4	4.75	15.80	4.44	19.24	80.76	81
#10	2	20.34	5.72	24.96	75.04	75
#20	0.85	16.27	(**) 4.57	29.53	70.47	70
#40	0.425	14.46	4.07	33.60	66.40	66
#60	0.25	19.76	5.56	39.15	60.85	61
#100	0.15	28.50	8.01	47.17	52.83	53
#140	0.106	22.80	6.41	53.58	46.42	46
#200	0.075	21.48	6.04	59.62	40.38	40
Pan	-	143.61	40.38	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/31/20 Checked By JLK Date 1/31/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-134

Boring No.: JB5-19-1
Depth (ft): 38.0-42.0
Sample No.: SpT-20/21
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	37
Wt. of Tare & Wet Sample (g)	44.10
Wt. of Tare & Dry Sample (g)	41.05
Weight of Tare (g)	8.33
Weight of Water (g)	3.05
Weight of Dry Sample (g)	32.72

Water Content (%) **9.3**

NON - PLASTIC MATERIAL

Tested By *TO* *Date* *1/29/20* *Checked By* *BRB* *Date* *1/29/20*

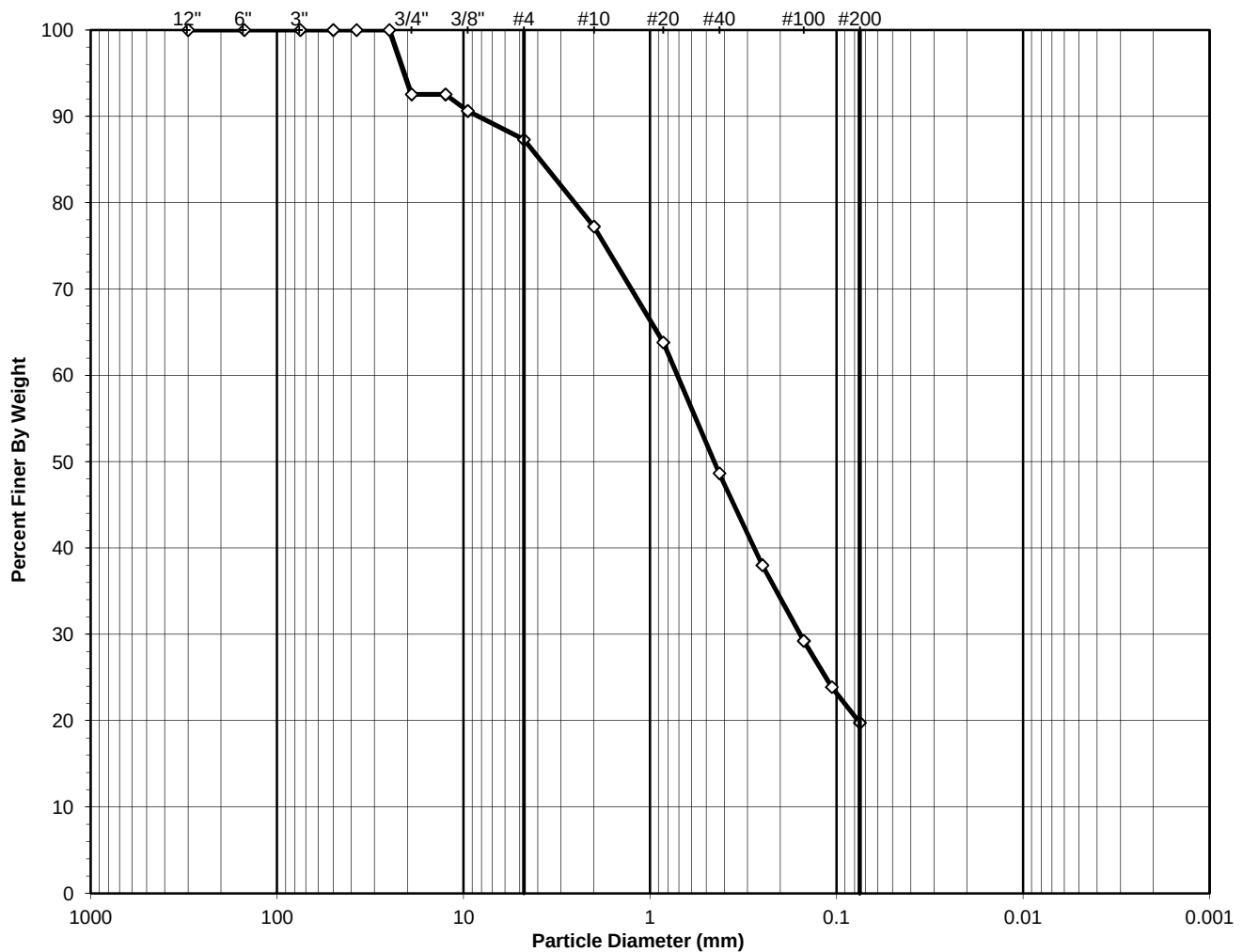
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-135

Boring No.: JB5-19-2
 Depth (ft): 2.0-6.0
 Sample No.: SpT-2/3
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.45

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/30/20 Checked By JLK Date 1/31/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-135

Boring No.: JB5-19-2
 Depth (ft): 2.0-6.0
 Sample No.: SpT-2/3
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1548	Tare No.:	NA	Tare No.:	1548	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	382.24	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	382.24	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	369.16	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	369.16	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.98	Weight of Tare (g):	NA	Weight of Tare (g):	144.98	Weight of Tare (g):	NA
Weight of Water (g):	13.08	Weight of Water (g):	NA	Weight of Water (g):	13.08	Weight of Water (g):	NA
Weight of Dry Soil (g):	224.18	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	224.18	Weight of Dry Soil (g):	NA
Moisture Content (%):	5.8	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	224.18	Total Dry Weight of Sample (g):	224.18	Dry Weight of Sample (g):	224.18	Total Dry Weight of Sample (g):	224.18
Tare No. (Sub-Specimen)	1548	Wet Weight of +3/4" Sample (g):	17.70	Tare No. (Sub-Specimen)	1548	Wet Weight of +3/4" Sample (g):	17.70
Wt. of Tare & Wet Sub-Specimen (g):	382.24	Dry Weight of + 3/4" Sample (g):	16.72	Wt. of Tare & Wet Sub-Specimen (g):	382.24	Dry Weight of + 3/4" Sample (g):	16.72
Weight of Tare (g):	144.98	Dry Weight of - 3/4" Sample (g):	207.46	Weight of Tare (g):	144.98	Dry Weight of - 3/4" Sample (g):	207.46
Sub-Specimen Wet Weight (g):	237.26	Dry Weight -3/4" +3/8" Sample (g):	4.29	Sub-Specimen Wet Weight (g):	237.26	Dry Weight -3/4" +3/8" Sample (g):	4.29
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	203.49	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	203.49
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	16.72	7.46	7.46	92.54	93
1/2"	12.5	0.00	(**) 0.00	7.46	92.54	93
3/8"	9.5	4.29	1.91	9.37	90.63	91
#4	4.75	7.43	3.31	12.69	87.31	87
#10	2	22.58	10.07	22.76	77.24	77
#20	0.85	30.09	(**) 13.42	36.18	63.82	64
#40	0.425	34.00	15.17	51.35	48.65	49
#60	0.25	23.85	10.64	61.99	38.01	38
#100	0.15	19.65	8.77	70.75	29.25	29
#140	0.106	12.00	5.35	76.10	23.90	24
#200	0.075	9.26	4.13	80.23	19.77	20
Pan	-	44.31	19.77	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/30/20 Checked By JLK Date 1/31/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-135

Boring No.: JB5-19-2
Depth (ft): 2.0-6.0
Sample No.: SpT-2/3
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	36
Wt. of Tare & Wet Sample (g)	28.60
Wt. of Tare & Dry Sample (g)	26.56
Weight of Tare (g)	8.46
Weight of Water (g)	2.04
Weight of Dry Sample (g)	18.10

Water Content (%)	11.3

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>TO</i>	<i>Date</i>	<i>1/29/20</i>	<i>Checked By</i>	<i>BRB</i>	<i>Date</i>	<i>1/29/20</i>

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-2
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	2.0-6.0
Project No.:	2020-002-001	Sample No.:	SpT-2/3
Lab ID:	2020-002-001-135	Visual Description:	Brown Sand

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	750.57	736.51
Temperature (°C):	24.6	25.0
Weight of Pycnometer & Water (g):	684.03	684.53
Tare Number:	975	969
Weight of Tare & Dry Soil (g):	201.67	181.99
Weight of Tare (g):	94.35	100.16
Weight of Dry Soil (g):	107.32	81.83
Specific Gravity of Soil @ Measured Temperature:	2.632	2.741
Specific Gravity of Water @ Measured Temperature:	0.99715	0.99705
Conversion Factor for Measured Temperature:	0.99895	0.99884
Specific Gravity @ 20° Celsius:	2.634	2.745

Average Specific Gravity @ 20° Celsius	2.69

Tested By TO Date 1/30/20 Checked By JLK Date 1/31/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

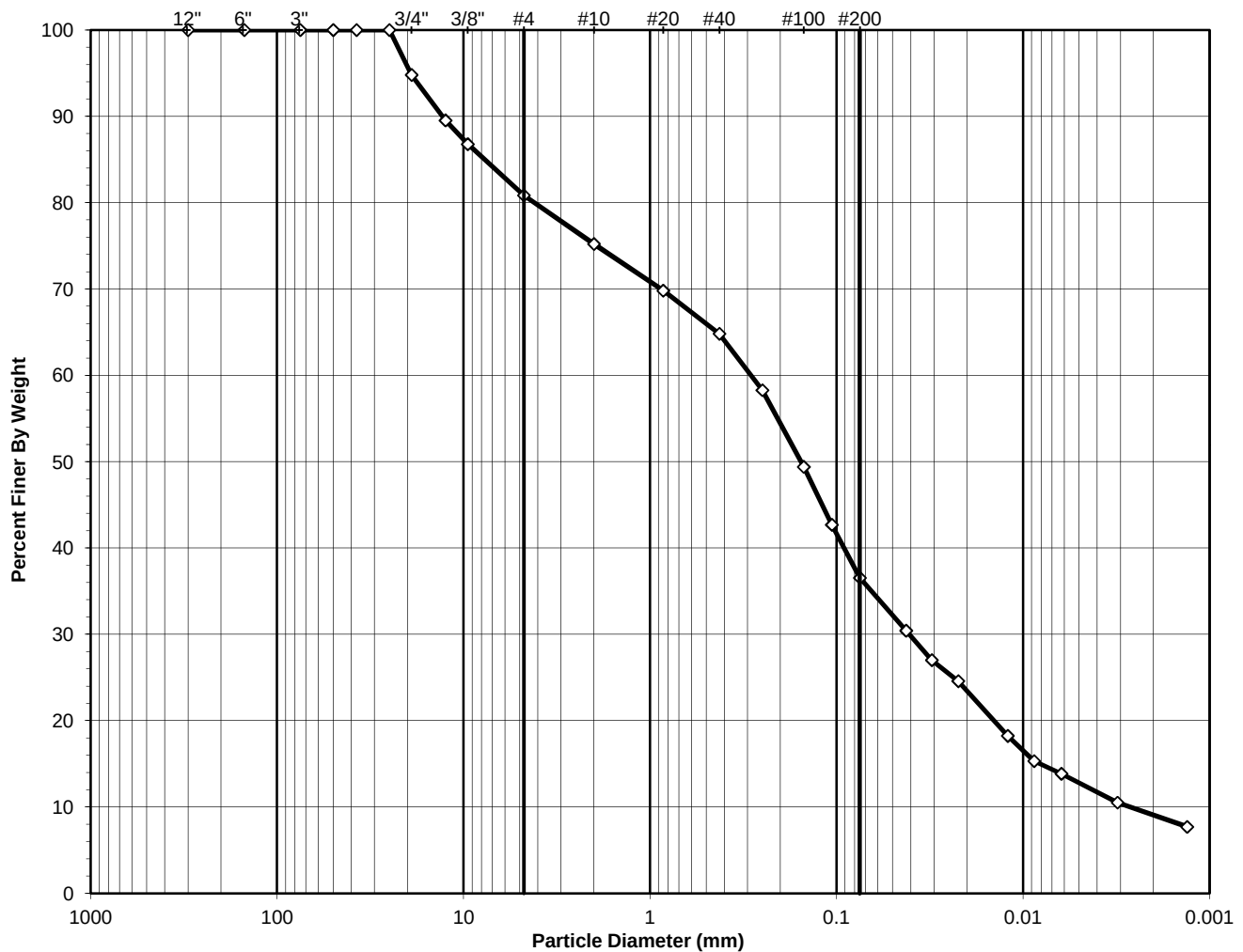
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-136

Boring No.: JB5-19-2
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.16

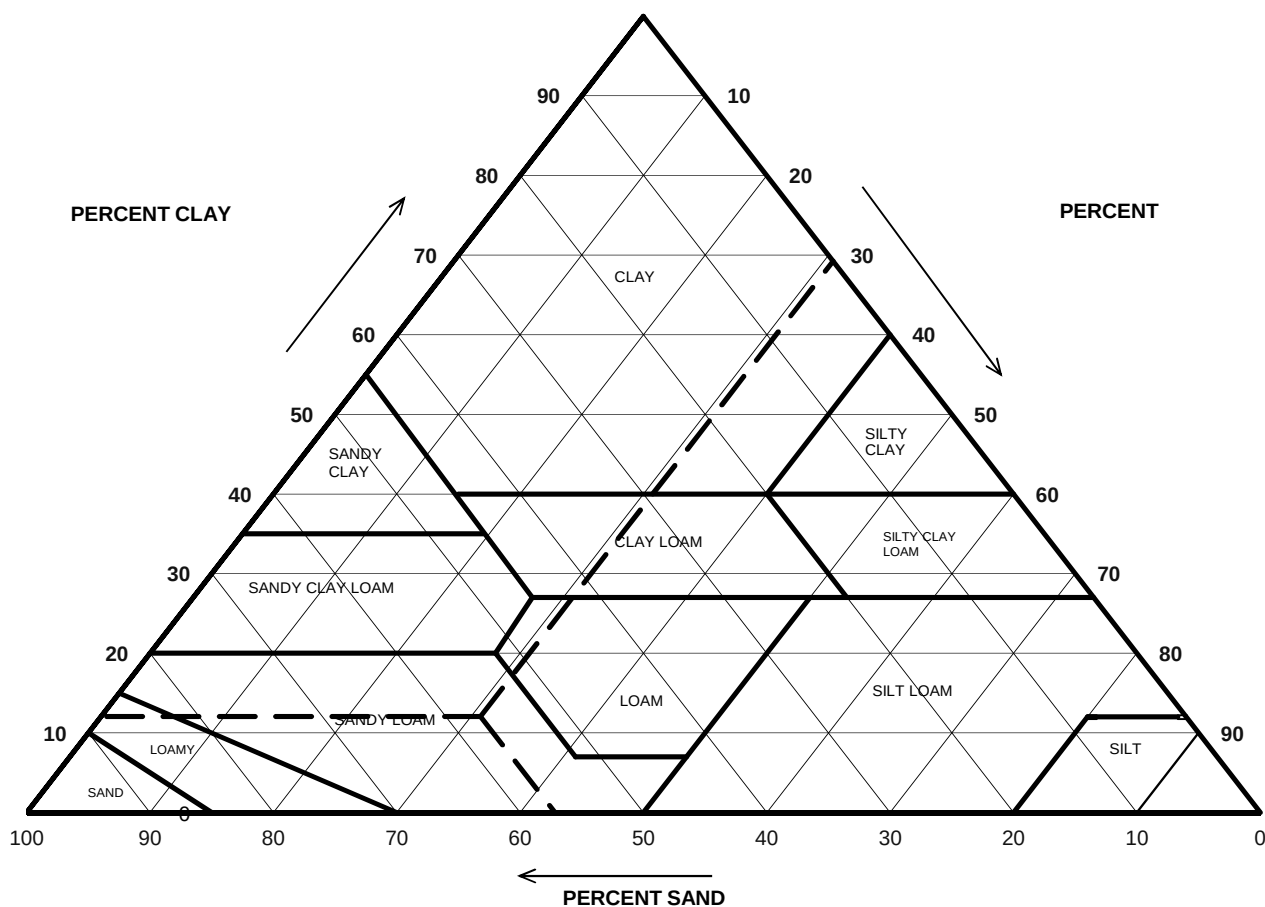
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-136

Boring No.: JB5-19-2
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	24.78	
2	75.22	Sand	43.01	57.18
0.05	32.21	Silt	23.14	30.76
0.002	9.07	Clay	9.07	12.05

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-136

Boring No.: JB5-19-2
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1513	Tare No.:	NA	Tare No.:	1513	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	536.37	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	536.37	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	511.82	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	511.82	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.16	Weight of Tare (g):	NA	Weight of Tare (g):	148.16	Weight of Tare (g):	NA
Weight of Water (g):	24.55	Weight of Water (g):	NA	Weight of Water (g):	24.55	Weight of Water (g):	NA
Weight of Dry Soil (g):	363.66	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	363.66	Weight of Dry Soil (g):	NA
Moisture Content (%):	6.8	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	363.66	Total Dry Weight of Sample (g):	363.66	Dry Weight of Sample (g):	363.66	Total Dry Weight of Sample (g):	363.66
Tare No. (Sub-Specimen)	1513	Wet Weight of +3/4" Sample (g):	20.19	Tare No. (Sub-Specimen)	1513	Wet Weight of +3/4" Sample (g):	20.19
Wt. of Tare & Wet Sub-Specimen (g):	536.37	Dry Weight of + 3/4" Sample (g):	18.91	Wt. of Tare & Wet Sub-Specimen (g):	536.37	Dry Weight of + 3/4" Sample (g):	18.91
Weight of Tare (g):	148.16	Dry Weight of - 3/4" Sample (g):	344.75	Weight of Tare (g):	148.16	Dry Weight of - 3/4" Sample (g):	344.75
Sub-Specimen Wet Weight (g):	388.21	Dry Weight -3/4" +3/8" Sample (g):	29.18	Sub-Specimen Wet Weight (g):	388.21	Dry Weight -3/4" +3/8" Sample (g):	29.18
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	317.09	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	317.09
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	18.91	5.20	5.20	94.80	95
1/2"	12.5	19.15	(**) 5.27	10.47	89.53	90
3/8"	9.5	10.03	2.76	13.22	86.78	87
#4	4.75	21.57	5.93	19.16	80.84	81
#10	2	20.46	5.63	24.78	75.22	75
#20	0.85	19.66	(**) 5.41	30.19	69.81	70
#40	0.425	18.16	4.99	35.18	64.82	65
#60	0.25	23.78	6.54	41.72	58.28	58
#100	0.15	32.27	8.87	50.59	49.41	49
#140	0.106	24.41	6.71	57.31	42.69	43
#200	0.075	22.33	6.14	63.45	36.55	37
Pan	-	132.93	36.55	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-2
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-14.0
Project No.:	2020-002-001	Sample No.:	SpT-6/7
Lab ID:	2020-002-001-136	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	37.0	22.3	5.78	10.3	0.0424	83.3	30.4
2	33.5	22.3	5.78	10.9	0.0309	73.9	27.0
4	31.0	22.3	5.78	11.3	0.0223	67.2	24.6
15	24.5	22.3	5.78	12.5	0.0121	49.9	18.2
30	21.5	22.3	5.78	13.1	0.0087	41.9	15.3
60	20.0	22.3	5.78	13.3	0.0062	37.9	13.9
250	16.5	22.5	5.71	14.0	0.0031	28.8	10.5
1440	13.5	22.8	5.60	14.5	0.0013	21.1	7.7

Soil Specimen Data

Tare No.:	301	Percent Finer than # 200:	36.55
Wt. of Tare & Dry Material (g):	145.79		
Weight of Tare (g):	103.71	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	37.08		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	1/30/20	Checked By	JLK	Date	2/3/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-136

Boring No.: JB5-19-2
Depth (ft): 10.0-14.0
Sample No.: SpT-6/7
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	34
Wt. of Tare & Wet Sample (g)	30.46
Wt. of Tare & Dry Sample (g)	28.14
Weight of Tare (g)	8.42
Weight of Water (g)	2.32
Weight of Dry Sample (g)	19.72

Water Content (%) **11.8**

NON - PLASTIC MATERIAL

Tested By *TO* *Date* *1/29/20* *Checked By* *BRB* *Date* *1/29/20*

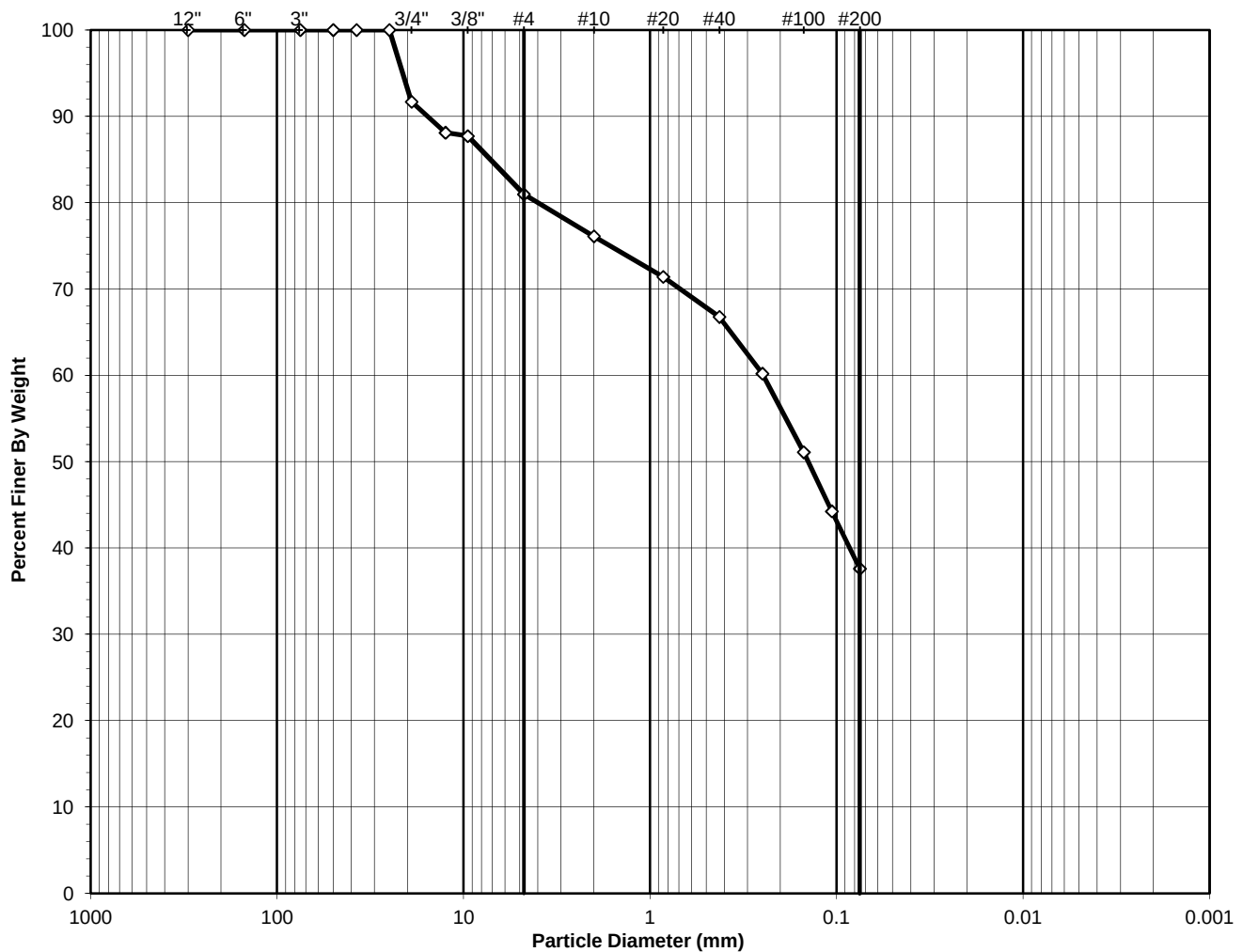
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-137

Boring No.: JB5-19-3
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.14

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/4/20 Checked By JLK Date 2/5/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-137

Boring No.: JB5-19-3
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2026	Tare No.:	NA	Tare No.:	2026	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	537.72	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	537.72	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	537.72	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	537.72	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.15	Weight of Tare (g):	NA	Weight of Tare (g):	148.15	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	389.57	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	389.57	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	389.57	Total Dry Weight of Sample (g):	389.57	Dry Weight of Sample (g):	389.57	Total Dry Weight of Sample (g):	389.57
Tare No. (Sub-Specimen)	2026	Wet Weight of +3/4" Sample (g):	32.39	Tare No. (Sub-Specimen)	2026	Wet Weight of +3/4" Sample (g):	32.39
Wt. of Tare & Wet Sub-Specimen (g):	537.72	Dry Weight of + 3/4" Sample (g):	32.39	Wt. of Tare & Wet Sub-Specimen (g):	537.72	Dry Weight of + 3/4" Sample (g):	32.39
Weight of Tare (g):	148.15	Dry Weight of - 3/4" Sample (g):	357.18	Weight of Tare (g):	148.15	Dry Weight of - 3/4" Sample (g):	357.18
Sub-Specimen Wet Weight (g):	389.57	Dry Weight -3/4" +3/8" Sample (g):	15.48	Sub-Specimen Wet Weight (g):	389.57	Dry Weight -3/4" +3/8" Sample (g):	15.48
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	342.99	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	342.99
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	32.39	8.31	8.31	91.69	92
1/2"	12.5	13.95	(**) 3.58	11.90	88.10	88
3/8"	9.5	1.53	0.39	12.29	87.71	88
#4	4.75	26.27	6.74	19.03	80.97	81
#10	2	18.95	4.86	23.90	76.10	76
#20	0.85	18.31	(**) 4.70	28.60	71.40	71
#40	0.425	18.06	4.64	33.23	66.77	67
#60	0.25	25.59	6.57	39.80	60.20	60
#100	0.15	35.48	9.11	48.91	51.09	51
#140	0.106	26.65	6.84	55.75	44.25	44
#200	0.075	25.89	6.65	62.39	37.61	38
Pan	-	146.50	37.61	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/4/20 Checked By JLK Date 2/5/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-137

Boring No.: JB5-19-3
Depth (ft): 4.0-8.0
Sample No.: SpT-3/4
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	19
Wt. of Tare & Wet Sample (g)	41.89
Wt. of Tare & Dry Sample (g)	37.87
Weight of Tare (g)	8.29
Weight of Water (g)	4.02
Weight of Dry Sample (g)	29.58

Water Content (%)	13.6

NON - PLASTIC MATERIAL

Tested By *MLF* Date *1/30/20* Checked By *JLK* Date *1/30/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-3
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	4.0-8.0
Project No.:	2020-002-001	Sample No.:	SpT-3/4
Lab ID:	2020-002-001-137	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.58	748.33
Temperature (°C):	25.8	25.8
Weight of Pycnometer & Water (g):	683.88	684.43
Tare Number:	664	708
Weight of Tare & Dry Soil (g):	195.15	194.02
Weight of Tare (g):	94.07	93.58
Weight of Dry Soil (g):	101.08	100.44
Specific Gravity of Soil @ Measured Temperature:	2.634	2.749
Specific Gravity of Water @ Measured Temperature:	0.99684	0.99684
Conversion Factor for Measured Temperature:	0.99864	0.99864
Specific Gravity @ 20° Celsius:	2.637	2.753

Average Specific Gravity @ 20° Celsius	2.70

Tested By TO Date 1/31/20 Checked By BRB Date 2/4/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

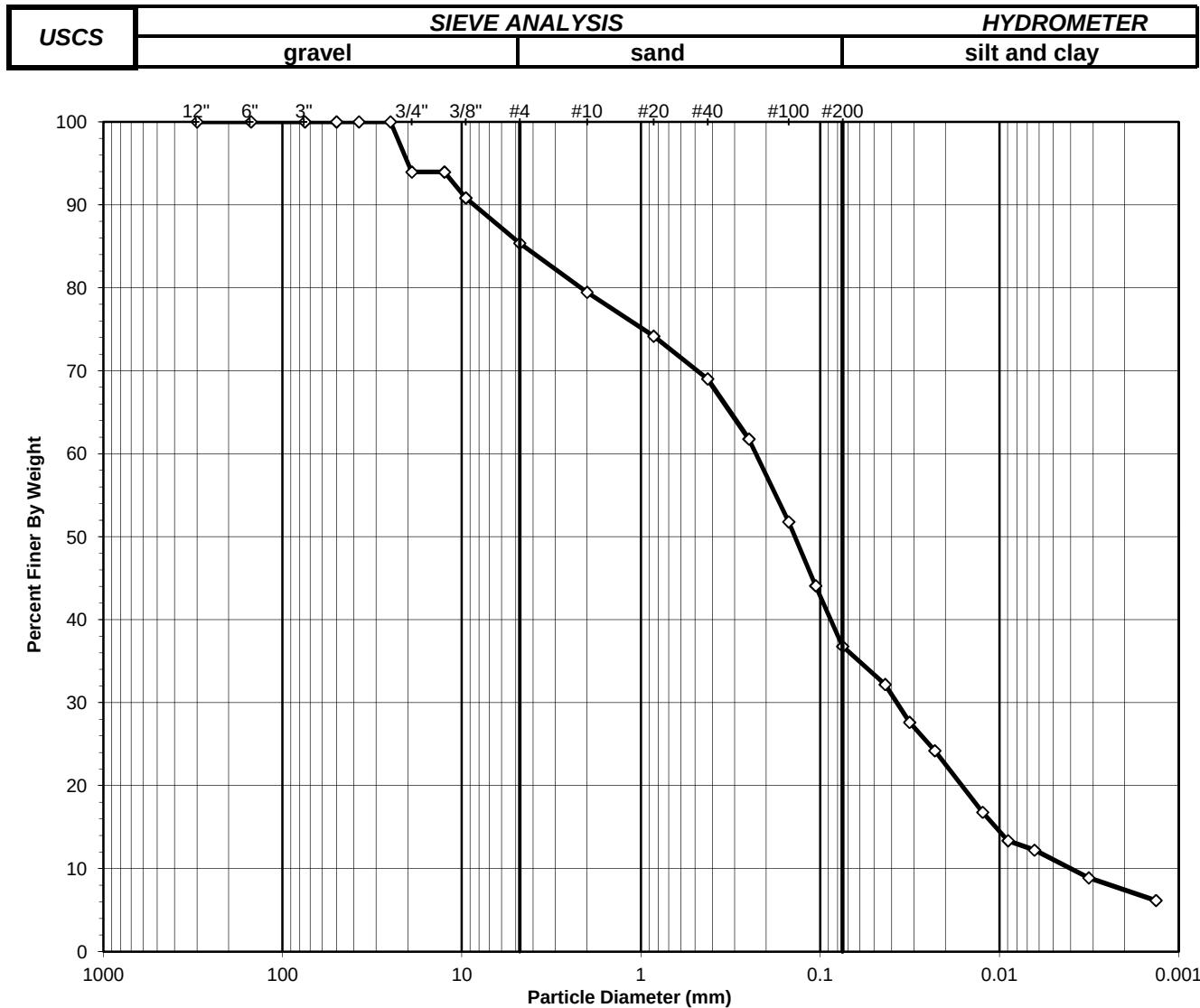
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SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-138

Boring No.: JB5-19-3
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.14

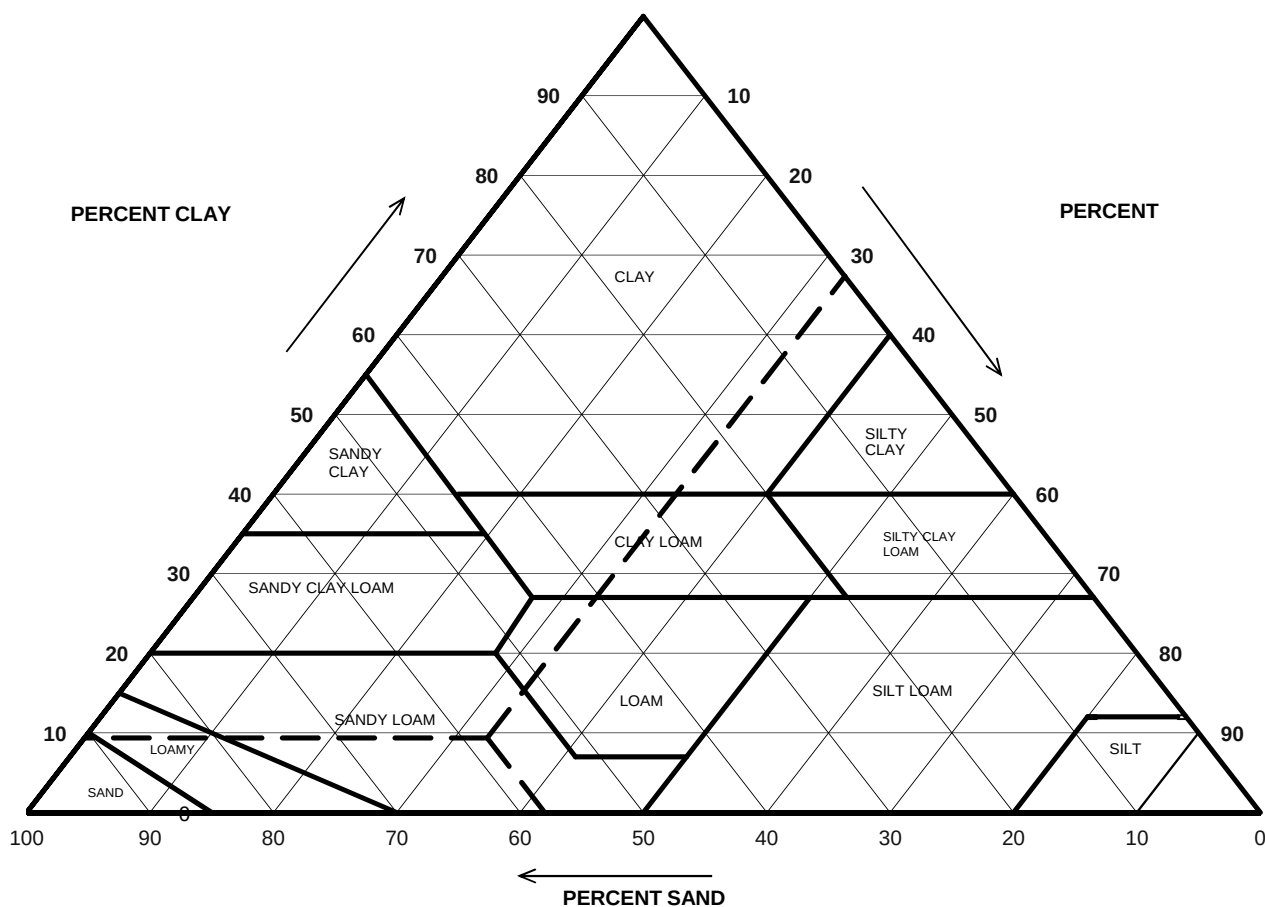
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-138

Boring No.: JB5-19-3
Depth (ft): 10.0-14.0
Sample No.: SpT-6/7
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	20.54	
2	79.46	Sand	46.09	58.00
0.05	33.38	Silt	25.95	32.65
0.002	7.43	Clay	7.43	9.35

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-138

Boring No.: JB5-19-3
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2038	Tare No.:	NA	Tare No.:	2038	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	492.92	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	492.92	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	460.30	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	460.30	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.41	Weight of Tare (g):	NA	Weight of Tare (g):	146.41	Weight of Tare (g):	NA
Weight of Water (g):	32.62	Weight of Water (g):	NA	Weight of Water (g):	32.62	Weight of Water (g):	NA
Weight of Dry Soil (g):	313.89	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	313.89	Weight of Dry Soil (g):	NA
Moisture Content (%):	10.4	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	313.89	Total Dry Weight of Sample (g):	313.89	Dry Weight of Sample (g):	313.89	Total Dry Weight of Sample (g):	313.89
Tare No. (Sub-Specimen)	2038	Wet Weight of +3/4" Sample (g):	20.95	Tare No. (Sub-Specimen)	2038	Wet Weight of +3/4" Sample (g):	20.95
Wt. of Tare & Wet Sub-Specimen (g):	492.92	Dry Weight of + 3/4" Sample (g):	18.98	Wt. of Tare & Wet Sub-Specimen (g):	492.92	Dry Weight of + 3/4" Sample (g):	18.98
Weight of Tare (g):	146.41	Dry Weight of - 3/4" Sample (g):	294.91	Weight of Tare (g):	146.41	Dry Weight of - 3/4" Sample (g):	294.91
Sub-Specimen Wet Weight (g):	346.51	Dry Weight -3/4" +3/8" Sample (g):	9.80	Sub-Specimen Wet Weight (g):	346.51	Dry Weight -3/4" +3/8" Sample (g):	9.80
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	285.70	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	285.70
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	18.98	6.05	6.05	93.95	94
1/2"	12.5	0.00	(**) 0.00	6.05	93.95	94
3/8"	9.5	9.80	3.12	9.17	90.83	91
#4	4.75	17.14	5.46	14.63	85.37	85
#10	2	18.54	5.91	20.54	79.46	79
#20	0.85	16.62	(**) 5.29	25.83	74.17	74
#40	0.425	16.15	5.15	30.98	69.02	69
#60	0.25	22.76	7.25	38.23	61.77	62
#100	0.15	31.33	9.98	48.21	51.79	52
#140	0.106	24.19	7.71	55.91	44.09	44
#200	0.075	22.90	7.30	63.21	36.79	37
Pan	-	115.48	36.79	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-3
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-14.0
Project No.:	2020-002-001	Sample No.:	SpT-6/7
Lab ID:	2020-002-001-138	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	34.0	22.3	5.78	10.8	0.0435	87.5	32.2
2	30.0	22.3	5.78	11.5	0.0317	75.1	27.6
4	27.0	22.3	5.78	12.1	0.0230	65.8	24.2
15	20.5	22.3	5.78	13.2	0.0124	45.7	16.8
30	17.5	22.3	5.78	13.8	0.0090	36.3	13.4
60	16.5	22.3	5.78	14.0	0.0064	33.2	12.2
250	13.5	22.5	5.71	14.5	0.0032	24.2	8.9
1440	11.0	22.8	5.60	14.9	0.0013	16.8	6.2

Soil Specimen Data

Tare No.:	949	Percent Finer than # 200:	36.79
Wt. of Tare & Dry Material (g):	132.65		
Weight of Tare (g):	95.77	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	31.88		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	1/30/20	Checked By	JLK	Date	2/3/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-138

Boring No.: JB5-19-3
Depth (ft): 10.0-14.0
Sample No.: SpT-6/7
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	8
Wt. of Tare & Wet Sample (g)	37.44
Wt. of Tare & Dry Sample (g)	33.62
Weight of Tare (g)	8.32
Weight of Water (g)	3.82
Weight of Dry Sample (g)	25.30

Water Content (%)	15.1

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>TO</i>	<i>Date</i>	<i>1/29/20</i>	<i>Checked By</i>	<i>BRB</i>	<i>Date</i>	<i>1/29/20</i>

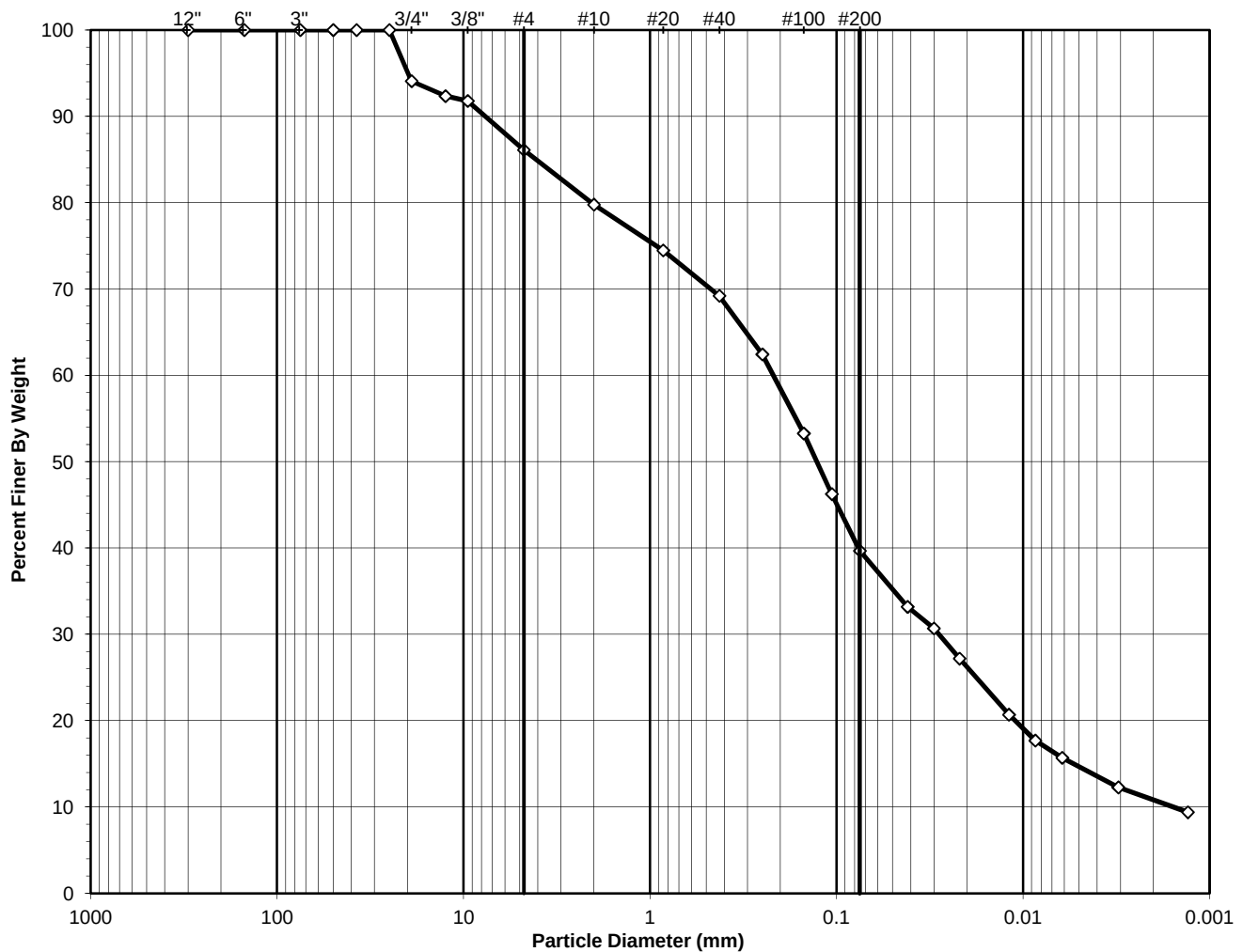
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-139

Boring No.: JB5-19-4
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.13

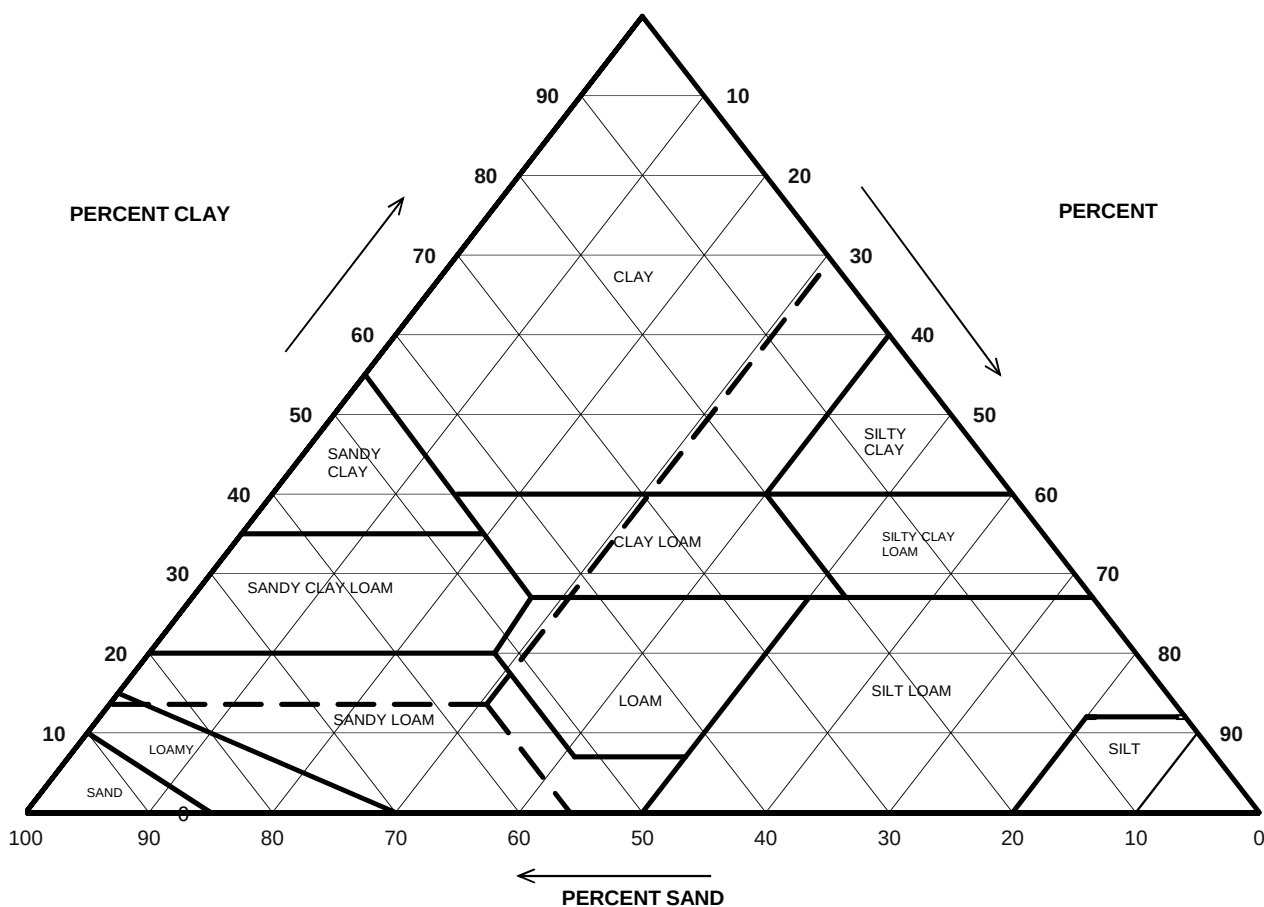
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/31/20 Checked By JLK Date 2/3/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-139

Boring No.: JB5-19-4
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	20.22	
2	79.78	Sand	44.57	55.86
0.05	35.21	Silt	24.39	30.57
0.002	10.82	Clay	10.82	13.57

USDA Classification: SANDY LOAM

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-139

Boring No.: JB5-19-4
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1476	Tare No.:	NA	Tare No.:	1476	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	539.85	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	539.85	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	508.60	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	508.60	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.49	Weight of Tare (g):	NA	Weight of Tare (g):	146.49	Weight of Tare (g):	NA
Weight of Water (g):	31.25	Weight of Water (g):	NA	Weight of Water (g):	31.25	Weight of Water (g):	NA
Weight of Dry Soil (g):	362.11	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	362.11	Weight of Dry Soil (g):	NA
Moisture Content (%):	8.6	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	362.11	Total Dry Weight of Sample (g):	362.11	Dry Weight of Sample (g):	362.11	Total Dry Weight of Sample (g):	362.11
Tare No. (Sub-Specimen)	1476	Wet Weight of +3/4" Sample (g):	23.29	Tare No. (Sub-Specimen)	1476	Wet Weight of +3/4" Sample (g):	23.29
Wt. of Tare & Wet Sub-Specimen (g):	539.85	Dry Weight of + 3/4" Sample (g):	21.44	Wt. of Tare & Wet Sub-Specimen (g):	539.85	Dry Weight of + 3/4" Sample (g):	21.44
Weight of Tare (g):	146.49	Dry Weight of - 3/4" Sample (g):	340.67	Weight of Tare (g):	146.49	Dry Weight of - 3/4" Sample (g):	340.67
Sub-Specimen Wet Weight (g):	393.36	Dry Weight -3/4" +3/8" Sample (g):	8.32	Sub-Specimen Wet Weight (g):	393.36	Dry Weight -3/4" +3/8" Sample (g):	8.32
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	332.84	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	332.84
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	21.44	5.92	5.92	94.08	94
1/2"	12.5	6.27	(**) 1.73	7.65	92.35	92
3/8"	9.5	2.05	0.57	8.22	91.78	92
#4	4.75	20.56	5.68	13.90	86.10	86
#10	2	22.90	6.32	20.22	79.78	80
#20	0.85	19.21	(**) 5.31	25.53	74.47	74
#40	0.425	19.05	5.26	30.79	69.21	69
#60	0.25	24.54	6.78	37.56	62.44	62
#100	0.15	33.17	9.16	46.72	53.28	53
#140	0.106	25.44	7.03	53.75	46.25	46
#200	0.075	23.79	6.57	60.32	39.68	40
Pan	-	143.69	39.68	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/31/20 Checked By JLK Date 2/3/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-4
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	4.0-8.0
Project No.:	2020-002-001	Sample No.:	SpT-3/4
Lab ID:	2020-002-001-139	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	39.0	22.3	5.78	9.9	0.0416	83.6	33.2
2	36.5	22.3	5.78	10.4	0.0301	77.3	30.7
4	33.0	22.3	5.78	11.0	0.0219	68.5	27.2
15	26.5	22.3	5.78	12.2	0.0119	52.2	20.7
30	23.5	22.3	5.78	12.7	0.0086	44.6	17.7
60	21.5	22.3	5.78	13.1	0.0062	39.6	15.7
250	18.0	22.5	5.71	13.7	0.0031	31.0	12.3
1440	15.0	22.8	5.60	14.2	0.0013	23.7	9.4

Soil Specimen Data

Tare No.:	961	Percent Finer than # 200:	39.68
Wt. of Tare & Dry Material (g):	144.19		
Weight of Tare (g):	99.92	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	39.27		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	1/30/20	Checked By	JLK	Date	2/3/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-139

Boring No.: JB5-19-4
Depth (ft): 4.0-8.0
Sample No.: SpT-3/4
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	39
Wt. of Tare & Wet Sample (g)	33.64
Wt. of Tare & Dry Sample (g)	31.48
Weight of Tare (g)	8.45
Weight of Water (g)	2.16
Weight of Dry Sample (g)	23.03

Water Content (%) **9.4**

NON - PLASTIC MATERIAL

Tested By *TO* *Date* *1/29/20* *Checked By* *BRB* *Date* *1/29/20*

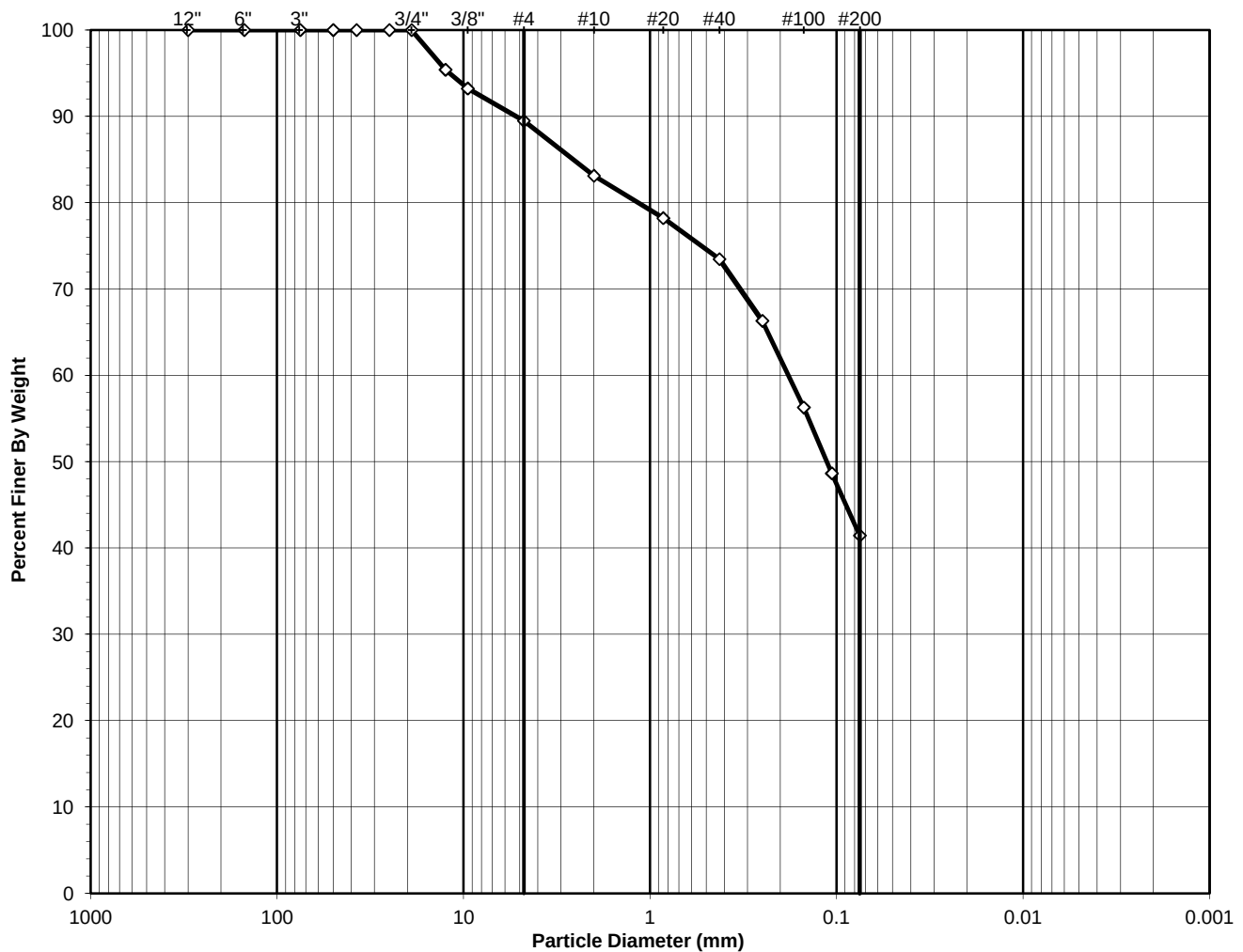
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-140

Boring No.: JB5-19-4
 Depth (ft): 8.0-11.4
 Sample No.: SpT-5/6
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.11

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/31/20 Checked By JLK Date 1/31/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-140

Boring No.: JB5-19-4
 Depth (ft): 8.0-11.4
 Sample No.: SpT-5/6
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1414	Tare No.:	NA	Tare No.:	1414	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	357.73	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	357.73	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	337.85	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	337.85	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.94	Weight of Tare (g):	NA	Weight of Tare (g):	144.94	Weight of Tare (g):	NA
Weight of Water (g):	19.88	Weight of Water (g):	NA	Weight of Water (g):	19.88	Weight of Water (g):	NA
Weight of Dry Soil (g):	192.91	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	192.91	Weight of Dry Soil (g):	NA
Moisture Content (%):	10.3	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	192.91	Total Dry Weight of Sample (g):	192.91	Dry Weight of Sample (g):	192.91	Total Dry Weight of Sample (g):	192.91
Tare No. (Sub-Specimen)	1414	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1414	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	357.73	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	357.73	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	144.94	Dry Weight of - 3/4" Sample (g):	192.91	Weight of Tare (g):	144.94	Dry Weight of - 3/4" Sample (g):	192.91
Sub-Specimen Wet Weight (g):	212.79	Dry Weight -3/4" +3/8" Sample (g):	13.07	Sub-Specimen Wet Weight (g):	212.79	Dry Weight -3/4" +3/8" Sample (g):	13.07
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	179.84	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	179.84
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	8.87	(**)	4.60	95.40	95
3/8"	9.5	4.20	2.18	6.78	93.22	93
#4	4.75	7.23	3.75	10.52	89.48	89
#10	2	12.26	6.36	16.88	83.12	83
#20	0.85	9.47	(**)	21.79	78.21	78
#40	0.425	9.15	4.74	26.53	73.47	73
#60	0.25	13.80	7.15	33.68	66.32	66
#100	0.15	19.36	10.04	43.72	56.28	56
#140	0.106	14.72	7.63	51.35	48.65	49
#200	0.075	13.89	7.20	58.55	41.45	41
Pan	-	79.96	41.45	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/31/20 Checked By JLK Date 1/31/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-140

Boring No.: JB5-19-4
Depth (ft): 8.0-11.4
Sample No.: SpT-5/6
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	20
Wt. of Tare & Wet Sample (g)	27.93
Wt. of Tare & Dry Sample (g)	26.03
Weight of Tare (g)	8.45
Weight of Water (g)	1.90
Weight of Dry Sample (g)	17.58

Water Content (%)	10.8

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>TO</i>	<i>Date</i>	<i>1/29/20</i>	<i>Checked By</i>	<i>BRB</i>	<i>Date</i>	<i>1/29/20</i>

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-4
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	8.0-11.4
Project No.:	2020-002-001	Sample No.:	SpT-5/6
Lab ID:	2020-002-001-140	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	726.18	727.35
Temperature (°C):	23.3	23.5
Weight of Pycnometer & Water (g):	684.19	684.72
Tare Number:	700	950
Weight of Tare & Dry Soil (g):	155.87	165.82
Weight of Tare (g):	87.42	98.61
Weight of Dry Soil (g):	68.45	67.21
Specific Gravity of Soil @ Measured Temperature:	2.587	2.735
Specific Gravity of Water @ Measured Temperature:	0.99747	0.99742
Conversion Factor for Measured Temperature:	0.99926	0.99922
Specific Gravity @ 20° Celsius:	2.589	2.737

Average Specific Gravity @ 20° Celsius	2.66

Tested By TO Date 1/30/20 Checked By JLK Date 1/31/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

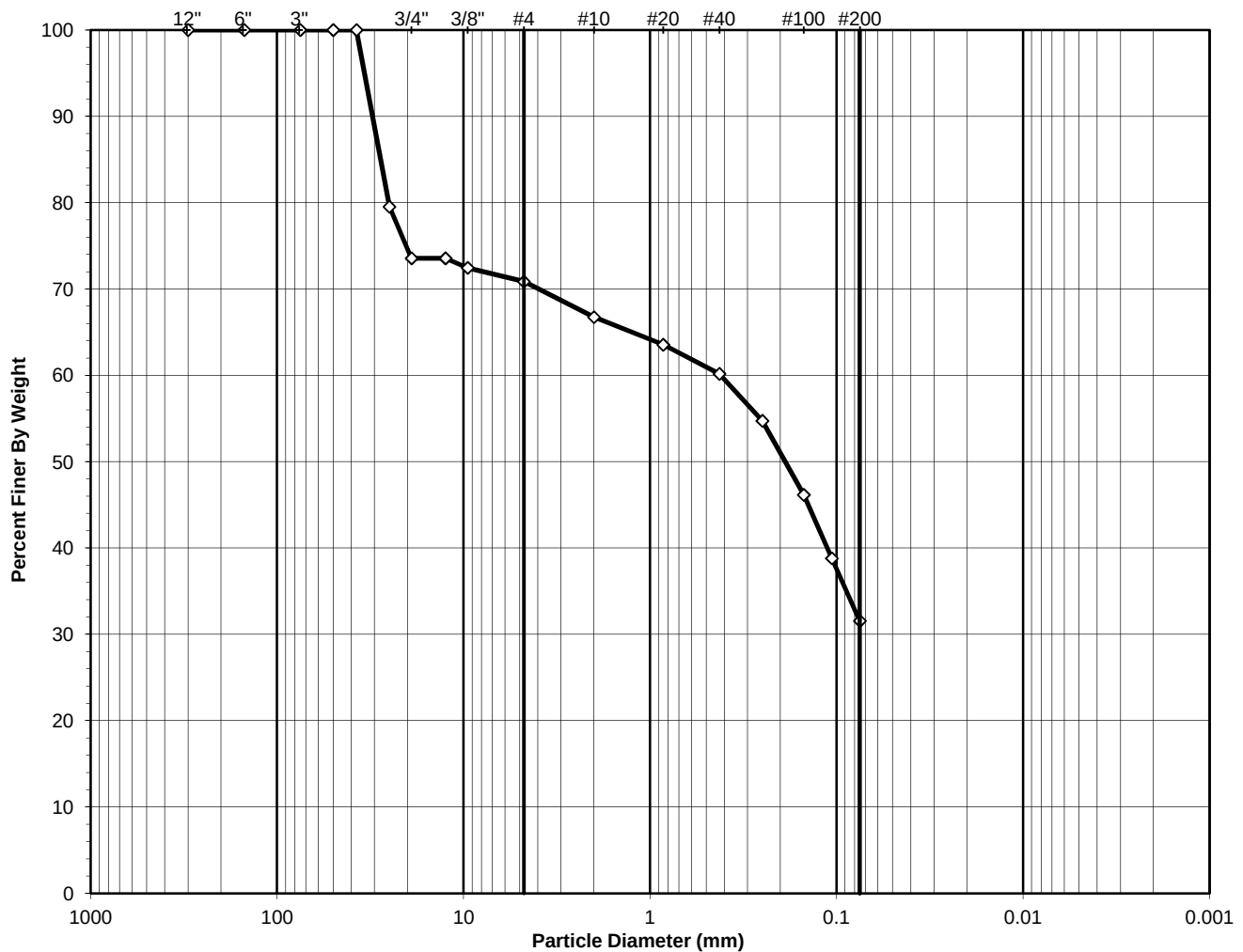
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-141

Boring No.: JB5-19-201N
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.19

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 1/31/20 Checked By JLK Date 1/31/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-141

Boring No.: JB5-19-201N
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1554	Tare No.:	NA	Tare No.:	1554	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	325.23	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	325.23	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	299.88	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	299.88	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	143.52	Weight of Tare (g):	NA	Weight of Tare (g):	143.52	Weight of Tare (g):	NA
Weight of Water (g):	25.35	Weight of Water (g):	NA	Weight of Water (g):	25.35	Weight of Water (g):	NA
Weight of Dry Soil (g):	156.36	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	156.36	Weight of Dry Soil (g):	NA
Moisture Content (%):	16.2	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	156.36	Total Dry Weight of Sample (g):	156.36	Dry Weight of Sample (g):	156.36	Total Dry Weight of Sample (g):	156.36
Tare No. (Sub-Specimen)	1554	Wet Weight of +3/4" Sample (g):	48.05	Tare No. (Sub-Specimen)	1554	Wet Weight of +3/4" Sample (g):	48.05
Wt. of Tare & Wet Sub-Specimen (g):	325.23	Dry Weight of + 3/4" Sample (g):	41.35	Wt. of Tare & Wet Sub-Specimen (g):	325.23	Dry Weight of + 3/4" Sample (g):	41.35
Weight of Tare (g):	143.52	Dry Weight of - 3/4" Sample (g):	115.01	Weight of Tare (g):	143.52	Dry Weight of - 3/4" Sample (g):	115.01
Sub-Specimen Wet Weight (g):	181.71	Dry Weight -3/4" +3/8" Sample (g):	1.72	Sub-Specimen Wet Weight (g):	181.71	Dry Weight -3/4" +3/8" Sample (g):	1.72
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	113.74	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	113.74
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	32.00	20.47	20.47	79.53	80
3/4"	19	9.35	5.98	26.45	73.55	74
1/2"	12.5	0.00	(**) 0.00	26.45	73.55	74
3/8"	9.5	1.72	1.10	27.55	72.45	72
#4	4.75	2.49	1.59	29.14	70.86	71
#10	2	6.44	4.12	33.26	66.74	67
#20	0.85	5.00	(**) 3.20	36.45	63.55	64
#40	0.425	5.27	3.37	39.82	60.18	60
#60	0.25	8.51	5.44	45.27	54.73	55
#100	0.15	13.40	8.57	53.84	46.16	46
#140	0.106	11.50	7.35	61.19	38.81	39
#200	0.075	11.35	7.26	68.45	31.55	32
Pan	-	49.33	31.55	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/31/20 Checked By JLK Date 1/31/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-141

Boring No.: JB5-19-201N
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	50
Wt. of Tare & Wet Sample (g)	24.03
Wt. of Tare & Dry Sample (g)	21.91
Weight of Tare (g)	8.46
Weight of Water (g)	2.12
Weight of Dry Sample (g)	13.45

Water Content (%)	15.8

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>TO</i>	<i>Date</i>	<i>1/29/20</i>	<i>Checked By</i>	<i>BRB</i>	<i>Date</i>	<i>1/29/20</i>

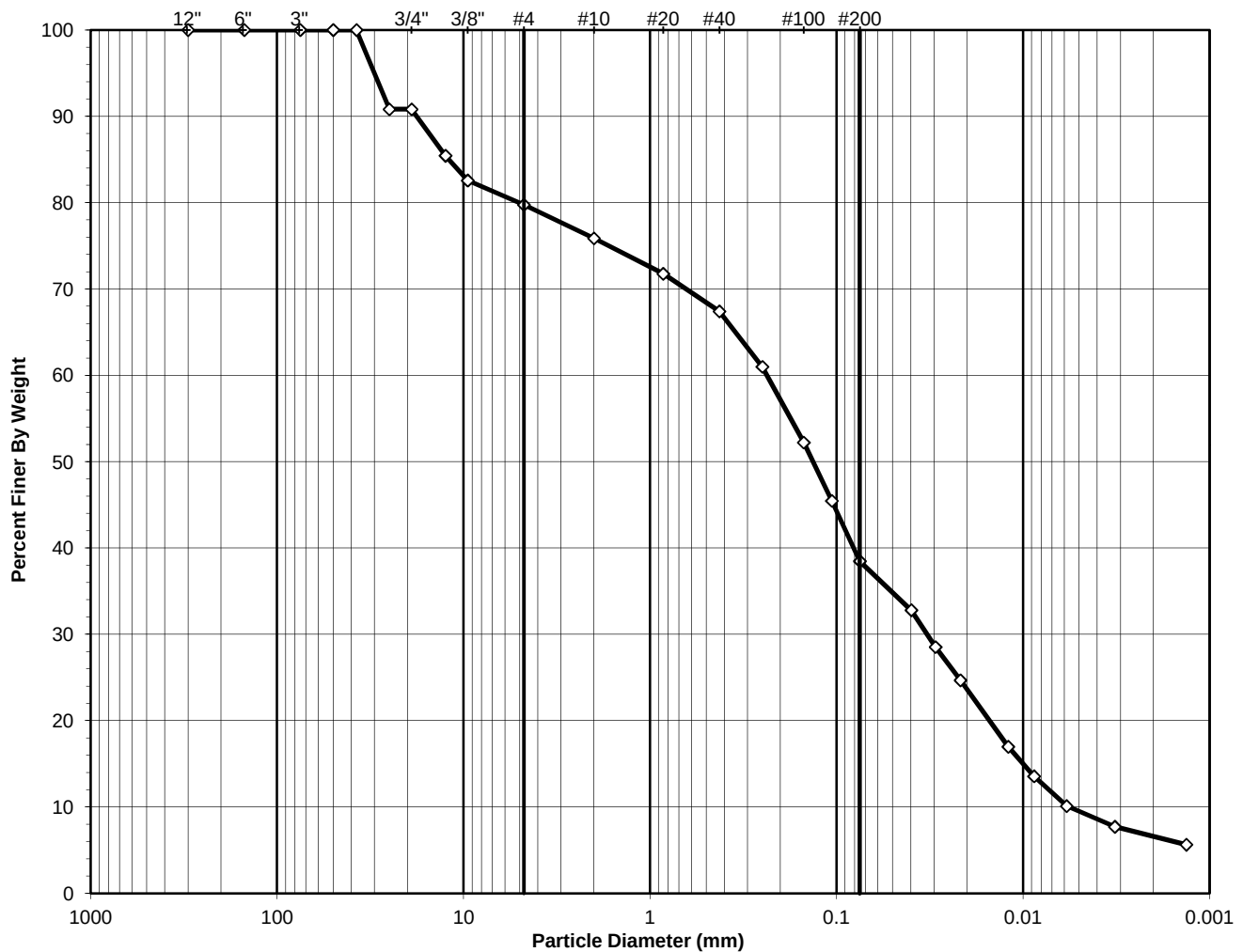
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-142

Boring No.: JB5-19-201N
 Depth (ft): 2.0-6.0
 Sample No.: SpT-2/3
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.13

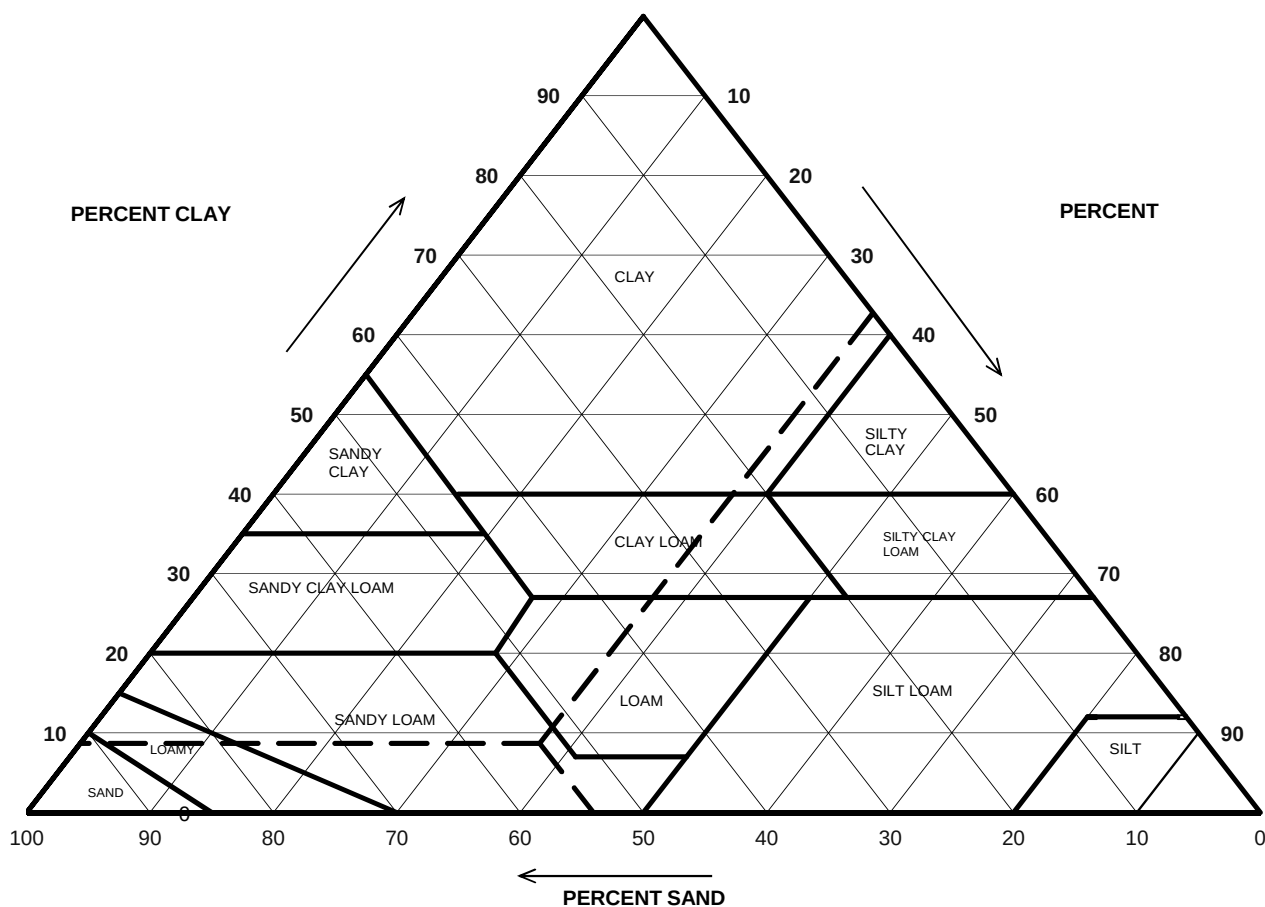
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/4/20 Checked By JLK Date 2/6/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-142

Boring No.: JB5-19-201N
Depth (ft): 2.0-6.0
Sample No.: SpT-2/3
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	24.13	
2	75.87	Sand	41.01	54.06
0.05	34.86	Silt	28.26	37.25
0.002	6.59	Clay	6.59	8.69

USDA Classification: SANDY LOAM

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-142

Boring No.: JB5-19-201N
 Depth (ft): 2.0-6.0
 Sample No.: SpT-2/3
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1557	Tare No.:	NA	Tare No.:	1557	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	520.42	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	520.42	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	520.42	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	520.42	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.67	Weight of Tare (g):	NA	Weight of Tare (g):	147.67	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	372.75	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	372.75	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	372.75	Total Dry Weight of Sample (g):	372.75	Dry Weight of Sample (g):	372.75	Total Dry Weight of Sample (g):	372.75
Tare No. (Sub-Specimen)	1557	Wet Weight of +3/4" Sample (g):	34.24	Tare No. (Sub-Specimen)	1557	Wet Weight of +3/4" Sample (g):	34.24
Wt. of Tare & Wet Sub-Specimen (g):	520.42	Dry Weight of + 3/4" Sample (g):	34.24	Wt. of Tare & Wet Sub-Specimen (g):	520.42	Dry Weight of + 3/4" Sample (g):	34.24
Weight of Tare (g):	147.67	Dry Weight of - 3/4" Sample (g):	338.51	Weight of Tare (g):	147.67	Dry Weight of - 3/4" Sample (g):	338.51
Sub-Specimen Wet Weight (g):	372.75	Dry Weight -3/4" +3/8" Sample (g):	30.74	Sub-Specimen Wet Weight (g):	372.75	Dry Weight -3/4" +3/8" Sample (g):	30.74
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	310.59	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	310.59
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	34.24	9.19	9.19	90.81	91
3/4"	19	0.00	0.00	9.19	90.81	91
1/2"	12.5	20.04	(**)	14.56	85.44	85
3/8"	9.5	10.70	2.87	17.43	82.57	83
#4	4.75	10.50	2.82	20.25	79.75	80
#10	2	14.47	3.88	24.13	75.87	76
#20	0.85	15.30	(**)	28.24	71.76	72
#40	0.425	16.23	4.35	32.59	67.41	67
#60	0.25	23.92	6.42	39.01	60.99	61
#100	0.15	32.70	8.77	47.78	52.22	52
#140	0.106	25.19	6.76	54.54	45.46	45
#200	0.075	26.03	6.98	61.52	38.48	38
Pan	-	143.43	38.48	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/4/20 Checked By JLK Date 2/6/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-201N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	2.0-6.0
Project No.:	2020-002-001	Sample No.:	SpT-2/3
Lab ID:	2020-002-001-142	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	44.0	22.7	5.63	9.0	0.0397	85.2	32.8
2	39.0	22.7	5.63	9.9	0.0295	74.1	28.5
4	34.5	22.7	5.63	10.7	0.0217	64.1	24.7
15	25.5	22.7	5.63	12.3	0.0120	44.1	17.0
30	21.5	22.7	5.63	13.1	0.0087	35.3	13.6
71	17.5	22.6	5.67	13.8	0.0058	26.3	10.1
240	14.5	23.1	5.48	14.3	0.0032	20.0	7.7
1440	12.0	23.3	5.41	14.8	0.0013	14.6	5.6

Soil Specimen Data

Tare No.:	2333	Percent Finer than # 200:	38.48
Wt. of Tare & Dry Material (g):	144.55		
Weight of Tare (g):	94.85	Specific Gravity:	2.68 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	44.70		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/4/20	Checked By	JLK	Date	2/6/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-142

Boring No.: JB5-19-201N
Depth (ft): 2.0-6.0
Sample No.: SpT-2/3
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	13
Wt. of Tare & Wet Sample (g)	30.22
Wt. of Tare & Dry Sample (g)	27.54
Weight of Tare (g)	8.31
Weight of Water (g)	2.68
Weight of Dry Sample (g)	19.23

Water Content (%) **13.9**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *1/30/20* *Checked By* *JLK* *Date* *1/30/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-201N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	2.0-6.0
Project No.:	2020-002-001	Sample No.:	SpT-2/3
Lab ID:	2020-002-001-142	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.92	748.45
Temperature (°C):	26.6	26.7
Weight of Pycnometer & Water (g):	683.77	684.31
Tare Number:	979	976
Weight of Tare & Dry Soil (g):	197.58	200.08
Weight of Tare (g):	95.52	98.82
Weight of Dry Soil (g):	102.06	101.26
Specific Gravity of Soil @ Measured Temperature:	2.623	2.728
Specific Gravity of Water @ Measured Temperature:	0.99663	0.99660
Conversion Factor for Measured Temperature:	0.99842	0.99839
Specific Gravity @ 20° Celsius:	2.627	2.733

Average Specific Gravity @ 20° Celsius	2.68

Tested By TO Date 1/31/20 Checked By BRB Date 2/4/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

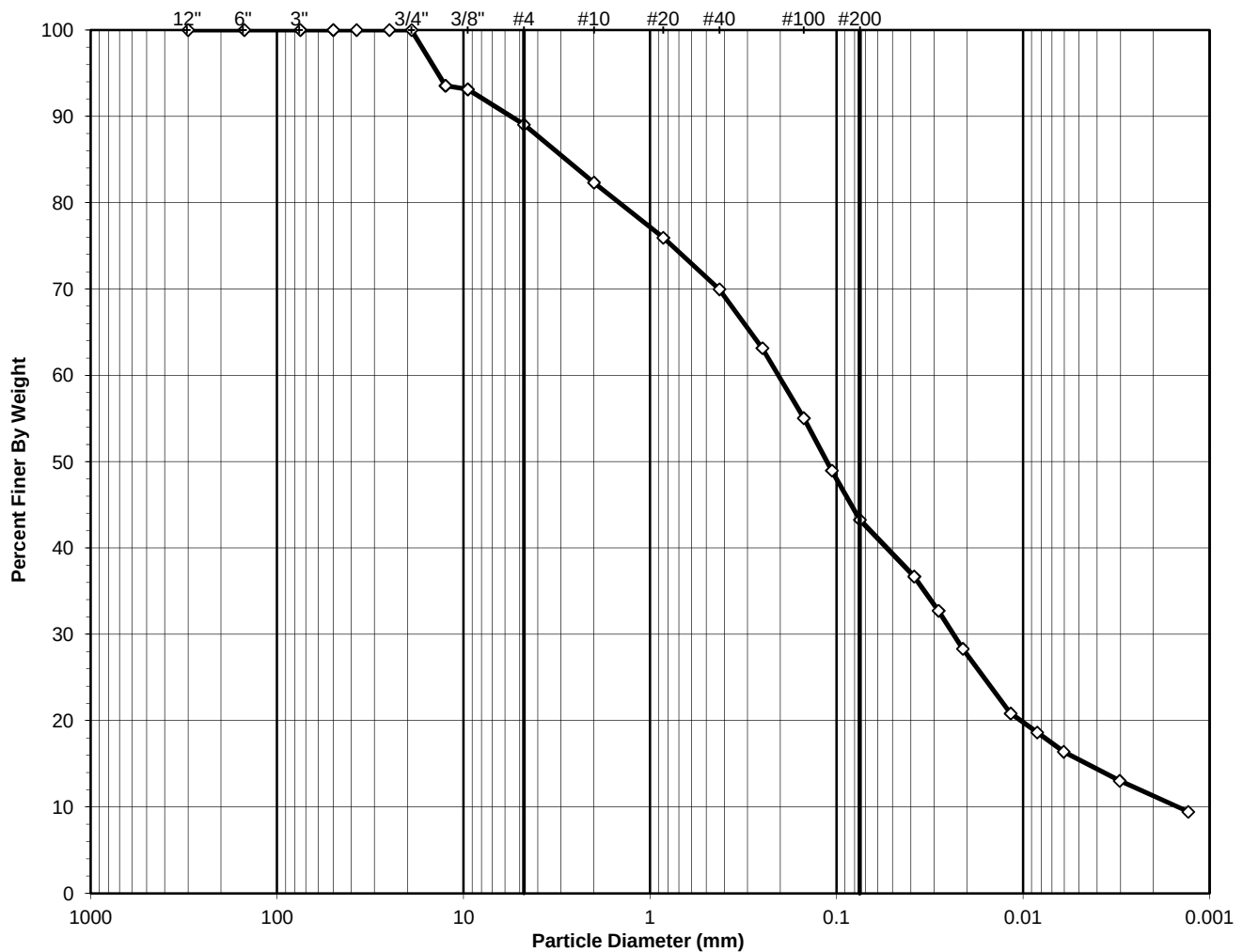
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-143

Boring No.: JB5-19-201NA
 Depth (ft): 8.0-11.4
 Sample No.: SpT-1/2
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.11

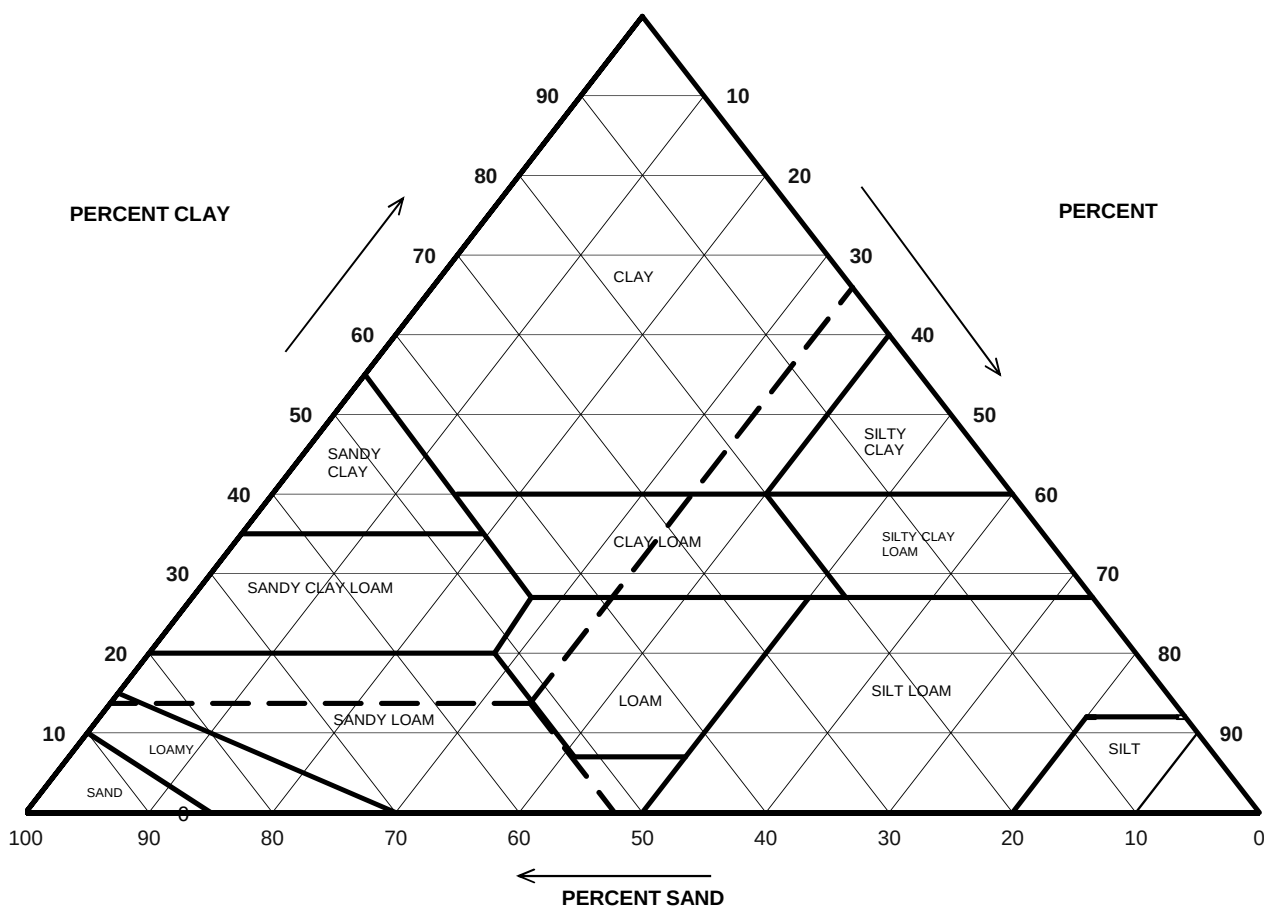
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/29/20 Checked By JLK Date 2/3/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-143

Boring No.: JB5-19-201NA
Depth (ft): 8.0-11.4
Sample No.: SpT-1/2
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	17.67	
2	82.33	Sand	43.03	52.27
0.05	39.30	Silt	28.03	34.05
0.002	11.27	Clay	11.27	13.68

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client:	D'Appolonia	Boring No.:	JB5-19-201NA
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	8.0-11.4
Project No.:	2020-002-001	Sample No.:	SpT-1/2
Lab ID:	2020-002-001-143	Soil Color:	Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1510	Tare No.:	NA	Tare No.:	1510	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	480.64	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	480.64	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	453.83	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	453.83	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.24	Weight of Tare (g):	NA	Weight of Tare (g):	147.24	Weight of Tare (g):	NA
Weight of Water (g):	26.81	Weight of Water (g):	NA	Weight of Water (g):	26.81	Weight of Water (g):	NA
Weight of Dry Soil (g):	306.59	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	306.59	Weight of Dry Soil (g):	NA
Moisture Content (%):	8.7	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	306.59	Total Dry Weight of Sample (g):	306.59	Dry Weight of Sample (g):	306.59	Total Dry Weight of Sample (g):	306.59
Tare No. (Sub-Specimen)	1510	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1510	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	480.64	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	480.64	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	147.24	Dry Weight of - 3/4" Sample (g):	306.59	Weight of Tare (g):	147.24	Dry Weight of - 3/4" Sample (g):	306.59
Sub-Specimen Wet Weight (g):	333.40	Dry Weight -3/4" +3/8" Sample (g):	21.07	Sub-Specimen Wet Weight (g):	333.40	Dry Weight -3/4" +3/8" Sample (g):	21.07
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	285.52	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	285.52
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	19.78	(**)	6.45	93.55	94
3/8"	9.5	1.29	0.42	6.87	93.13	93
#4	4.75	12.53	4.09	10.96	89.04	89
#10	2	20.57	6.71	17.67	82.33	82
#20	0.85	19.60	(**)	24.06	75.94	76
#40	0.425	18.30	5.97	30.03	69.97	70
#60	0.25	20.90	6.82	36.85	63.15	63
#100	0.15	24.85	8.11	44.95	55.05	55
#140	0.106	18.62	6.07	51.03	48.97	49
#200	0.075	17.49	5.70	56.73	43.27	43
Pan	-	132.66	43.27	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By	DS	Date	1/29/20	Checked By	JLK	Date	2/3/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-201NA
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	8.0-11.4
Project No.:	2020-002-001	Sample No.:	SpT-1/2
Lab ID:	2020-002-001-143	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	47.5	22.1	5.86	8.4	0.0384	84.8	36.7
2	43.0	22.1	5.86	9.2	0.0284	75.7	32.7
4	38.0	22.1	5.86	10.1	0.0210	65.5	28.3
15	29.5	22.1	5.86	11.6	0.0117	48.2	20.8
30	27.0	22.1	5.86	12.1	0.0084	43.1	18.6
60	24.5	22.0	5.89	12.5	0.0061	37.9	16.4
250	20.5	22.5	5.71	13.2	0.0030	30.1	13.0
1440	16.5	22.3	5.78	14.0	0.0013	21.8	9.4

Soil Specimen Data

Tare No.:	966	Percent Finer than # 200:	43.27
Wt. of Tare & Dry Material (g):	153.38		
Weight of Tare (g):	99.83	Specific Gravity:	2.70 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	48.55		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	1/29/20	Checked By	JLK	Date	2/3/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-143

Boring No.: JB5-19-201NA
Depth (ft): 8.0-11.4
Sample No.: SpT-1/2
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	47
Wt. of Tare & Wet Sample (g)	44.45
Wt. of Tare & Dry Sample (g)	41.62
Weight of Tare (g)	8.41
Weight of Water (g)	2.83
Weight of Dry Sample (g)	33.21

Water Content (%) 8.5

NON - PLASTIC MATERIAL

Tested By FS Date 1/29/20 Checked By JLK Date 1/29/20

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-201NA
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	8.0-11.4
Project No.:	2020-002-001	Sample No.:	SpT-1/2
Lab ID:	2020-002-001-143	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747.03	749.14
Temperature (°C):	24.3	24.1
Weight of Pycnometer & Water (g):	684.07	684.64
Tare Number:	649	692
Weight of Tare & Dry Soil (g):	195.07	194.42
Weight of Tare (g):	93.82	93.03
Weight of Dry Soil (g):	101.25	101.39
Specific Gravity of Soil @ Measured Temperature:	2.644	2.748
Specific Gravity of Water @ Measured Temperature:	0.99723	0.99728
Conversion Factor for Measured Temperature:	0.99902	0.99907
Specific Gravity @ 20° Celsius:	2.647	2.751

Average Specific Gravity @ 20° Celsius	2.70

Tested By TO Date 1/30/20 Checked By JLK Date 1/31/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

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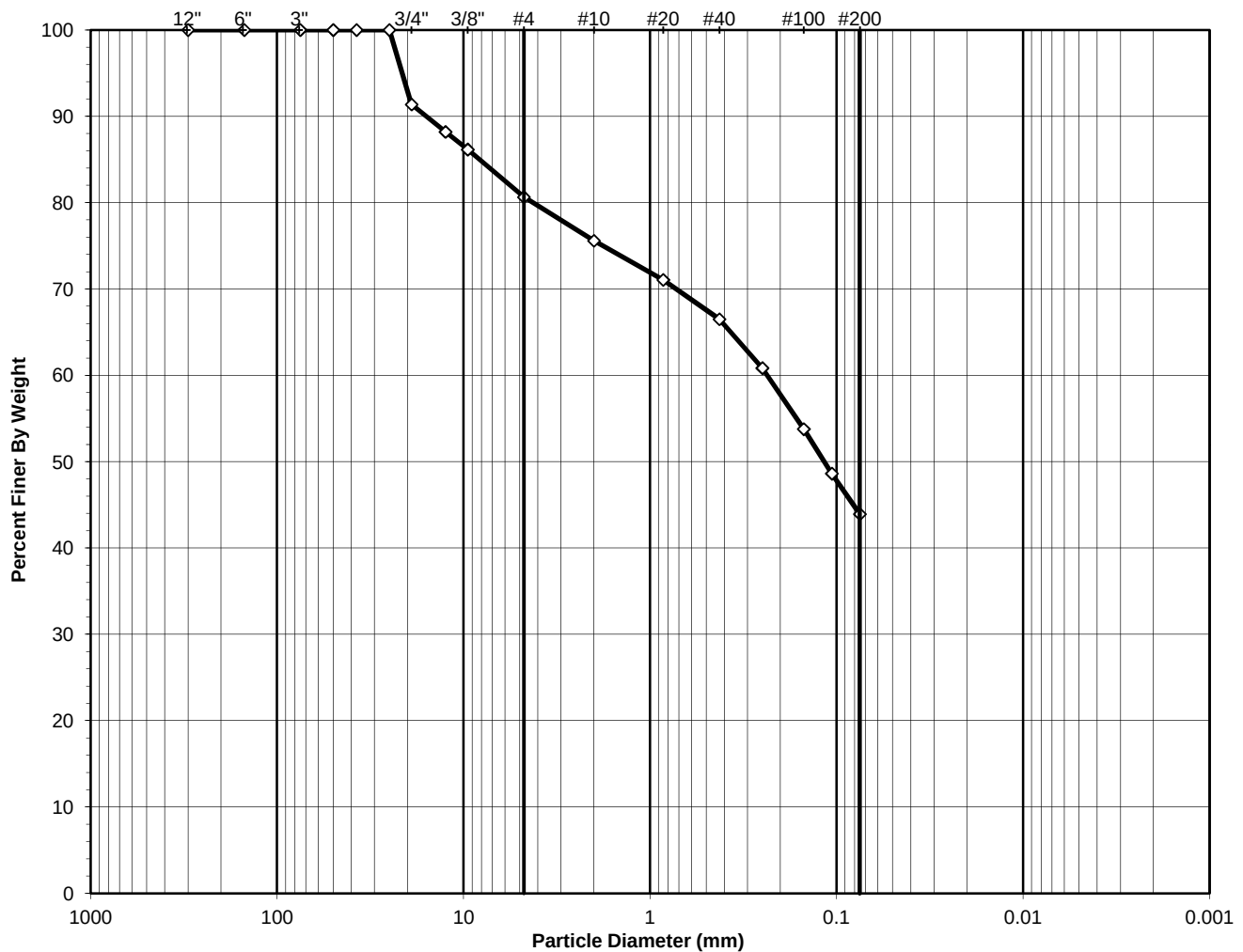
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-144

Boring No.: JB5-19-201NA
 Depth (ft): 18.0-20.0
 Sample No.: SpT-6
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.12

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 1/29/20 Checked By JLK Date 1/29/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client:	D'Appolonia	Boring No.:	JB5-19-201NA
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	18.0-20.0
Project No.:	2020-002-001	Sample No.:	SpT-6
Lab ID:	2020-002-001-144	Soil Color:	Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1432			Tare No.:	NA		
Wt. of Tare & Wet Sample (g):	694.35			Weight of Tare & Wet Sample (g):	NA		
Wt. of Tare & Dry Sample (g):	659.16			Weight of Tare & Dry Sample (g):	NA		
Weight of Tare (g):	144.42			Weight of Tare (g):	NA		
Weight of Water (g):	35.19			Weight of Water (g):	NA		
Weight of Dry Soil (g):	514.74			Weight of Dry Soil (g):	NA		
Moisture Content (%):	6.8			Moisture Content (%):	0.0		
Wet Weight of -3/4" Sample (g):	NA			Total Dry Weight of Sample (g):	583.47		
Tare No. (-3/4" Sub-Specimen)	1536			Wet Weight of +3/4" Sample (g):	53.79		
Wt. of Tare & Wet -3/4" Sub-Specimen (g):	772.44			Dry Weight of + 3/4" Sample (g):	50.35		
Weight of Tare (g):	149.08			Dry Weight of - 3/4" Sample (g):	533.12		
Sub-Specimen -3/4" Wet Weight (g):	623.36			Dry Weight -3/4" +3/8" Sample (g):	30.45		
Tare No. (-3/8" Sub-Specimen):	NA			Dry Weight of -3/8" Sample (g):	502.67		
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA			J - Factor (% Finer than 3/4"):	NA		
Weight of Tare (g):	NA			J - Factor (% Finer than 3/8"):	NA		
Sub-Specimen -3/8" Wet Weight (g):	NA						

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	50.35	8.63	8.63	91.37	91
1/2"	12.5	18.49	(**) 3.17	11.80	88.20	88
3/8"	9.5	11.96	2.05	13.85	86.15	86
#4	4.75	32.13	5.51	19.35	80.65	81
#10	2	29.49	5.05	24.41	75.59	76
#20	0.85	26.46	(**) 4.53	28.94	71.06	71
#40	0.425	26.58	4.56	33.50	66.50	67
#60	0.25	33.02	5.66	39.16	60.84	61
#100	0.15	41.24	7.07	46.23	53.77	54
#140	0.106	30.06	5.15	51.38	48.62	49
#200	0.075	27.37	4.69	56.07	43.93	44
Pan	-	256.32	43.93	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By	DS	Date	1/29/20	Checked By	JLK	Date	1/29/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-144

Boring No.: JB5-19-201NA
Depth (ft): 18.0-20.0
Sample No.: SpT-6
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	22
Wt. of Tare & Wet Sample (g)	45.59
Wt. of Tare & Dry Sample (g)	43.01
Weight of Tare (g)	8.34
Weight of Water (g)	2.58
Weight of Dry Sample (g)	34.67

Water Content (%) **7.4**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *1/29/20* *Checked By* *JLK* *Date* *1/29/20*

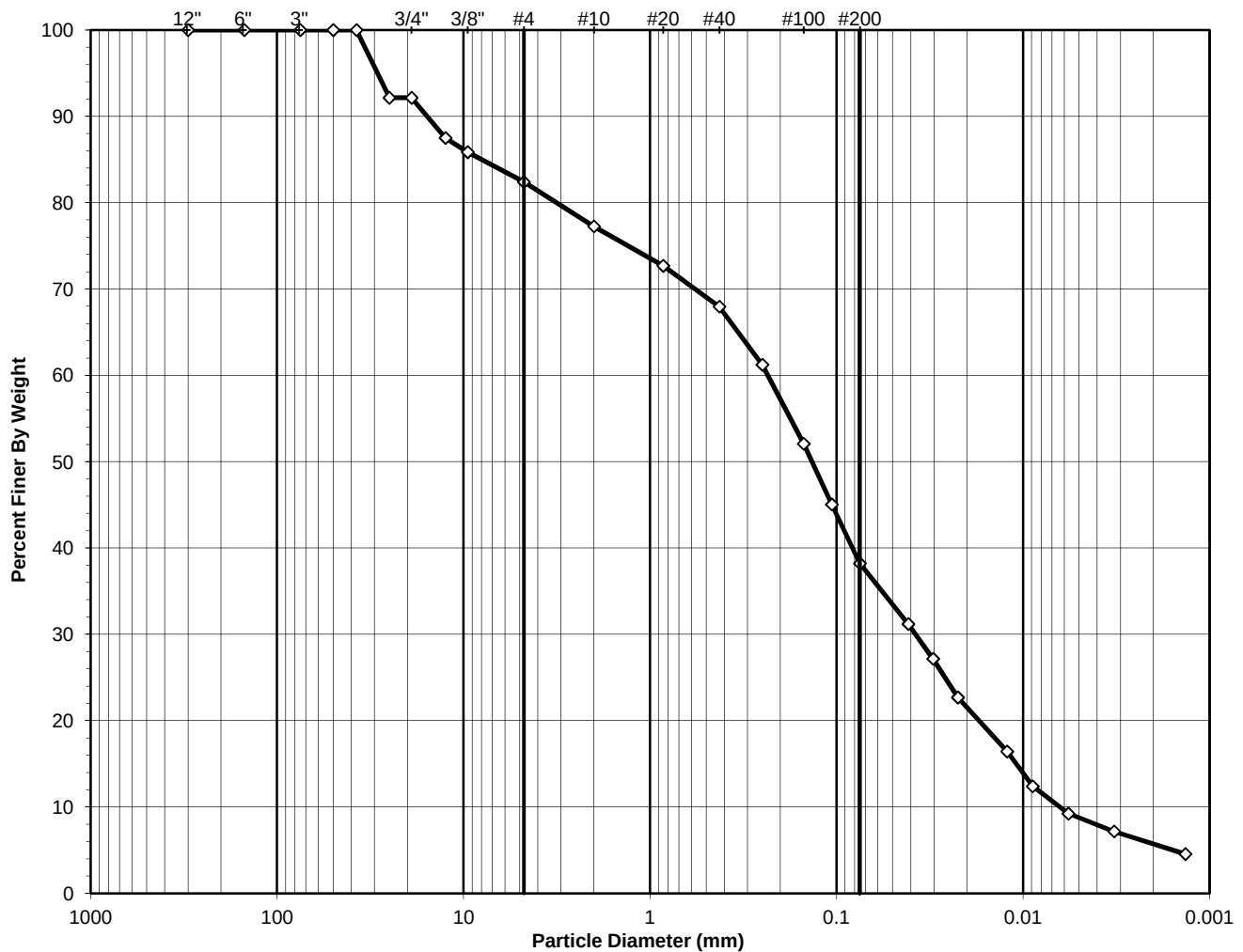
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-145

Boring No.: JB5-19-202N
 Depth (ft): 0.0-6.0
 Sample No.: SpT-1/3
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.14

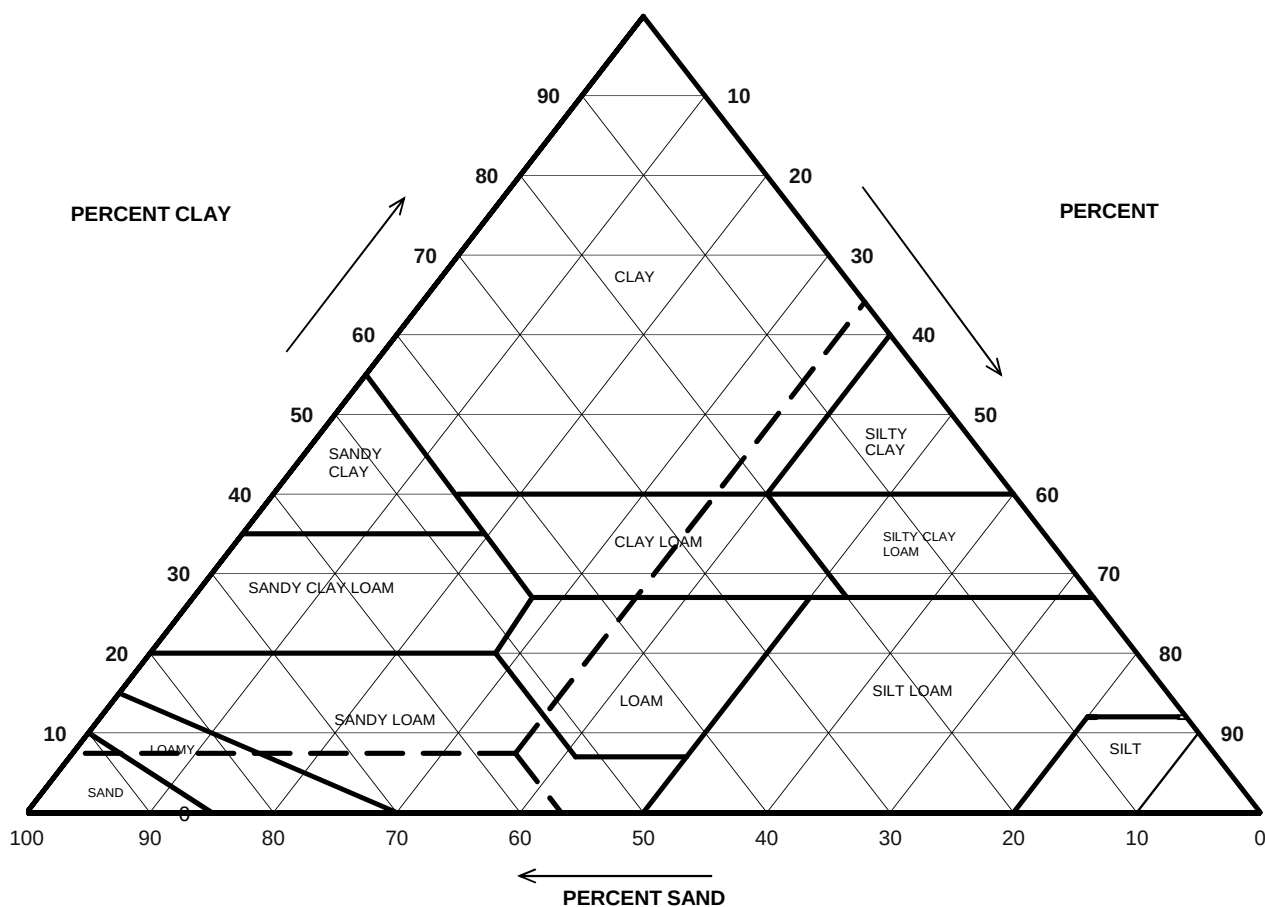
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/4/20 Checked By JLK Date 2/6/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-145

Boring No.: JB5-19-202N
 Depth (ft): 0.0-6.0
 Sample No.: SpT-1/3
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	22.74	
2	77.26	Sand	43.79	56.69
0.05	33.46	Silt	27.73	35.90
0.002	5.73	Clay	5.73	7.42

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-145

Boring No.: JB5-19-202N
 Depth (ft): 0.0-6.0
 Sample No.: SpT-1/3
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1547	Tare No.:	NA	Tare No.:	1547	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	462.00	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	462.00	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	462.00	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	462.00	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.90	Weight of Tare (g):	NA	Weight of Tare (g):	145.90	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	316.10	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	316.10	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	316.10	Total Dry Weight of Sample (g):	316.10	Dry Weight of Sample (g):	316.10	Total Dry Weight of Sample (g):	316.10
Tare No. (Sub-Specimen)	1547	Wet Weight of +3/4" Sample (g):	24.81	Tare No. (Sub-Specimen)	1547	Wet Weight of +3/4" Sample (g):	24.81
Wt. of Tare & Wet Sub-Specimen (g):	462.00	Dry Weight of + 3/4" Sample (g):	24.81	Wt. of Tare & Wet Sub-Specimen (g):	462.00	Dry Weight of + 3/4" Sample (g):	24.81
Weight of Tare (g):	145.90	Dry Weight of - 3/4" Sample (g):	291.29	Weight of Tare (g):	145.90	Dry Weight of - 3/4" Sample (g):	291.29
Sub-Specimen Wet Weight (g):	316.10	Dry Weight -3/4" +3/8" Sample (g):	19.91	Sub-Specimen Wet Weight (g):	316.10	Dry Weight -3/4" +3/8" Sample (g):	19.91
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	272.94	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	272.94
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	24.81	7.85	7.85	92.15	92
3/4"	19	0.00	0.00	7.85	92.15	92
1/2"	12.5	14.71	(**) 4.65	12.50	87.50	87
3/8"	9.5	5.20	1.65	14.15	85.85	86
#4	4.75	10.92	3.45	17.60	82.40	82
#10	2	16.25	5.14	22.74	77.26	77
#20	0.85	14.45	(**) 4.57	27.31	72.69	73
#40	0.425	14.95	4.73	32.04	67.96	68
#60	0.25	21.26	6.73	38.77	61.23	61
#100	0.15	28.95	9.16	47.93	52.07	52
#140	0.106	22.19	7.02	54.95	45.05	45
#200	0.075	21.59	6.83	61.78	38.22	38
Pan	-	120.82	38.22	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/4/20 Checked By JLK Date 2/6/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-202N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	0.0-6.0
Project No.:	2020-002-001	Sample No.:	SpT-1/3
Lab ID:	2020-002-001-145	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	40.5	22.7	5.63	9.6	0.0412	81.6	31.2
2	36.0	22.7	5.63	10.4	0.0303	71.1	27.2
4	31.0	22.7	5.63	11.3	0.0224	59.4	22.7
15	24.0	22.7	5.63	12.6	0.0122	43.0	16.4
30	19.5	22.7	5.63	13.4	0.0089	32.5	12.4
76	16.0	22.6	5.67	14.0	0.0057	24.2	9.2
240	13.5	23.1	5.48	14.5	0.0032	18.8	7.2
1440	10.5	23.3	5.41	15.0	0.0013	11.9	4.6

Soil Specimen Data

Tare No.:	650	Percent Finer than # 200:	38.22
Wt. of Tare & Dry Material (g):	144.19		
Weight of Tare (g):	96.67	Specific Gravity:	2.67 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	42.52		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/4/20	Checked By	JLK	Date	2/6/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-145

Boring No.: JB5-19-202N
Depth (ft): 0.0-6.0
Sample No.: SpT-1/3
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	5
Wt. of Tare & Wet Sample (g)	28.23
Wt. of Tare & Dry Sample (g)	25.72
Weight of Tare (g)	8.30
Weight of Water (g)	2.51
Weight of Dry Sample (g)	17.42

Water Content (%)	14.4

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *1/30/20* *Checked By* *JLK* *Date* *1/30/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-202N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	0.0-6.0
Project No.:	2020-002-001	Sample No.:	SpT-1/3
Lab ID:	2020-002-001-145	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747	747.94
Temperature (°C):	26.1	26.2
Weight of Pycnometer & Water (g):	683.84	684.37
Tare Number:	503	958
Weight of Tare & Dry Soil (g):	194.63	195.87
Weight of Tare (g):	92.23	95.59
Weight of Dry Soil (g):	102.40	100.28
Specific Gravity of Soil @ Measured Temperature:	2.610	2.731
Specific Gravity of Water @ Measured Temperature:	0.99677	0.99674
Conversion Factor for Measured Temperature:	0.99856	0.99853
Specific Gravity @ 20° Celsius:	2.614	2.735

Average Specific Gravity @ 20° Celsius	2.67

Tested By TO Date 1/31/20 Checked By BRB Date 2/4/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

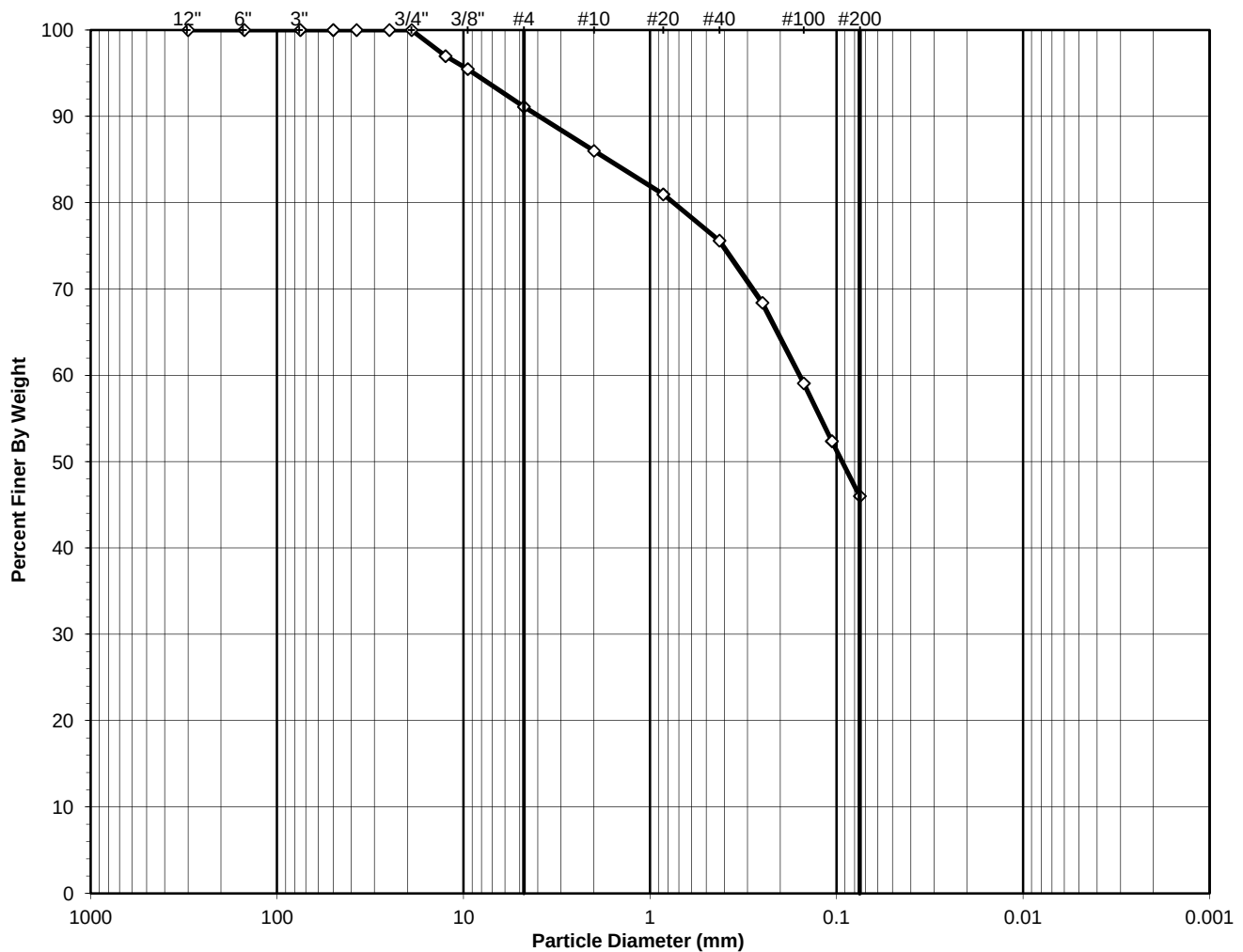
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-146

Boring No.: JB5-19-202N
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.09

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/4/20 Checked By JLK Date 2/5/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-146

Boring No.: JB5-19-202N
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1516	Tare No.:	NA	Tare No.:	1516	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	476.32	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	476.32	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	476.32	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	476.32	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	142.88	Weight of Tare (g):	NA	Weight of Tare (g):	142.88	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	333.44	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	333.44	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	333.44	Total Dry Weight of Sample (g):	333.44	Dry Weight of Sample (g):	333.44	Total Dry Weight of Sample (g):	333.44
Tare No. (Sub-Specimen)	1516	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1516	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	476.32	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	476.32	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	142.88	Dry Weight of - 3/4" Sample (g):	333.44	Weight of Tare (g):	142.88	Dry Weight of - 3/4" Sample (g):	333.44
Sub-Specimen Wet Weight (g):	333.44	Dry Weight -3/4" +3/8" Sample (g):	15.08	Sub-Specimen Wet Weight (g):	333.44	Dry Weight -3/4" +3/8" Sample (g):	15.08
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	318.36	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	318.36
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	10.08	(**)	3.02	96.98	97
3/8"	9.5	5.00	1.50	4.52	95.48	95
#4	4.75	14.57	4.37	8.89	91.11	91
#10	2	17.01	5.10	13.99	86.01	86
#20	0.85	16.80	(**)	19.03	80.97	81
#40	0.425	17.87	5.36	24.39	75.61	76
#60	0.25	24.00	7.20	31.59	68.41	68
#100	0.15	31.12	9.33	40.92	59.08	59
#140	0.106	22.34	6.70	47.62	52.38	52
#200	0.075	21.22	6.36	53.99	46.01	46
Pan	-	153.43	46.01	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/4/20 Checked By JLK Date 2/5/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-146

Boring No.: JB5-19-202N
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	14
Wt. of Tare & Wet Sample (g)	31.62
Wt. of Tare & Dry Sample (g)	29.49
Weight of Tare (g)	8.49
Weight of Water (g)	2.13
Weight of Dry Sample (g)	21.00

Water Content (%)	10.1

NON - PLASTIC MATERIAL

Tested By *MLF* Date *1/30/20* Checked By *JLK* Date *1/30/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-202N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	6.0-10.0
Project No.:	2020-002-001	Sample No.:	SpT-4/5
Lab ID:	2020-002-001-146	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.54	748.84
Temperature (°C):	25.1	25.6
Weight of Pycnometer & Water (g):	683.97	684.45
Tare Number:	631	633
Weight of Tare & Dry Soil (g):	196.8	195.54
Weight of Tare (g):	95.69	94.18
Weight of Dry Soil (g):	101.11	101.36
Specific Gravity of Soil @ Measured Temperature:	2.624	2.741
Specific Gravity of Water @ Measured Temperature:	0.99703	0.99690
Conversion Factor for Measured Temperature:	0.99882	0.99869
Specific Gravity @ 20° Celsius:	2.627	2.745

Average Specific Gravity @ 20° Celsius	2.69

Tested By TO Date 1/31/20 Checked By BRB Date 2/4/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

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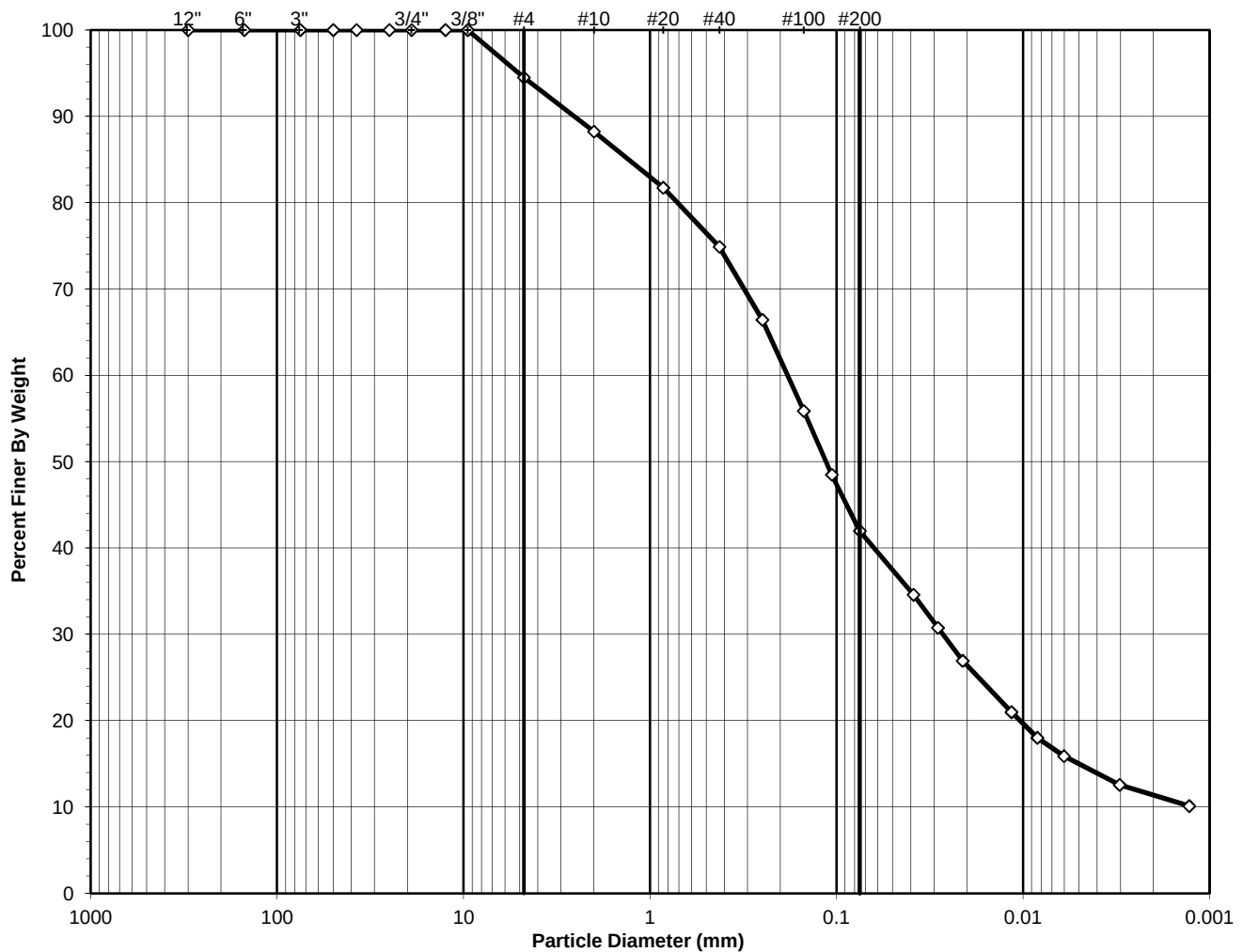
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-147

Boring No.: JB5-19-202N
 Depth (ft): 12.0-16.0
 Sample No.: SpT-7/8
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.11

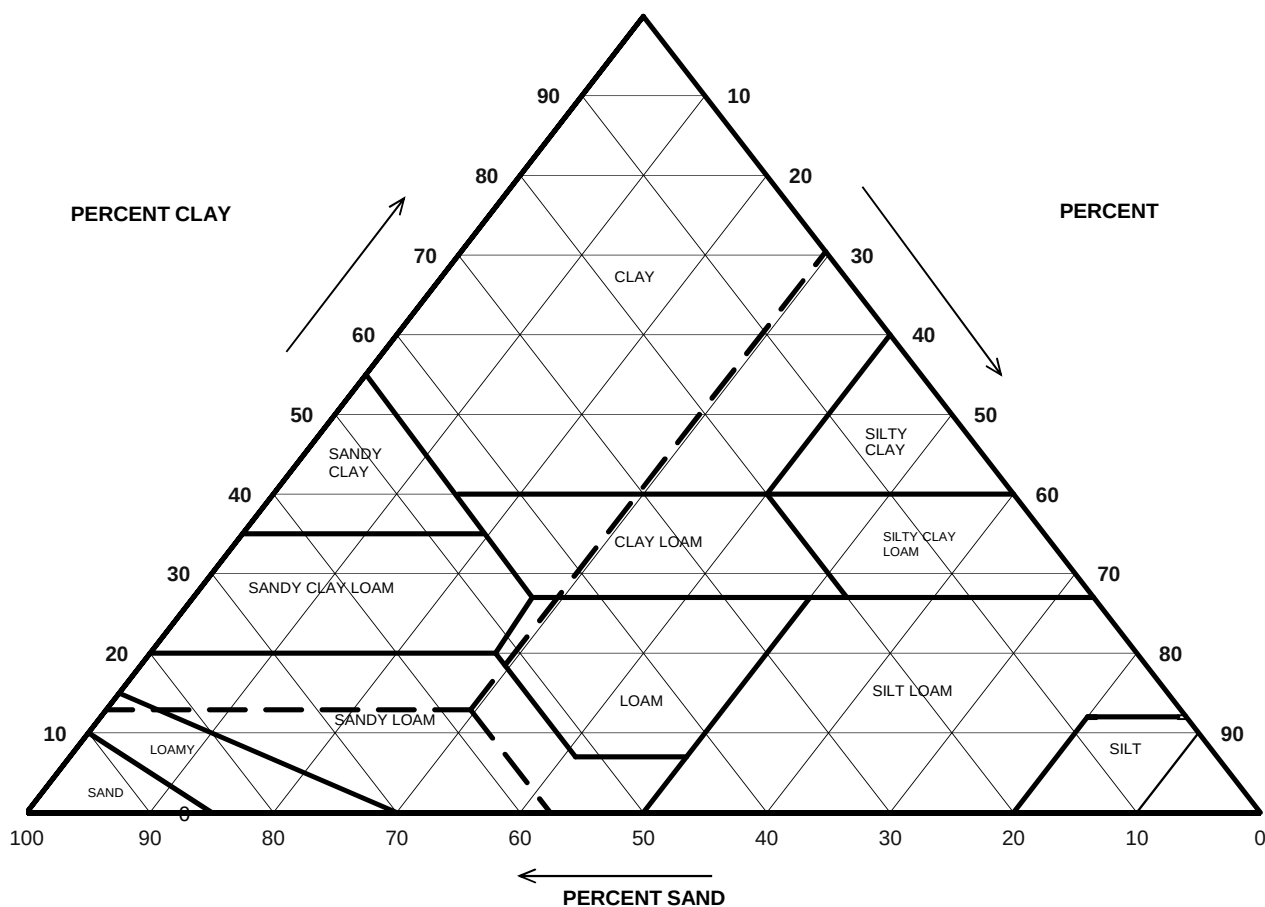
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-147

Boring No.: JB5-19-202N
 Depth (ft): 12.0-16.0
 Sample No.: SpT-7/8
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	11.76	
2	88.24	Sand	50.79	57.56
0.05	37.45	Silt	26.07	29.55
0.002	11.37	Clay	11.37	12.89

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-147

Boring No.: JB5-19-202N
 Depth (ft): 12.0-16.0
 Sample No.: SpT-7/8
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1555	Tare No.:	NA	Tare No.:	1555	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	491.88	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	491.88	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	457.05	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	457.05	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.64	Weight of Tare (g):	NA	Weight of Tare (g):	146.64	Weight of Tare (g):	NA
Weight of Water (g):	34.83	Weight of Water (g):	NA	Weight of Water (g):	34.83	Weight of Water (g):	NA
Weight of Dry Soil (g):	310.41	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	310.41	Weight of Dry Soil (g):	NA
Moisture Content (%):	11.2	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	310.41	Total Dry Weight of Sample (g):	310.41	Dry Weight of Sample (g):	310.41	Total Dry Weight of Sample (g):	310.41
Tare No. (Sub-Specimen)	1555	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1555	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	491.88	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	491.88	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	146.64	Dry Weight of - 3/4" Sample (g):	310.41	Weight of Tare (g):	146.64	Dry Weight of - 3/4" Sample (g):	310.41
Sub-Specimen Wet Weight (g):	345.24	Dry Weight -3/4" +3/8" Sample (g):	0.00	Sub-Specimen Wet Weight (g):	345.24	Dry Weight -3/4" +3/8" Sample (g):	0.00
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	310.41	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	310.41
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**) 0.00	0.00	100.00	100
3/8"	9.5	0.00	0.00	0.00	100.00	100
#4	4.75	17.08	5.50	5.50	94.50	94
#10	2	19.43	6.26	11.76	88.24	88
#20	0.85	20.20	(**) 6.51	18.27	81.73	82
#40	0.425	21.23	6.84	25.11	74.89	75
#60	0.25	26.25	8.46	33.57	66.43	66
#100	0.15	32.78	10.56	44.13	55.87	56
#140	0.106	22.93	7.39	51.51	48.49	48
#200	0.075	20.24	6.52	58.03	41.97	42
Pan	-	130.27	41.97	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/30/20 Checked By JLK Date 2/3/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-202N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	12.0-16.0
Project No.:	2020-002-001	Sample No.:	SpT-7/8
Lab ID:	2020-002-001-147	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	46.5	22.3	5.78	8.6	0.0387	82.4	34.6
2	42.0	22.3	5.78	9.4	0.0286	73.3	30.8
4	37.5	22.3	5.78	10.2	0.0211	64.2	26.9
15	30.5	22.3	5.78	11.4	0.0115	50.0	21.0
30	27.0	22.3	5.78	12.1	0.0084	42.9	18.0
60	24.5	22.3	5.78	12.5	0.0060	37.9	15.9
250	20.5	22.5	5.71	13.2	0.0030	29.9	12.6
1440	17.5	22.8	5.60	13.8	0.0013	24.1	10.1

Soil Specimen Data

Tare No.:	972	Percent Finer than # 200:	41.97
Wt. of Tare & Dry Material (g):	152.74		
Weight of Tare (g):	98.88	Specific Gravity:	2.70 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	48.86		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	1/30/20	Checked By	JLK	Date	2/3/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-147

Boring No.: JB5-19-202N
Depth (ft): 12.0-16.0
Sample No.: SpT-7/8
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	18
Wt. of Tare & Wet Sample (g)	25.79
Wt. of Tare & Dry Sample (g)	24.35
Weight of Tare (g)	8.46
Weight of Water (g)	1.44
Weight of Dry Sample (g)	15.89

Water Content (%) 9.1

NON - PLASTIC MATERIAL

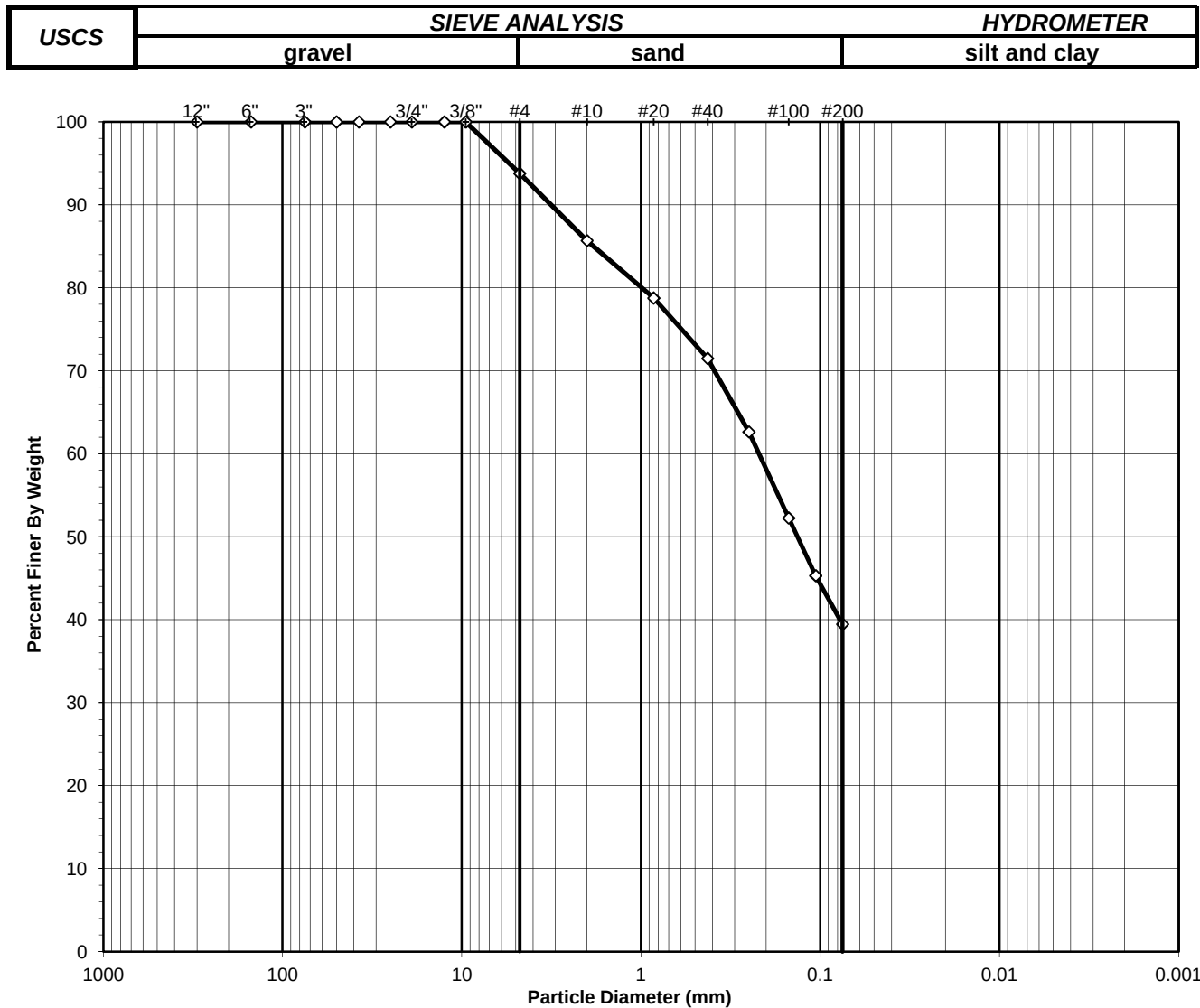
Tested By TO *Date* 1/29/20 *Checked By* BRB *Date* 1/29/20

SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-148

Boring No.: JB5-19-202N
 Depth (ft): 18.0-20.0
 Sample No.: SpT-10
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.13

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 1/30/20 Checked By JLK Date 1/31/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-148

Boring No.: JB5-19-202N
Depth (ft): 18.0-20.0
Sample No.: SpT-10
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1473	Tare No.:	NA	Tare No.:	1473	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	321.45	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	321.45	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	305.08	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	305.08	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.98	Weight of Tare (g):	NA	Weight of Tare (g):	145.98	Weight of Tare (g):	NA
Weight of Water (g):	16.37	Weight of Water (g):	NA	Weight of Water (g):	16.37	Weight of Water (g):	NA
Weight of Dry Soil (g):	159.10	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	159.10	Weight of Dry Soil (g):	NA
Moisture Content (%):	10.3	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	159.10	Total Dry Weight of Sample (g):	159.10	Dry Weight of Sample (g):	159.10	Total Dry Weight of Sample (g):	159.10
Tare No. (Sub-Specimen)	1473	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1473	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	321.45	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	321.45	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.98	Dry Weight of - 3/4" Sample (g):	159.10	Weight of Tare (g):	145.98	Dry Weight of - 3/4" Sample (g):	159.10
Sub-Specimen Wet Weight (g):	175.47	Dry Weight -3/4" +3/8" Sample (g):	0.00	Sub-Specimen Wet Weight (g):	175.47	Dry Weight -3/4" +3/8" Sample (g):	0.00
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	159.10	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	159.10
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**)	0.00	100.00	100
3/8"	9.5	0.00	0.00	0.00	100.00	100
#4	4.75	9.88	6.21	6.21	93.79	94
#10	2	12.89	8.10	14.31	85.69	86
#20	0.85	11.01	(**)	21.23	78.77	79
#40	0.425	11.58	7.28	28.51	71.49	71
#60	0.25	14.09	8.86	37.37	62.63	63
#100	0.15	16.50	10.37	47.74	52.26	52
#140	0.106	11.07	6.96	54.70	45.30	45
#200	0.075	9.30	5.85	60.54	39.46	39
Pan	-	62.78	39.46	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 1/30/20 Checked By JLK Date 1/31/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-148

Boring No.: JB5-19-202N
Depth (ft): 18.0-20.0
Sample No.: SpT-10
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	32
Wt. of Tare & Wet Sample (g)	24.00
Wt. of Tare & Dry Sample (g)	22.91
Weight of Tare (g)	8.44
Weight of Water (g)	1.09
Weight of Dry Sample (g)	14.47

Water Content (%) **7.5**

NON - PLASTIC MATERIAL

Tested By *TO* *Date* *1/29/20* *Checked By* *BRB* *Date* *1/29/20*

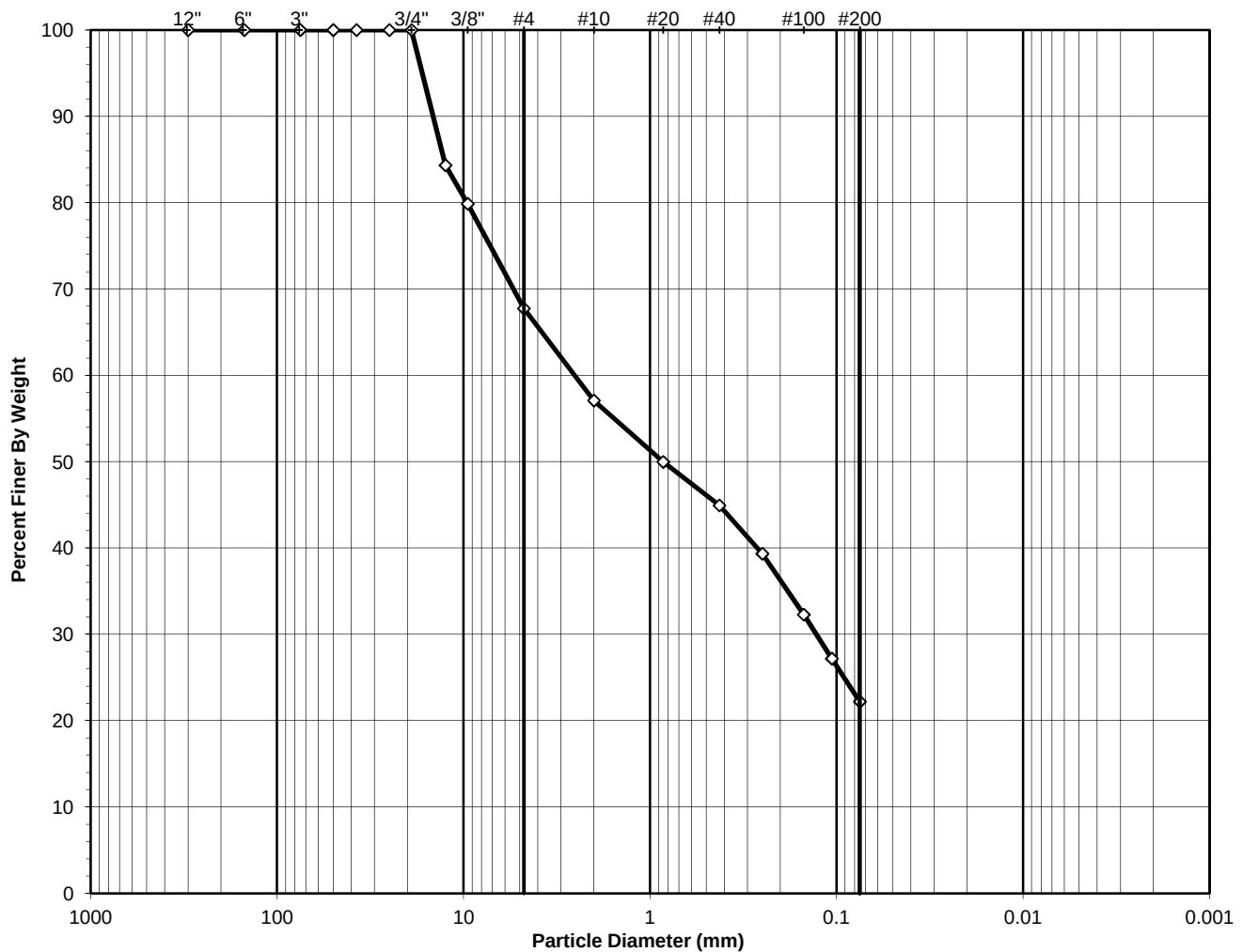
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-149

Boring No.: JB5-19-203N
 Depth (ft): 0.0-4.0
 Sample No.: SpT-1/2
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.85

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-149

Boring No.: JB5-19-203N
 Depth (ft): 0.0-4.0
 Sample No.: SpT-1/2
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1493	Tare No.:	NA	Tare No.:	1493	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	665.34	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	665.34	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	622.14	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	622.14	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.09	Weight of Tare (g):	NA	Weight of Tare (g):	148.09	Weight of Tare (g):	NA
Weight of Water (g):	43.20	Weight of Water (g):	NA	Weight of Water (g):	43.20	Weight of Water (g):	NA
Weight of Dry Soil (g):	474.05	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	474.05	Weight of Dry Soil (g):	NA
Moisture Content (%):	9.1	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	474.05	Total Dry Weight of Sample (g):	474.05	Dry Weight of Sample (g):	474.05	Total Dry Weight of Sample (g):	474.05
Tare No. (Sub-Specimen)	1493	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1493	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	665.34	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	665.34	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	148.09	Dry Weight of - 3/4" Sample (g):	474.05	Weight of Tare (g):	148.09	Dry Weight of - 3/4" Sample (g):	474.05
Sub-Specimen Wet Weight (g):	517.25	Dry Weight -3/4" +3/8" Sample (g):	95.43	Sub-Specimen Wet Weight (g):	517.25	Dry Weight -3/4" +3/8" Sample (g):	95.43
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	378.62	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	378.62
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	74.25	(**)	15.66	84.34	84
3/8"	9.5	21.18	4.47	20.13	79.87	80
#4	4.75	57.47	12.12	32.25	67.75	68
#10	2	50.53	10.66	42.91	57.09	57
#20	0.85	33.71	(**)	50.02	49.98	50
#40	0.425	23.87	5.04	55.06	44.94	45
#60	0.25	26.53	5.60	60.66	39.34	39
#100	0.15	33.44	7.05	67.71	32.29	32
#140	0.106	24.16	5.10	72.81	27.19	27
#200	0.075	23.61	4.98	77.79	22.21	22
Pan	-	105.30	22.21	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-149

Boring No.: JB5-19-203N
Depth (ft): 0.0-4.0
Sample No.: SpT-1/2
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	3
Wt. of Tare & Wet Sample (g)	56.48
Wt. of Tare & Dry Sample (g)	53.30
Weight of Tare (g)	8.46
Weight of Water (g)	3.18
Weight of Dry Sample (g)	44.84

Water Content (%)	7.1

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

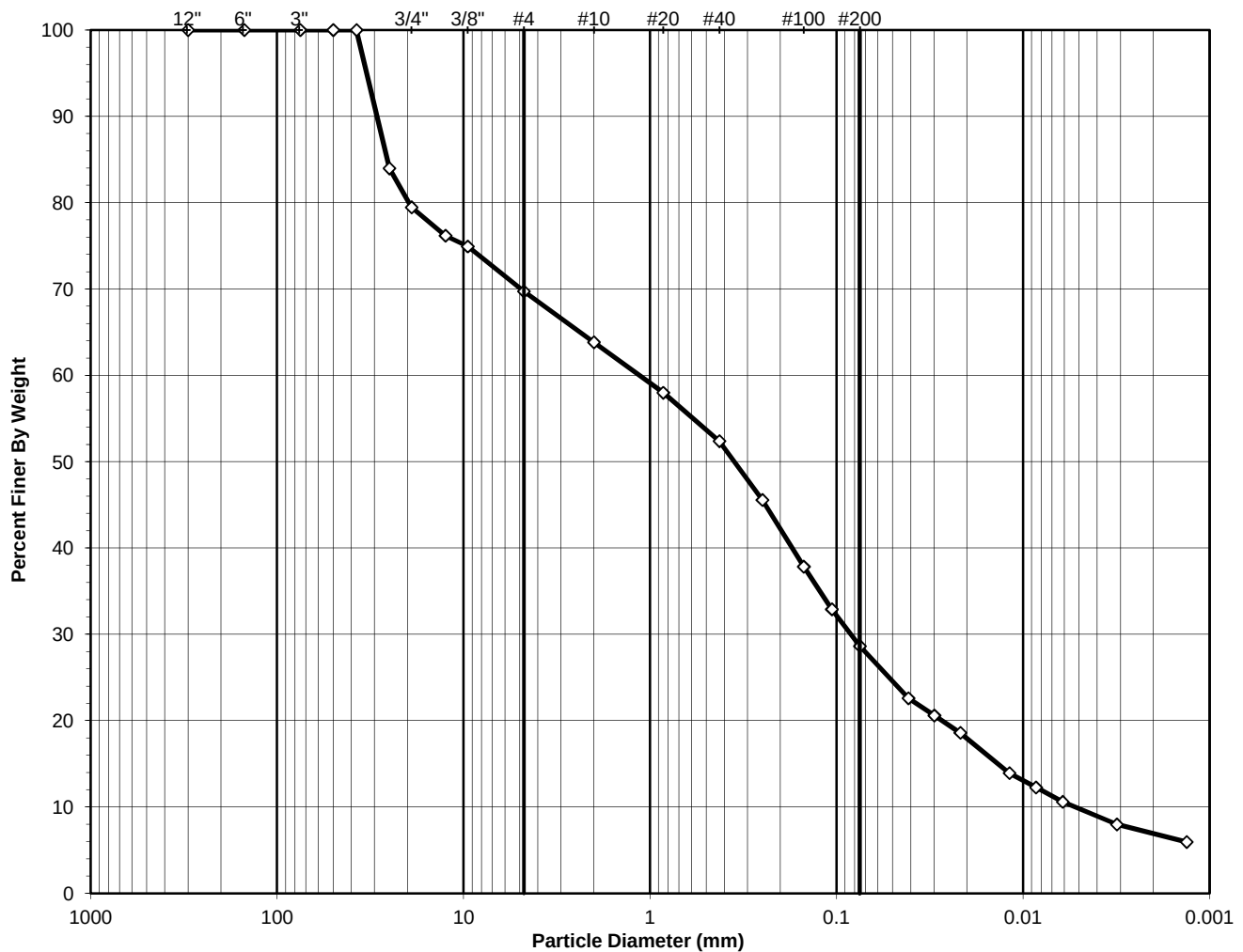
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-150

Boring No.: JB5-19-203N
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.35

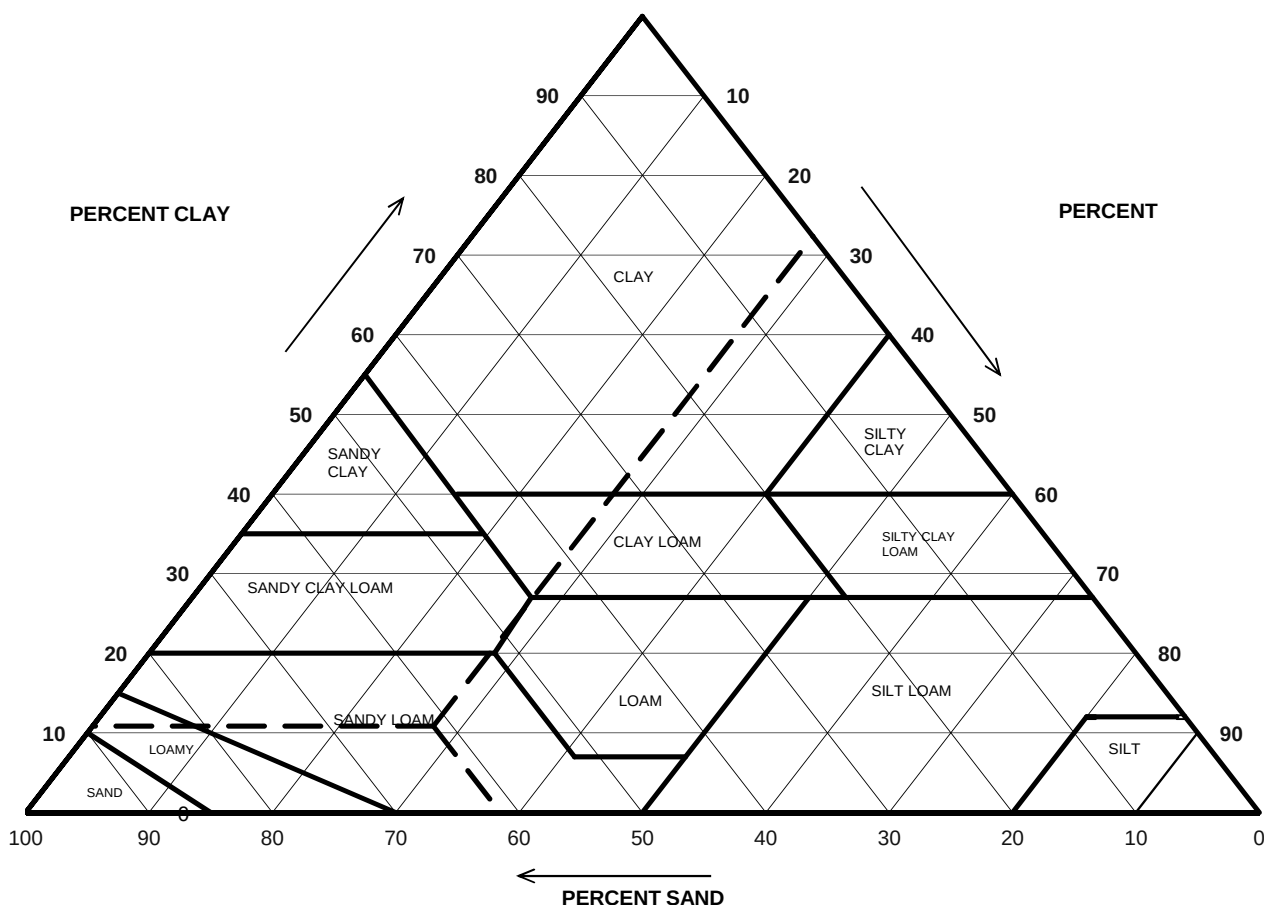
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-150

Boring No.: JB5-19-203N
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	36.17	
2	63.83	Sand	39.28	61.53
0.05	24.56	Silt	17.64	27.63
0.002	6.92	Clay	6.92	10.84

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-150

Boring No.: JB5-19-203N
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1614	Tare No.:	NA	Tare No.:	1614	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	589.20	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	589.20	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	566.33	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	566.33	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.90	Weight of Tare (g):	NA	Weight of Tare (g):	147.90	Weight of Tare (g):	NA
Weight of Water (g):	22.87	Weight of Water (g):	NA	Weight of Water (g):	22.87	Weight of Water (g):	NA
Weight of Dry Soil (g):	418.43	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	418.43	Weight of Dry Soil (g):	NA
Moisture Content (%):	5.5	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	418.43	Total Dry Weight of Sample (g):	418.43	Dry Weight of Sample (g):	418.43	Total Dry Weight of Sample (g):	418.43
Tare No. (Sub-Specimen)	1614	Wet Weight of +3/4" Sample (g):	90.63	Tare No. (Sub-Specimen)	1614	Wet Weight of +3/4" Sample (g):	90.63
Wt. of Tare & Wet Sub-Specimen (g):	589.20	Dry Weight of + 3/4" Sample (g):	85.93	Wt. of Tare & Wet Sub-Specimen (g):	589.20	Dry Weight of + 3/4" Sample (g):	85.93
Weight of Tare (g):	147.90	Dry Weight of - 3/4" Sample (g):	332.50	Weight of Tare (g):	147.90	Dry Weight of - 3/4" Sample (g):	332.50
Sub-Specimen Wet Weight (g):	441.30	Dry Weight -3/4" +3/8" Sample (g):	18.97	Sub-Specimen Wet Weight (g):	441.30	Dry Weight -3/4" +3/8" Sample (g):	18.97
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	317.43	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	317.43
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	67.06	16.03	16.03	83.97	84
3/4"	19	18.87	4.51	20.54	79.46	79
1/2"	12.5	13.75	(**)	23.82	76.18	76
3/8"	9.5	5.22	1.25	25.07	74.93	75
#4	4.75	21.75	5.20	30.27	69.73	70
#10	2	24.69	5.90	36.17	63.83	64
#20	0.85	24.45	(**)	42.01	57.99	58
#40	0.425	23.46	5.61	47.62	52.38	52
#60	0.25	28.50	6.81	54.43	45.57	46
#100	0.15	32.33	7.73	62.16	37.84	38
#140	0.106	20.66	4.94	67.09	32.91	33
#200	0.075	17.85	4.27	71.36	28.64	29
Pan	-	119.84	28.64	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-203N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	6.0-10.0
Project No.:	2020-002-001	Sample No.:	SpT-4/5
Lab ID:	2020-002-001-150	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	39.5	22.8	5.60	9.8	0.0412	78.9	22.6
2	36.5	22.8	5.60	10.4	0.0299	71.9	20.6
4	33.5	22.8	5.60	10.9	0.0217	65.0	18.6
15	26.5	22.8	5.60	12.2	0.0118	48.7	13.9
30	24.0	22.8	5.60	12.6	0.0085	42.8	12.3
60	21.5	22.8	5.60	13.1	0.0061	37.0	10.6
240	17.5	23.0	5.52	13.8	0.0031	27.9	8.0
1440	15.0	21.5	6.07	14.2	0.0013	20.8	6.0

Soil Specimen Data

Tare No.:	968	Percent Finer than # 200:	28.64
Wt. of Tare & Dry Material (g):	145.48		
Weight of Tare (g):	98.00	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	42.48		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-150

Boring No.: JB5-19-203N
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	22
Wt. of Tare & Wet Sample (g)	49.76
Wt. of Tare & Dry Sample (g)	46.29
Weight of Tare (g)	8.33
Weight of Water (g)	3.47
Weight of Dry Sample (g)	37.96

Water Content (%) **9.1**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

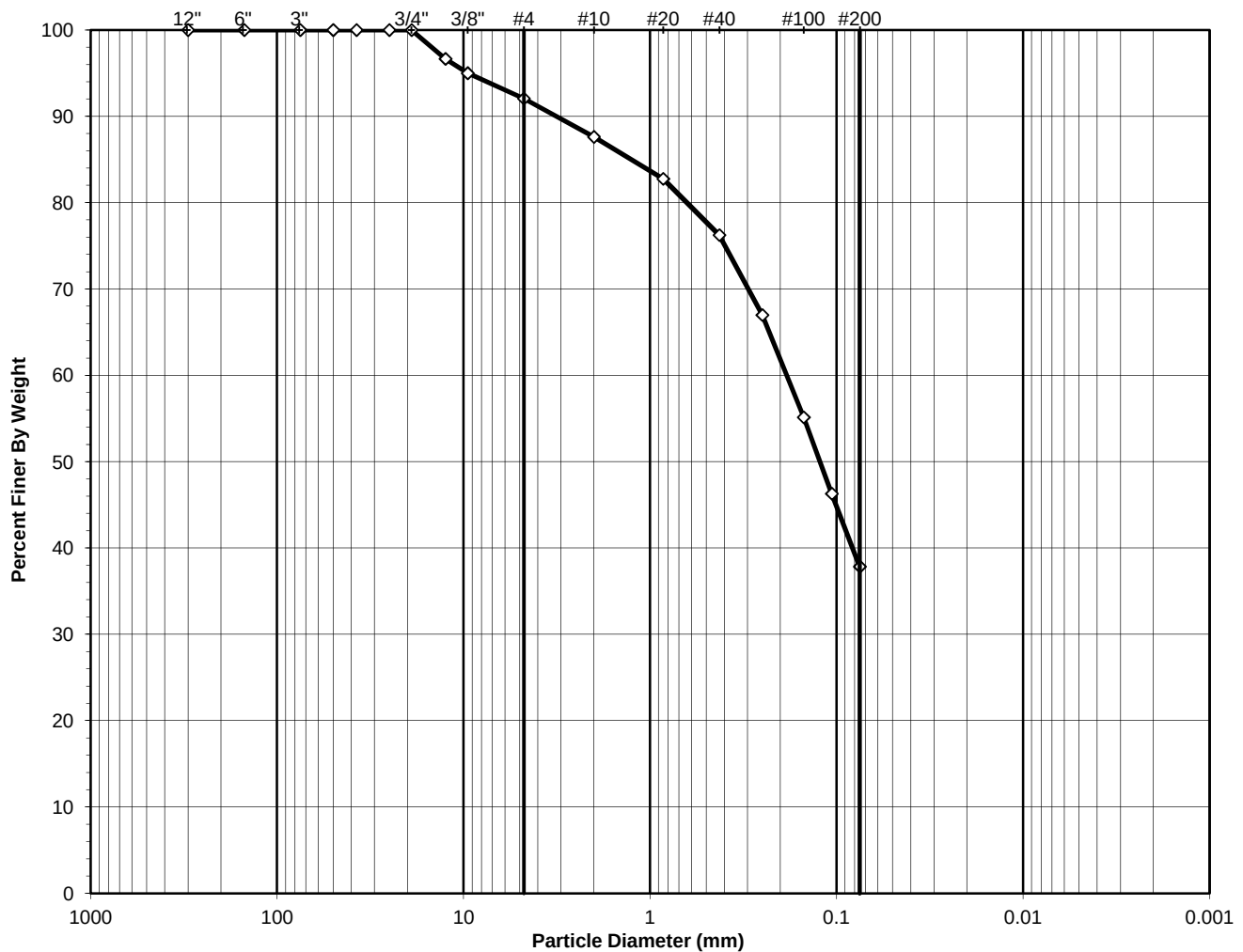
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-151

Boring No.: JB5-19-203N
 Depth (ft): 10.0-13.4
 Sample No.: SpT-6/7
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.12

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-151

Boring No.: JB5-19-203N
 Depth (ft): 10.0-13.4
 Sample No.: SpT-6/7
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1459	Tare No.:	NA	Tare No.:	1459	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	504.63	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	504.63	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	469.37	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	469.37	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	140.12	Weight of Tare (g):	NA	Weight of Tare (g):	140.12	Weight of Tare (g):	NA
Weight of Water (g):	35.26	Weight of Water (g):	NA	Weight of Water (g):	35.26	Weight of Water (g):	NA
Weight of Dry Soil (g):	329.25	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	329.25	Weight of Dry Soil (g):	NA
Moisture Content (%):	10.7	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	329.25	Total Dry Weight of Sample (g):	329.25	Dry Weight of Sample (g):	329.25	Total Dry Weight of Sample (g):	329.25
Tare No. (Sub-Specimen)	1459	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1459	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	504.63	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	504.63	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	140.12	Dry Weight of - 3/4" Sample (g):	329.25	Weight of Tare (g):	140.12	Dry Weight of - 3/4" Sample (g):	329.25
Sub-Specimen Wet Weight (g):	364.51	Dry Weight -3/4" +3/8" Sample (g):	16.46	Sub-Specimen Wet Weight (g):	364.51	Dry Weight -3/4" +3/8" Sample (g):	16.46
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	312.79	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	312.79
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	11.00	(**) 3.34	3.34	96.66	97
3/8"	9.5	5.46	1.66	5.00	95.00	95
#4	4.75	9.68	2.94	7.94	92.06	92
#10	2	14.61	4.44	12.38	87.62	88
#20	0.85	16.00	(**) 4.86	17.24	82.76	83
#40	0.425	21.45	6.51	23.75	76.25	76
#60	0.25	30.49	9.26	33.01	66.99	67
#100	0.15	39.01	11.85	44.86	55.14	55
#140	0.106	29.12	8.84	53.70	46.30	46
#200	0.075	27.80	8.44	62.15	37.85	38
Pan	-	124.63	37.85	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-151

Boring No.: JB5-19-203N
Depth (ft): 10.0-13.4
Sample No.: SpT-6/7
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	34
Wt. of Tare & Wet Sample (g)	38.41
Wt. of Tare & Dry Sample (g)	35.46
Weight of Tare (g)	8.43
Weight of Water (g)	2.95
Weight of Dry Sample (g)	27.03

Water Content (%) **10.9**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

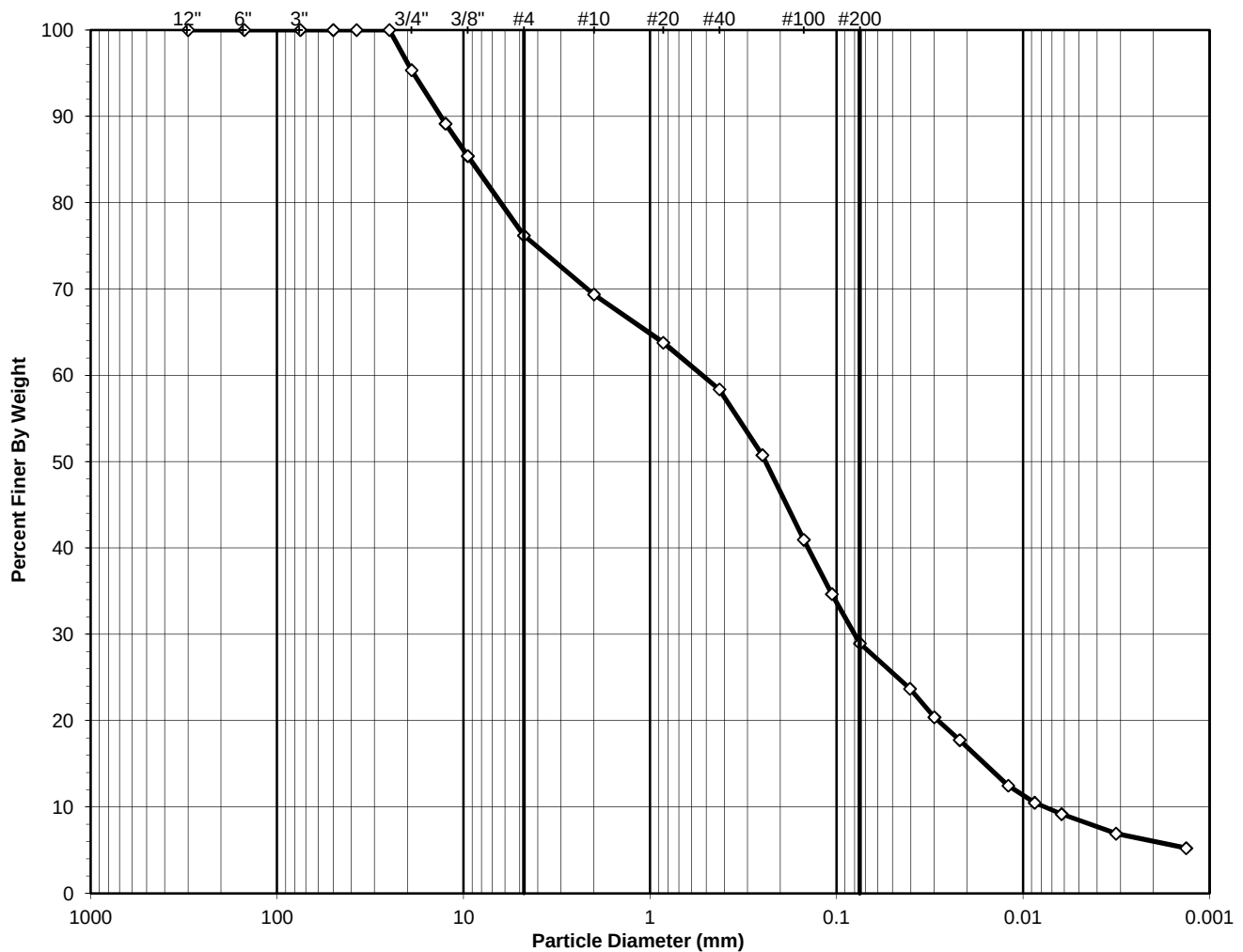
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-152

Boring No.: JB5-19-203N
 Depth (ft): 16.0-20.0
 Sample No.: SpT-9/10
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.24

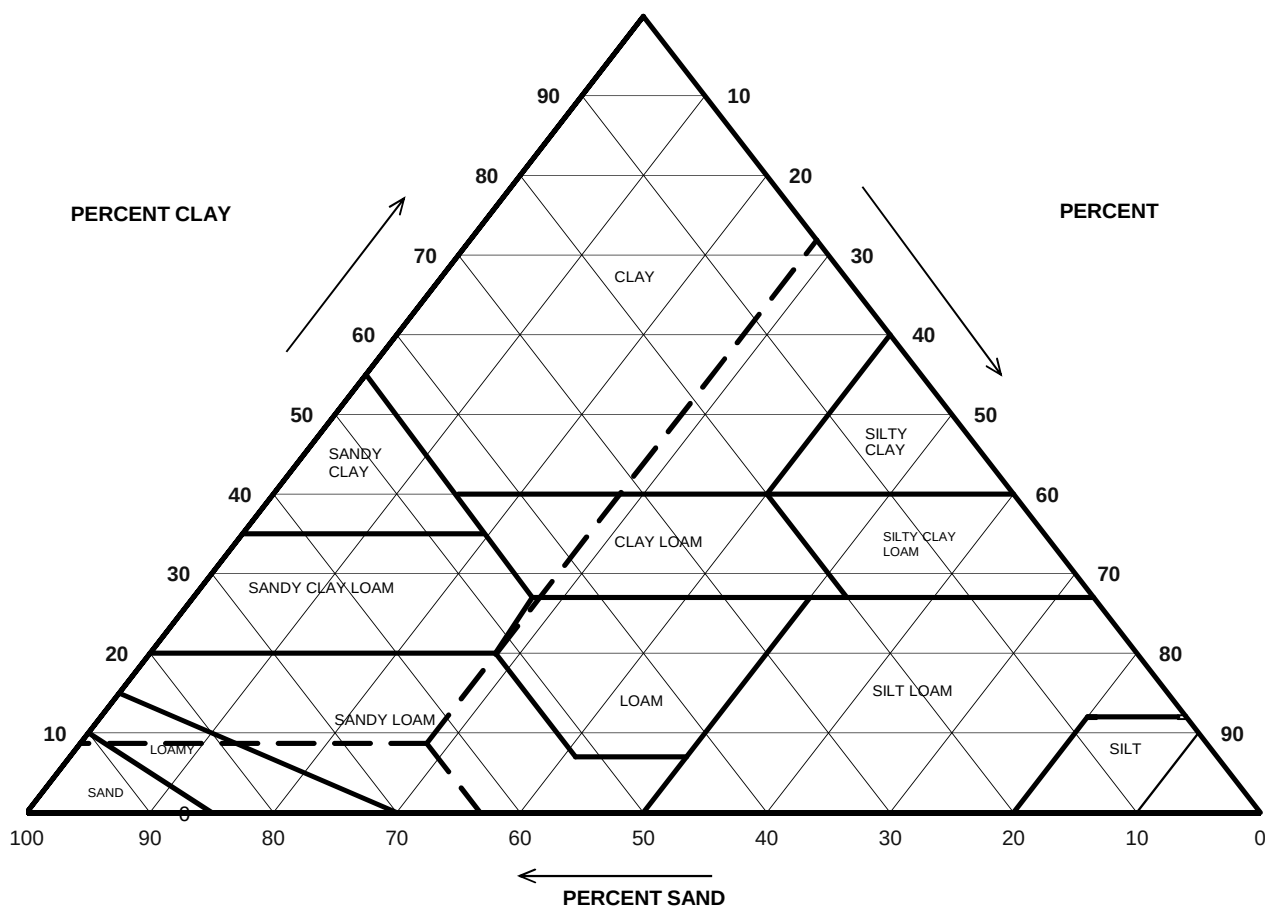
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-152

Boring No.: JB5-19-203N
Depth (ft): 16.0-20.0
Sample No.: SpT-9/10
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	30.63	
2	69.37	Sand	43.86	63.23
0.05	25.51	Silt	19.49	28.09
0.002	6.02	Clay	6.02	8.68

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-152

Boring No.: JB5-19-203N
 Depth (ft): 16.0-20.0
 Sample No.: SpT-9/10
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1524	Tare No.:	NA	Tare No.:	1524	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	602.75	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	602.75	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	583.30	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	583.30	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.26	Weight of Tare (g):	NA	Weight of Tare (g):	145.26	Weight of Tare (g):	NA
Weight of Water (g):	19.45	Weight of Water (g):	NA	Weight of Water (g):	19.45	Weight of Water (g):	NA
Weight of Dry Soil (g):	438.04	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	438.04	Weight of Dry Soil (g):	NA
Moisture Content (%):	4.4	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	438.04	Total Dry Weight of Sample (g):	438.04	Dry Weight of Sample (g):	438.04	Total Dry Weight of Sample (g):	438.04
Tare No. (Sub-Specimen)	1524	Wet Weight of +3/4" Sample (g):	21.28	Tare No. (Sub-Specimen)	1524	Wet Weight of +3/4" Sample (g):	21.28
Wt. of Tare & Wet Sub-Specimen (g):	602.75	Dry Weight of + 3/4" Sample (g):	20.38	Wt. of Tare & Wet Sub-Specimen (g):	602.75	Dry Weight of + 3/4" Sample (g):	20.38
Weight of Tare (g):	145.26	Dry Weight of - 3/4" Sample (g):	417.66	Weight of Tare (g):	145.26	Dry Weight of - 3/4" Sample (g):	417.66
Sub-Specimen Wet Weight (g):	457.49	Dry Weight -3/4" +3/8" Sample (g):	43.58	Sub-Specimen Wet Weight (g):	457.49	Dry Weight -3/4" +3/8" Sample (g):	43.58
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	376.11	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	376.11
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	20.38	4.65	4.65	95.35	95
1/2"	12.5	27.15	(**) 6.20	10.85	89.15	89
3/8"	9.5	16.43	3.75	14.60	85.40	85
#4	4.75	40.29	9.20	23.80	76.20	76
#10	2	29.92	6.83	30.63	69.37	69
#20	0.85	24.48	(**) 5.59	36.22	63.78	64
#40	0.425	23.66	5.40	41.62	58.38	58
#60	0.25	33.38	7.62	49.24	50.76	51
#100	0.15	42.95	9.81	59.04	40.96	41
#140	0.106	27.54	6.29	65.33	34.67	35
#200	0.075	25.00	5.71	71.04	28.96	29
Pan	-	126.86	28.96	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-203N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	16.0-20.0
Project No.:	2020-002-001	Sample No.:	SpT-9/10
Lab ID:	2020-002-001-152	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	41.5	22.8	5.60	9.5	0.0404	81.8	23.7
2	36.5	22.8	5.60	10.4	0.0299	70.4	20.4
4	32.5	22.8	5.60	11.1	0.0219	61.3	17.8
15	24.5	22.8	5.60	12.5	0.0120	43.1	12.5
30	21.5	22.8	5.60	13.1	0.0087	36.2	10.5
60	19.5	22.8	5.60	13.4	0.0062	31.7	9.2
240	16.0	23.0	5.52	14.0	0.0032	23.9	6.9
1440	14.0	21.5	6.07	14.4	0.0013	18.1	5.2

Soil Specimen Data

Tare No.:	2331	Percent Finer than # 200:	28.96
Wt. of Tare & Dry Material (g):	140.54		
Weight of Tare (g):	92.15	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	43.39		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-152

Boring No.: JB5-19-203N
Depth (ft): 16.0-20.0
Sample No.: SpT-9/10
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	2
Wt. of Tare & Wet Sample (g)	42.45
Wt. of Tare & Dry Sample (g)	39.95
Weight of Tare (g)	8.30
Weight of Water (g)	2.50
Weight of Dry Sample (g)	31.65

Water Content (%)	7.9

NON - PLASTIC MATERIAL

Tested By	MLF	Date	2/5/20	Checked By	JLK	Date	2/6/20

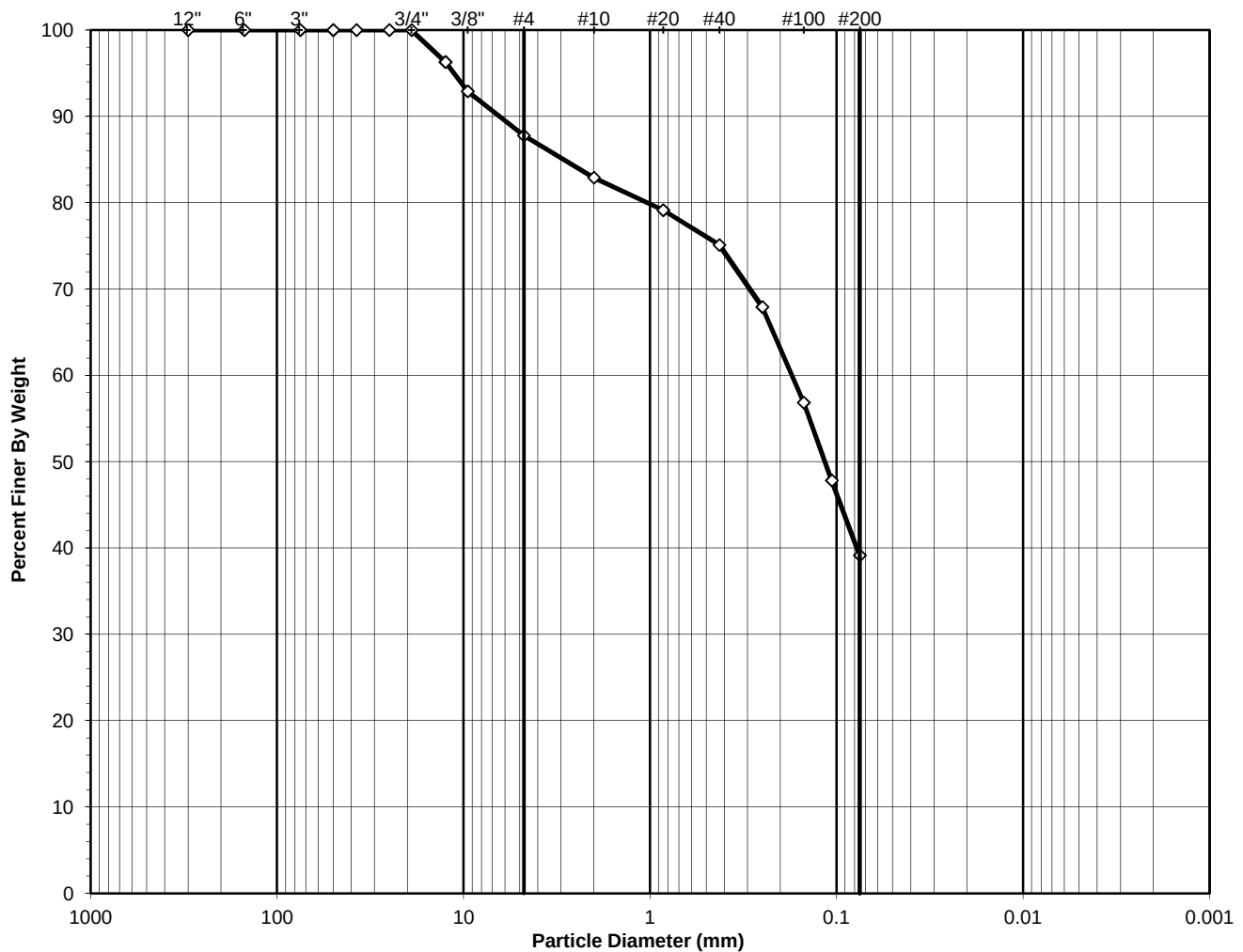
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-153

Boring No.: JB5-19-204N
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.12

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-153

Boring No.: JB5-19-204N
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2012	Tare No.:	NA	Tare No.:	2012	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	313.27	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	313.27	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	278.34	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	278.34	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.66	Weight of Tare (g):	NA	Weight of Tare (g):	144.66	Weight of Tare (g):	NA
Weight of Water (g):	34.93	Weight of Water (g):	NA	Weight of Water (g):	34.93	Weight of Water (g):	NA
Weight of Dry Soil (g):	133.68	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	133.68	Weight of Dry Soil (g):	NA
Moisture Content (%):	26.1	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	133.68	Total Dry Weight of Sample (g):	133.68	Dry Weight of Sample (g):	133.68	Total Dry Weight of Sample (g):	133.68
Tare No. (Sub-Specimen)	2012	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	2012	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	313.27	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	313.27	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	144.66	Dry Weight of - 3/4" Sample (g):	133.68	Weight of Tare (g):	144.66	Dry Weight of - 3/4" Sample (g):	133.68
Sub-Specimen Wet Weight (g):	168.61	Dry Weight -3/4" +3/8" Sample (g):	9.49	Sub-Specimen Wet Weight (g):	168.61	Dry Weight -3/4" +3/8" Sample (g):	9.49
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	124.19	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	124.19
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	4.95	(**)	3.70	96.30	96
3/8"	9.5	4.54	3.40	7.10	92.90	93
#4	4.75	6.85	5.12	12.22	87.78	88
#10	2	6.52	4.88	17.10	82.90	83
#20	0.85	5.03	(**)	20.86	79.14	79
#40	0.425	5.39	4.03	24.90	75.10	75
#60	0.25	9.61	7.19	32.08	67.92	68
#100	0.15	14.80	11.07	43.16	56.84	57
#140	0.106	12.06	9.02	52.18	47.82	48
#200	0.075	11.59	8.67	60.85	39.15	39
Pan	-	52.34	39.15	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-153

Boring No.: JB5-19-204N
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	30
Wt. of Tare & Wet Sample (g)	24.38
Wt. of Tare & Dry Sample (g)	21.84
Weight of Tare (g)	8.57
Weight of Water (g)	2.54
Weight of Dry Sample (g)	13.27

Water Content (%) **19.1**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

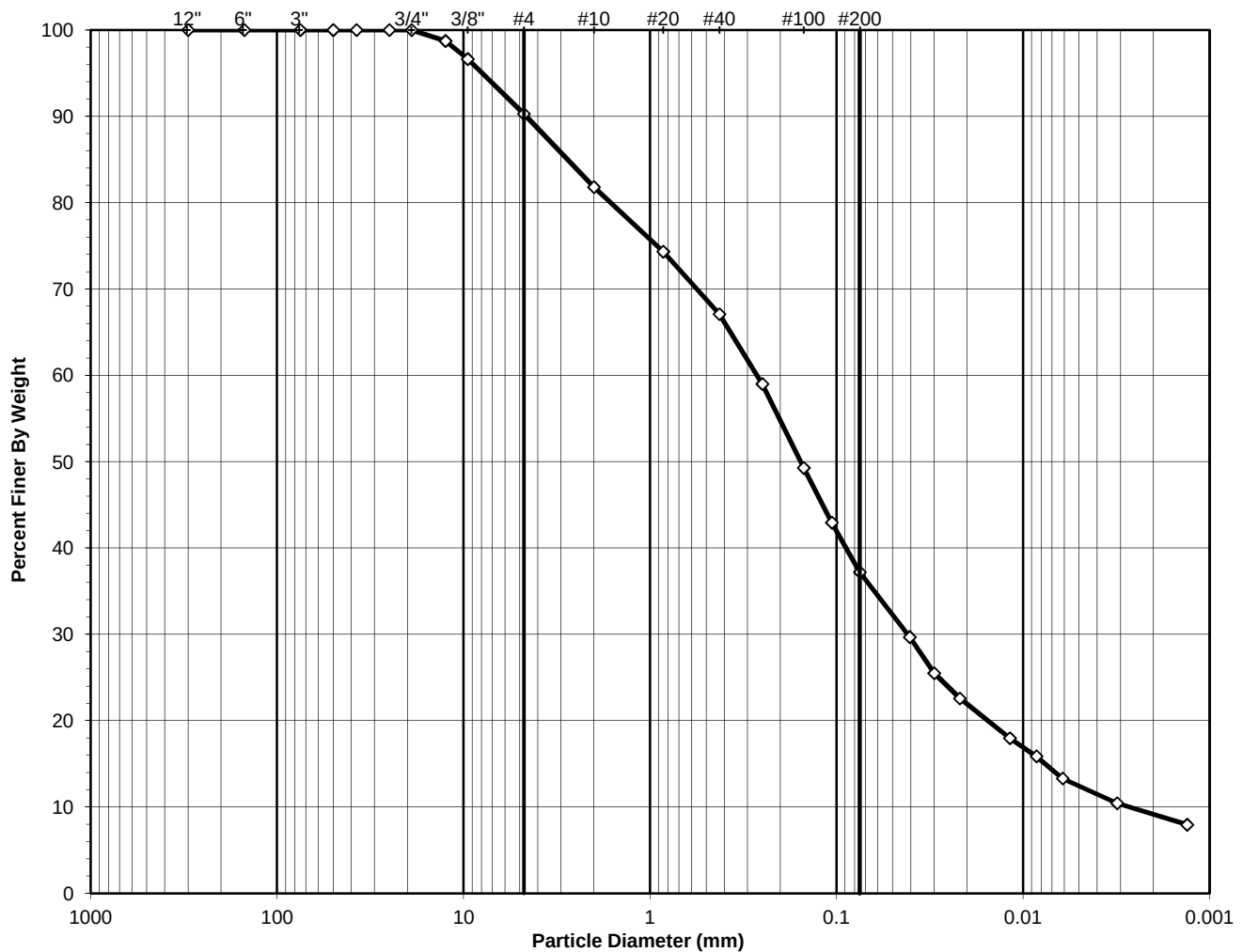
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-154

Boring No.: JB5-19-204N
 Depth (ft): 2.0-8.0
 Sample No.: SpT-2/3/4
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.16

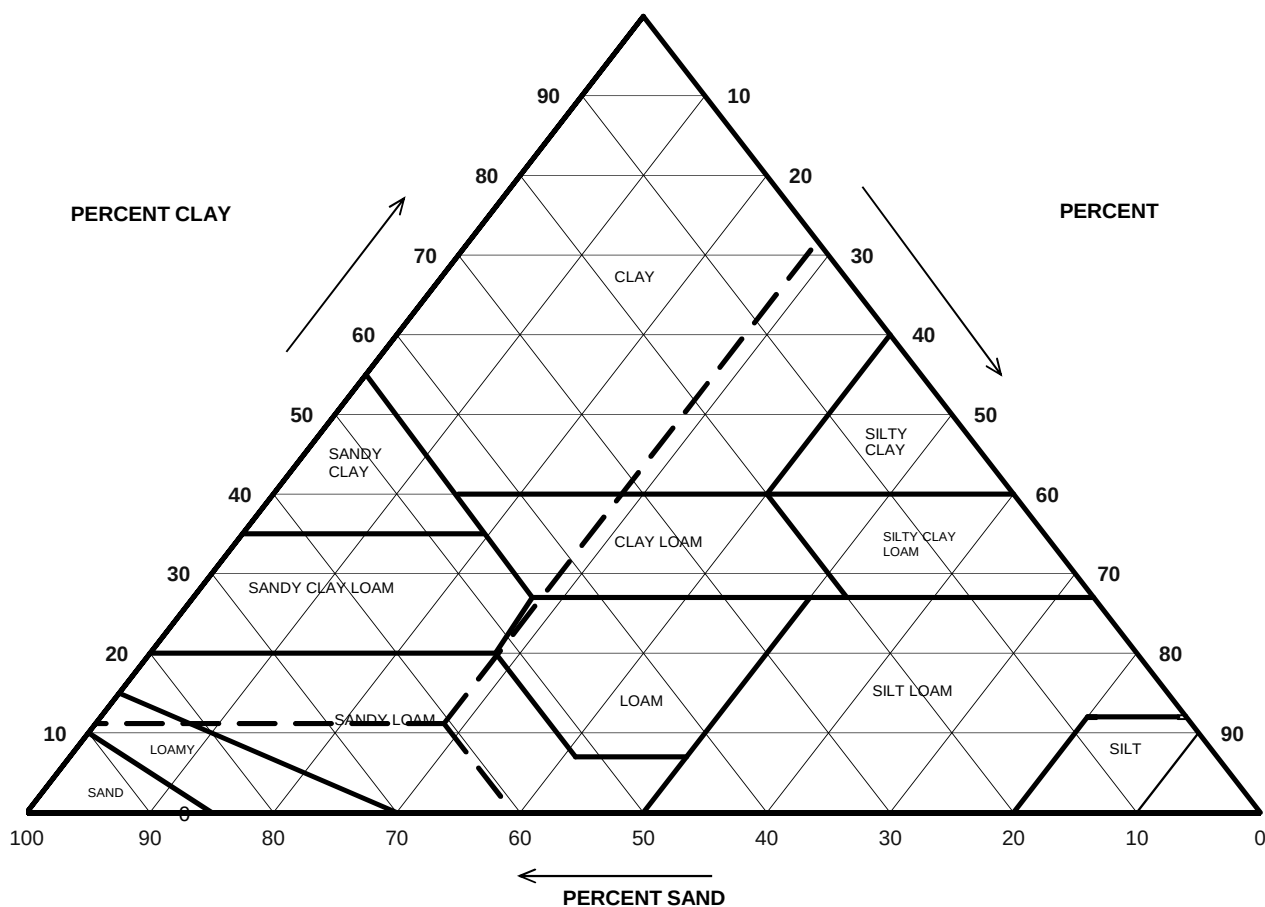
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-154

Boring No.: JB5-19-204N
Depth (ft): 2.0-8.0
Sample No.: SpT-2/3/4
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	18.19	
2	81.81	Sand	49.56	60.58
0.05	32.25	Silt	23.10	28.24
0.002	9.15	Clay	9.15	11.18

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-154

Boring No.: JB5-19-204N
 Depth (ft): 2.0-8.0
 Sample No.: SpT-2/3/4
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1440	Tare No.:	NA	Tare No.:	1440	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	773.20	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	773.20	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	752.92	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	752.92	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.48	Weight of Tare (g):	NA	Weight of Tare (g):	145.48	Weight of Tare (g):	NA
Weight of Water (g):	20.28	Weight of Water (g):	NA	Weight of Water (g):	20.28	Weight of Water (g):	NA
Weight of Dry Soil (g):	607.44	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	607.44	Weight of Dry Soil (g):	NA
Moisture Content (%):	3.3	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	607.44	Total Dry Weight of Sample (g):	607.44	Dry Weight of Sample (g):	607.44	Total Dry Weight of Sample (g):	607.44
Tare No. (Sub-Specimen)	1440	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1440	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	773.20	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	773.20	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.48	Dry Weight of - 3/4" Sample (g):	607.44	Weight of Tare (g):	145.48	Dry Weight of - 3/4" Sample (g):	607.44
Sub-Specimen Wet Weight (g):	627.72	Dry Weight -3/4" +3/8" Sample (g):	20.43	Sub-Specimen Wet Weight (g):	627.72	Dry Weight -3/4" +3/8" Sample (g):	20.43
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	587.01	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	587.01
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	7.71	(**)	1.27	98.73	99
3/8"	9.5	12.72	2.09	3.36	96.64	97
#4	4.75	38.60	6.35	9.72	90.28	90
#10	2	51.47	8.47	18.19	81.81	82
#20	0.85	45.43	(**)	25.67	74.33	74
#40	0.425	43.95	7.24	32.91	67.09	67
#60	0.25	49.16	8.09	41.00	59.00	59
#100	0.15	59.06	9.72	50.72	49.28	49
#140	0.106	38.51	6.34	57.06	42.94	43
#200	0.075	34.86	5.74	62.80	37.20	37
Pan	-	225.97	37.20	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-204N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	2.0-8.0
Project No.:	2020-002-001	Sample No.:	SpT-2/3/4
Lab ID:	2020-002-001-154	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	41.0	23.0	5.52	9.5	0.0405	79.8	29.7
2	36.0	23.0	5.52	10.4	0.0300	68.6	25.5
4	32.5	23.0	5.52	11.1	0.0218	60.7	22.6
15	27.0	23.0	5.52	12.1	0.0118	48.3	18.0
30	24.5	23.0	5.52	12.5	0.0085	42.7	15.9
60	21.5	22.8	5.60	13.1	0.0061	35.8	13.3
240	18.0	23.0	5.52	13.7	0.0031	28.1	10.4
1440	15.5	21.7	6.00	14.1	0.0013	21.4	7.9

Soil Specimen Data

Tare No.:	687	Percent Finer than # 200:	37.20
Wt. of Tare & Dry Material (g):	143.64		
Weight of Tare (g):	94.68	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	43.96		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-154

Boring No.: JB5-19-204N
Depth (ft): 2.0-8.0
Sample No.: SpT-2/3/4
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	21
Wt. of Tare & Wet Sample (g)	30.87
Wt. of Tare & Dry Sample (g)	29.08
Weight of Tare (g)	8.33
Weight of Water (g)	1.79
Weight of Dry Sample (g)	20.75

Water Content (%) **8.6**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

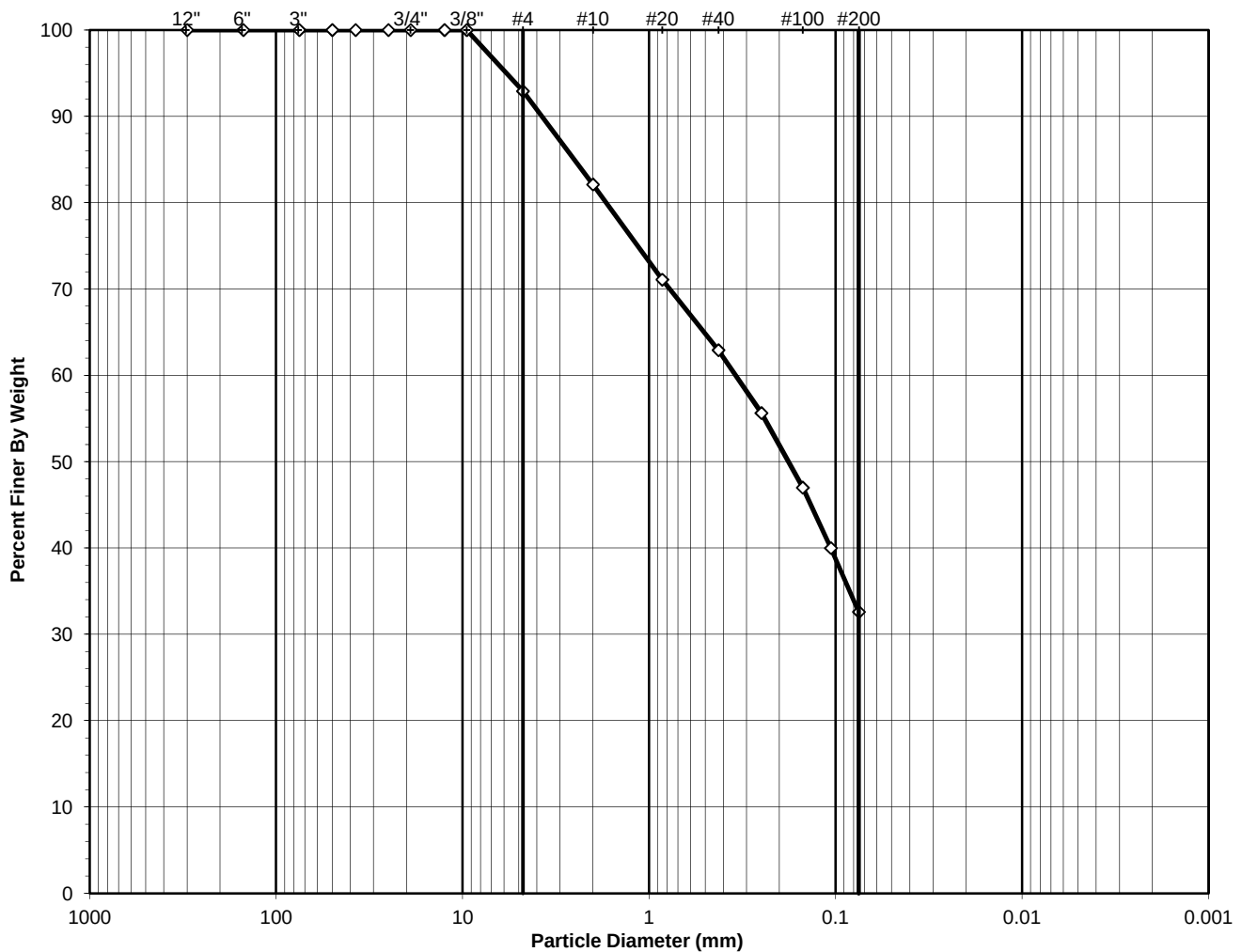
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-155

Boring No.: JB5-19-204N
 Depth (ft): 10.0-12.9
 Sample No.: SpT-6/7
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.18

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client:	D'Appolonia	Boring No.:	JB5-19-204N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-12.9
Project No.:	2020-002-001	Sample No.:	SpT-6/7
Lab ID:	2020-002-001-155	Soil Color:	Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2030	Tare No.:	NA	Tare No.:	2030	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	499.97	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	499.97	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	499.97	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	499.97	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.80	Weight of Tare (g):	NA	Weight of Tare (g):	146.80	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	353.17	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	353.17	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	353.17	Total Dry Weight of Sample (g):	353.17	Dry Weight of Sample (g):	353.17	Total Dry Weight of Sample (g):	353.17
Tare No. (Sub-Specimen)	2030	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	2030	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	499.97	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	499.97	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	146.80	Dry Weight of - 3/4" Sample (g):	353.17	Weight of Tare (g):	146.80	Dry Weight of - 3/4" Sample (g):	353.17
Sub-Specimen Wet Weight (g):	353.17	Dry Weight -3/4" +3/8" Sample (g):	0.00	Sub-Specimen Wet Weight (g):	353.17	Dry Weight -3/4" +3/8" Sample (g):	0.00
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	353.17	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	353.17
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**)	0.00	100.00	100
3/8"	9.5	0.00	0.00	0.00	100.00	100
#4	4.75	25.00	7.08	7.08	92.92	93
#10	2	38.17	10.81	17.89	82.11	82
#20	0.85	38.95	(**)	28.92	71.08	71
#40	0.425	28.82	8.16	37.08	62.92	63
#60	0.25	25.74	7.29	44.36	55.64	56
#100	0.15	30.50	8.64	53.00	47.00	47
#140	0.106	24.75	7.01	60.01	39.99	40
#200	0.075	26.12	7.40	67.40	32.60	33
Pan	-	115.12	32.60	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By	DS	Date	2/12/20	Checked By	JLK	Date	2/13/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-155

Boring No.: JB5-19-204N
Depth (ft): 10.0-12.9
Sample No.: SpT-6/7
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	31
Wt. of Tare & Wet Sample (g)	51.75
Wt. of Tare & Dry Sample (g)	48.84
Weight of Tare (g)	8.33
Weight of Water (g)	2.91
Weight of Dry Sample (g)	40.51

Water Content (%)	7.2

NON - PLASTIC MATERIAL

Tested By *MLF* Date *2/5/20* Checked By *JLK* Date *2/6/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-204N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-12.9
Project No.:	2020-022-001	Sample No.:	SpT-6/7
Lab ID:	2020-022-001-155	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747.12	749.23
Temperature (°C):	25.1	25.3
Weight of Pycnometer & Water (g):	683.97	684.49
Tare Number:	1920	947
Weight of Tare & Dry Soil (g):	197.06	199.87
Weight of Tare (g):	94.99	97.99
Weight of Dry Soil (g):	102.07	101.88
Specific Gravity of Soil @ Measured Temperature:	2.623	2.743
Specific Gravity of Water @ Measured Temperature:	0.99703	0.99698
Conversion Factor for Measured Temperature:	0.99882	0.99877
Specific Gravity @ 20° Celsius:	2.626	2.746

Average Specific Gravity @ 20° Celsius	2.69

Tested By TO Date 2/10/20 Checked By JLK Date 2/11/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

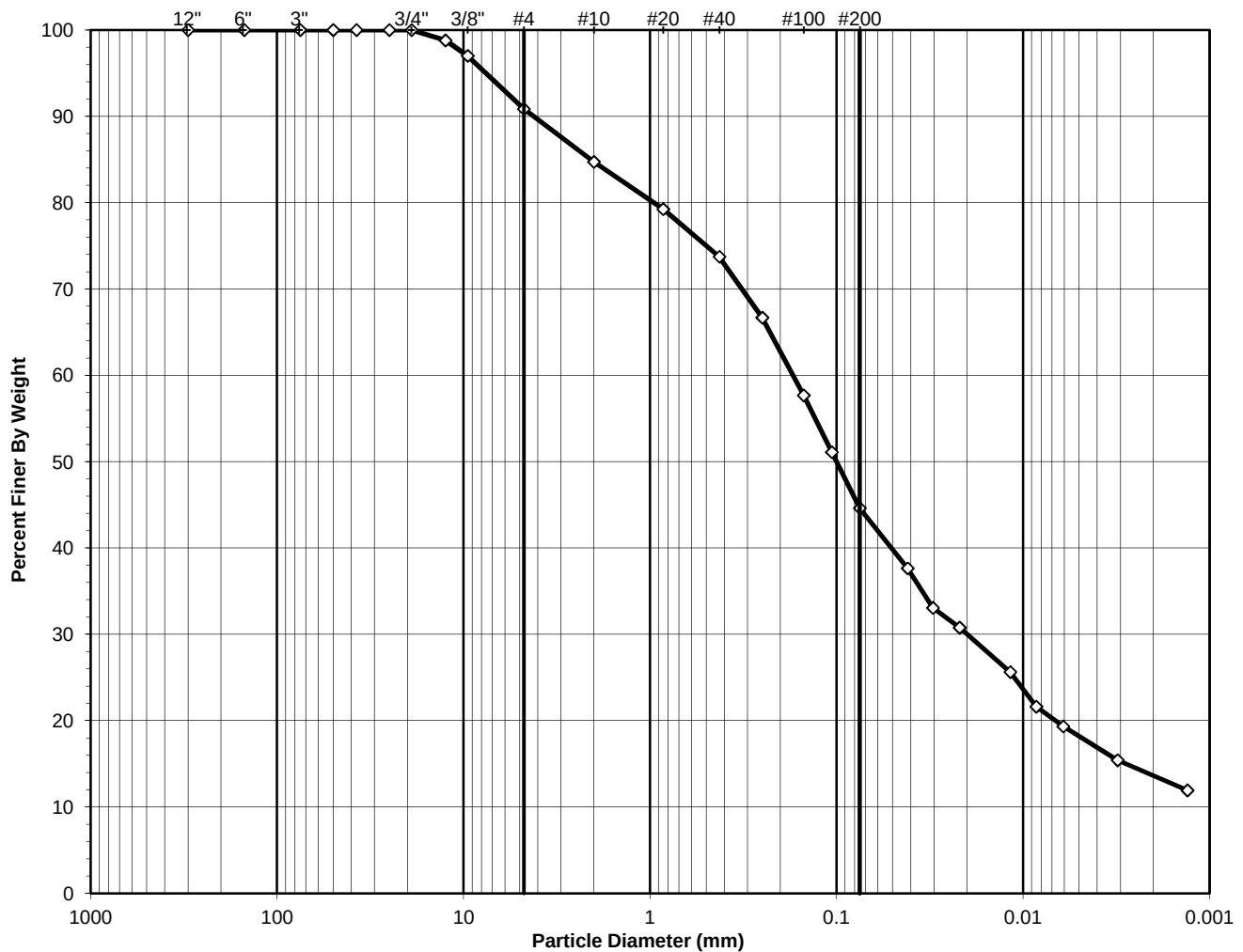
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-156

Boring No.: JB5-19-204N
 Depth (ft): 14.0-17.8
 Sample No.: SpT-8/9
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.10

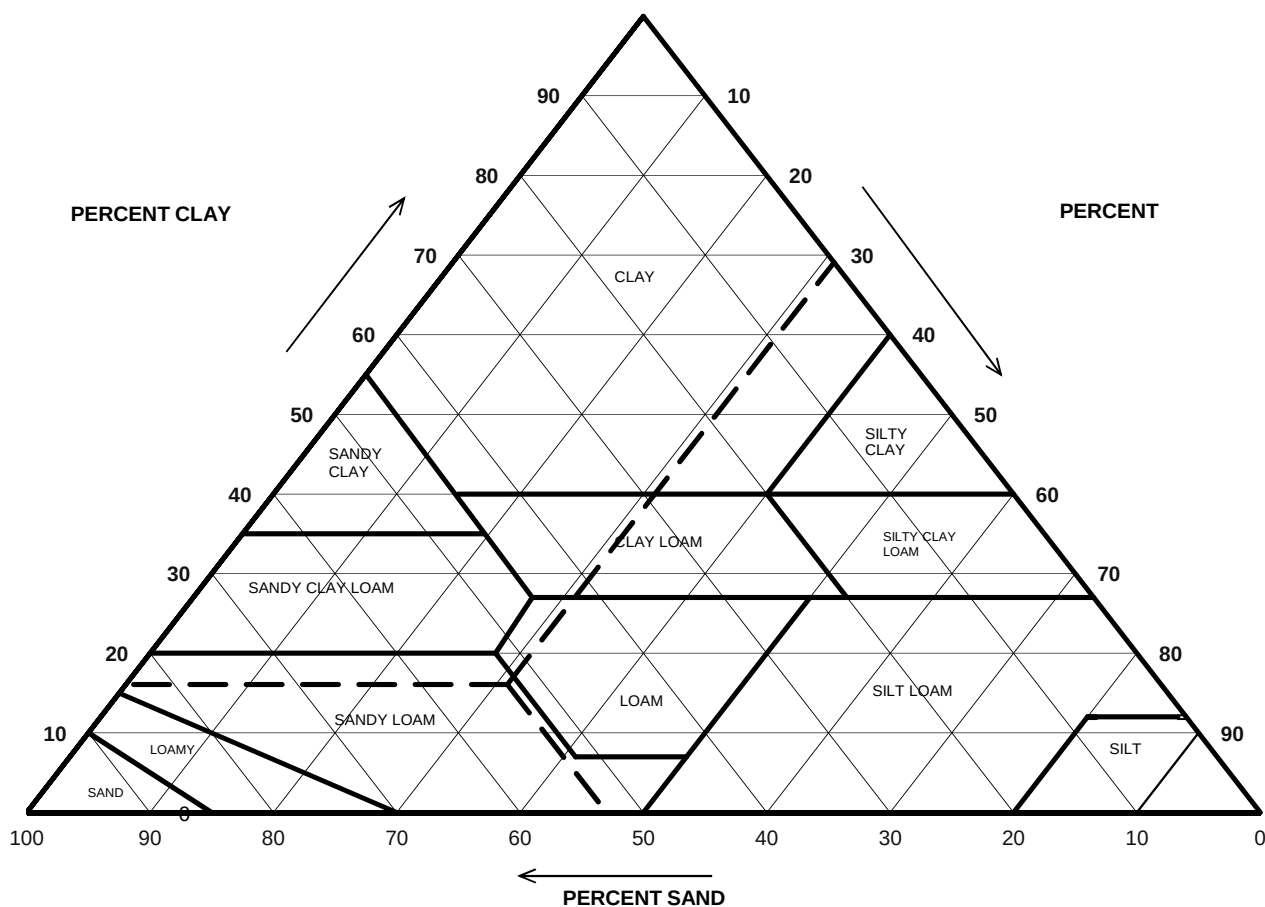
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-156

Boring No.: JB5-19-204N
Depth (ft): 14.0-17.8
Sample No.: SpT-8/9
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	15.27	
2	84.73	Sand	44.90	52.99
0.05	39.83	Silt	26.20	30.92
0.002	13.63	Clay	13.63	16.09

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-156

Boring No.: JB5-19-204N
 Depth (ft): 14.0-17.8
 Sample No.: SpT-8/9
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1481	Tare No.:	NA	Tare No.:	1481	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	508.30	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	508.30	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	494.31	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	494.31	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.98	Weight of Tare (g):	NA	Weight of Tare (g):	145.98	Weight of Tare (g):	NA
Weight of Water (g):	13.99	Weight of Water (g):	NA	Weight of Water (g):	13.99	Weight of Water (g):	NA
Weight of Dry Soil (g):	348.33	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	348.33	Weight of Dry Soil (g):	NA
Moisture Content (%):	4.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	348.33	Total Dry Weight of Sample (g):	348.33	Dry Weight of Sample (g):	348.33	Total Dry Weight of Sample (g):	348.33
Tare No. (Sub-Specimen)	1481	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1481	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	508.30	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	508.30	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.98	Dry Weight of - 3/4" Sample (g):	348.33	Weight of Tare (g):	145.98	Dry Weight of - 3/4" Sample (g):	348.33
Sub-Specimen Wet Weight (g):	362.32	Dry Weight -3/4" +3/8" Sample (g):	10.42	Sub-Specimen Wet Weight (g):	362.32	Dry Weight -3/4" +3/8" Sample (g):	10.42
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	337.91	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	337.91
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	4.20	(**)	1.21	98.79	99
3/8"	9.5	6.22	1.79	2.99	97.01	97
#4	4.75	21.44	6.16	9.15	90.85	91
#10	2	21.33	6.12	15.27	84.73	85
#20	0.85	19.06	(**)	20.74	79.26	79
#40	0.425	19.22	5.52	26.26	73.74	74
#60	0.25	24.57	7.05	33.31	66.69	67
#100	0.15	31.38	9.01	42.32	57.68	58
#140	0.106	22.90	6.57	48.90	51.10	51
#200	0.075	22.60	6.49	55.38	44.62	45
Pan	-	155.41	44.62	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-204N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	14.0-17.8
Project No.:	2020-002-001	Sample No.:	SpT-8/9
Lab ID:	2020-002-001-156	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	38.5	22.8	5.60	10.0	0.0416	84.4	37.6
2	34.5	22.8	5.60	10.7	0.0304	74.1	33.1
4	32.5	22.8	5.60	11.1	0.0219	69.0	30.8
15	28.0	22.8	5.60	11.9	0.0117	57.5	25.6
30	24.5	22.8	5.60	12.5	0.0085	48.5	21.6
60	22.5	22.8	5.60	12.9	0.0061	43.3	19.3
240	19.0	23.0	5.52	13.5	0.0031	34.6	15.4
1440	16.5	21.5	6.07	14.0	0.0013	26.7	11.9

Soil Specimen Data

Tare No.:	2337	Percent Finer than # 200:	44.62
Wt. of Tare & Dry Material (g):	137.58		
Weight of Tare (g):	94.02	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	38.56		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-156

Boring No.: JB5-19-204N
Depth (ft): 14.0-17.8
Sample No.: SpT-8/9
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	35
Wt. of Tare & Wet Sample (g)	50.40
Wt. of Tare & Dry Sample (g)	46.98
Weight of Tare (g)	8.45
Weight of Water (g)	3.42
Weight of Dry Sample (g)	38.53

Water Content (%) **8.9**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

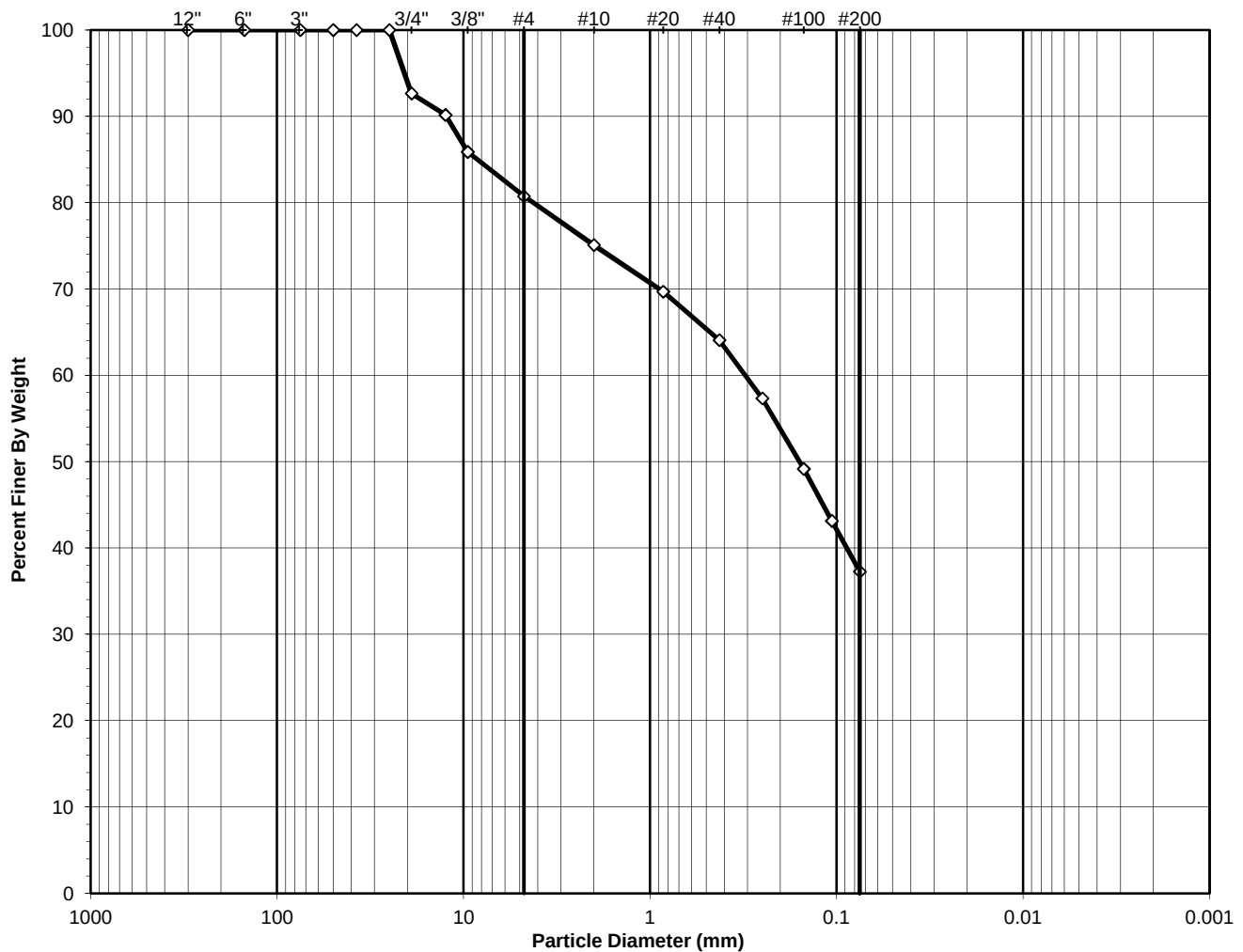
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-157

Boring No.: JB5-19-204N
 Depth (ft): 20.0-22.9
 Sample No.: SpT-11/12
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.16

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-157

Boring No.: JB5-19-204N
 Depth (ft): 20.0-22.9
 Sample No.: SpT-11/12
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1514	Tare No.:	NA	Tare No.:	1514	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	553.01	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	553.01	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	553.01	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	553.01	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.10	Weight of Tare (g):	NA	Weight of Tare (g):	146.10	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	406.91	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	406.91	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	406.91	Total Dry Weight of Sample (g):	406.91	Dry Weight of Sample (g):	406.91	Total Dry Weight of Sample (g):	406.91
Tare No. (Sub-Specimen)	1514	Wet Weight of +3/4" Sample (g):	29.91	Tare No. (Sub-Specimen)	1514	Wet Weight of +3/4" Sample (g):	29.91
Wt. of Tare & Wet Sub-Specimen (g):	553.01	Dry Weight of + 3/4" Sample (g):	29.91	Wt. of Tare & Wet Sub-Specimen (g):	553.01	Dry Weight of + 3/4" Sample (g):	29.91
Weight of Tare (g):	146.10	Dry Weight of - 3/4" Sample (g):	377.00	Weight of Tare (g):	146.10	Dry Weight of - 3/4" Sample (g):	377.00
Sub-Specimen Wet Weight (g):	406.91	Dry Weight -3/4" +3/8" Sample (g):	27.54	Sub-Specimen Wet Weight (g):	406.91	Dry Weight -3/4" +3/8" Sample (g):	27.54
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	351.48	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	351.48
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	29.91	7.35	7.35	92.65	93
1/2"	12.5	10.13	(**) 2.49	9.84	90.16	90
3/8"	9.5	17.41	4.28	14.12	85.88	86
#4	4.75	20.90	5.14	19.25	80.75	81
#10	2	23.00	5.65	24.91	75.09	75
#20	0.85	21.98	(**) 5.40	30.31	69.69	70
#40	0.425	22.83	5.61	35.92	64.08	64
#60	0.25	27.46	6.75	42.67	57.33	57
#100	0.15	33.23	8.17	50.83	49.17	49
#140	0.106	24.49	6.02	56.85	43.15	43
#200	0.075	23.88	5.87	62.72	37.28	37
Pan	-	151.69	37.28	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-157

Boring No.: JB5-19-204N
Depth (ft): 20.0-22.9
Sample No.: SpT-11/12
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	19
Wt. of Tare & Wet Sample (g)	55.79
Wt. of Tare & Dry Sample (g)	51.68
Weight of Tare (g)	8.26
Weight of Water (g)	4.11
Weight of Dry Sample (g)	43.42

Water Content (%) **9.5**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-204N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	20.0-22.9
Project No.:	2020-022-001	Sample No.:	SpT-11/12
Lab ID:	2020-022-001-157	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747.41	749.12
Temperature (°C):	25.9	25.9
Weight of Pycnometer & Water (g):	683.86	684.41
Tare Number:	932	695
Weight of Tare & Dry Soil (g):	197.62	192.23
Weight of Tare (g):	95.44	90.51
Weight of Dry Soil (g):	102.18	101.72
Specific Gravity of Soil @ Measured Temperature:	2.645	2.748
Specific Gravity of Water @ Measured Temperature:	0.99682	0.99682
Conversion Factor for Measured Temperature:	0.99861	0.99861
Specific Gravity @ 20° Celsius:	2.649	2.752

Average Specific Gravity @ 20° Celsius	2.70

Tested By TO Date 2/10/20 Checked By JLK Date 2/11/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

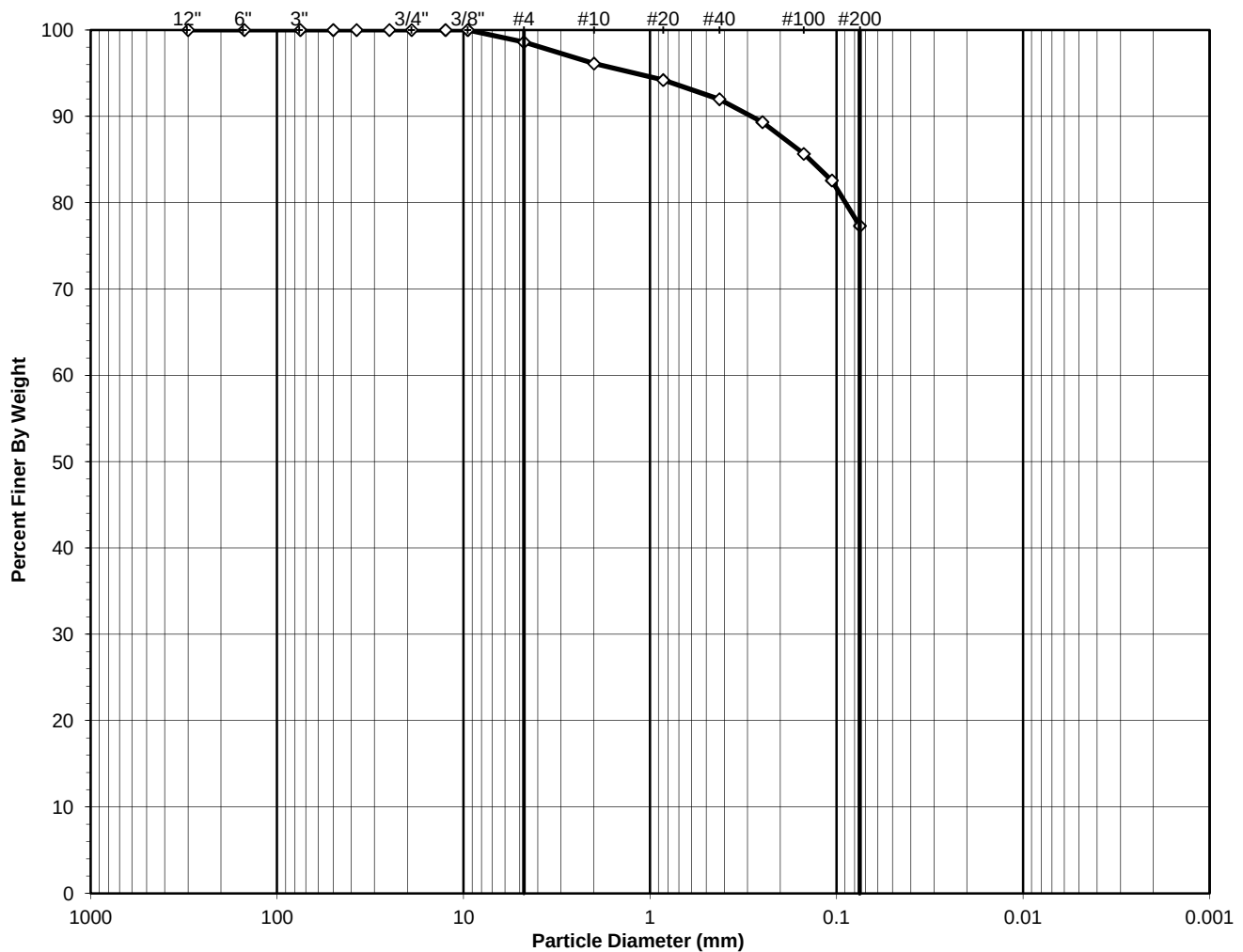
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-158

Boring No.: JB5-19-204N
 Depth (ft): 28.0-29.8
 Sample No.: SpT-15
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
ML, TESTED

D50 = 0.02

USCS Classification:
SILT WITH SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-158

Boring No.: JB5-19-204N
 Depth (ft): 28.0-29.8
 Sample No.: SpT-15
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2016	Tare No.:	NA	Tare No.:	2016	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	327.54	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	327.54	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	310.84	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	310.84	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.50	Weight of Tare (g):	NA	Weight of Tare (g):	145.50	Weight of Tare (g):	NA
Weight of Water (g):	16.70	Weight of Water (g):	NA	Weight of Water (g):	16.70	Weight of Water (g):	NA
Weight of Dry Soil (g):	165.34	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	165.34	Weight of Dry Soil (g):	NA
Moisture Content (%):	10.1	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	165.34	Total Dry Weight of Sample (g):	165.34	Dry Weight of Sample (g):	165.34	Total Dry Weight of Sample (g):	165.34
Tare No. (Sub-Specimen)	2016	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	2016	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	327.54	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	327.54	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.50	Dry Weight of - 3/4" Sample (g):	165.34	Weight of Tare (g):	145.50	Dry Weight of - 3/4" Sample (g):	165.34
Sub-Specimen Wet Weight (g):	182.04	Dry Weight -3/4" +3/8" Sample (g):	0.00	Sub-Specimen Wet Weight (g):	182.04	Dry Weight -3/4" +3/8" Sample (g):	0.00
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	165.34	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	165.34
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**)	0.00	100.00	100
3/8"	9.5	0.00	0.00	0.00	100.00	100
#4	4.75	2.32	1.40	1.40	98.60	99
#10	2	4.10	2.48	3.88	96.12	96
#20	0.85	3.17	(**)	5.80	94.20	94
#40	0.425	3.66	2.21	8.01	91.99	92
#60	0.25	4.39	2.66	10.67	89.33	89
#100	0.15	6.07	3.67	14.34	85.66	86
#140	0.106	5.10	3.08	17.42	82.58	83
#200	0.075	8.70	5.26	22.69	77.31	77
Pan	-	127.83	77.31	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-158

Boring No.: JB5-19-204N
Depth (ft): 28.0-29.8
Sample No.: SpT-15
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	39
Wt. of Tare & Wet Sample (g)	27.27
Wt. of Tare & Dry Sample (g)	24.24
Weight of Tare (g)	8.48
Weight of Water (g)	3.03
Weight of Dry Sample (g)	15.76

Water Content (%)	19.2

NON - PLASTIC MATERIAL

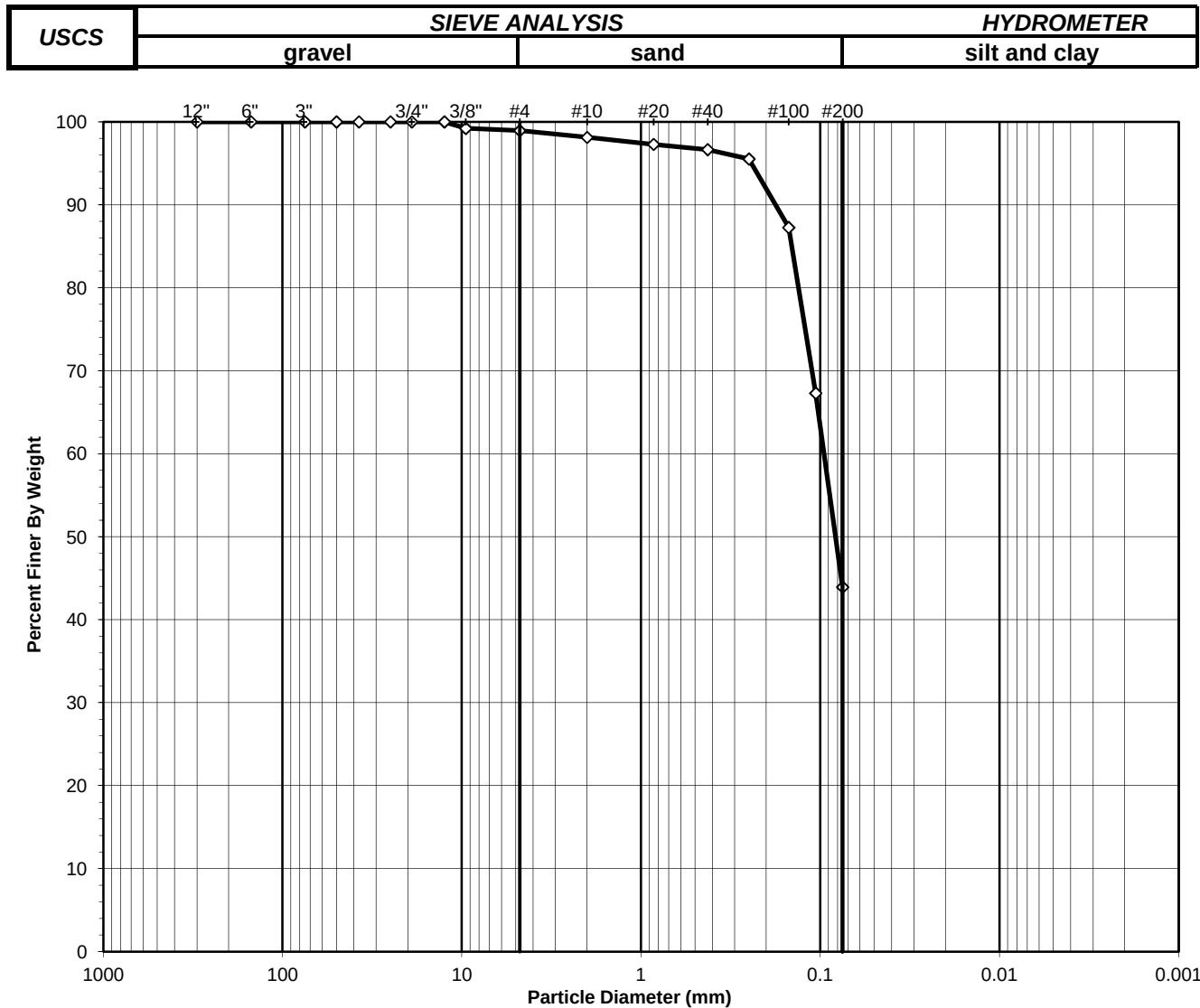
Tested By *MLF* Date *2/5/20* Checked By *JLK* Date *2/6/20*

SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-159

Boring No.: JB5-19-204N
 Depth (ft): 30.5-33.4
 Sample No.: SpT-16/17
 Soil Color: Brown



USCS Symbol:
sm, ASSUMED

D50 = 0.08

USCS Classification:
SILTY SAND

Tested By DS	Date 2/3/20	Checked By JLK	Date 2/3/20

page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-159

Boring No.: JB5-19-204N
 Depth (ft): 30.5-33.4
 Sample No.: SpT-16/17
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1615	Tare No.:	NA	Tare No.:	1615	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	477.64	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	477.64	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	418.01	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	418.01	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.15	Weight of Tare (g):	NA	Weight of Tare (g):	148.15	Weight of Tare (g):	NA
Weight of Water (g):	59.63	Weight of Water (g):	NA	Weight of Water (g):	59.63	Weight of Water (g):	NA
Weight of Dry Soil (g):	269.86	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	269.86	Weight of Dry Soil (g):	NA
Moisture Content (%):	22.1	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	269.86	Total Dry Weight of Sample (g):	269.86	Dry Weight of Sample (g):	269.86	Total Dry Weight of Sample (g):	269.86
Tare No. (Sub-Specimen)	1615	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1615	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	477.64	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	477.64	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	148.15	Dry Weight of - 3/4" Sample (g):	269.86	Weight of Tare (g):	148.15	Dry Weight of - 3/4" Sample (g):	269.86
Sub-Specimen Wet Weight (g):	329.49	Dry Weight -3/4" +3/8" Sample (g):	2.12	Sub-Specimen Wet Weight (g):	329.49	Dry Weight -3/4" +3/8" Sample (g):	2.12
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	267.74	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	267.74
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**) 0.00	0.00	100.00	100
3/8"	9.5	2.12	0.79	0.79	99.21	99
#4	4.75	0.73	0.27	1.06	98.94	99
#10	2	2.20	0.82	1.87	98.13	98
#20	0.85	2.27	(**) 0.84	2.71	97.29	97
#40	0.425	1.71	0.63	3.35	96.65	97
#60	0.25	3.04	1.13	4.47	95.53	96
#100	0.15	22.29	8.26	12.73	87.27	87
#140	0.106	53.87	19.96	32.69	67.31	67
#200	0.075	63.06	23.37	56.06	43.94	44
Pan	-	118.57	43.94	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/3/20 Checked By JLK Date 2/3/20

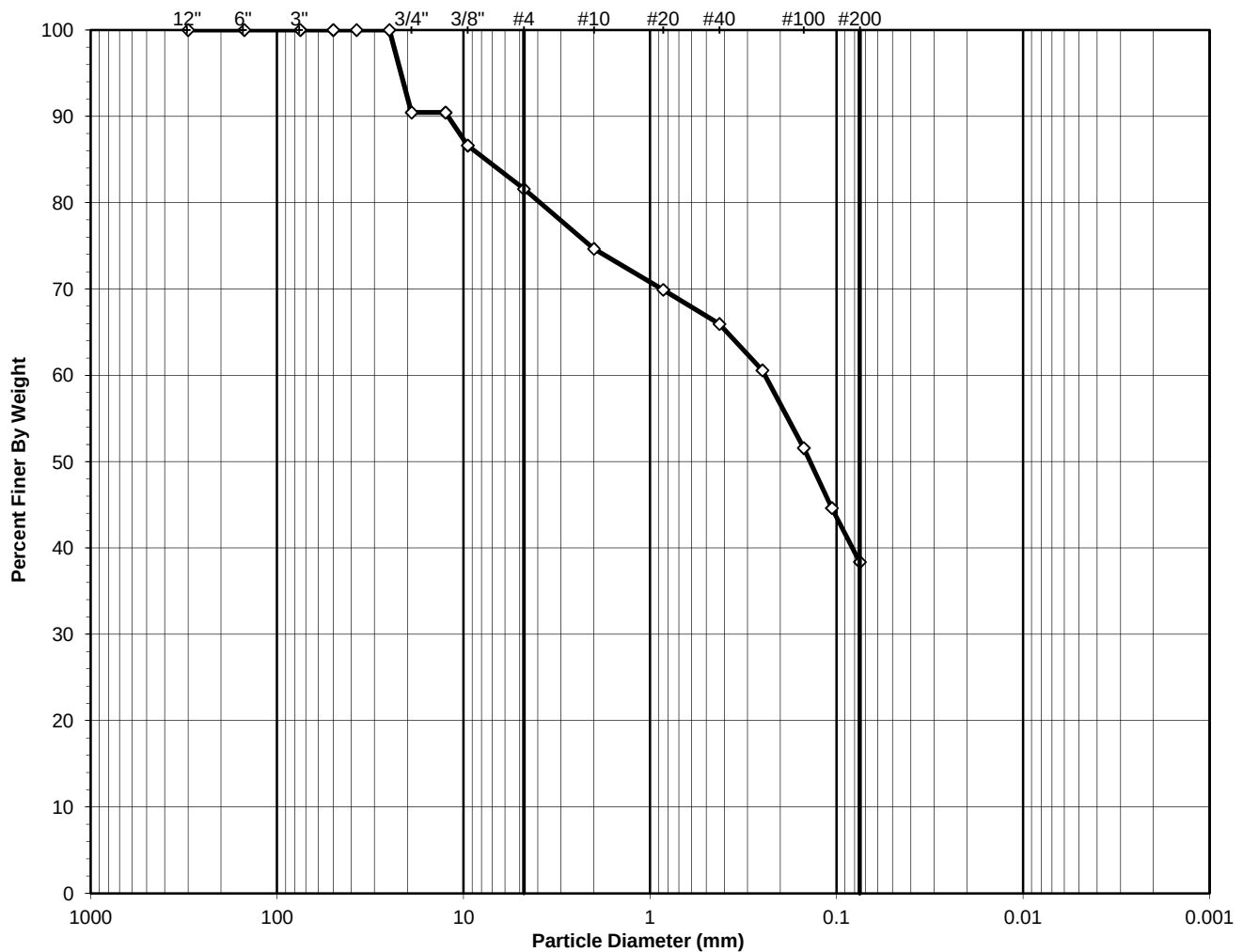
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-160

Boring No.: JB5-19-204N
 Depth (ft): 38.0-40.0
 Sample No.: SpT-20
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.14

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-160

Boring No.: JB5-19-204N
 Depth (ft): 38.0-40.0
 Sample No.: SpT-20
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1443	Tare No.:	NA	Tare No.:	1443	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	340.17	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	340.17	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	326.04	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	326.04	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.39	Weight of Tare (g):	NA	Weight of Tare (g):	144.39	Weight of Tare (g):	NA
Weight of Water (g):	14.13	Weight of Water (g):	NA	Weight of Water (g):	14.13	Weight of Water (g):	NA
Weight of Dry Soil (g):	181.65	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	181.65	Weight of Dry Soil (g):	NA
Moisture Content (%):	7.8	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	181.65	Total Dry Weight of Sample (g):	181.65	Dry Weight of Sample (g):	181.65	Total Dry Weight of Sample (g):	181.65
Tare No. (Sub-Specimen)	1443	Wet Weight of +3/4" Sample (g):	18.71	Tare No. (Sub-Specimen)	1443	Wet Weight of +3/4" Sample (g):	18.71
Wt. of Tare & Wet Sub-Specimen (g):	340.17	Dry Weight of + 3/4" Sample (g):	17.36	Wt. of Tare & Wet Sub-Specimen (g):	340.17	Dry Weight of + 3/4" Sample (g):	17.36
Weight of Tare (g):	144.39	Dry Weight of - 3/4" Sample (g):	164.29	Weight of Tare (g):	144.39	Dry Weight of - 3/4" Sample (g):	164.29
Sub-Specimen Wet Weight (g):	195.78	Dry Weight -3/4" +3/8" Sample (g):	6.94	Sub-Specimen Wet Weight (g):	195.78	Dry Weight -3/4" +3/8" Sample (g):	6.94
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	158.01	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	158.01
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	17.36	9.56	9.56	90.44	90
1/2"	12.5	0.00	(**) 0.00	9.56	90.44	90
3/8"	9.5	6.94	3.82	13.38	86.62	87
#4	4.75	9.14	5.03	18.41	81.59	82
#10	2	12.60	6.94	25.35	74.65	75
#20	0.85	8.62	(**) 4.75	30.09	69.91	70
#40	0.425	7.19	3.96	34.05	65.95	66
#60	0.25	9.75	5.37	39.42	60.58	61
#100	0.15	16.36	9.01	48.42	51.58	52
#140	0.106	12.62	6.95	55.37	44.63	45
#200	0.075	11.36	6.25	61.62	38.38	38
Pan	-	69.71	38.38	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-160

Boring No.: JB5-19-204N
Depth (ft): 38.0-40.0
Sample No.: SpT-20
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	40
Wt. of Tare & Wet Sample (g)	32.11
Wt. of Tare & Dry Sample (g)	29.75
Weight of Tare (g)	8.43
Weight of Water (g)	2.36
Weight of Dry Sample (g)	21.32

Water Content (%) **11.1**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

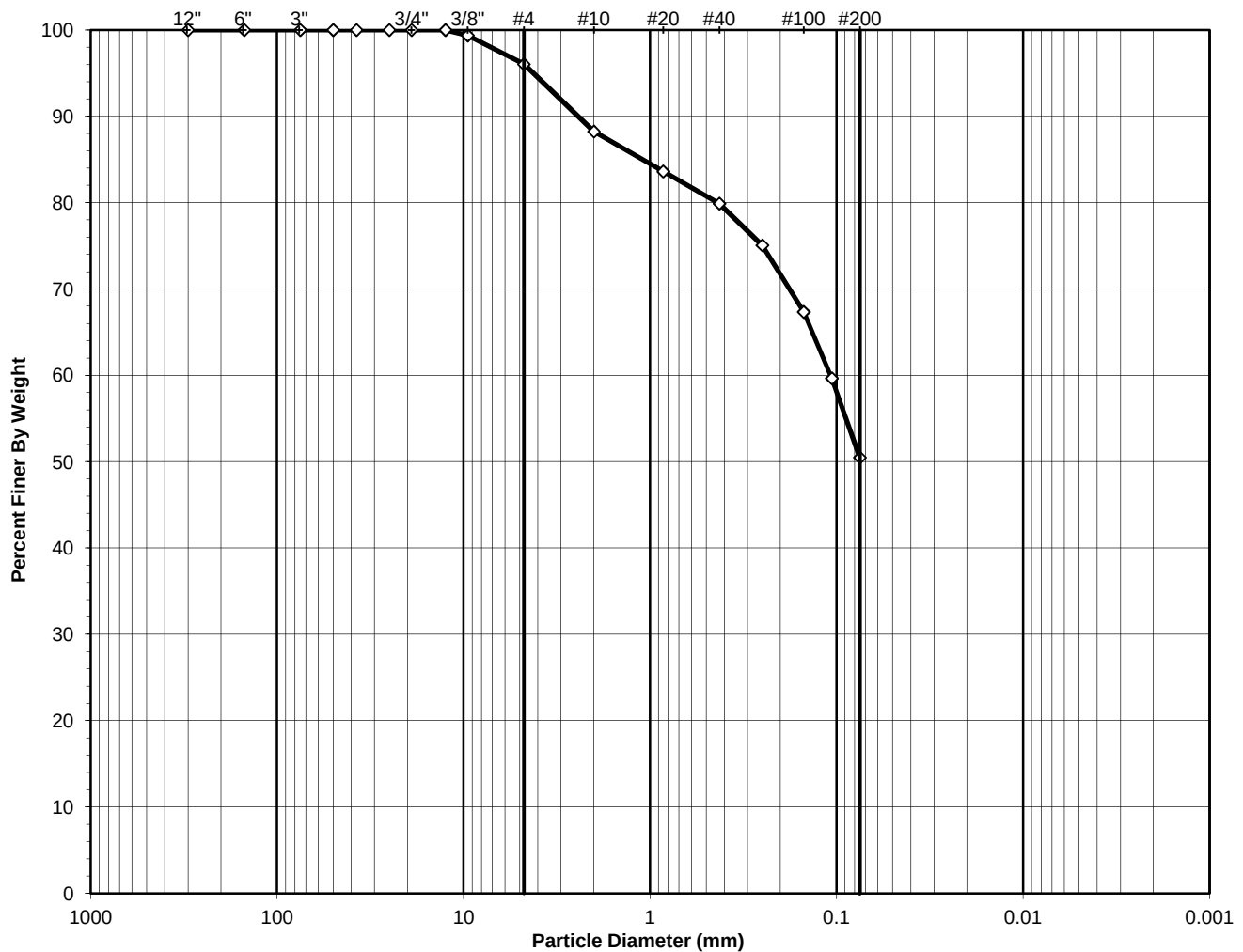
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-161

Boring No.: JB5-19-204N
 Depth (ft): 45.0-46.4
 Sample No.: SpT-22
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
ML, TESTED

D50 = 0.07

USCS Classification:
SANDY SILT
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-161

Boring No.: JB5-19-204N
 Depth (ft): 45.0-46.4
 Sample No.: SpT-22
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1449	Tare No.:	NA	Tare No.:	1449	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	322.15	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	322.15	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	303.82	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	303.82	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.46	Weight of Tare (g):	NA	Weight of Tare (g):	145.46	Weight of Tare (g):	NA
Weight of Water (g):	18.33	Weight of Water (g):	NA	Weight of Water (g):	18.33	Weight of Water (g):	NA
Weight of Dry Soil (g):	158.36	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	158.36	Weight of Dry Soil (g):	NA
Moisture Content (%):	11.6	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	158.36	Total Dry Weight of Sample (g):	158.36	Dry Weight of Sample (g):	158.36	Total Dry Weight of Sample (g):	158.36
Tare No. (Sub-Specimen)	1449	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1449	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	322.15	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	322.15	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.46	Dry Weight of - 3/4" Sample (g):	158.36	Weight of Tare (g):	145.46	Dry Weight of - 3/4" Sample (g):	158.36
Sub-Specimen Wet Weight (g):	176.69	Dry Weight -3/4" +3/8" Sample (g):	1.00	Sub-Specimen Wet Weight (g):	176.69	Dry Weight -3/4" +3/8" Sample (g):	1.00
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	157.36	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	157.36
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**) 0.00	0.00	100.00	100
3/8"	9.5	1.00	0.63	0.63	99.37	99
#4	4.75	5.26	3.32	3.95	96.05	96
#10	2	12.36	7.81	11.76	88.24	88
#20	0.85	7.32	(**) 4.62	16.38	83.62	84
#40	0.425	5.90	3.73	20.11	79.89	80
#60	0.25	7.65	4.83	24.94	75.06	75
#100	0.15	12.22	7.72	32.65	67.35	67
#140	0.106	12.18	7.69	40.34	59.66	60
#200	0.075	14.53	9.18	49.52	50.48	50
Pan	-	79.94	50.48	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-161

Boring No.: JB5-19-204N
Depth (ft): 45.0-46.4
Sample No.: SpT-22
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	5
Wt. of Tare & Wet Sample (g)	35.44
Wt. of Tare & Dry Sample (g)	31.97
Weight of Tare (g)	8.32
Weight of Water (g)	3.47
Weight of Dry Sample (g)	23.65

Water Content (%) **14.7**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

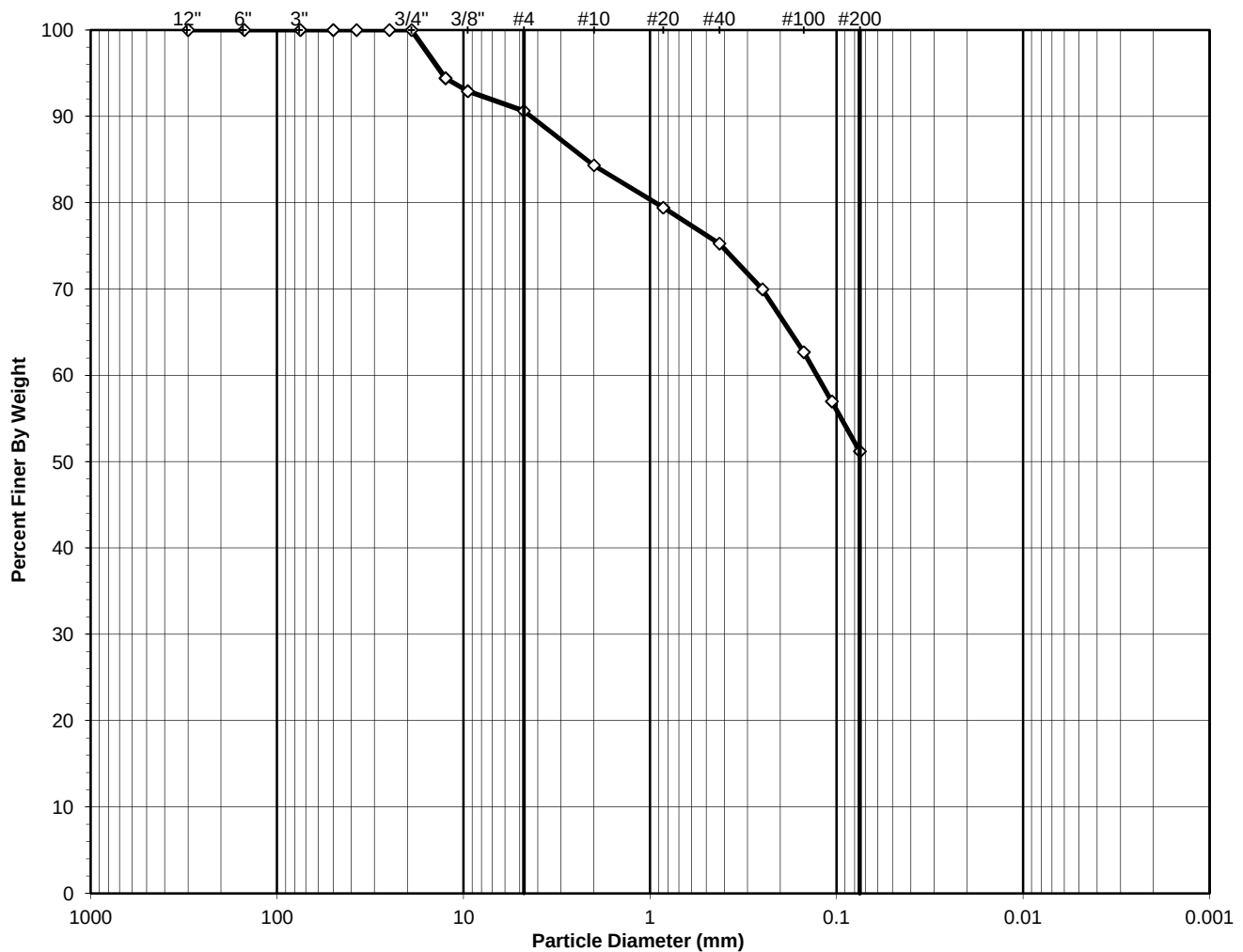
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-162

Boring No.: JB5-19-204N
 Depth (ft): 50.0-51.1
 Sample No.: SpT-23
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
ML, TESTED

D50 = 0.07

USCS Classification:
SANDY SILT
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/13/20
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WASH SIEVE ANALYSIS

ASTM D6913-17



Client:	D'Appolonia	Boring No.:	JB5-19-204N
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	50.0-51.1
Project No.:	2020-002-001	Sample No.:	SpT-23
Lab ID:	2020-002-001-162	Soil Color:	Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1505	Tare No.:	NA	Tare No.:	1505	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	305.88	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	305.88	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	292.16	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	292.16	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	140.19	Weight of Tare (g):	NA	Weight of Tare (g):	140.19	Weight of Tare (g):	NA
Weight of Water (g):	13.72	Weight of Water (g):	NA	Weight of Water (g):	13.72	Weight of Water (g):	NA
Weight of Dry Soil (g):	151.97	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	151.97	Weight of Dry Soil (g):	NA
Moisture Content (%):	9.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	151.97	Total Dry Weight of Sample (g):	151.97	Dry Weight of Sample (g):	151.97	Total Dry Weight of Sample (g):	151.97
Tare No. (Sub-Specimen)	1505	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1505	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	305.88	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	305.88	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	140.19	Dry Weight of - 3/4" Sample (g):	151.97	Weight of Tare (g):	140.19	Dry Weight of - 3/4" Sample (g):	151.97
Sub-Specimen Wet Weight (g):	165.69	Dry Weight -3/4" +3/8" Sample (g):	10.77	Sub-Specimen Wet Weight (g):	165.69	Dry Weight -3/4" +3/8" Sample (g):	10.77
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	141.20	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	141.20
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	8.48	(**)	5.58	94.42	94
3/8"	9.5	2.29	1.51	7.09	92.91	93
#4	4.75	3.47	2.28	9.37	90.63	91
#10	2	9.57	6.30	15.67	84.33	84
#20	0.85	7.46	(**)	20.58	79.42	79
#40	0.425	6.32	4.16	24.74	75.26	75
#60	0.25	8.05	5.30	30.03	69.97	70
#100	0.15	11.06	7.28	37.31	62.69	63
#140	0.106	8.68	5.71	43.02	56.98	57
#200	0.075	8.79	5.78	48.81	51.19	51
Pan	-	77.80	51.19	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By	DS	Date	2/7/20	Checked By	JLK	Date	2/13/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-162

Boring No.: JB5-19-204N
Depth (ft): 50.0-51.1
Sample No.: SpT-23
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	26
Wt. of Tare & Wet Sample (g)	39.02
Wt. of Tare & Dry Sample (g)	35.13
Weight of Tare (g)	8.44
Weight of Water (g)	3.89
Weight of Dry Sample (g)	26.69

Water Content (%)	14.6

NON - PLASTIC MATERIAL

Tested By *MLF* Date *2/5/20* Checked By *JLK* Date *2/6/20*

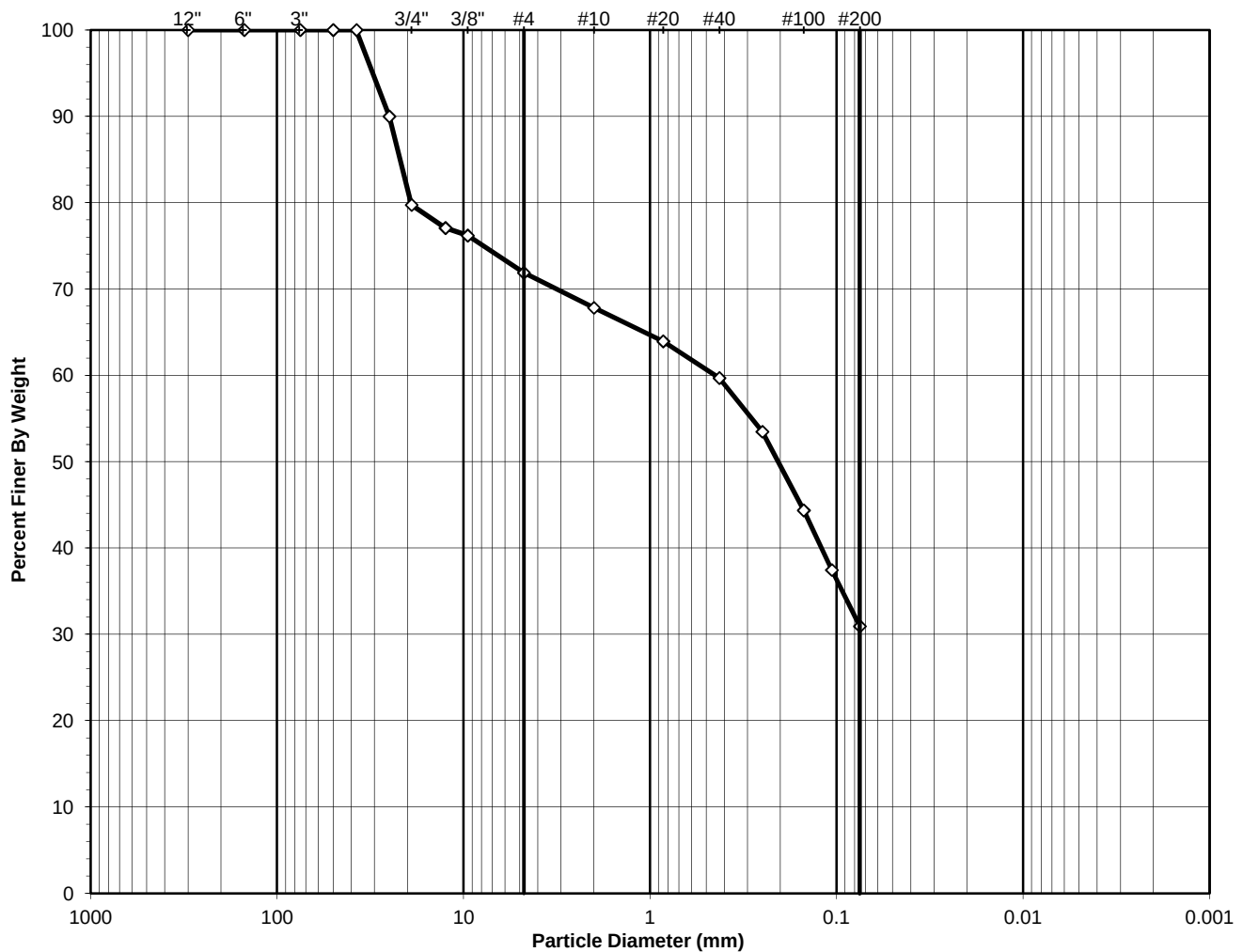
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-163

Boring No.: JB5-19-205S
 Depth (ft): 0.0-4.0
 Sample No.: SpT-1/2
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
sm, ASSUMED

D50 = 0.21

USCS Classification:
SILTY SAND WITH GRAVEL

Tested By DS Date 2/3/20 Checked By JLK Date 2/3/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-163

Boring No.: JB5-19-205S
 Depth (ft): 0.0-4.0
 Sample No.: SpT-1/2
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1471	Tare No.:	NA	Tare No.:	1471	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	502.10	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	502.10	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	451.02	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	451.02	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.15	Weight of Tare (g):	NA	Weight of Tare (g):	147.15	Weight of Tare (g):	NA
Weight of Water (g):	51.08	Weight of Water (g):	NA	Weight of Water (g):	51.08	Weight of Water (g):	NA
Weight of Dry Soil (g):	303.87	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	303.87	Weight of Dry Soil (g):	NA
Moisture Content (%):	16.8	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	303.87	Total Dry Weight of Sample (g):	303.87	Dry Weight of Sample (g):	303.87	Total Dry Weight of Sample (g):	303.87
Tare No. (Sub-Specimen)	1471	Wet Weight of +3/4" Sample (g):	71.92	Tare No. (Sub-Specimen)	1471	Wet Weight of +3/4" Sample (g):	71.92
Wt. of Tare & Wet Sub-Specimen (g):	502.10	Dry Weight of + 3/4" Sample (g):	61.57	Wt. of Tare & Wet Sub-Specimen (g):	502.10	Dry Weight of + 3/4" Sample (g):	61.57
Weight of Tare (g):	147.15	Dry Weight of - 3/4" Sample (g):	242.30	Weight of Tare (g):	147.15	Dry Weight of - 3/4" Sample (g):	242.30
Sub-Specimen Wet Weight (g):	354.95	Dry Weight -3/4" +3/8" Sample (g):	10.77	Sub-Specimen Wet Weight (g):	354.95	Dry Weight -3/4" +3/8" Sample (g):	10.77
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	233.71	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	233.71
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	30.42	10.01	10.01	89.99	90
3/4"	19	31.15	10.25	20.26	79.74	80
1/2"	12.5	8.12	(**) 2.67	22.93	77.07	77
3/8"	9.5	2.65	0.87	23.81	76.19	76
#4	4.75	13.10	4.31	28.12	71.88	72
#10	2	12.33	4.06	32.17	67.83	68
#20	0.85	11.80	(**) 3.88	36.06	63.94	64
#40	0.425	12.92	4.25	40.31	59.69	60
#60	0.25	18.89	6.22	46.53	53.47	53
#100	0.15	27.69	9.11	55.64	44.36	44
#140	0.106	21.00	6.91	62.55	37.45	37
#200	0.075	19.77	6.51	69.06	30.94	31
Pan	-	94.03	30.94	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

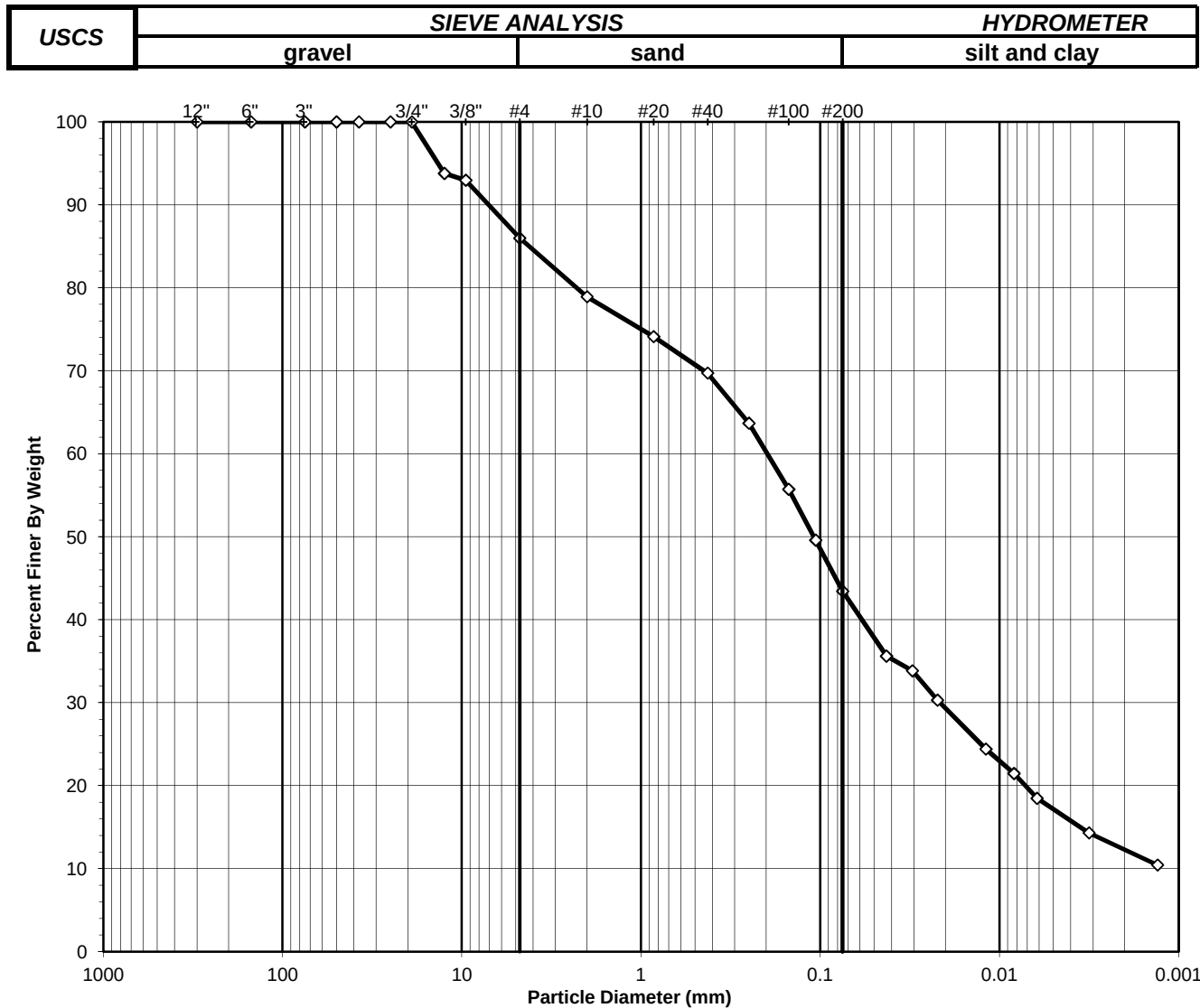
Tested By DS Date 2/3/20 Checked By JLK Date 2/3/20

SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-164

Boring No.: JB5-19-205S
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.11

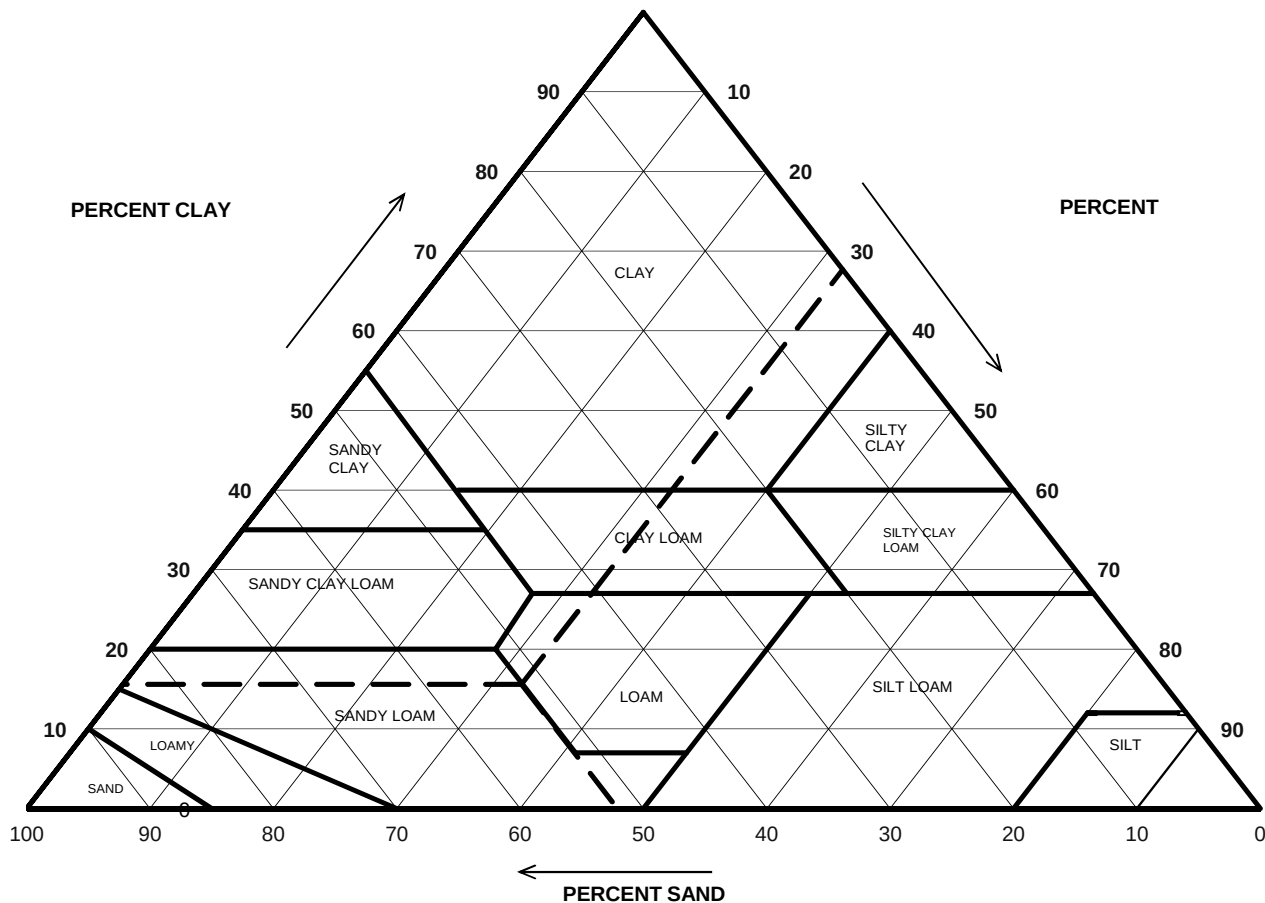
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/12/20 Checked By JLK Date 2/17/20
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USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-164

Boring No.: JB5-19-205S
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	21.07	
2	78.93	Sand	41.13	52.10
0.05	37.80	Silt	25.50	32.31
0.002	12.30	Clay	12.30	15.58

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-164

Boring No.: JB5-19-205S
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1435	Tare No.:	NA	Tare No.:	1435	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	452.17	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	452.17	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	452.17	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	452.17	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.19	Weight of Tare (g):	NA	Weight of Tare (g):	145.19	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	306.98	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	306.98	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	306.98	Total Dry Weight of Sample (g):	306.98	Dry Weight of Sample (g):	306.98	Total Dry Weight of Sample (g):	306.98
Tare No. (Sub-Specimen)	1435	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1435	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	452.17	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	452.17	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.19	Dry Weight of - 3/4" Sample (g):	306.98	Weight of Tare (g):	145.19	Dry Weight of - 3/4" Sample (g):	306.98
Sub-Specimen Wet Weight (g):	306.98	Dry Weight -3/4" +3/8" Sample (g):	21.59	Sub-Specimen Wet Weight (g):	306.98	Dry Weight -3/4" +3/8" Sample (g):	21.59
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	285.39	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	285.39
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	19.06	(**)	6.21	93.79	94
3/8"	9.5	2.53	0.82	7.03	92.97	93
#4	4.75	21.43	6.98	14.01	85.99	86
#10	2	21.66	7.06	21.07	78.93	79
#20	0.85	14.75	(**)	25.87	74.13	74
#40	0.425	13.48	4.39	30.27	69.73	70
#60	0.25	18.56	6.05	36.31	63.69	64
#100	0.15	24.46	7.97	44.28	55.72	56
#140	0.106	18.82	6.13	50.41	49.59	50
#200	0.075	18.85	6.14	56.55	43.45	43
Pan	-	133.38	43.45	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/12/20 Checked By JLK Date 2/17/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-205S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	6.0-10.0
Project No.:	2020-002-001	Sample No.:	SpT-4/5
Lab ID:	2020-002-001-164	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	36.0	22.3	5.78	10.4	0.0427	82.0	35.6
2	34.5	22.3	5.78	10.7	0.0306	77.9	33.8
4	31.5	22.3	5.78	11.3	0.0222	69.8	30.3
15	26.5	22.3	5.78	12.2	0.0119	56.2	24.4
32	24.0	22.3	5.78	12.6	0.0083	49.4	21.5
60	21.5	22.2	5.82	13.1	0.0062	42.5	18.5
240	18.0	22.1	5.86	13.7	0.0032	32.9	14.3
1440	14.5	22.7	5.63	14.3	0.0013	24.1	10.5

Soil Specimen Data

Tare No.:	503	Percent Finer than # 200:	43.45
Wt. of Tare & Dry Material (g):	133.87		
Weight of Tare (g):	92.42	Specific Gravity:	2.70 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	36.45		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/13/20	Checked By	JLK	Date	2/17/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-164

Boring No.: JB5-19-205S
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	45
Wt. of Tare & Wet Sample (g)	46.16
Wt. of Tare & Dry Sample (g)	43.09
Weight of Tare (g)	8.45
Weight of Water (g)	3.07
Weight of Dry Sample (g)	34.64

Water Content (%) **8.9**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-205S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	6.0-10.0
Project No.:	2020-022-001	Sample No.:	SpT-4/5
Lab ID:	2020-022-001-164	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747.05	747.79
Temperature (°C):	25.3	25.4
Weight of Pycnometer & Water (g):	683.94	684.48
Tare Number:	637	926
Weight of Tare & Dry Soil (g):	196.85	193.07
Weight of Tare (g):	95.18	93.54
Weight of Dry Soil (g):	101.67	99.53
Specific Gravity of Soil @ Measured Temperature:	2.637	2.748
Specific Gravity of Water @ Measured Temperature:	0.99698	0.99695
Conversion Factor for Measured Temperature:	0.99877	0.99874
Specific Gravity @ 20° Celsius:	2.640	2.751

Average Specific Gravity @ 20° Celsius

2.70

Tested By TO Date 2/10/20 Checked By JLK Date 2/11/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

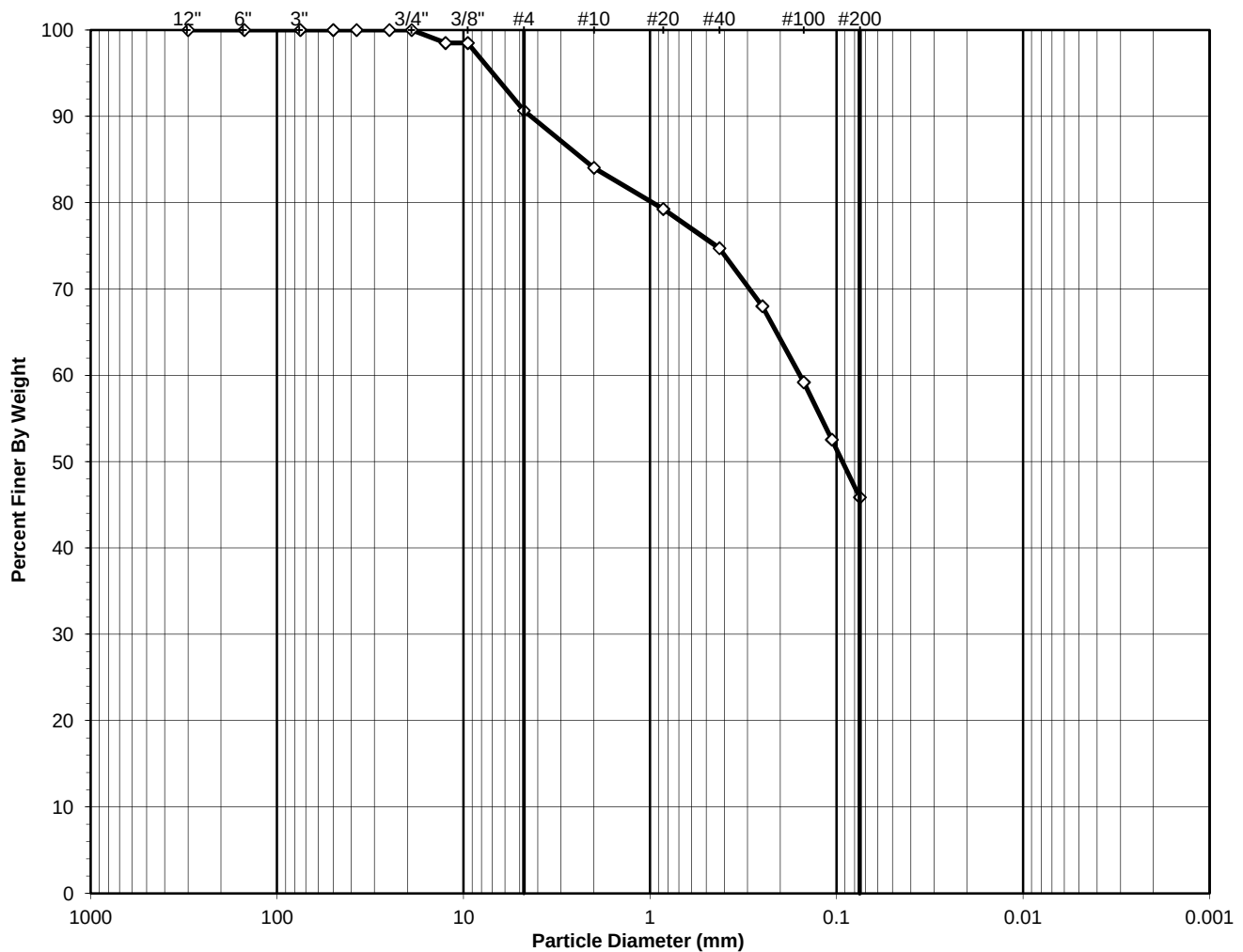
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-165

Boring No.: JB5-19-205S
 Depth (ft): 10.0-13.7
 Sample No.: SpT-6/7
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.09

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-165

Boring No.: JB5-19-205S
 Depth (ft): 10.0-13.7
 Sample No.: SpT-6/7
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1534	Tare No.:	NA	Tare No.:	1534	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	486.44	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	486.44	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	486.44	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	486.44	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.13	Weight of Tare (g):	NA	Weight of Tare (g):	145.13	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	341.31	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	341.31	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	341.31	Total Dry Weight of Sample (g):	341.31	Dry Weight of Sample (g):	341.31	Total Dry Weight of Sample (g):	341.31
Tare No. (Sub-Specimen)	1534	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1534	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	486.44	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	486.44	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.13	Dry Weight of - 3/4" Sample (g):	341.31	Weight of Tare (g):	145.13	Dry Weight of - 3/4" Sample (g):	341.31
Sub-Specimen Wet Weight (g):	341.31	Dry Weight -3/4" +3/8" Sample (g):	5.12	Sub-Specimen Wet Weight (g):	341.31	Dry Weight -3/4" +3/8" Sample (g):	5.12
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	336.19	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	336.19
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	5.12	(**)	1.50	98.50	98
3/8"	9.5	0.00	0.00	1.50	98.50	98
#4	4.75	26.72	7.83	9.33	90.67	91
#10	2	22.62	6.63	15.96	84.04	84
#20	0.85	16.30	(**)	20.73	79.27	79
#40	0.425	15.50	4.54	25.27	74.73	75
#60	0.25	22.93	6.72	31.99	68.01	68
#100	0.15	30.06	8.81	40.80	59.20	59
#140	0.106	22.70	6.65	47.45	52.55	53
#200	0.075	22.81	6.68	54.13	45.87	46
Pan	-	156.55	45.87	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-165

Boring No.: JB5-19-205S
Depth (ft): 10.0-13.7
Sample No.: SpT-6/7
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	12
Wt. of Tare & Wet Sample (g)	50.93
Wt. of Tare & Dry Sample (g)	47.02
Weight of Tare (g)	8.46
Weight of Water (g)	3.91
Weight of Dry Sample (g)	38.56

Water Content (%)	10.1

NON - PLASTIC MATERIAL

Tested By	MLF	Date	2/5/20	Checked By	JLK	Date	2/6/20

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-205S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-13.7
Project No.:	2020-022-001	Sample No.:	SpT-6/7
Lab ID:	2020-022-001-165	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747.1	748.3
Temperature (°C):	26.1	26.3
Weight of Pycnometer & Water (g):	683.84	684.36
Tare Number:	967	704
Weight of Tare & Dry Soil (g):	200.6	191.07
Weight of Tare (g):	98.56	90.65
Weight of Dry Soil (g):	102.04	100.42
Specific Gravity of Soil @ Measured Temperature:	2.631	2.753
Specific Gravity of Water @ Measured Temperature:	0.99677	0.99671
Conversion Factor for Measured Temperature:	0.99856	0.99850
Specific Gravity @ 20° Celsius:	2.635	2.757

Average Specific Gravity @ 20° Celsius	2.70

Tested By TO Date 2/10/20 Checked By JLK Date 2/11/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

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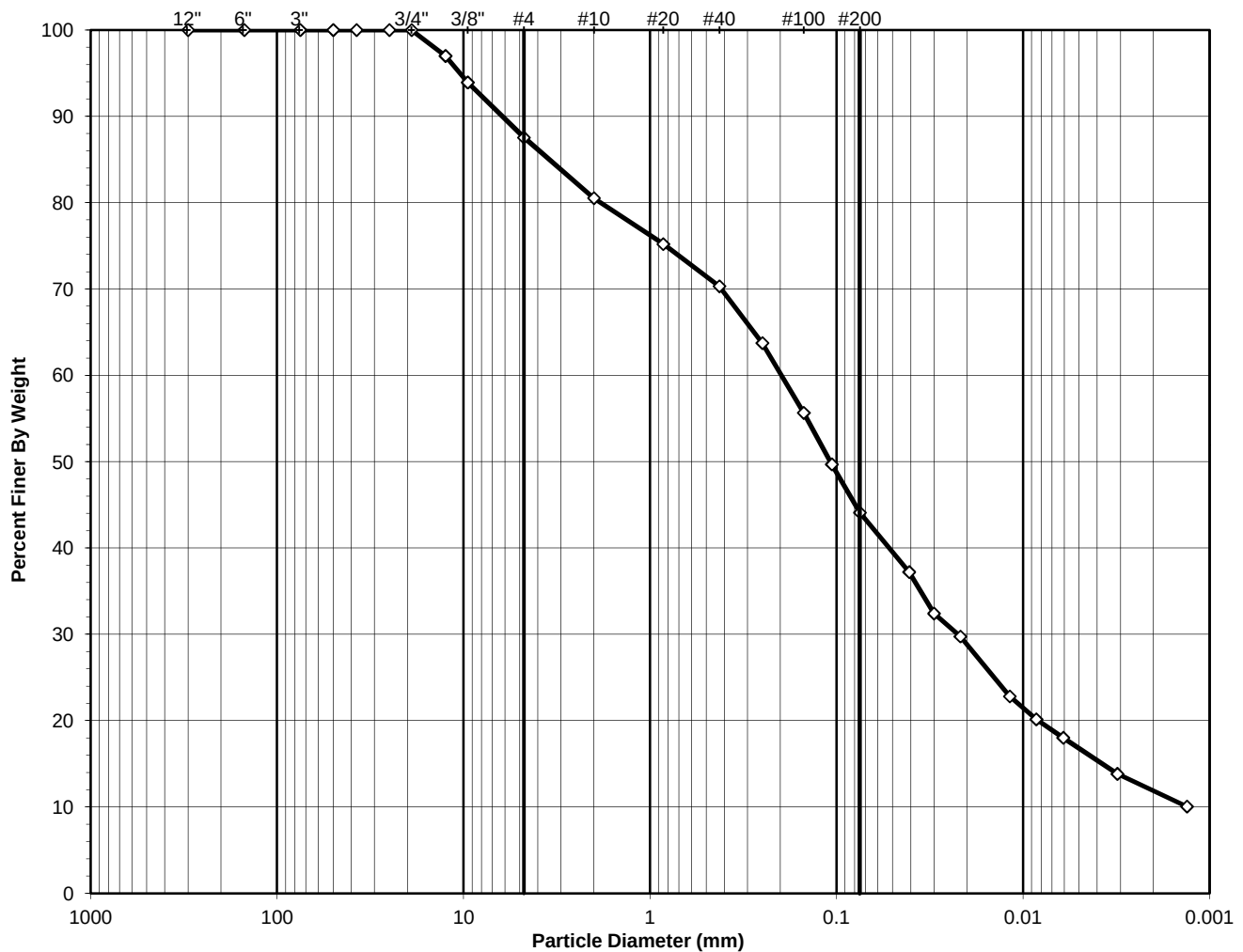
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-166

Boring No.: JB5-19-205S
 Depth (ft): 16.0-17.3
 Sample No.: SpT-9
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.11

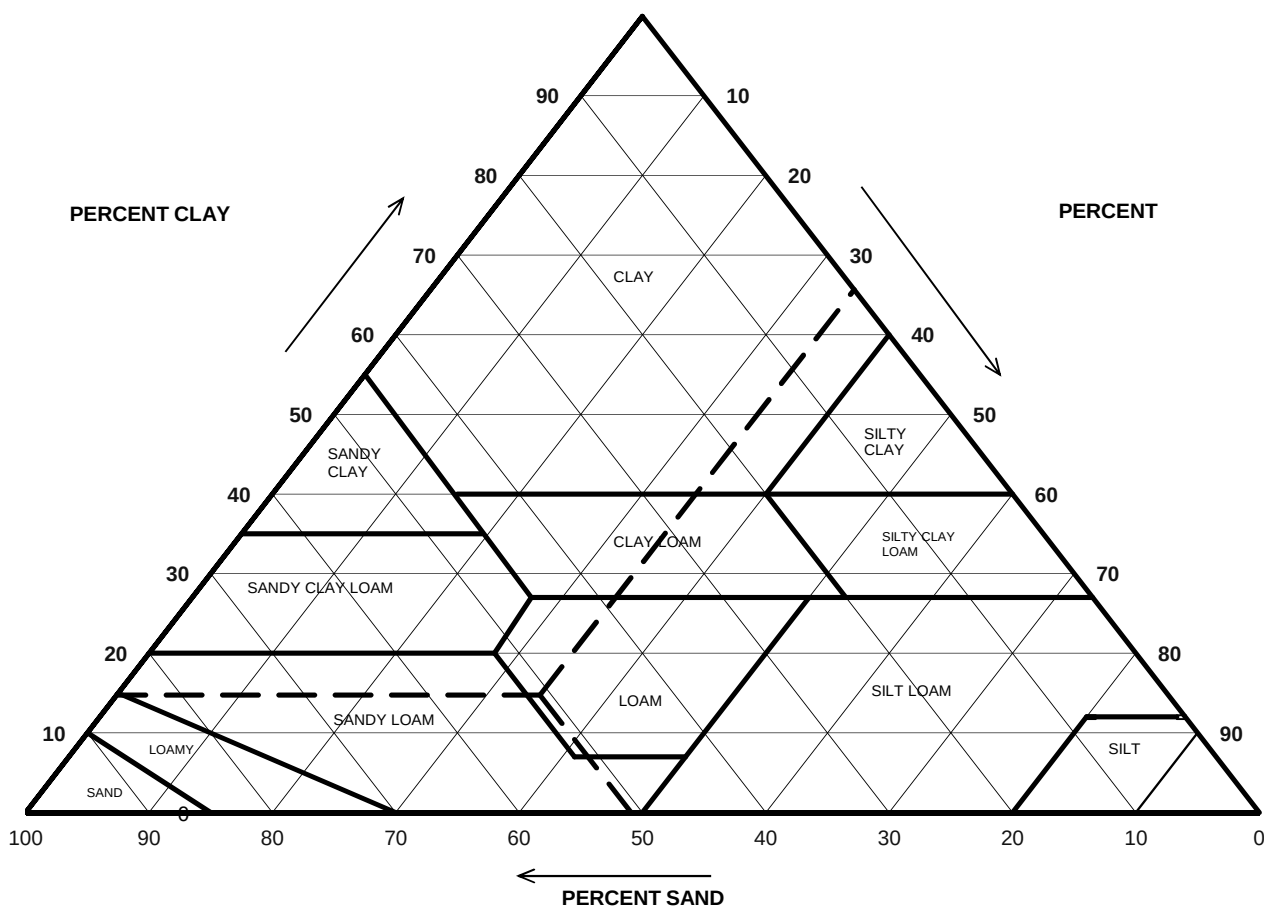
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-166

Boring No.: JB5-19-205S
 Depth (ft): 16.0-17.3
 Sample No.: SpT-9
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	19.47	
2	80.53	Sand	41.01	50.93
0.05	39.52	Silt	27.64	34.32
0.002	11.88	Clay	11.88	14.75

USDA Classification: **LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-166

Boring No.: JB5-19-205S
 Depth (ft): 16.0-17.3
 Sample No.: SpT-9
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1536	Tare No.:	NA	Tare No.:	1536	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	309.49	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	309.49	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	298.95	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	298.95	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	149.03	Weight of Tare (g):	NA	Weight of Tare (g):	149.03	Weight of Tare (g):	NA
Weight of Water (g):	10.54	Weight of Water (g):	NA	Weight of Water (g):	10.54	Weight of Water (g):	NA
Weight of Dry Soil (g):	149.92	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	149.92	Weight of Dry Soil (g):	NA
Moisture Content (%):	7.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	149.92	Total Dry Weight of Sample (g):	149.92	Dry Weight of Sample (g):	149.92	Total Dry Weight of Sample (g):	149.92
Tare No. (Sub-Specimen)	1536	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1536	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	309.49	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	309.49	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	149.03	Dry Weight of - 3/4" Sample (g):	149.92	Weight of Tare (g):	149.03	Dry Weight of - 3/4" Sample (g):	149.92
Sub-Specimen Wet Weight (g):	160.46	Dry Weight -3/4" +3/8" Sample (g):	9.10	Sub-Specimen Wet Weight (g):	160.46	Dry Weight -3/4" +3/8" Sample (g):	9.10
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	140.82	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	140.82
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	4.50	(**)	3.00	97.00	97
3/8"	9.5	4.60	3.07	6.07	93.93	94
#4	4.75	9.57	6.38	12.45	87.55	88
#10	2	10.52	7.02	19.47	80.53	81
#20	0.85	7.98	(**)	24.79	75.21	75
#40	0.425	7.33	4.89	29.68	70.32	70
#60	0.25	9.86	6.58	36.26	63.74	64
#100	0.15	12.12	8.08	44.34	55.66	56
#140	0.106	8.94	5.96	50.31	49.69	50
#200	0.075	8.38	5.59	55.90	44.10	44
Pan	-	66.12	44.10	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-205S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	16.0-17.3
Project No.:	2020-002-001	Sample No.:	SpT-9
Lab ID:	2020-002-001-166	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	40.5	22.8	5.60	9.6	0.0408	84.4	37.2
2	36.0	22.8	5.60	10.4	0.0300	73.5	32.4
4	33.5	22.8	5.60	10.9	0.0217	67.5	29.8
15	27.0	22.8	5.60	12.1	0.0118	51.7	22.8
30	24.5	22.8	5.60	12.5	0.0085	45.7	20.2
60	22.5	22.8	5.60	12.9	0.0061	40.9	18.0
240	18.5	23.0	5.52	13.6	0.0031	31.4	13.8
1440	15.5	21.5	6.07	14.1	0.0013	22.8	10.1

Soil Specimen Data

Tare No.:	979	Percent Finer than # 200:	44.10
Wt. of Tare & Dry Material (g):	141.39		
Weight of Tare (g):	95.49	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	40.90		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-166

Boring No.: JB5-19-205S
Depth (ft): 16.0-17.3
Sample No.: SpT-9
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	29
Wt. of Tare & Wet Sample (g)	34.42
Wt. of Tare & Dry Sample (g)	32.44
Weight of Tare (g)	8.47
Weight of Water (g)	1.98
Weight of Dry Sample (g)	23.97

Water Content (%) **8.3**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

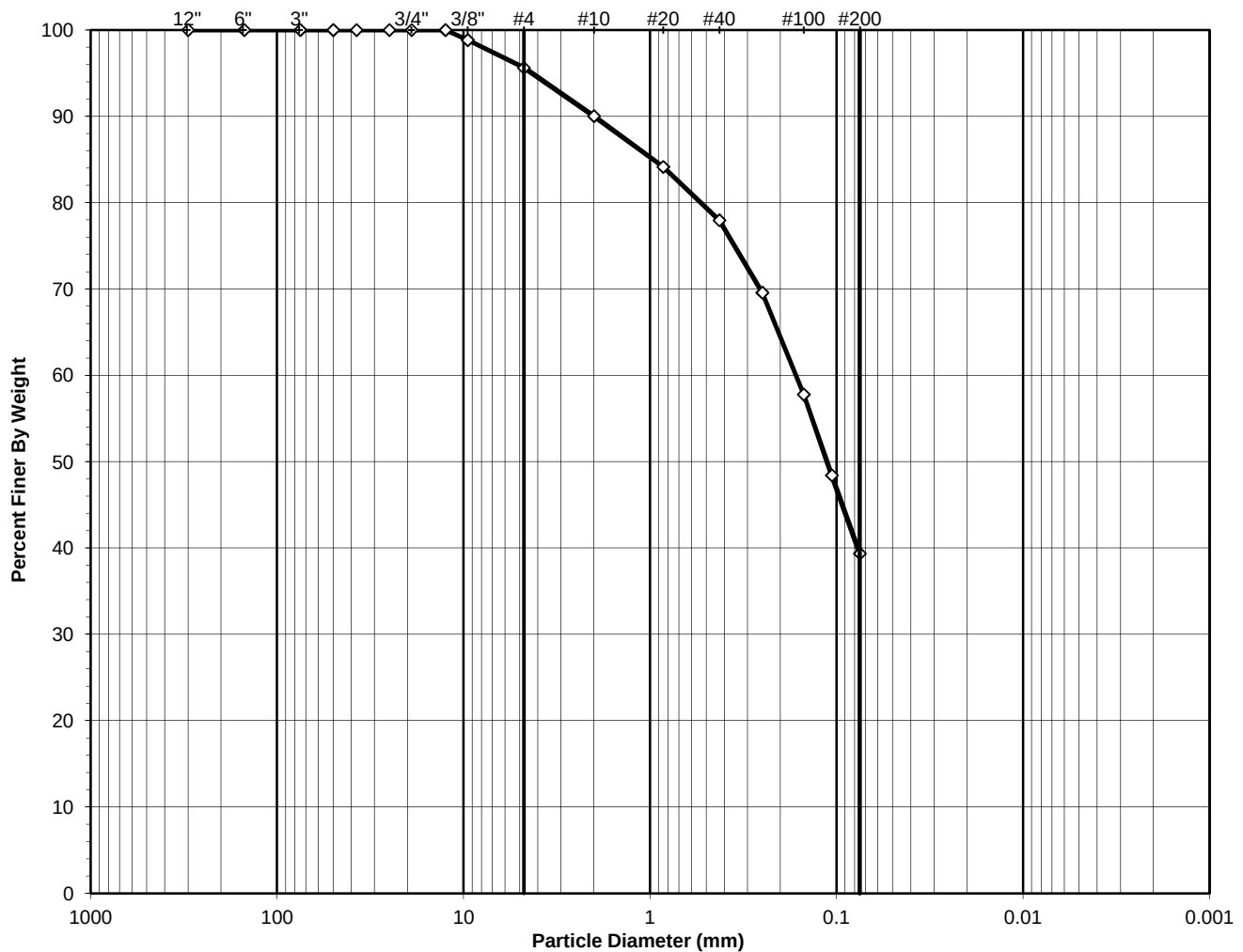
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-167

Boring No.: JB5-19-206S
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.11

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-167

Boring No.: JB5-19-206S
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1426	Tare No.:	NA	Tare No.:	1426	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	291.08	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	291.08	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	291.08	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	291.08	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.42	Weight of Tare (g):	NA	Weight of Tare (g):	144.42	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	146.66	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	146.66	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	146.66	Total Dry Weight of Sample (g):	146.66	Dry Weight of Sample (g):	146.66	Total Dry Weight of Sample (g):	146.66
Tare No. (Sub-Specimen)	1426	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1426	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	291.08	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	291.08	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	144.42	Dry Weight of - 3/4" Sample (g):	146.66	Weight of Tare (g):	144.42	Dry Weight of - 3/4" Sample (g):	146.66
Sub-Specimen Wet Weight (g):	146.66	Dry Weight -3/4" +3/8" Sample (g):	1.70	Sub-Specimen Wet Weight (g):	146.66	Dry Weight -3/4" +3/8" Sample (g):	1.70
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	144.96	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	144.96
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**)	0.00	100.00	100
3/8"	9.5	1.70	1.16	1.16	98.84	99
#4	4.75	4.72	3.22	4.38	95.62	96
#10	2	8.20	5.59	9.97	90.03	90
#20	0.85	8.63	(**)	15.85	84.15	84
#40	0.425	9.06	6.18	22.03	77.97	78
#60	0.25	12.30	8.39	30.42	69.58	70
#100	0.15	17.31	11.80	42.22	57.78	58
#140	0.106	13.73	9.36	51.58	48.42	48
#200	0.075	13.28	9.05	60.64	39.36	39
Pan	-	57.73	39.36	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-167

Boring No.: JB5-19-206S
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	46
Wt. of Tare & Wet Sample (g)	32.57
Wt. of Tare & Dry Sample (g)	28.34
Weight of Tare (g)	8.45
Weight of Water (g)	4.23
Weight of Dry Sample (g)	19.89

Water Content (%)	21.3

NON - PLASTIC MATERIAL

Tested By	MLF	Date	2/5/20	Checked By	JLK	Date	2/6/20

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-206S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	0.0-2.0
Project No.:	2020-022-001	Sample No.:	SpT-1
Lab ID:	2020-022-001-167	Visual Description:	Brown Sandy Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	719.8	732.69
Temperature (°C):	26.6	27.0
Weight of Pycnometer & Water (g):	683.77	684.27
Tare Number:	1092	960
Weight of Tare & Dry Soil (g):	157.34	169.96
Weight of Tare (g):	97.11	92.79
Weight of Dry Soil (g):	60.23	77.17
Specific Gravity of Soil @ Measured Temperature:	2.489	2.685
Specific Gravity of Water @ Measured Temperature:	0.99663	0.99652
Conversion Factor for Measured Temperature:	0.99842	0.99831
Specific Gravity @ 20° Celsius:	2.493	2.689

Average Specific Gravity @ 20° Celsius	2.59

Tested By TO Date 2/10/20 Checked By JLK Date 2/11/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

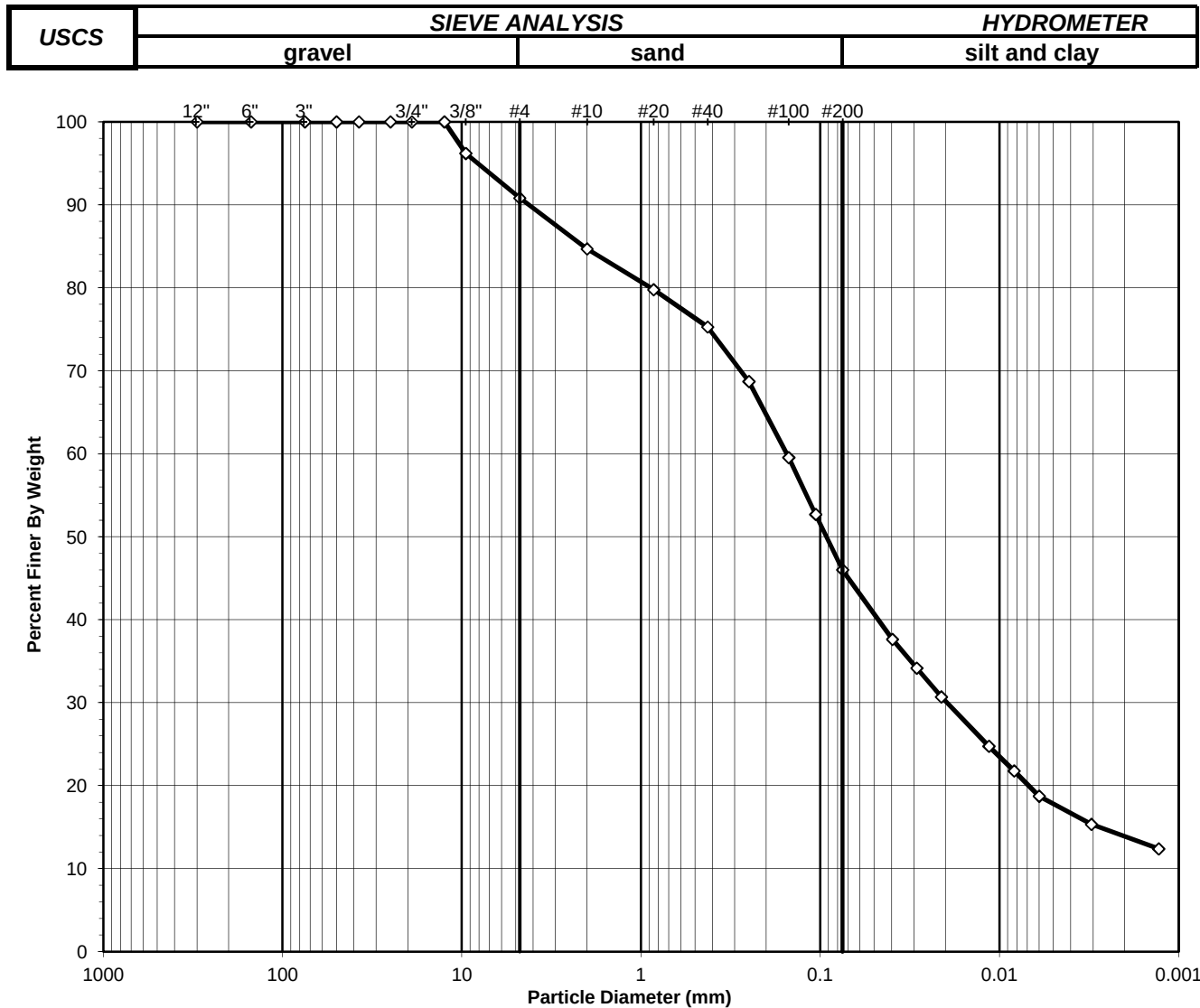
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SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-168

Boring No.: JB5-19-206S
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.09

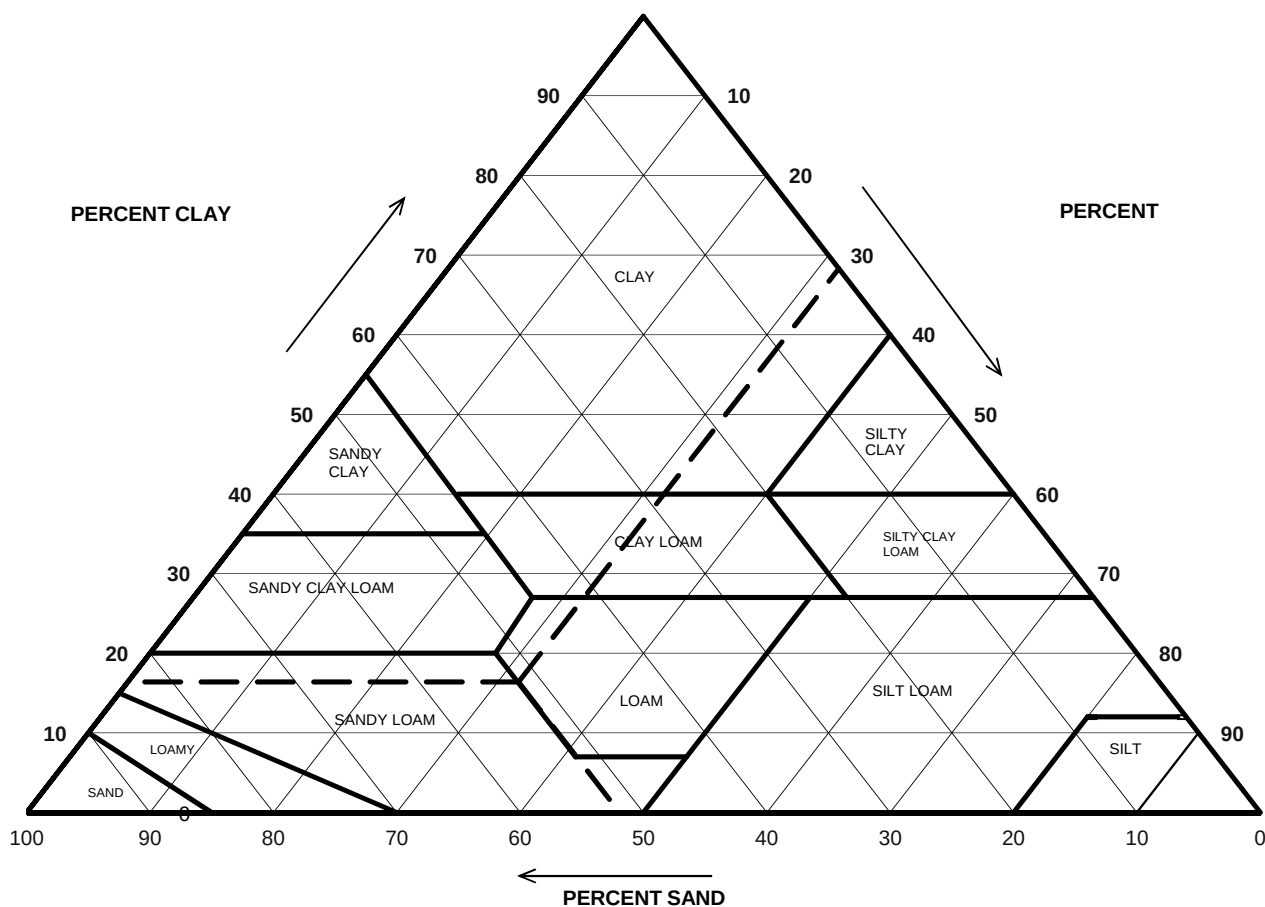
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-168

Boring No.: JB5-19-206S
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	15.31	
2	84.69	Sand	43.99	51.94
0.05	40.70	Silt	26.83	31.68
0.002	13.88	Clay	13.88	16.38

USDA Classification: **LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-168

Boring No.: JB5-19-206S
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1420	Tare No.:	NA	Tare No.:	1420	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	475.93	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	475.93	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	452.19	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	452.19	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.58	Weight of Tare (g):	NA	Weight of Tare (g):	144.58	Weight of Tare (g):	NA
Weight of Water (g):	23.74	Weight of Water (g):	NA	Weight of Water (g):	23.74	Weight of Water (g):	NA
Weight of Dry Soil (g):	307.61	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	307.61	Weight of Dry Soil (g):	NA
Moisture Content (%):	7.7	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	307.61	Total Dry Weight of Sample (g):	307.61	Dry Weight of Sample (g):	307.61	Total Dry Weight of Sample (g):	307.61
Tare No. (Sub-Specimen)	1420	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1420	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	475.93	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	475.93	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	144.58	Dry Weight of - 3/4" Sample (g):	307.61	Weight of Tare (g):	144.58	Dry Weight of - 3/4" Sample (g):	307.61
Sub-Specimen Wet Weight (g):	331.35	Dry Weight -3/4" +3/8" Sample (g):	11.69	Sub-Specimen Wet Weight (g):	331.35	Dry Weight -3/4" +3/8" Sample (g):	11.69
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	295.92	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	295.92
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**) 0.00	0.00	100.00	100
3/8"	9.5	11.69	3.80	3.80	96.20	96
#4	4.75	16.55	5.38	9.18	90.82	91
#10	2	18.85	6.13	15.31	84.69	85
#20	0.85	15.12	(**) 4.92	20.22	79.78	80
#40	0.425	13.84	4.50	24.72	75.28	75
#60	0.25	20.20	6.57	31.29	68.71	69
#100	0.15	28.19	9.16	40.45	59.55	60
#140	0.106	21.09	6.86	47.31	52.69	53
#200	0.075	20.55	6.68	53.99	46.01	46
Pan	-	141.53	46.01	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-206S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	6.0-10.0
Project No.:	2020-002-001	Sample No.:	SpT-4/5
Lab ID:	2020-002-001-168	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	43.5	23.0	5.52	9.1	0.0396	81.8	37.6
2	40.0	23.0	5.52	9.7	0.0289	74.3	34.2
4	36.5	23.0	5.52	10.4	0.0211	66.7	30.7
15	30.5	23.0	5.52	11.4	0.0115	53.8	24.8
30	27.5	23.0	5.52	12.0	0.0083	47.3	21.8
60	24.5	22.8	5.60	12.5	0.0060	40.7	18.7
240	21.0	23.0	5.52	13.1	0.0031	33.3	15.3
1440	18.5	21.7	6.00	13.6	0.0013	26.9	12.4

Soil Specimen Data

Tare No.:	644	Percent Finer than # 200:	46.01
Wt. of Tare & Dry Material (g):	148.82		
Weight of Tare (g):	97.91	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	45.91		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-168

Boring No.: JB5-19-206S
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	43
Wt. of Tare & Wet Sample (g)	54.58
Wt. of Tare & Dry Sample (g)	50.50
Weight of Tare (g)	8.51
Weight of Water (g)	4.08
Weight of Dry Sample (g)	41.99

Water Content (%)	9.7

NON - PLASTIC MATERIAL

Tested By *MLF* Date *2/5/20* Checked By *JLK* Date *2/6/20*

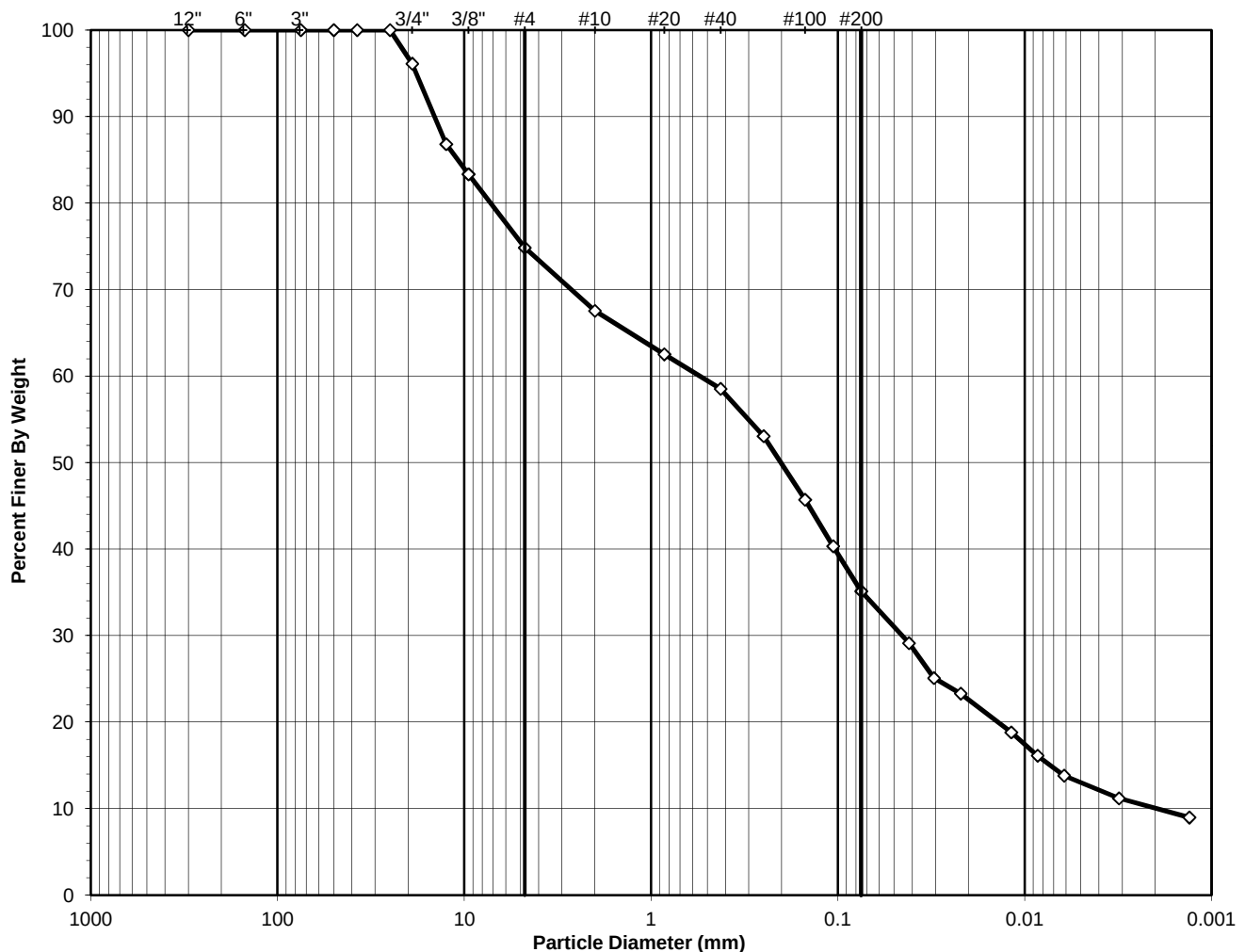
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-169

Boring No.: JB5-19-206S
 Depth (ft): 12.0-15.8
 Sample No.: SpT-7/8
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.20

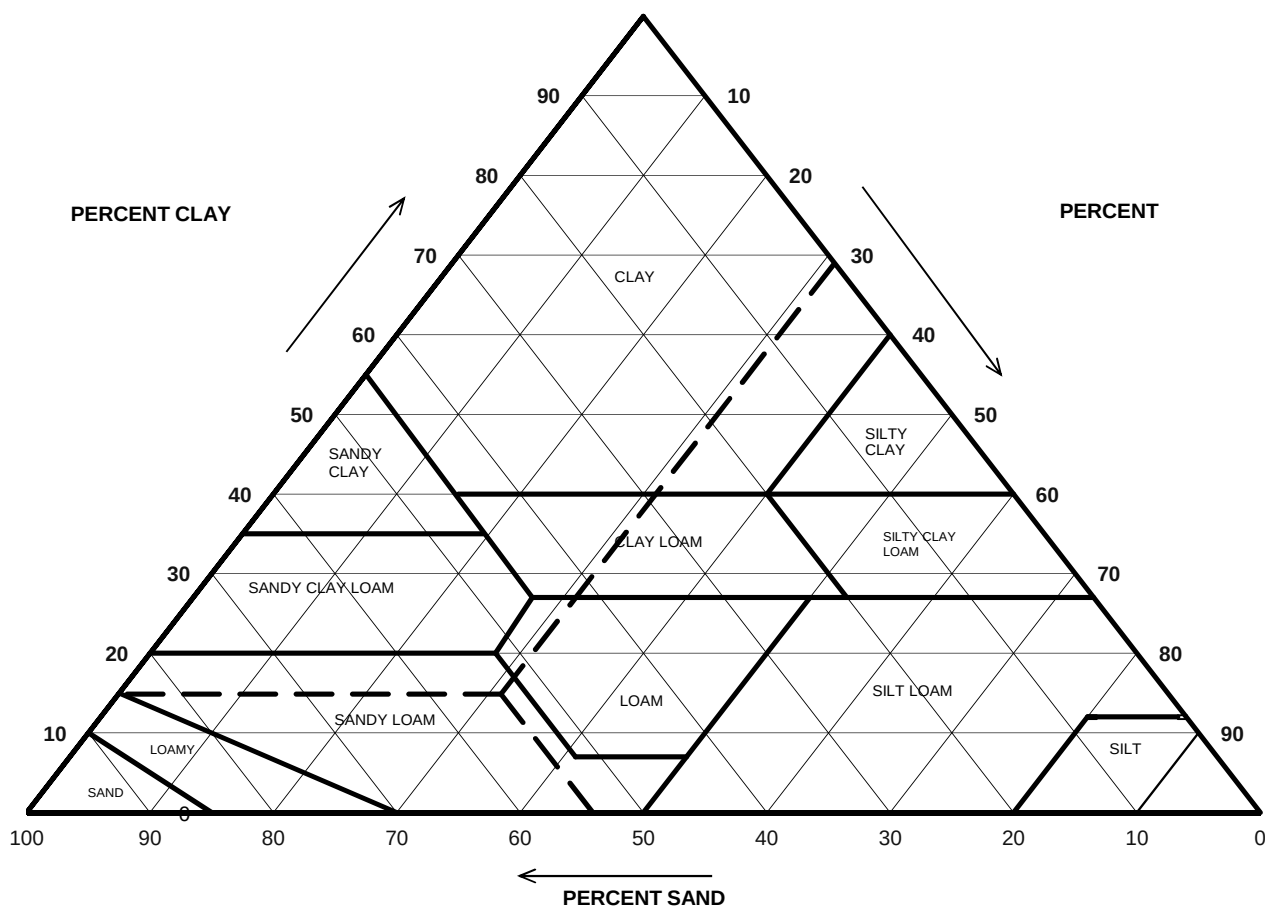
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-169

Boring No.: JB5-19-206S
Depth (ft): 12.0-15.8
Sample No.: SpT-7/8
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	32.45	
2	67.55	Sand	36.56	54.12
0.05	30.99	Silt	20.94	31.00
0.002	10.05	Clay	10.05	14.88

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-169

Boring No.: JB5-19-206S
 Depth (ft): 12.0-15.8
 Sample No.: SpT-7/8
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1483	Tare No.:	NA	Tare No.:	1483	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	498.68	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	498.68	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	481.86	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	481.86	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.25	Weight of Tare (g):	NA	Weight of Tare (g):	145.25	Weight of Tare (g):	NA
Weight of Water (g):	16.82	Weight of Water (g):	NA	Weight of Water (g):	16.82	Weight of Water (g):	NA
Weight of Dry Soil (g):	336.61	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	336.61	Weight of Dry Soil (g):	NA
Moisture Content (%):	5.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	336.61	Total Dry Weight of Sample (g):	336.61	Dry Weight of Sample (g):	336.61	Total Dry Weight of Sample (g):	336.61
Tare No. (Sub-Specimen)	1483	Wet Weight of +3/4" Sample (g):	13.72	Tare No. (Sub-Specimen)	1483	Wet Weight of +3/4" Sample (g):	13.72
Wt. of Tare & Wet Sub-Specimen (g):	498.68	Dry Weight of + 3/4" Sample (g):	13.07	Wt. of Tare & Wet Sub-Specimen (g):	498.68	Dry Weight of + 3/4" Sample (g):	13.07
Weight of Tare (g):	145.25	Dry Weight of - 3/4" Sample (g):	323.54	Weight of Tare (g):	145.25	Dry Weight of - 3/4" Sample (g):	323.54
Sub-Specimen Wet Weight (g):	353.43	Dry Weight -3/4" +3/8" Sample (g):	43.02	Sub-Specimen Wet Weight (g):	353.43	Dry Weight -3/4" +3/8" Sample (g):	43.02
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	282.19	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	282.19
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	13.07	3.88	3.88	96.12	96
1/2"	12.5	31.34	(**)	13.19	86.81	87
3/8"	9.5	11.68	3.47	16.66	83.34	83
#4	4.75	28.60	8.50	25.16	74.84	75
#10	2	24.55	7.29	32.45	67.55	68
#20	0.85	16.93	(**)	37.48	62.52	63
#40	0.425	13.43	3.99	41.47	58.53	59
#60	0.25	18.41	5.47	46.94	53.06	53
#100	0.15	24.74	7.35	54.29	45.71	46
#140	0.106	18.10	5.38	59.67	40.33	40
#200	0.075	17.52	5.20	64.87	35.13	35
Pan	-	118.24	35.13	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-206S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	12.0-15.8
Project No.:	2020-002-001	Sample No.:	SpT-7/8
Lab ID:	2020-002-001-169	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	38.0	23.0	5.52	10.1	0.0417	82.9	29.1
2	33.5	23.0	5.52	10.9	0.0306	71.4	25.1
4	31.5	23.0	5.52	11.3	0.0220	66.3	23.3
15	26.5	23.0	5.52	12.2	0.0118	53.6	18.8
30	23.5	23.0	5.52	12.7	0.0085	45.9	16.1
60	21.0	22.8	5.60	13.1	0.0062	39.3	13.8
240	18.0	23.0	5.52	13.7	0.0031	31.9	11.2
1440	16.0	21.7	5.99	14.0	0.0013	25.6	9.0

Soil Specimen Data

Tare No.:	961	Percent Finer than # 200:	35.13
Wt. of Tare & Dry Material (g):	143.87		
Weight of Tare (g):	100.14	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	38.73		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-169

Boring No.: JB5-19-206S
Depth (ft): 12.0-15.8
Sample No.: SpT-7/8
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	46
Wt. of Tare & Wet Sample (g)	41.42
Wt. of Tare & Dry Sample (g)	39.24
Weight of Tare (g)	8.44
Weight of Water (g)	2.18
Weight of Dry Sample (g)	30.80

Water Content (%) **7.1**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

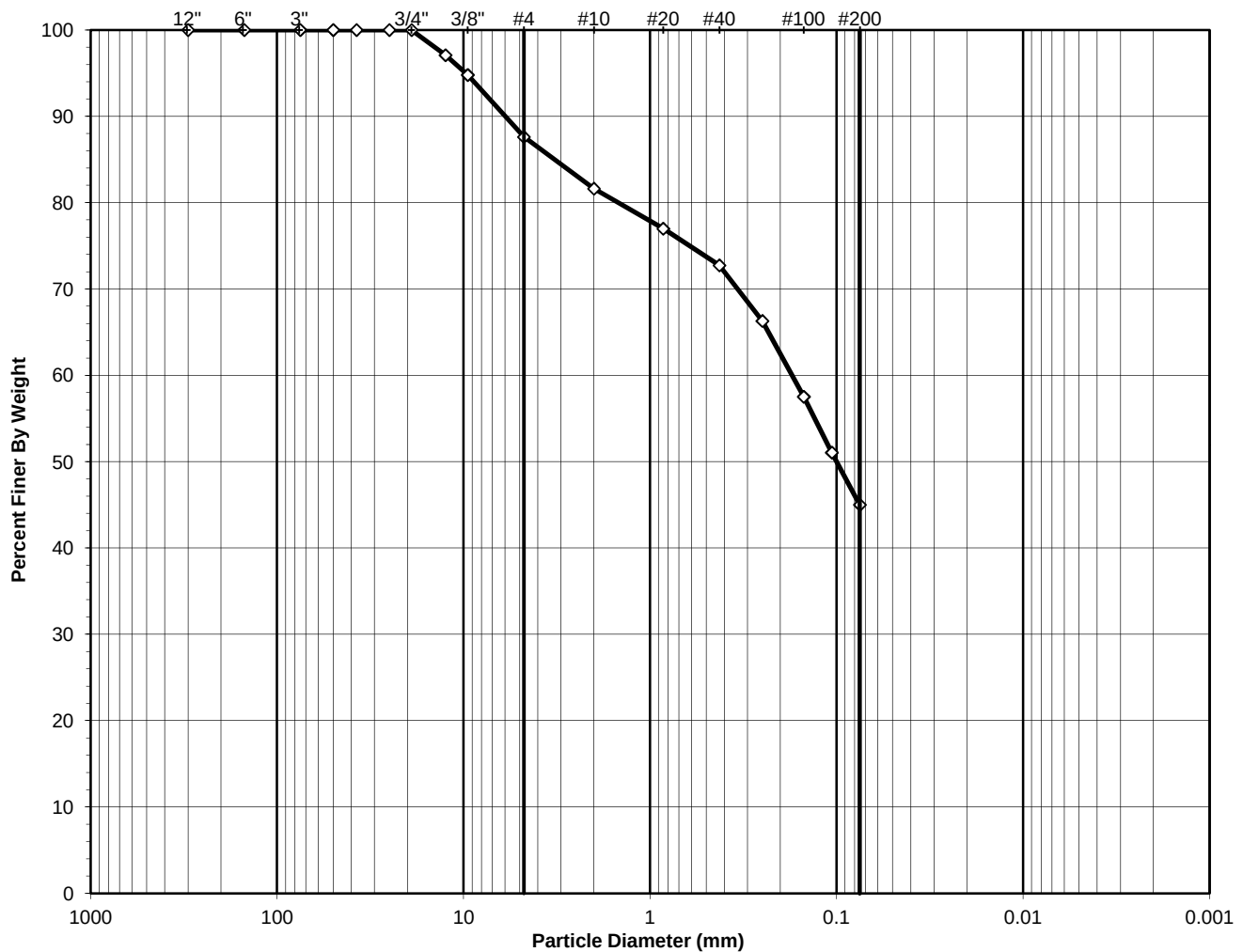
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-170

Boring No.: JB5-19-206S
 Depth (ft): 18.0-20.0
 Sample No.: SpT-10
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.10

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/18/20 Checked By JLK Date 2/18/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-170

Boring No.: JB5-19-206S
 Depth (ft): 18.0-20.0
 Sample No.: SpT-10
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1492	Tare No.:	NA	Tare No.:	1492	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	299.86	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	299.86	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	299.86	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	299.86	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.71	Weight of Tare (g):	NA	Weight of Tare (g):	146.71	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	153.15	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	153.15	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	153.15	Total Dry Weight of Sample (g):	153.15	Dry Weight of Sample (g):	153.15	Total Dry Weight of Sample (g):	153.15
Tare No. (Sub-Specimen)	1492	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1492	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	299.86	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	299.86	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	146.71	Dry Weight of - 3/4" Sample (g):	153.15	Weight of Tare (g):	146.71	Dry Weight of - 3/4" Sample (g):	153.15
Sub-Specimen Wet Weight (g):	153.15	Dry Weight -3/4" +3/8" Sample (g):	7.97	Sub-Specimen Wet Weight (g):	153.15	Dry Weight -3/4" +3/8" Sample (g):	7.97
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	145.18	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	145.18
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	4.47	(**)	2.92	97.08	97
3/8"	9.5	3.50	2.29	5.20	94.80	95
#4	4.75	11.00	7.18	12.39	87.61	88
#10	2	9.17	5.99	18.37	81.63	82
#20	0.85	7.10	(**)	23.01	76.99	77
#40	0.425	6.51	4.25	27.26	72.74	73
#60	0.25	9.86	6.44	33.70	66.30	66
#100	0.15	13.44	8.78	42.47	57.53	58
#140	0.106	9.91	6.47	48.95	51.05	51
#200	0.075	9.28	6.06	55.00	45.00	45
Pan	-	68.91	45.00	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/18/20 Checked By JLK Date 2/18/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-170

Boring No.: JB5-19-206S
Depth (ft): 18.0-20.0
Sample No.: SpT-10
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	40
Wt. of Tare & Wet Sample (g)	26.41
Wt. of Tare & Dry Sample (g)	24.94
Weight of Tare (g)	8.41
Weight of Water (g)	1.47
Weight of Dry Sample (g)	16.53

Water Content (%) **8.9**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-206S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	18.0-20.0
Project No.:	2020-002-001	Sample No.:	SpT-10
Lab ID:	2020-002-001-170	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	722.55	727.98
Temperature (°C):	26.3	26.9
Weight of Pycnometer & Water (g):	683.81	684.28
Tare Number:	631	2343
Weight of Tare & Dry Soil (g):	158.92	160.24
Weight of Tare (g):	95.69	91.88
Weight of Dry Soil (g):	63.23	68.36
Specific Gravity of Soil @ Measured Temperature:	2.582	2.772
Specific Gravity of Water @ Measured Temperature:	0.99671	0.99655
Conversion Factor for Measured Temperature:	0.99850	0.99834
Specific Gravity @ 20° Celsius:	2.586	2.777

Average Specific Gravity @ 20° Celsius	2.68

Tested By TO Date 2/14/20 Checked By JLK Date 2/17/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

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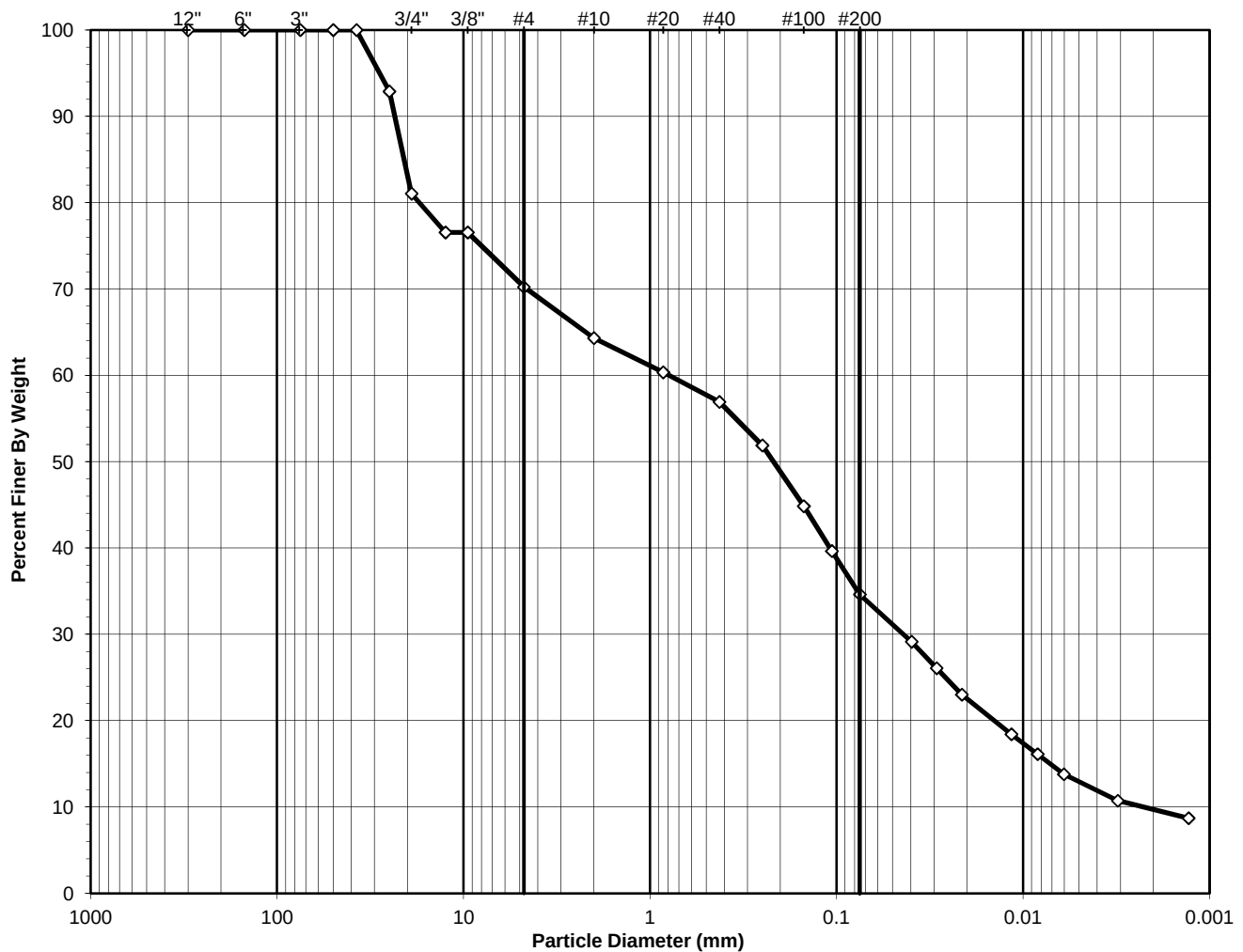
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-171

Boring No.: JB5-19-207S
 Depth (ft): 0.0-4.0
 Sample No.: SpT-1/2
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.22

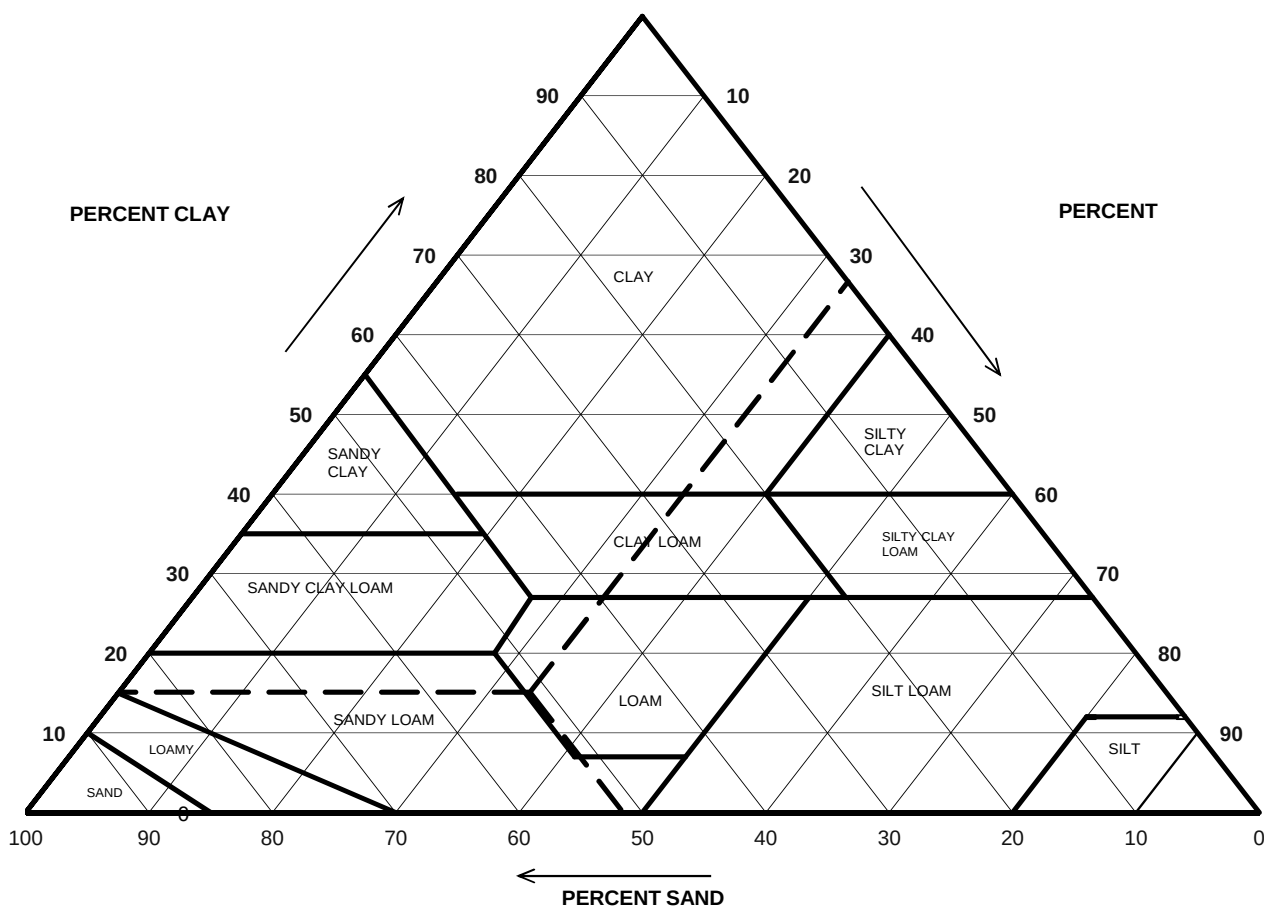
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/19/20 Checked By KC Date 2/21/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-171

Boring No.: JB5-19-207S
 Depth (ft): 0.0-4.0
 Sample No.: SpT-1/2
 Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	35.68	
2	64.32	Sand	33.17	51.57
0.05	31.15	Silt	21.44	33.33
0.002	9.71	Clay	9.71	15.10

USDA Classification: LOAM

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-171

Boring No.: JB5-19-207S
 Depth (ft): 0.0-4.0
 Sample No.: SpT-1/2
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1515	Tare No.:	NA	Tare No.:	1515	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	526.01	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	526.01	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	526.01	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	526.01	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.25	Weight of Tare (g):	NA	Weight of Tare (g):	145.25	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	380.76	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	380.76	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	380.76	Total Dry Weight of Sample (g):	380.76	Dry Weight of Sample (g):	380.76	Total Dry Weight of Sample (g):	380.76
Tare No. (Sub-Specimen)	1515	Wet Weight of +3/4" Sample (g):	72.17	Tare No. (Sub-Specimen)	1515	Wet Weight of +3/4" Sample (g):	72.17
Wt. of Tare & Wet Sub-Specimen (g):	526.01	Dry Weight of + 3/4" Sample (g):	72.17	Wt. of Tare & Wet Sub-Specimen (g):	526.01	Dry Weight of + 3/4" Sample (g):	72.17
Weight of Tare (g):	145.25	Dry Weight of - 3/4" Sample (g):	308.59	Weight of Tare (g):	145.25	Dry Weight of - 3/4" Sample (g):	308.59
Sub-Specimen Wet Weight (g):	380.76	Dry Weight -3/4" +3/8" Sample (g):	17.09	Sub-Specimen Wet Weight (g):	380.76	Dry Weight -3/4" +3/8" Sample (g):	17.09
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	294.74	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	294.74
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	27.08	7.11	7.11	92.89	93
3/4"	19	45.09	11.84	18.95	81.05	81
1/2"	12.5	17.09	(**) 4.49	23.44	76.56	77
3/8"	9.5	0.00	0.00	23.44	76.56	77
#4	4.75	24.11	6.33	29.77	70.23	70
#10	2	22.48	5.90	35.68	64.32	64
#20	0.85	15.12	(**) 3.97	39.65	60.35	60
#40	0.425	13.04	3.42	43.07	56.93	57
#60	0.25	19.19	5.04	48.11	51.89	52
#100	0.15	26.80	7.04	55.15	44.85	45
#140	0.106	19.79	5.20	60.35	39.65	40
#200	0.075	19.13	5.02	65.37	34.63	35
Pan	-	131.84	34.63	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/19/20 Checked By KC Date 2/21/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-207S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	0.0-4.0
Project No.:	2020-002-001	Sample No.:	SpT-1/2
Lab ID:	2020-002-001-171	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	43.5	23.2	5.45	9.1	0.0396	84.2	29.1
2	39.5	23.2	5.45	9.8	0.0291	75.3	26.1
4	35.5	23.2	5.45	10.5	0.0213	66.5	23.0
15	29.5	23.2	5.45	11.6	0.0115	53.2	18.4
30	26.5	23.2	5.45	12.2	0.0084	46.6	16.1
60	23.5	23.1	5.48	12.7	0.0060	39.9	13.8
240	19.5	23.1	5.48	13.4	0.0031	31.0	10.7
1440	17.0	22.7	5.63	13.9	0.0013	25.1	8.7

Soil Specimen Data

Tare No.:	1913	Percent Finer than # 200:	34.63
Wt. of Tare & Dry Material (g):	145.75		
Weight of Tare (g):	95.95	Specific Gravity:	2.69 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	44.80		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/19/20	Checked By	KC	Date	2/21/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-171

Boring No.: JB5-19-207S
Depth (ft): 0.0-4.0
Sample No.: SpT-1/2
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	20
Wt. of Tare & Wet Sample (g)	47.38
Wt. of Tare & Dry Sample (g)	44.38
Weight of Tare (g)	8.44
Weight of Water (g)	3.00
Weight of Dry Sample (g)	35.94

Water Content (%) **8.3**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-207S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	0.0-4.0
Project No.:	2020-002-001	Sample No.:	SpT-1/2
Lab ID:	2020-002-001-171	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747.12	749.21
Temperature (°C):	24.3	24.5
Weight of Pycnometer & Water (g):	684.07	684.59
Tare Number:	949	672
Weight of Tare & Dry Soil (g):	198.34	196.57
Weight of Tare (g):	96.69	95.04
Weight of Dry Soil (g):	101.65	101.53
Specific Gravity of Soil @ Measured Temperature:	2.634	2.751
Specific Gravity of Water @ Measured Temperature:	0.99723	0.99718
Conversion Factor for Measured Temperature:	0.99902	0.99897
Specific Gravity @ 20° Celsius:	2.636	2.753

Average Specific Gravity @ 20° Celsius	2.69

Tested By TO Date 2/14/20 Checked By JLK Date 2/17/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

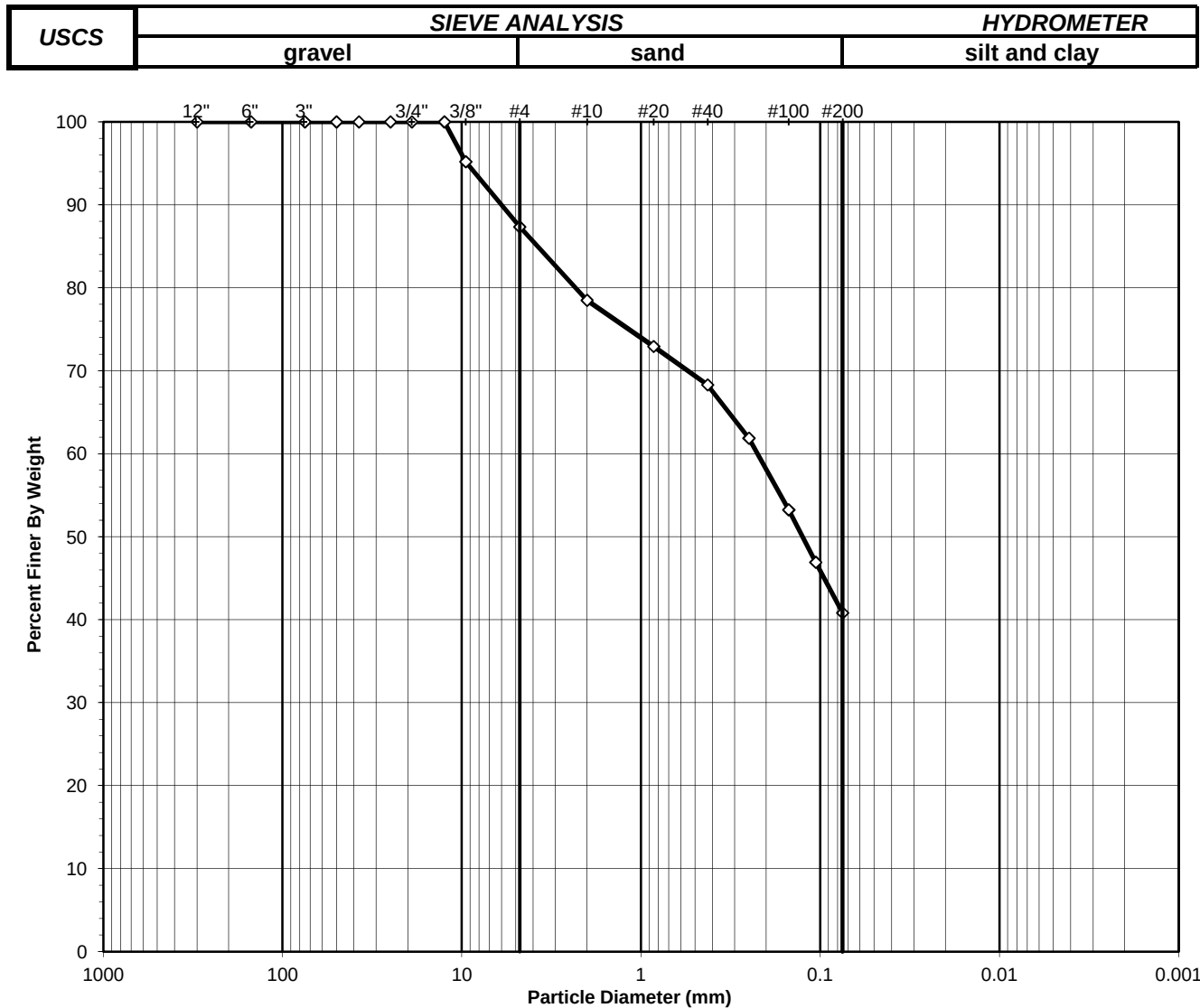
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SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-172

Boring No.: JB5-19-207S
 Depth (ft): 6.0-8.0
 Sample No.: SpT-4
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.13

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-172

Boring No.: JB5-19-207S
 Depth (ft): 6.0-8.0
 Sample No.: SpT-4
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1618	Tare No.:	NA	Tare No.:	1618	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	305.47	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	305.47	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	295.54	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	295.54	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.87	Weight of Tare (g):	NA	Weight of Tare (g):	147.87	Weight of Tare (g):	NA
Weight of Water (g):	9.93	Weight of Water (g):	NA	Weight of Water (g):	9.93	Weight of Water (g):	NA
Weight of Dry Soil (g):	147.67	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	147.67	Weight of Dry Soil (g):	NA
Moisture Content (%):	6.7	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	147.67	Total Dry Weight of Sample (g):	147.67	Dry Weight of Sample (g):	147.67	Total Dry Weight of Sample (g):	147.67
Tare No. (Sub-Specimen)	1618	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1618	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	305.47	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	305.47	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	147.87	Dry Weight of - 3/4" Sample (g):	147.67	Weight of Tare (g):	147.87	Dry Weight of - 3/4" Sample (g):	147.67
Sub-Specimen Wet Weight (g):	157.60	Dry Weight -3/4" +3/8" Sample (g):	7.09	Sub-Specimen Wet Weight (g):	157.60	Dry Weight -3/4" +3/8" Sample (g):	7.09
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	140.58	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	140.58
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**) 0.00	0.00	100.00	100
3/8"	9.5	7.09	4.80	4.80	95.20	95
#4	4.75	11.60	7.86	12.66	87.34	87
#10	2	13.06	8.84	21.50	78.50	78
#20	0.85	8.21	(**) 5.56	27.06	72.94	73
#40	0.425	6.84	4.63	31.69	68.31	68
#60	0.25	9.49	6.43	38.12	61.88	62
#100	0.15	12.75	8.63	46.75	53.25	53
#140	0.106	9.33	6.32	53.07	46.93	47
#200	0.075	9.01	6.10	59.17	40.83	41
Pan	-	60.29	40.83	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-172

Boring No.: JB5-19-207S
Depth (ft): 6.0-8.0
Sample No.: SpT-4
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	26
Wt. of Tare & Wet Sample (g)	36.61
Wt. of Tare & Dry Sample (g)	34.57
Weight of Tare (g)	8.45
Weight of Water (g)	2.04
Weight of Dry Sample (g)	26.12

Water Content (%) **7.8**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

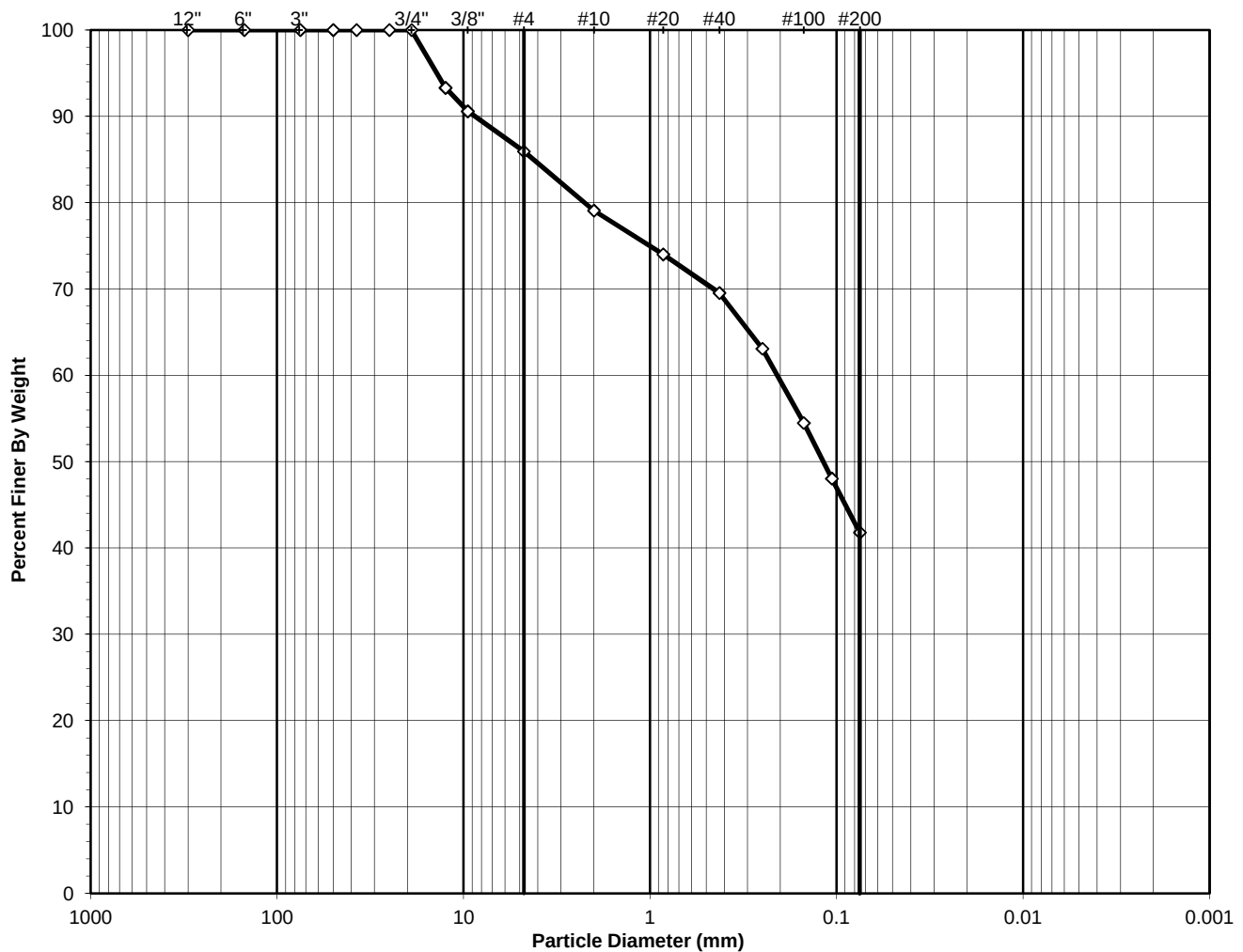
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-173

Boring No.: JB5-19-207S
 Depth (ft): 12.0-16.0
 Sample No.: SpT-7/8
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.12

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-173

Boring No.: JB5-19-207S
 Depth (ft): 12.0-16.0
 Sample No.: SpT-7/8
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1612	Tare No.:	NA	Tare No.:	1612	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	445.91	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	445.91	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	445.91	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	445.91	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.11	Weight of Tare (g):	NA	Weight of Tare (g):	148.11	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	297.80	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	297.80	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	297.80	Total Dry Weight of Sample (g):	297.80	Dry Weight of Sample (g):	297.80	Total Dry Weight of Sample (g):	297.80
Tare No. (Sub-Specimen)	1612	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1612	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	445.91	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	445.91	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	148.11	Dry Weight of - 3/4" Sample (g):	297.80	Weight of Tare (g):	148.11	Dry Weight of - 3/4" Sample (g):	297.80
Sub-Specimen Wet Weight (g):	297.80	Dry Weight -3/4" +3/8" Sample (g):	28.05	Sub-Specimen Wet Weight (g):	297.80	Dry Weight -3/4" +3/8" Sample (g):	28.05
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	269.75	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	269.75
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	19.95	(**)	6.70	93.30	93
3/8"	9.5	8.10	2.72	9.42	90.58	91
#4	4.75	13.84	4.65	14.07	85.93	86
#10	2	20.39	6.85	20.91	79.09	79
#20	0.85	15.11	(**)	25.99	74.01	74
#40	0.425	13.31	4.47	30.46	69.54	70
#60	0.25	19.23	6.46	36.91	63.09	63
#100	0.15	25.62	8.60	45.52	54.48	54
#140	0.106	19.16	6.43	51.95	48.05	48
#200	0.075	18.63	6.26	58.21	41.79	42
Pan	-	124.46	41.79	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/12/20 Checked By JLK Date 2/13/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-173

Boring No.: JB5-19-207S
Depth (ft): 12.0-16.0
Sample No.: SpT-7/8
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	31
Wt. of Tare & Wet Sample (g)	42.12
Wt. of Tare & Dry Sample (g)	39.50
Weight of Tare (g)	8.35
Weight of Water (g)	2.62
Weight of Dry Sample (g)	31.15

Water Content (%) **8.4**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-207S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	12.0-16.0
Project No.:	2020-022-001	Sample No.:	SpT-7/8
Lab ID:	2020-022-001-173	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	747.49	749.3
Temperature (°C):	25.5	25.5
Weight of Pycnometer & Water (g):	683.92	684.47
Tare Number:	690	970
Weight of Tare & Dry Soil (g):	196.14	200.68
Weight of Tare (g):	93.8	98.76
Weight of Dry Soil (g):	102.34	101.92
Specific Gravity of Soil @ Measured Temperature:	2.640	2.748
Specific Gravity of Water @ Measured Temperature:	0.99692	0.99692
Conversion Factor for Measured Temperature:	0.99871	0.99871
Specific Gravity @ 20° Celsius:	2.643	2.752

Average Specific Gravity @ 20° Celsius	2.70

Tested By TO Date 2/10/20 Checked By JLK Date 2/11/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

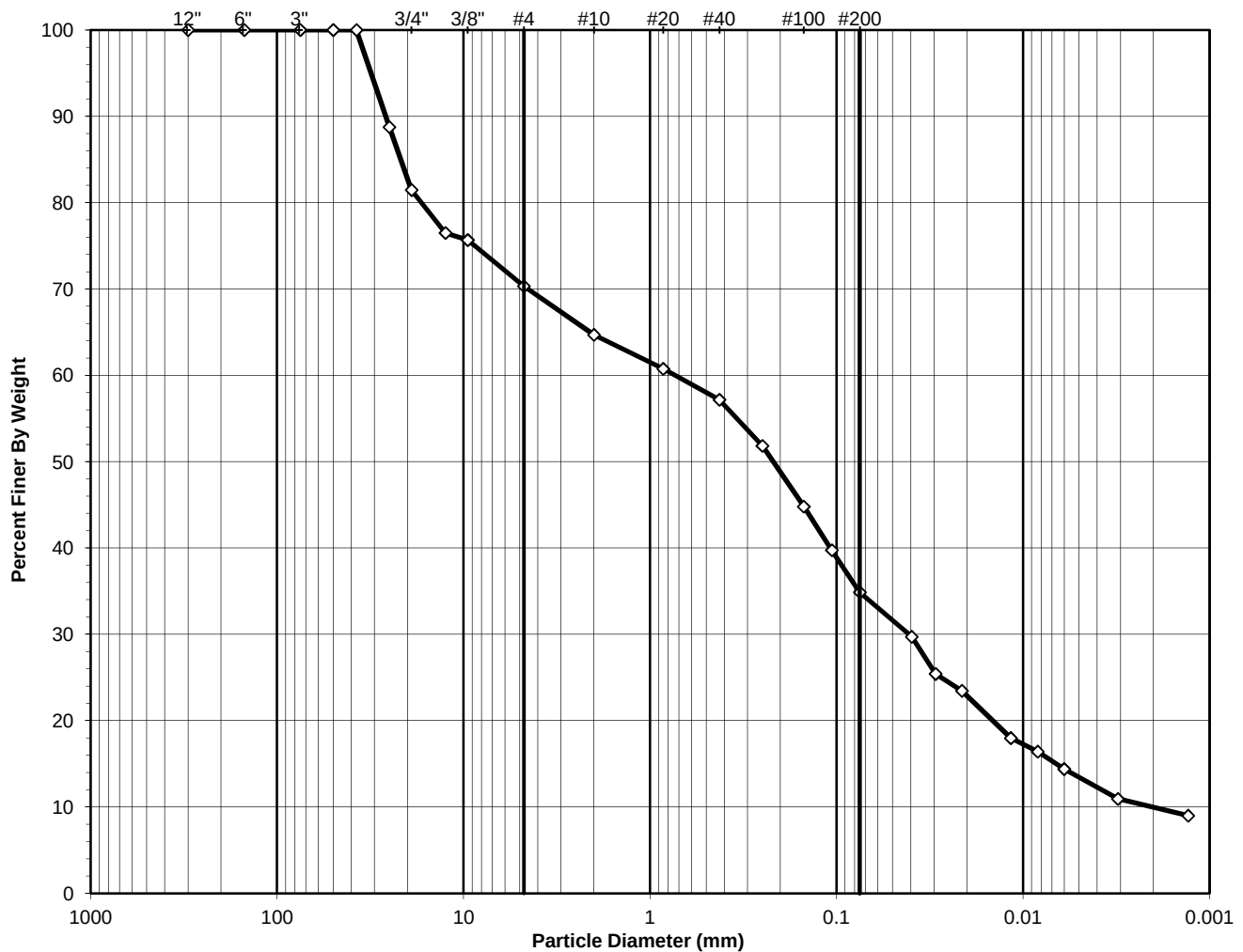
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-174

Boring No.: JB5-19-207S
 Depth (ft): 16.0-20.0
 Sample No.: SpT-9/10
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.22

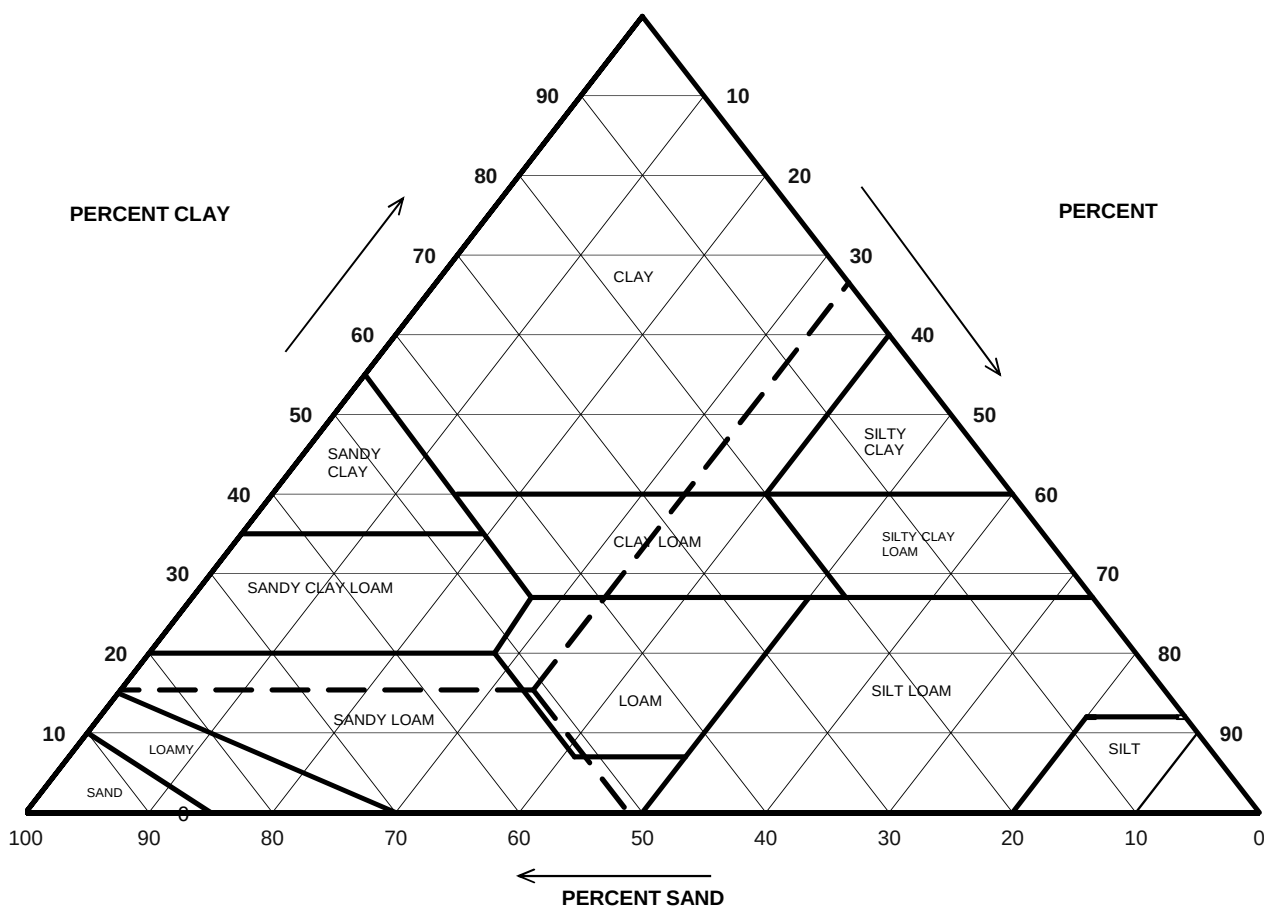
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-174

Boring No.: JB5-19-207S
Depth (ft): 16.0-20.0
Sample No.: SpT-9/10
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	35.30	
2	64.70	Sand	33.09	51.15
0.05	31.61	Silt	21.65	33.46
0.002	9.96	Clay	9.96	15.40

USDA Classification: **LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-174

Boring No.: JB5-19-207S
 Depth (ft): 16.0-20.0
 Sample No.: SpT-9/10
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1463	Tare No.:	NA	Tare No.:	1463	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	508.33	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	508.33	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	494.09	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	494.09	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.33	Weight of Tare (g):	NA	Weight of Tare (g):	147.33	Weight of Tare (g):	NA
Weight of Water (g):	14.24	Weight of Water (g):	NA	Weight of Water (g):	14.24	Weight of Water (g):	NA
Weight of Dry Soil (g):	346.76	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	346.76	Weight of Dry Soil (g):	NA
Moisture Content (%):	4.1	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	346.76	Total Dry Weight of Sample (g):	346.76	Dry Weight of Sample (g):	346.76	Total Dry Weight of Sample (g):	346.76
Tare No. (Sub-Specimen)	1463	Wet Weight of +3/4" Sample (g):	66.91	Tare No. (Sub-Specimen)	1463	Wet Weight of +3/4" Sample (g):	66.91
Wt. of Tare & Wet Sub-Specimen (g):	508.33	Dry Weight of + 3/4" Sample (g):	64.27	Wt. of Tare & Wet Sub-Specimen (g):	508.33	Dry Weight of + 3/4" Sample (g):	64.27
Weight of Tare (g):	147.33	Dry Weight of - 3/4" Sample (g):	282.49	Weight of Tare (g):	147.33	Dry Weight of - 3/4" Sample (g):	282.49
Sub-Specimen Wet Weight (g):	361.00	Dry Weight -3/4" +3/8" Sample (g):	20.09	Sub-Specimen Wet Weight (g):	361.00	Dry Weight -3/4" +3/8" Sample (g):	20.09
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	266.12	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	266.12
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	39.00	11.25	11.25	88.75	89
3/4"	19	25.27	7.29	18.53	81.47	81
1/2"	12.5	17.25	(**)	23.51	76.49	76
3/8"	9.5	2.84	0.82	24.33	75.67	76
#4	4.75	18.54	5.35	29.67	70.33	70
#10	2	19.52	5.63	35.30	64.70	65
#20	0.85	13.66	(**)	39.24	60.76	61
#40	0.425	12.41	3.58	42.82	57.18	57
#60	0.25	18.53	5.34	48.17	51.83	52
#100	0.15	24.39	7.03	55.20	44.80	45
#140	0.106	17.54	5.06	60.26	39.74	40
#200	0.075	16.91	4.88	65.13	34.87	35
Pan	-	120.90	34.87	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/12/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-207S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	16.0-20.0
Project No.:	2020-002-001	Sample No.:	SpT-9/10
Lab ID:	2020-002-001-174	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	43.5	23.0	5.52	9.1	0.0396	85.3	29.7
2	38.0	23.0	5.52	10.1	0.0295	72.9	25.4
4	35.5	23.0	5.52	10.5	0.0213	67.3	23.5
15	28.5	23.0	5.52	11.8	0.0116	51.6	18.0
30	26.5	23.0	5.52	12.2	0.0083	47.1	16.4
60	24.0	22.8	5.60	12.6	0.0060	41.3	14.4
240	19.5	23.0	5.52	13.4	0.0031	31.4	10.9
1440	17.5	21.7	6.00	13.8	0.0013	25.8	9.0

Soil Specimen Data

Tare No.:	516	Percent Finer than # 200:	34.87
Wt. of Tare & Dry Material (g):	137.19		
Weight of Tare (g):	88.14	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	44.05		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	FS	Date	2/10/20	Checked By	JLK	Date	2/12/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-174

Boring No.: JB5-19-207S
Depth (ft): 16.0-20.0
Sample No.: SpT-9/10
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	35
Wt. of Tare & Wet Sample (g)	36.72
Wt. of Tare & Dry Sample (g)	34.47
Weight of Tare (g)	8.42
Weight of Water (g)	2.25
Weight of Dry Sample (g)	26.05

Water Content (%) **8.6**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

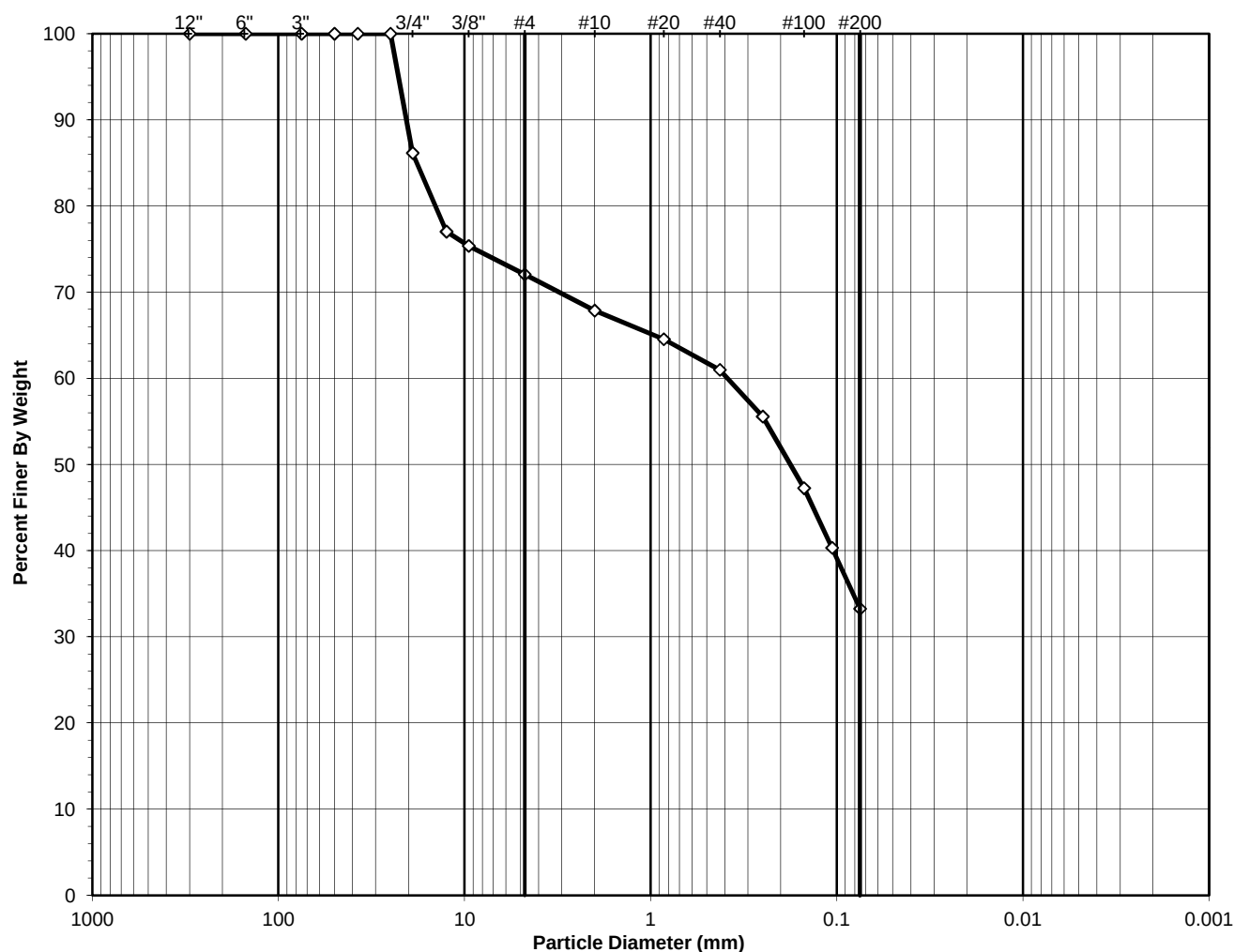
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-175

Boring No.: JB5-19-208S
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
sm, ASSUMED

D50 = 0.18

USCS Classification:
SILTY SAND WITH GRAVEL

Tested By DS Date 2/4/20 Checked By JLK Date 2/5/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-175

Boring No.: JB5-19-208S
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2032	Tare No.:	NA	Tare No.:	2032	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	329.70	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	329.70	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	309.11	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	309.11	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.21	Weight of Tare (g):	NA	Weight of Tare (g):	146.21	Weight of Tare (g):	NA
Weight of Water (g):	20.59	Weight of Water (g):	NA	Weight of Water (g):	20.59	Weight of Water (g):	NA
Weight of Dry Soil (g):	162.90	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	162.90	Weight of Dry Soil (g):	NA
Moisture Content (%):	12.6	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	162.90	Total Dry Weight of Sample (g):	162.90	Dry Weight of Sample (g):	162.90	Total Dry Weight of Sample (g):	162.90
Tare No. (Sub-Specimen)	2032	Wet Weight of +3/4" Sample (g):	25.40	Tare No. (Sub-Specimen)	2032	Wet Weight of +3/4" Sample (g):	25.40
Wt. of Tare & Wet Sub-Specimen (g):	329.70	Dry Weight of + 3/4" Sample (g):	22.55	Wt. of Tare & Wet Sub-Specimen (g):	329.70	Dry Weight of + 3/4" Sample (g):	22.55
Weight of Tare (g):	146.21	Dry Weight of - 3/4" Sample (g):	140.35	Weight of Tare (g):	146.21	Dry Weight of - 3/4" Sample (g):	140.35
Sub-Specimen Wet Weight (g):	183.49	Dry Weight -3/4" +3/8" Sample (g):	17.56	Sub-Specimen Wet Weight (g):	183.49	Dry Weight -3/4" +3/8" Sample (g):	17.56
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	125.22	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	125.22
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	22.55	13.84	13.84	86.16	86
1/2"	12.5	14.86	(**) 9.12	22.97	77.03	77
3/8"	9.5	2.70	1.66	24.62	75.38	75
#4	4.75	5.40	3.31	27.94	72.06	72
#10	2	6.83	4.19	32.13	67.87	68
#20	0.85	5.42	(**) 3.33	35.46	64.54	65
#40	0.425	5.78	3.55	39.01	60.99	61
#60	0.25	8.83	5.42	44.43	55.57	56
#100	0.15	13.54	8.31	52.74	47.26	47
#140	0.106	11.28	6.92	59.66	40.34	40
#200	0.075	11.51	7.07	66.73	33.27	33
Pan	-	54.20	33.27	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/4/20 Checked By JLK Date 2/5/20

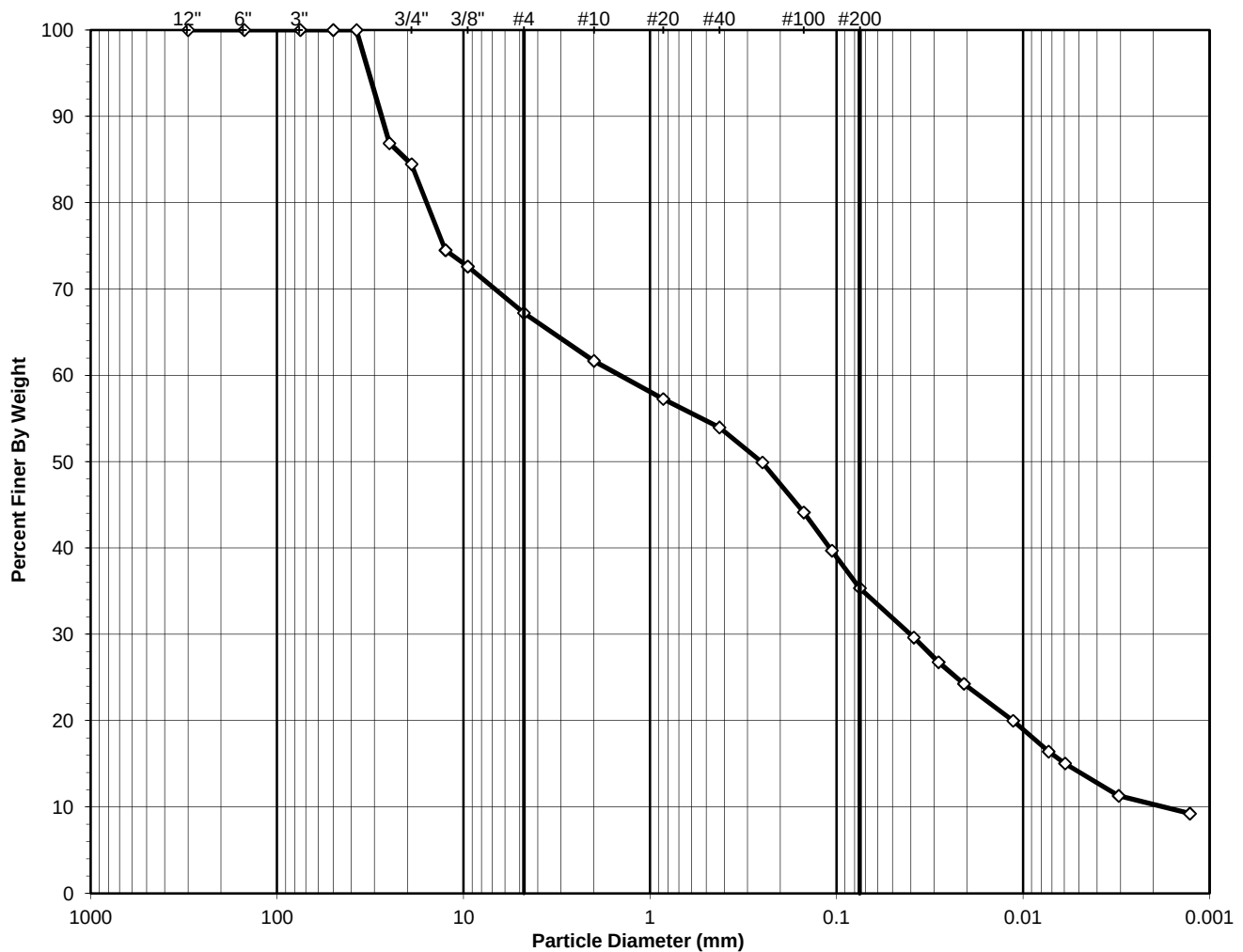
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-176

Boring No.: JB5-19-208S
 Depth (ft): 6.0-10.0
 Sample No.: SpT-4/5
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
GM, TESTED

D50 = 0.25

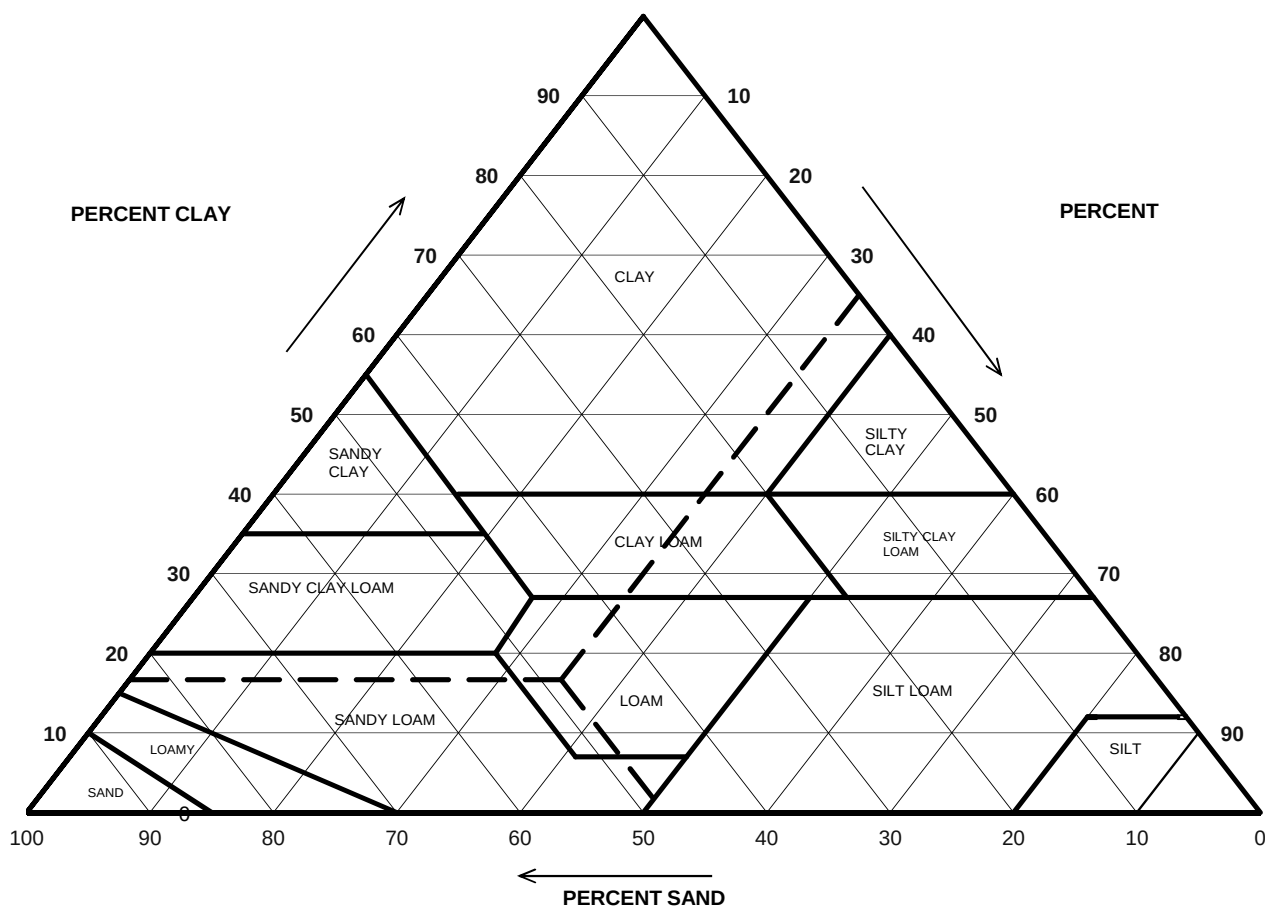
USCS Classification:
SILTY GRAVEL WITH SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/11/20 Checked By JLK Date 2/13/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-176

Boring No.: JB5-19-208S
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	38.32	
2	61.68	Sand	29.81	48.33
0.05	31.87	Silt	21.58	34.98
0.002	10.30	Clay	10.30	16.69

USDA Classification: **LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client:	D'Appolonia	Boring No.:	JB5-19-208S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	6.0-10.0
Project No.:	2020-002-001	Sample No.:	SpT-4/5
Lab ID:	2020-002-001-176	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1531	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	577.90	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	577.21	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.69	Weight of Tare (g):	NA
Weight of Water (g):	0.69	Weight of Water (g):	NA
Weight of Dry Soil (g):	429.52	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.2	Moisture Content (%):	0.0
Dry Weight of Sample (g):	429.52	Total Dry Weight of Sample (g):	429.52
Tare No. (Sub-Specimen)	1531	Wet Weight of +3/4" Sample (g):	66.86
Wt. of Tare & Wet Sub-Specimen (g):	577.90	Dry Weight of + 3/4" Sample (g):	66.75
Weight of Tare (g):	147.69	Dry Weight of - 3/4" Sample (g):	362.77
Sub-Specimen Wet Weight (g):	430.21	Dry Weight -3/4" +3/8" Sample (g):	50.90
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	319.78
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	56.35	13.12	13.12	86.88	87
3/4"	19	10.40	2.42	15.54	84.46	84
1/2"	12.5	42.80	(**) 9.96	25.51	74.49	74
3/8"	9.5	8.10	1.89	27.39	72.61	73
#4	4.75	23.15	5.39	32.78	67.22	67
#10	2	23.80	5.54	38.32	61.68	62
#20	0.85	18.96	(**) 4.41	42.74	57.26	57
#40	0.425	14.16	3.30	46.03	53.97	54
#60	0.25	17.40	4.05	50.08	49.92	50
#100	0.15	24.88	5.79	55.88	44.12	44
#140	0.106	19.00	4.42	60.30	39.70	40
#200	0.075	18.66	4.34	64.64	35.36	35
Pan	-	151.86	35.36	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By	DS	Date	2/11/20	Checked By	JLK	Date	2/13/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-208S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	6.0-10.0
Project No.:	2020-002-001	Sample No.:	SpT-4/5
Lab ID:	2020-002-001-176	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	47.5	21.7	6.00	8.4	0.0385	83.8	29.6
2	43.5	21.7	6.00	9.1	0.0284	75.7	26.8
4	40.0	21.7	6.00	9.7	0.0208	68.7	24.3
15	34.0	21.7	6.00	10.8	0.0113	56.6	20.0
39	29.0	21.7	6.00	11.7	0.0073	46.5	16.4
60	27.0	21.9	5.93	12.1	0.0060	42.6	15.0
240	21.5	22.6	5.67	13.1	0.0031	32.0	11.3
1440	18.5	22.9	5.56	13.6	0.0013	26.1	9.2

Soil Specimen Data

Tare No.:	1466	Percent Finer than # 200:	35.36
Wt. of Tare & Dry Material (g):	162.07		
Weight of Tare (g):	108.11	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	48.96		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/11/20	Checked By	JLK	Date	2/13/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-176

Boring No.: JB5-19-208S
Depth (ft): 6.0-10.0
Sample No.: SpT-4/5
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	3
Wt. of Tare & Wet Sample (g)	45.05
Wt. of Tare & Dry Sample (g)	42.19
Weight of Tare (g)	8.45
Weight of Water (g)	2.86
Weight of Dry Sample (g)	33.74

Water Content (%) **8.5**

NON - PLASTIC MATERIAL

Tested By *MLF* *Date* *2/5/20* *Checked By* *JLK* *Date* *2/6/20*

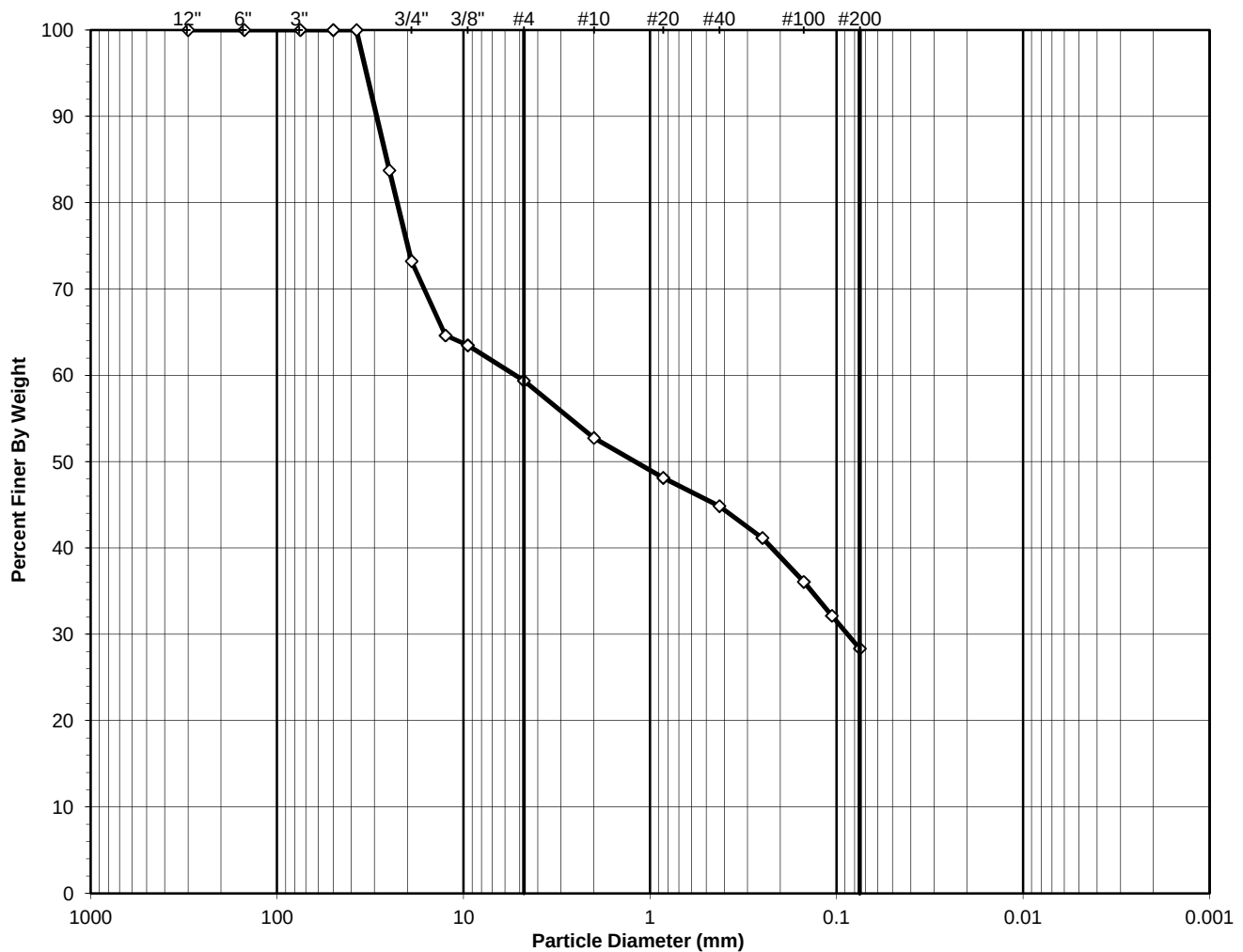
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-177

Boring No.: JB5-19-208S
 Depth (ft): 10.0-14.0
 Sample No.: SpT-6/7
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
GM, TESTED

D50 = 1.20

USCS Classification:
SILTY GRAVEL WITH SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/18/20 Checked By JLK Date 2/18/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-177

Boring No.: JB5-19-208S
Depth (ft): 10.0-14.0
Sample No.: SpT-6/7
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1430	Tare No.:	NA	Tare No.:	1430	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	520.99	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	520.99	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	520.99	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	520.99	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.20	Weight of Tare (g):	NA	Weight of Tare (g):	145.20	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	375.79	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	375.79	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	375.79	Total Dry Weight of Sample (g):	375.79	Dry Weight of Sample (g):	375.79	Total Dry Weight of Sample (g):	375.79
Tare No. (Sub-Specimen)	1430	Wet Weight of +3/4" Sample (g):	100.60	Tare No. (Sub-Specimen)	1430	Wet Weight of +3/4" Sample (g):	100.60
Wt. of Tare & Wet Sub-Specimen (g):	520.99	Dry Weight of + 3/4" Sample (g):	100.60	Wt. of Tare & Wet Sub-Specimen (g):	520.99	Dry Weight of + 3/4" Sample (g):	100.60
Weight of Tare (g):	145.20	Dry Weight of - 3/4" Sample (g):	275.19	Weight of Tare (g):	145.20	Dry Weight of - 3/4" Sample (g):	275.19
Sub-Specimen Wet Weight (g):	375.79	Dry Weight -3/4" +3/8" Sample (g):	36.63	Sub-Specimen Wet Weight (g):	375.79	Dry Weight -3/4" +3/8" Sample (g):	36.63
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	248.37	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	248.37
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	61.12	16.26	16.26	83.74	84
3/4"	19	39.48	10.51	26.77	73.23	73
1/2"	12.5	32.36	8.61	35.38	64.62	65
3/8"	9.5	4.27	(**) 1.14	36.52	63.48	63
#4	4.75	15.42	4.10	40.62	59.38	59
#10	2	24.93	6.63	47.26	52.74	53
#20	0.85	17.35	(**) 4.62	51.87	48.13	48
#40	0.425	12.30	3.27	55.15	44.85	45
#60	0.25	13.85	3.69	58.83	41.17	41
#100	0.15	19.13	5.09	63.92	36.08	36
#140	0.106	14.75	3.93	67.85	32.15	32
#200	0.075	14.27	3.80	71.64	28.36	28
Pan	-	106.56	28.36	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/18/20 Checked By JLK Date 2/18/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-177

Boring No.: JB5-19-208S
Depth (ft): 10.0-14.0
Sample No.: SpT-6/7
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	22
Wt. of Tare & Wet Sample (g)	43.18
Wt. of Tare & Dry Sample (g)	39.88
Weight of Tare (g)	8.31
Weight of Water (g)	3.30
Weight of Dry Sample (g)	31.57

Water Content (%)	10.5

NON - PLASTIC MATERIAL

Tested By	FS	Date	2/11/20	Checked By	JLK	Date	2/11/20

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-208S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	10.0-14.0
Project No.:	2020-002-001	Sample No.:	SpT-6/7
Lab ID:	2020-002-001-177	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	740.09	737.4
Temperature (°C):	25.8	25.8
Weight of Pycnometer & Water (g):	683.88	684.43
Tare Number:	952	650
Weight of Tare & Dry Soil (g):	191.5	179.43
Weight of Tare (g):	100.87	96.53
Weight of Dry Soil (g):	90.63	82.90
Specific Gravity of Soil @ Measured Temperature:	2.633	2.770
Specific Gravity of Water @ Measured Temperature:	0.99684	0.99684
Conversion Factor for Measured Temperature:	0.99864	0.99864
Specific Gravity @ 20° Celsius:	2.637	2.774

Average Specific Gravity @ 20° Celsius

2.71

Tested By TO Date 2/14/20 Checked By JLK Date 2/17/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

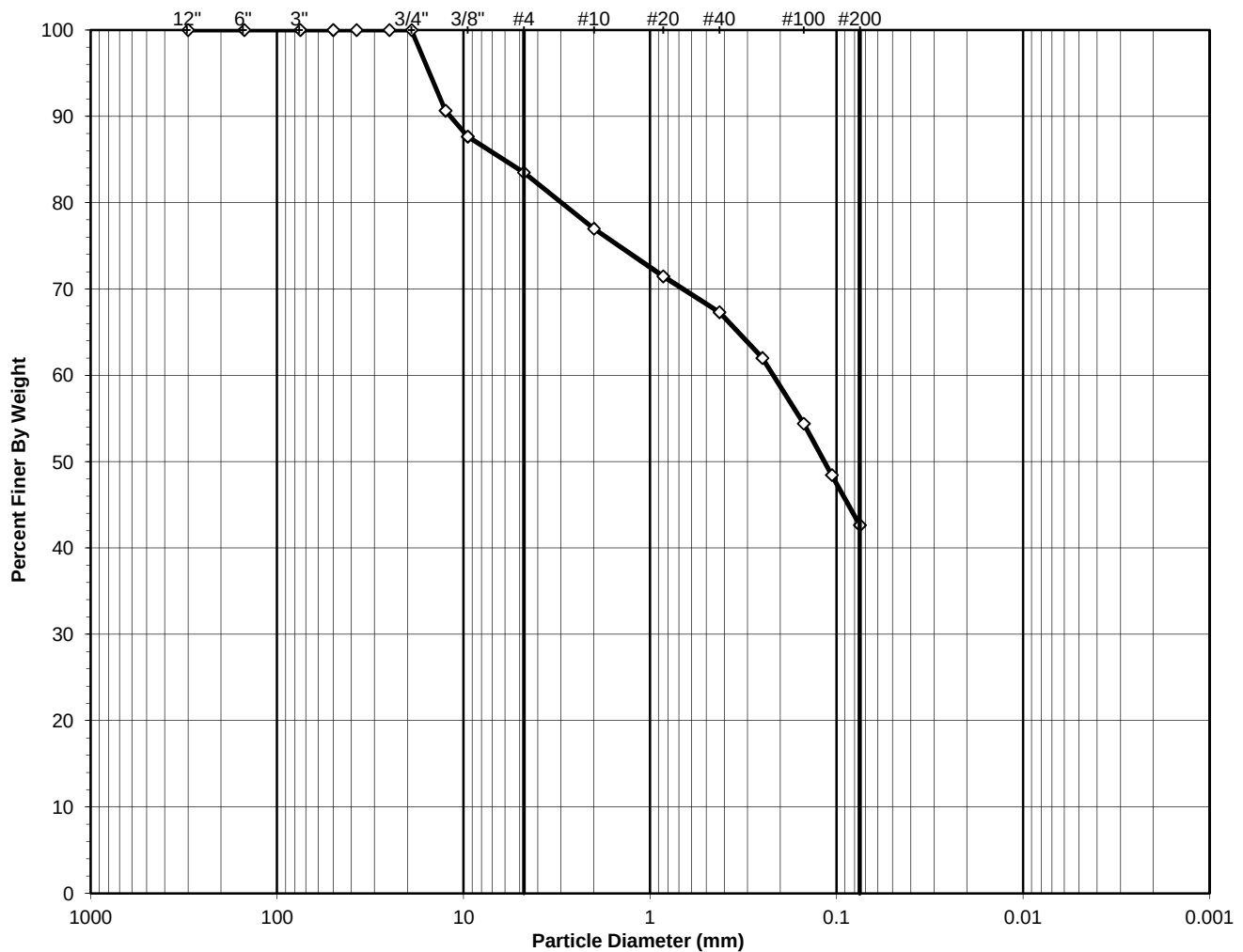
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-178

Boring No.: JB5-19-208S
Depth (ft): 18.0-20.0
Sample No.: SpT-10
Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.12

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-178

Boring No.: JB5-19-208S
 Depth (ft): 18.0-20.0
 Sample No.: SpT-10
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1424	Tare No.:	NA	Tare No.:	1424	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	290.14	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	290.14	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	282.95	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	282.95	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.80	Weight of Tare (g):	NA	Weight of Tare (g):	145.80	Weight of Tare (g):	NA
Weight of Water (g):	7.19	Weight of Water (g):	NA	Weight of Water (g):	7.19	Weight of Water (g):	NA
Weight of Dry Soil (g):	137.15	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	137.15	Weight of Dry Soil (g):	NA
Moisture Content (%):	5.2	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	137.15	Total Dry Weight of Sample (g):	137.15	Dry Weight of Sample (g):	137.15	Total Dry Weight of Sample (g):	137.15
Tare No. (Sub-Specimen)	1424	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1424	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	290.14	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	290.14	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	145.80	Dry Weight of - 3/4" Sample (g):	137.15	Weight of Tare (g):	145.80	Dry Weight of - 3/4" Sample (g):	137.15
Sub-Specimen Wet Weight (g):	144.34	Dry Weight -3/4" +3/8" Sample (g):	16.92	Sub-Specimen Wet Weight (g):	144.34	Dry Weight -3/4" +3/8" Sample (g):	16.92
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	120.23	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	120.23
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	12.81	(**)	9.34	90.66	91
3/8"	9.5	4.11	3.00	12.34	87.66	88
#4	4.75	5.72	4.17	16.51	83.49	83
#10	2	8.92	6.50	23.01	76.99	77
#20	0.85	7.57	(**)	28.53	71.47	71
#40	0.425	5.69	4.15	32.68	67.32	67
#60	0.25	7.28	5.31	37.99	62.01	62
#100	0.15	10.43	7.60	45.59	54.41	54
#140	0.106	8.17	5.96	51.55	48.45	48
#200	0.075	7.95	5.80	57.35	42.65	43
Pan	-	58.50	42.65	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-178

Boring No.: JB5-19-208S
Depth (ft): 18.0-20.0
Sample No.: SpT-10
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	34
Wt. of Tare & Wet Sample (g)	28.40
Wt. of Tare & Dry Sample (g)	26.39
Weight of Tare (g)	8.40
Weight of Water (g)	2.01
Weight of Dry Sample (g)	17.99

Water Content (%)	11.2

NON - PLASTIC MATERIAL

Tested By *MLF* Date *2/5/20* Checked By *JLK* Date *2/6/20*

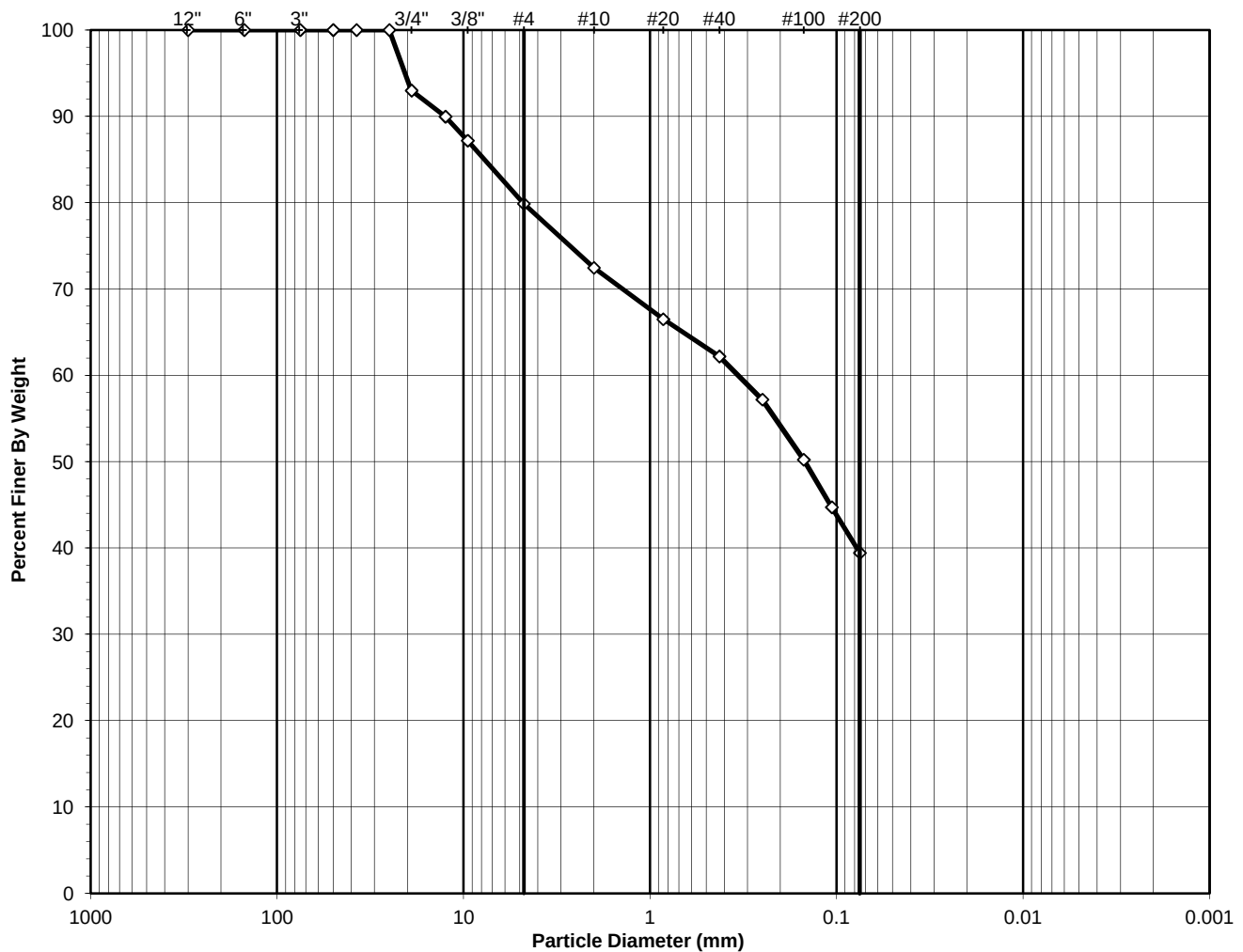
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-179

Boring No.: JB5-19-208S
 Depth (ft): 20.0-22.0
 Sample No.: SpT-11
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.15

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-179

Boring No.: JB5-19-208S
 Depth (ft): 20.0-22.0
 Sample No.: SpT-11
 Soil Color: Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1613	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	344.28	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	330.18	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	148.66	Weight of Tare (g):	NA
Weight of Water (g):	14.10	Weight of Water (g):	NA
Weight of Dry Soil (g):	181.52	Weight of Dry Soil (g):	NA
Moisture Content (%):	7.8	Moisture Content (%):	0.0
Dry Weight of Sample (g):	181.52	Total Dry Weight of Sample (g):	181.52
Tare No. (Sub-Specimen)	1613	Wet Weight of +3/4" Sample (g):	13.72
Wt. of Tare & Wet Sub-Specimen (g):	344.28	Dry Weight of + 3/4" Sample (g):	12.73
Weight of Tare (g):	148.66	Dry Weight of - 3/4" Sample (g):	168.79
Sub-Specimen Wet Weight (g):	195.62	Dry Weight -3/4" +3/8" Sample (g):	10.53
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	159.00
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	12.73	7.01	7.01	92.99	93
1/2"	12.5	5.48	(**) 3.02	10.03	89.97	90
3/8"	9.5	5.05	2.78	12.81	87.19	87
#4	4.75	13.28	7.32	20.13	79.87	80
#10	2	13.46	7.42	27.55	72.45	72
#20	0.85	10.81	(**) 5.96	33.50	66.50	66
#40	0.425	7.82	4.31	37.81	62.19	62
#60	0.25	9.07	5.00	42.81	57.19	57
#100	0.15	12.64	6.96	49.77	50.23	50
#140	0.106	10.00	5.51	55.28	44.72	45
#200	0.075	9.58	5.28	60.56	39.44	39
Pan	-	71.60	39.44	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-179

Boring No.: JB5-19-208S
Depth (ft): 20.0-22.0
Sample No.: SpT-11
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	40
Wt. of Tare & Wet Sample (g)	25.66
Wt. of Tare & Dry Sample (g)	24.39
Weight of Tare (g)	8.43
Weight of Water (g)	1.27
Weight of Dry Sample (g)	15.96

Water Content (%) **8.0**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

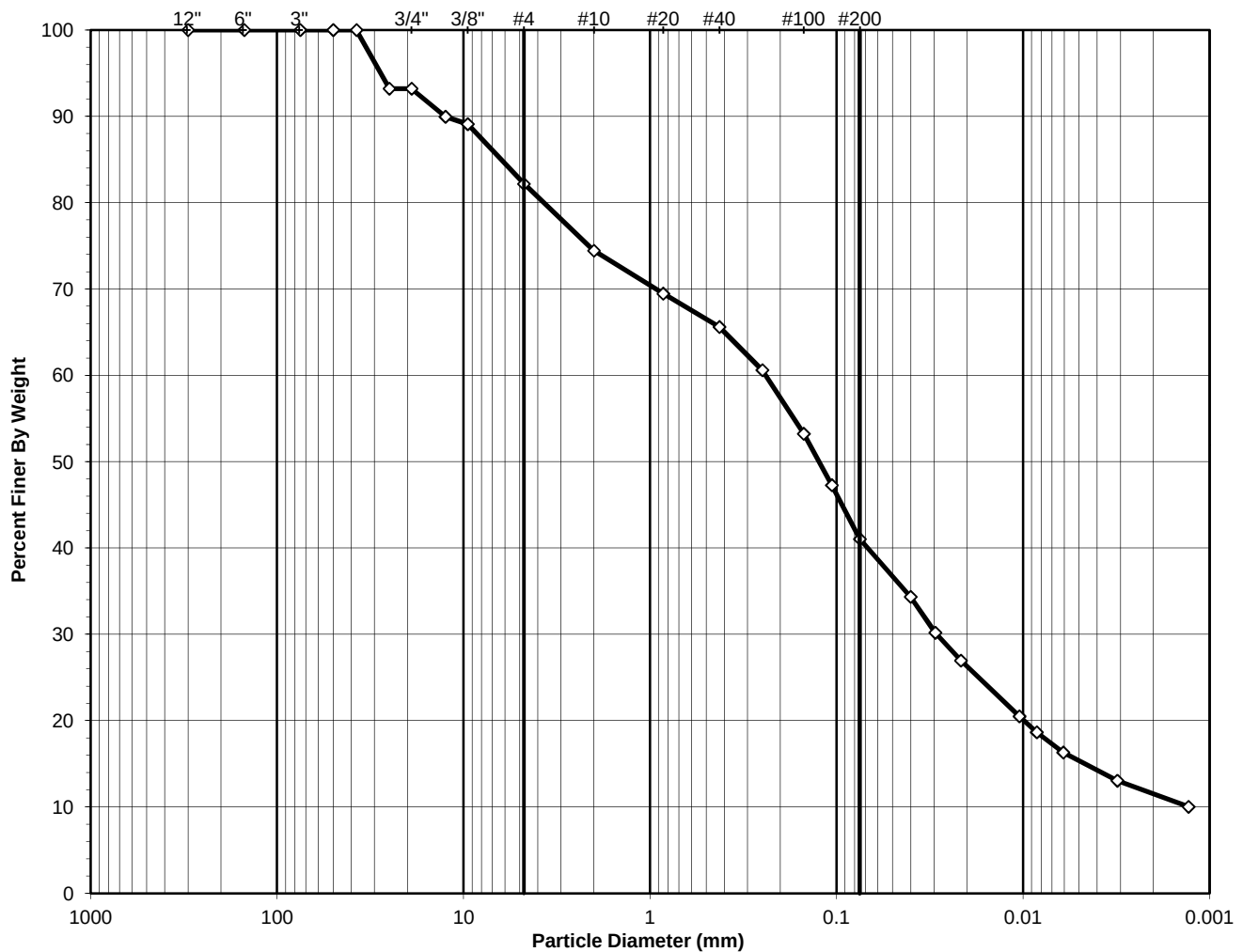
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-180

Boring No.: JB5-19-208S
 Depth (ft): 28.0-32.0
 Sample No.: SpT-15/16
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.12

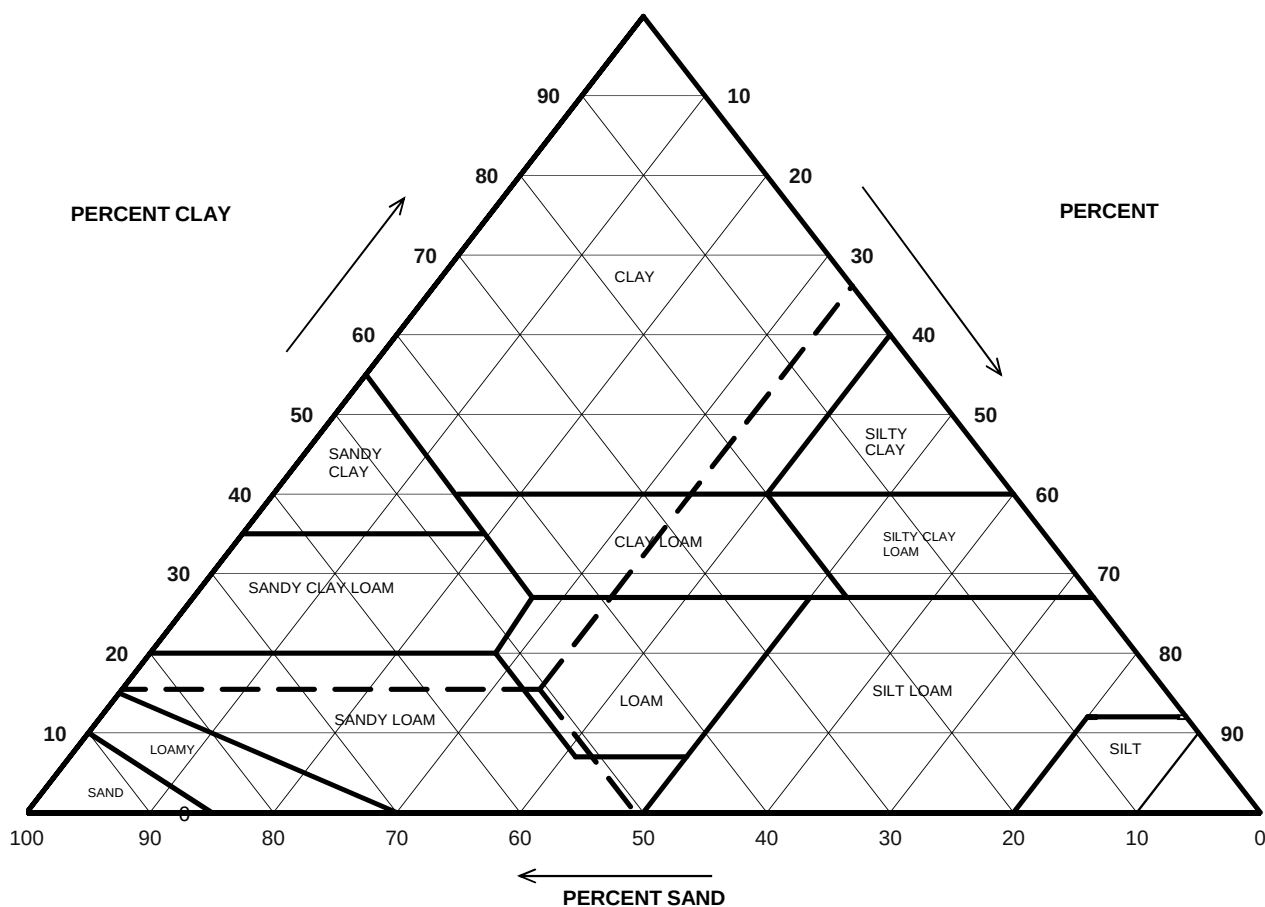
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/13/20 Checked By JLK Date 2/17/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-180

Boring No.: JB5-19-208S
Depth (ft): 28.0-32.0
Sample No.: SpT-15/16
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	25.56	
2	74.44	Sand	37.73	50.68
0.05	36.71	Silt	25.19	33.84
0.002	11.52	Clay	11.52	15.48

USDA Classification: **LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-180

Boring No.: JB5-19-208S
 Depth (ft): 28.0-32.0
 Sample No.: SpT-15/16
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1473	Tare No.:	NA	Tare No.:	1473	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	531.53	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	531.53	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	503.86	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	503.86	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.87	Weight of Tare (g):	NA	Weight of Tare (g):	145.87	Weight of Tare (g):	NA
Weight of Water (g):	27.67	Weight of Water (g):	NA	Weight of Water (g):	27.67	Weight of Water (g):	NA
Weight of Dry Soil (g):	357.99	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	357.99	Weight of Dry Soil (g):	NA
Moisture Content (%):	7.7	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	357.99	Total Dry Weight of Sample (g):	357.99	Dry Weight of Sample (g):	357.99	Total Dry Weight of Sample (g):	357.99
Tare No. (Sub-Specimen)	1473	Wet Weight of +3/4" Sample (g):	26.19	Tare No. (Sub-Specimen)	1473	Wet Weight of +3/4" Sample (g):	26.19
Wt. of Tare & Wet Sub-Specimen (g):	531.53	Dry Weight of + 3/4" Sample (g):	24.31	Wt. of Tare & Wet Sub-Specimen (g):	531.53	Dry Weight of + 3/4" Sample (g):	24.31
Weight of Tare (g):	145.87	Dry Weight of - 3/4" Sample (g):	333.68	Weight of Tare (g):	145.87	Dry Weight of - 3/4" Sample (g):	333.68
Sub-Specimen Wet Weight (g):	385.66	Dry Weight -3/4" +3/8" Sample (g):	14.72	Sub-Specimen Wet Weight (g):	385.66	Dry Weight -3/4" +3/8" Sample (g):	14.72
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	319.96	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	319.96
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	24.31	6.79	6.79	93.21	93
3/4"	19	0.00	0.00	6.79	93.21	93
1/2"	12.5	11.64	(**) 3.25	10.04	89.96	90
3/8"	9.5	3.08	0.86	10.90	89.10	89
#4	4.75	24.78	6.92	17.82	82.18	82
#10	2	27.68	7.73	25.56	74.44	74
#20	0.85	17.81	(**) 4.97	30.53	69.47	69
#40	0.425	13.83	3.86	34.39	65.61	66
#60	0.25	17.90	5.00	39.39	60.61	61
#100	0.15	26.38	7.37	46.76	53.24	53
#140	0.106	21.33	5.96	52.72	47.28	47
#200	0.075	22.31	6.23	58.95	41.05	41
Pan	-	146.94	41.05	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/17/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-208S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	28.0-32.0
Project No.:	2020-002-001	Sample No.:	SpT-15/16
Lab ID:	2020-002-001-180	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	43.0	22.3	5.78	9.2	0.0401	83.7	34.3
2	38.5	22.3	5.78	10.0	0.0296	73.6	30.2
4	35.0	22.3	5.78	10.6	0.0216	65.7	27.0
19	28.0	22.3	5.78	11.9	0.0105	50.0	20.5
30	26.0	22.3	5.78	12.2	0.0084	45.5	18.7
60	23.5	22.2	5.82	12.7	0.0061	39.8	16.3
240	20.0	22.1	5.86	13.3	0.0031	31.8	13.1
1440	16.5	22.7	5.63	14.0	0.0013	24.4	10.0

Soil Specimen Data

Tare No.:	958	Percent Finer than # 200:	41.05
Wt. of Tare & Dry Material (g):	144.47		
Weight of Tare (g):	95.49	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	43.98		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/13/20	Checked By	JLK	Date	2/17/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-180

Boring No.: JB5-19-208S
Depth (ft): 28.0-32.0
Sample No.: SpT-15/16
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	20
Wt. of Tare & Wet Sample (g)	38.93
Wt. of Tare & Dry Sample (g)	36.58
Weight of Tare (g)	8.45
Weight of Water (g)	2.35
Weight of Dry Sample (g)	28.13

Water Content (%) **8.4**

NON - PLASTIC MATERIAL

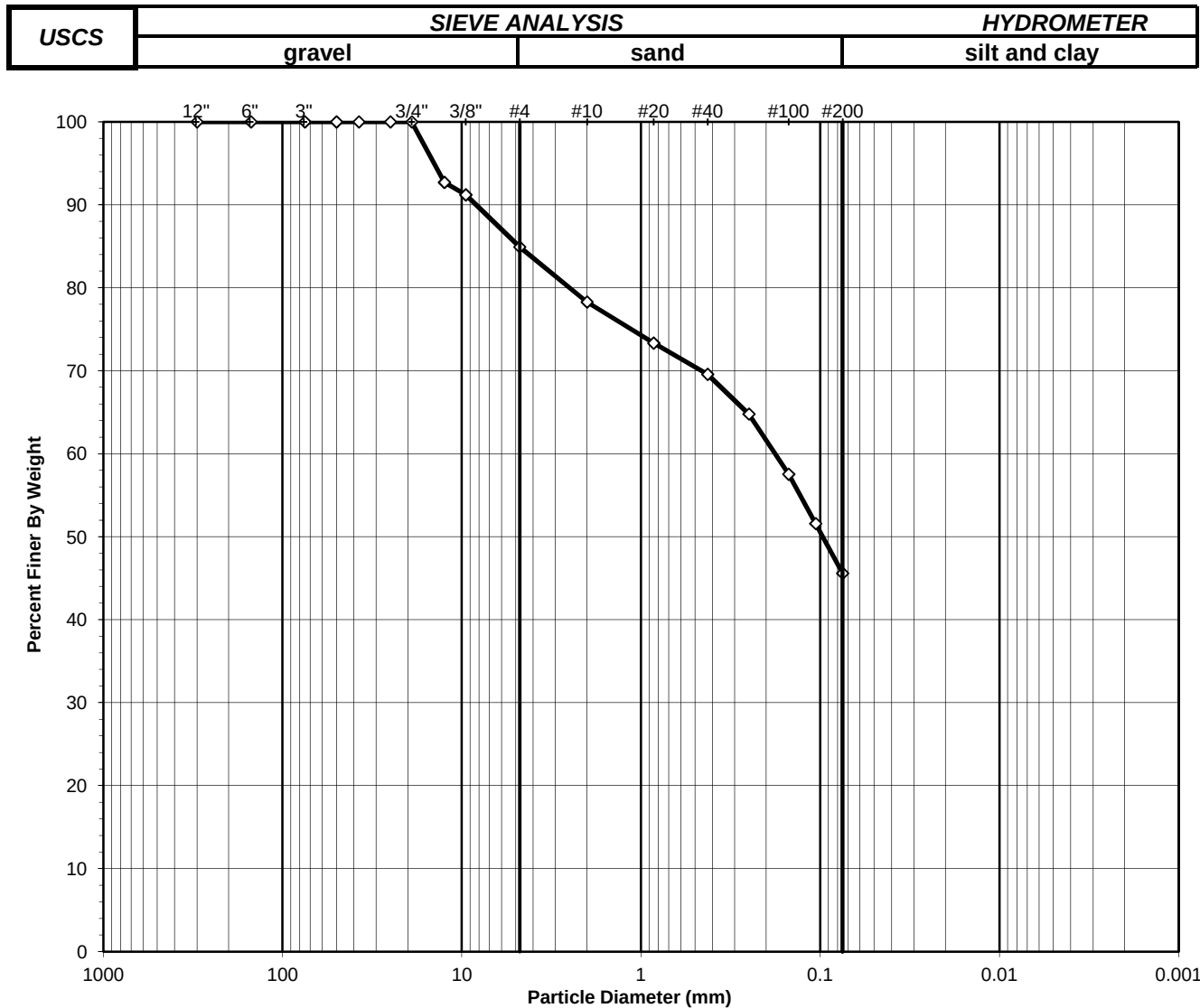
Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-181

Boring No.: JB5-19-208S
 Depth (ft): 32.0-36.0
 Sample No.: SpT-17/18
 Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.10

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/18/20 Checked By JLK Date 2/18/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-181

Boring No.: JB5-19-208S
 Depth (ft): 32.0-36.0
 Sample No.: SpT-17/18
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1500	Tare No.:	NA	Tare No.:	1500	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	486.76	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	486.76	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	486.76	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	486.76	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.98	Weight of Tare (g):	NA	Weight of Tare (g):	144.98	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	341.78	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	341.78	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	341.78	Total Dry Weight of Sample (g):	341.78	Dry Weight of Sample (g):	341.78	Total Dry Weight of Sample (g):	341.78
Tare No. (Sub-Specimen)	1500	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1500	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	486.76	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	486.76	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	144.98	Dry Weight of - 3/4" Sample (g):	341.78	Weight of Tare (g):	144.98	Dry Weight of - 3/4" Sample (g):	341.78
Sub-Specimen Wet Weight (g):	341.78	Dry Weight -3/4" +3/8" Sample (g):	30.04	Sub-Specimen Wet Weight (g):	341.78	Dry Weight -3/4" +3/8" Sample (g):	30.04
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	311.74	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	311.74
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	24.91	(**) 7.29	7.29	92.71	93
3/8"	9.5	5.13	1.50	8.79	91.21	91
#4	4.75	21.49	6.29	15.08	84.92	85
#10	2	22.66	6.63	21.71	78.29	78
#20	0.85	16.92	(**) 4.95	26.66	73.34	73
#40	0.425	12.86	3.76	30.42	69.58	70
#60	0.25	16.38	4.79	35.21	64.79	65
#100	0.15	24.78	7.25	42.46	57.54	58
#140	0.106	20.33	5.95	48.41	51.59	52
#200	0.075	20.44	5.98	54.39	45.61	46
Pan	-	155.88	45.61	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/18/20 Checked By JLK Date 2/18/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-181

Boring No.: JB5-19-208S
Depth (ft): 32.0-36.0
Sample No.: SpT-17/18
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	26
Wt. of Tare & Wet Sample (g)	43.28
Wt. of Tare & Dry Sample (g)	40.74
Weight of Tare (g)	8.53
Weight of Water (g)	2.54
Weight of Dry Sample (g)	32.21

Water Content (%) **7.9**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-208S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	32.0-36.0
Project No.:	2020-002-001	Sample No.:	SpT-17/18
Lab ID:	2020-002-001-181	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.33	748.53
Temperature (°C):	25.9	25.9
Weight of Pycnometer & Water (g):	683.86	684.41
Tare Number:	970	932
Weight of Tare & Dry Soil (g):	199.39	196.04
Weight of Tare (g):	98.74	95.39
Weight of Dry Soil (g):	100.65	100.65
Specific Gravity of Soil @ Measured Temperature:	2.636	2.755
Specific Gravity of Water @ Measured Temperature:	0.99682	0.99682
Conversion Factor for Measured Temperature:	0.99861	0.99861
Specific Gravity @ 20° Celsius:	2.640	2.759

Average Specific Gravity @ 20° Celsius

2.70

Tested By TO Date 2/14/20 Checked By JLK Date 2/17/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

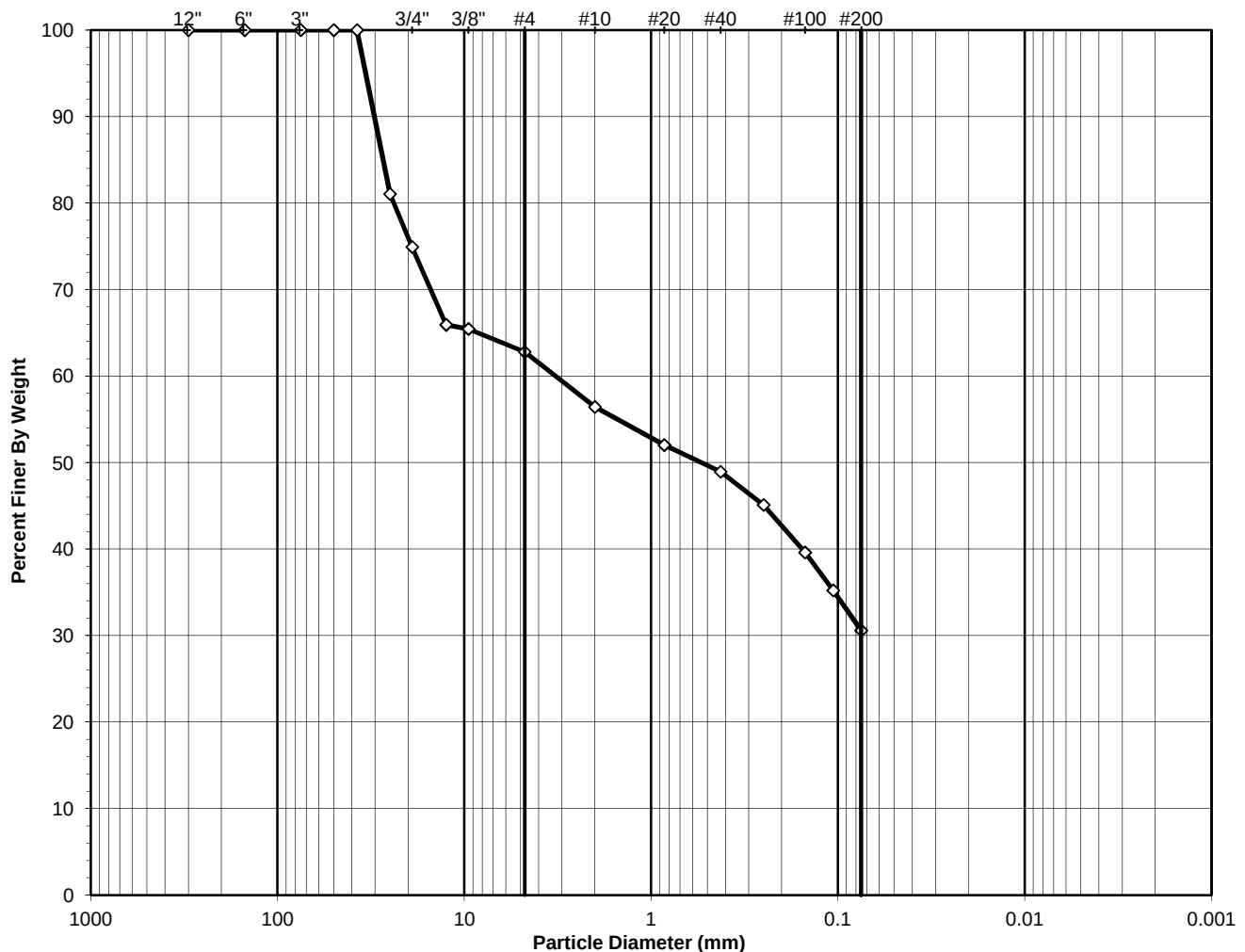
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-182

Boring No.: JB5-19-208S
 Depth (ft): 40.0-40.9
 Sample No.: SpT-21
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
GM, TESTED

D50 = 0.54

USCS Classification:
SILTY GRAVEL WITH SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-182

Boring No.: JB5-19-208S
Depth (ft): 40.0-40.9
Sample No.: SpT-21
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2037	Tare No.:	NA	Tare No.:	2037	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	542.55	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	542.55	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	524.77	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	524.77	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.89	Weight of Tare (g):	NA	Weight of Tare (g):	146.89	Weight of Tare (g):	NA
Weight of Water (g):	17.78	Weight of Water (g):	NA	Weight of Water (g):	17.78	Weight of Water (g):	NA
Weight of Dry Soil (g):	377.88	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	377.88	Weight of Dry Soil (g):	NA
Moisture Content (%):	4.7	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	377.88	Total Dry Weight of Sample (g):	377.88	Dry Weight of Sample (g):	377.88	Total Dry Weight of Sample (g):	377.88
Tare No. (Sub-Specimen)	2037	Wet Weight of +3/4" Sample (g):	99.23	Tare No. (Sub-Specimen)	2037	Wet Weight of +3/4" Sample (g):	99.23
Wt. of Tare & Wet Sub-Specimen (g):	542.55	Dry Weight of + 3/4" Sample (g):	94.77	Wt. of Tare & Wet Sub-Specimen (g):	542.55	Dry Weight of + 3/4" Sample (g):	94.77
Weight of Tare (g):	146.89	Dry Weight of - 3/4" Sample (g):	283.11	Weight of Tare (g):	146.89	Dry Weight of - 3/4" Sample (g):	283.11
Sub-Specimen Wet Weight (g):	395.66	Dry Weight -3/4" +3/8" Sample (g):	35.79	Sub-Specimen Wet Weight (g):	395.66	Dry Weight -3/4" +3/8" Sample (g):	35.79
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	256.30	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	256.30
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	71.60	18.95	18.95	81.05	81
3/4"	19	23.17	6.13	25.08	74.92	75
1/2"	12.5	33.98	(**)	34.07	65.93	66
3/8"	9.5	1.81	0.48	34.55	65.45	65
#4	4.75	10.03	2.65	37.20	62.80	63
#10	2	24.01	6.35	43.56	56.44	56
#20	0.85	16.67	(**)	47.97	52.03	52
#40	0.425	11.66	3.09	51.06	48.94	49
#60	0.25	14.50	3.84	54.89	45.11	45
#100	0.15	20.75	5.49	60.38	39.62	40
#140	0.106	16.58	4.39	64.77	35.23	35
#200	0.075	17.51	4.63	69.41	30.59	31
Pan	-	115.61	30.59	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-182

Boring No.: JB5-19-208S
Depth (ft): 40.0-40.9
Sample No.: SpT-21
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	31
Wt. of Tare & Wet Sample (g)	35.16
Wt. of Tare & Dry Sample (g)	32.73
Weight of Tare (g)	8.46
Weight of Water (g)	2.43
Weight of Dry Sample (g)	24.27

Water Content (%)	10.0

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>FS</i>	<i>Date</i>	<i>2/11/20</i>	<i>Checked By</i>	<i>JLK</i>	<i>Date</i>	<i>2/11/20</i>

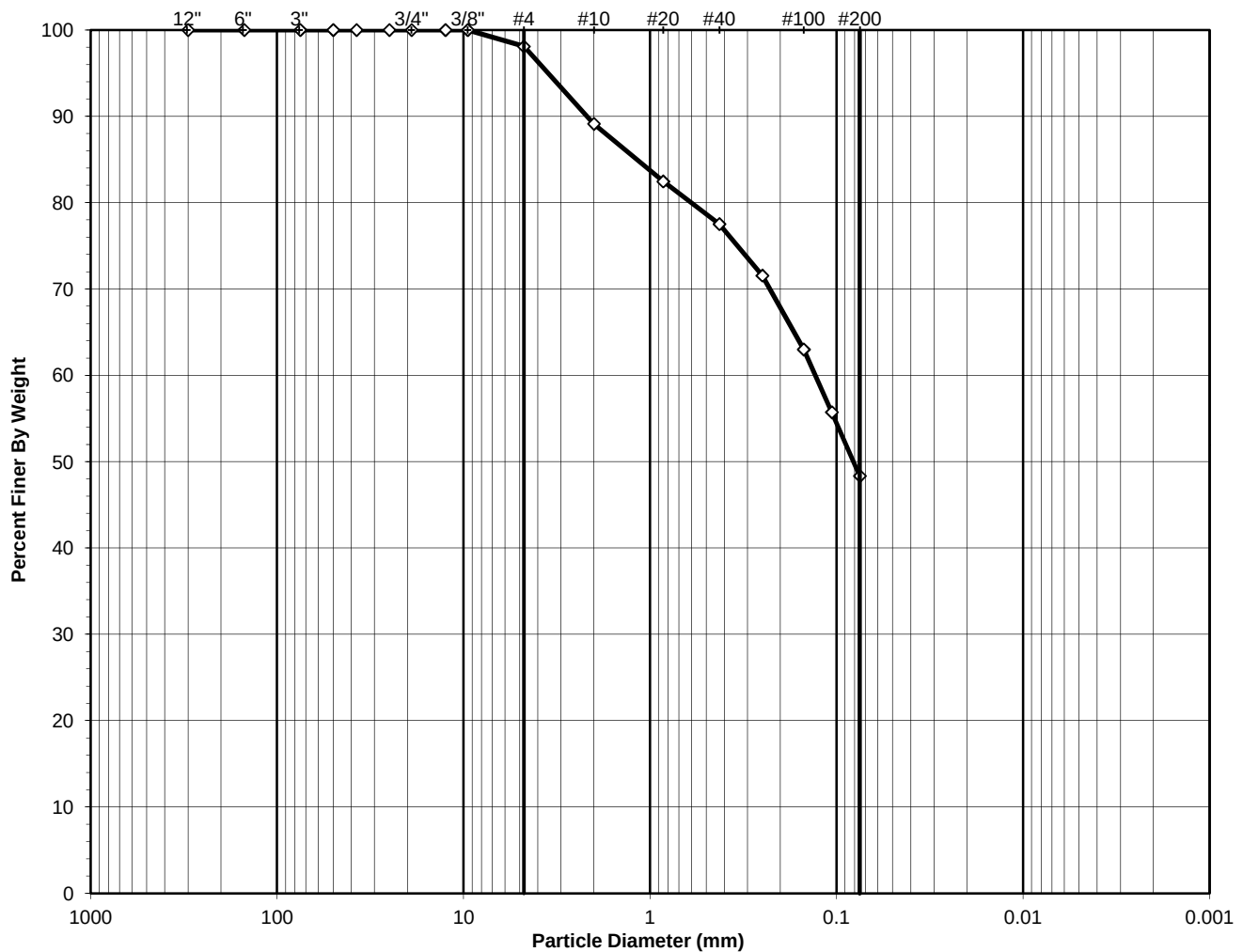
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-183

Boring No.: JB5-19-208S
 Depth (ft): 42.0-44.0
 Sample No.: SpT-22
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.08

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-183

Boring No.: JB5-19-208S
 Depth (ft): 42.0-44.0
 Sample No.: SpT-22
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1489	Tare No.:	NA	Tare No.:	1489	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	332.65	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	332.65	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	308.98	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	308.98	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	146.54	Weight of Tare (g):	NA	Weight of Tare (g):	146.54	Weight of Tare (g):	NA
Weight of Water (g):	23.67	Weight of Water (g):	NA	Weight of Water (g):	23.67	Weight of Water (g):	NA
Weight of Dry Soil (g):	162.44	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	162.44	Weight of Dry Soil (g):	NA
Moisture Content (%):	14.6	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	162.44	Total Dry Weight of Sample (g):	162.44	Dry Weight of Sample (g):	162.44	Total Dry Weight of Sample (g):	162.44
Tare No. (Sub-Specimen)	1489	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1489	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	332.65	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	332.65	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	146.54	Dry Weight of - 3/4" Sample (g):	162.44	Weight of Tare (g):	146.54	Dry Weight of - 3/4" Sample (g):	162.44
Sub-Specimen Wet Weight (g):	186.11	Dry Weight -3/4" +3/8" Sample (g):	0.00	Sub-Specimen Wet Weight (g):	186.11	Dry Weight -3/4" +3/8" Sample (g):	0.00
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	162.44	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	162.44
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	0.00	(**)	0.00	100.00	100
3/8"	9.5	0.00	0.00	0.00	100.00	100
#4	4.75	3.10	1.91	1.91	98.09	98
#10	2	14.56	8.96	10.87	89.13	89
#20	0.85	10.83	(**)	17.54	82.46	82
#40	0.425	8.02	4.94	22.48	77.52	78
#60	0.25	9.69	5.97	28.44	71.56	72
#100	0.15	13.90	8.56	37.00	63.00	63
#140	0.106	11.82	7.28	44.27	55.73	56
#200	0.075	12.00	7.39	51.66	48.34	48
Pan	-	78.52	48.34	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-183

Boring No.: JB5-19-208S
Depth (ft): 42.0-44.0
Sample No.: SpT-22
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	29
Wt. of Tare & Wet Sample (g)	29.87
Wt. of Tare & Dry Sample (g)	27.76
Weight of Tare (g)	8.46
Weight of Water (g)	2.11
Weight of Dry Sample (g)	19.30

Water Content (%)	10.9

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>FS</i>	<i>Date</i>	<i>2/11/20</i>	<i>Checked By</i>	<i>JLK</i>	<i>Date</i>	<i>2/11/20</i>

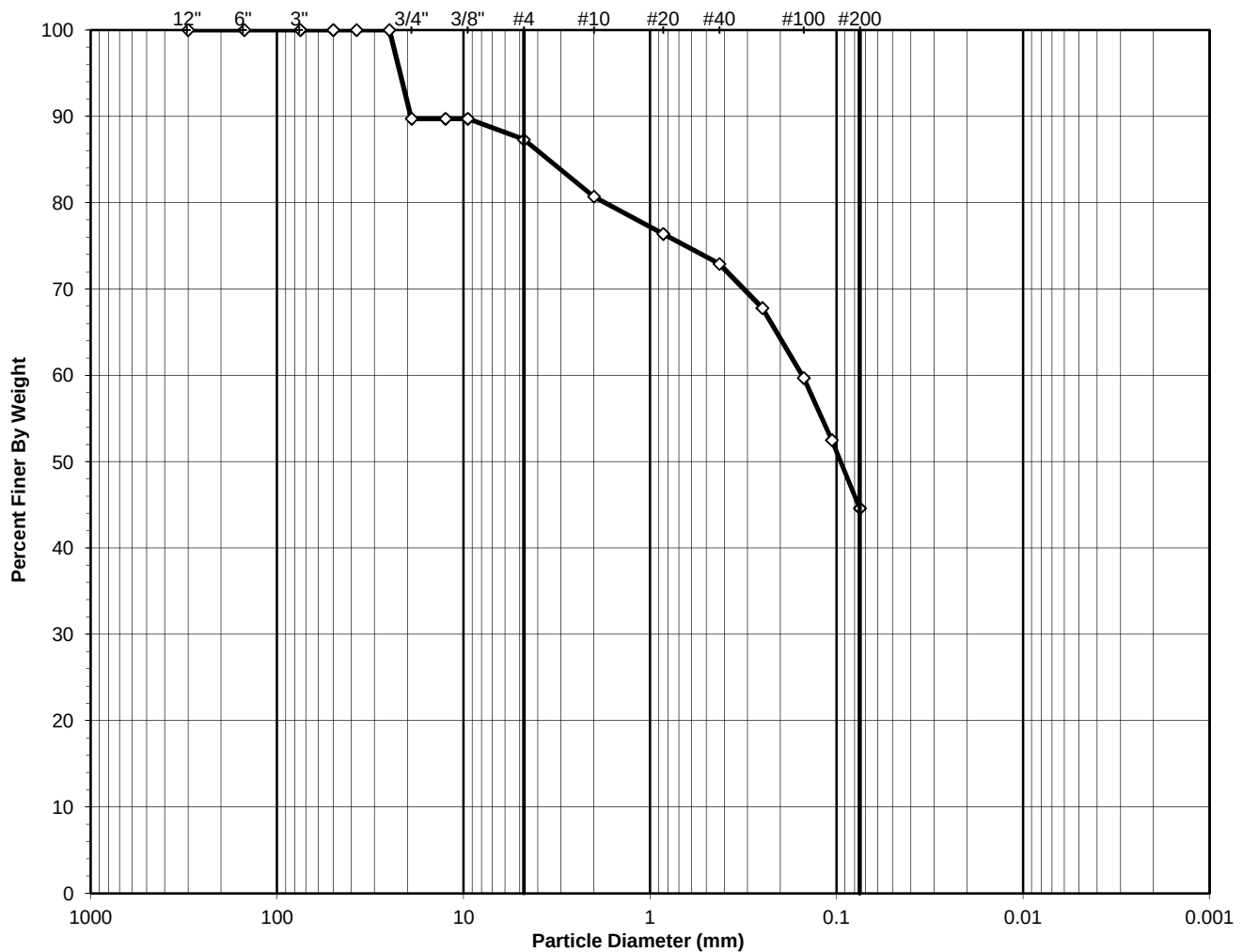
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-184

Boring No.: JB5-19-208S
 Depth (ft): 46.0-47.4
 Sample No.: SpT-24
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.09

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-184

Boring No.: JB5-19-208S
Depth (ft): 46.0-47.4
Sample No.: SpT-24
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1491	Tare No.:	NA	Tare No.:	1491	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	316.70	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	316.70	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	299.45	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	299.45	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	142.26	Weight of Tare (g):	NA	Weight of Tare (g):	142.26	Weight of Tare (g):	NA
Weight of Water (g):	17.25	Weight of Water (g):	NA	Weight of Water (g):	17.25	Weight of Water (g):	NA
Weight of Dry Soil (g):	157.19	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	157.19	Weight of Dry Soil (g):	NA
Moisture Content (%):	11.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	157.19	Total Dry Weight of Sample (g):	157.19	Dry Weight of Sample (g):	157.19	Total Dry Weight of Sample (g):	157.19
Tare No. (Sub-Specimen)	1491	Wet Weight of +3/4" Sample (g):	17.93	Tare No. (Sub-Specimen)	1491	Wet Weight of +3/4" Sample (g):	17.93
Wt. of Tare & Wet Sub-Specimen (g):	316.70	Dry Weight of + 3/4" Sample (g):	16.16	Wt. of Tare & Wet Sub-Specimen (g):	316.70	Dry Weight of + 3/4" Sample (g):	16.16
Weight of Tare (g):	142.26	Dry Weight of - 3/4" Sample (g):	141.03	Weight of Tare (g):	142.26	Dry Weight of - 3/4" Sample (g):	141.03
Sub-Specimen Wet Weight (g):	174.44	Dry Weight -3/4" +3/8" Sample (g):	0.00	Sub-Specimen Wet Weight (g):	174.44	Dry Weight -3/4" +3/8" Sample (g):	0.00
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	141.03	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	141.03
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	16.16	10.28	10.28	89.72	90
1/2"	12.5	0.00	(**)	10.28	89.72	90
3/8"	9.5	0.00	0.00	10.28	89.72	90
#4	4.75	3.81	2.42	12.70	87.30	87
#10	2	10.36	6.59	19.30	80.70	81
#20	0.85	6.80	(**)	23.62	76.38	76
#40	0.425	5.45	3.47	27.09	72.91	73
#60	0.25	8.04	5.11	32.20	67.80	68
#100	0.15	12.73	8.10	40.30	59.70	60
#140	0.106	11.31	7.20	47.50	52.50	53
#200	0.075	12.42	7.90	55.40	44.60	45
Pan	-	70.11	44.60	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/7/20 Checked By JLK Date 2/10/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-184

Boring No.: JB5-19-208S
Depth (ft): 46.0-47.4
Sample No.: SpT-24
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	12
Wt. of Tare & Wet Sample (g)	27.65
Wt. of Tare & Dry Sample (g)	25.66
Weight of Tare (g)	8.45
Weight of Water (g)	1.99
Weight of Dry Sample (g)	17.21

Water Content (%)	11.6

NON - PLASTIC MATERIAL

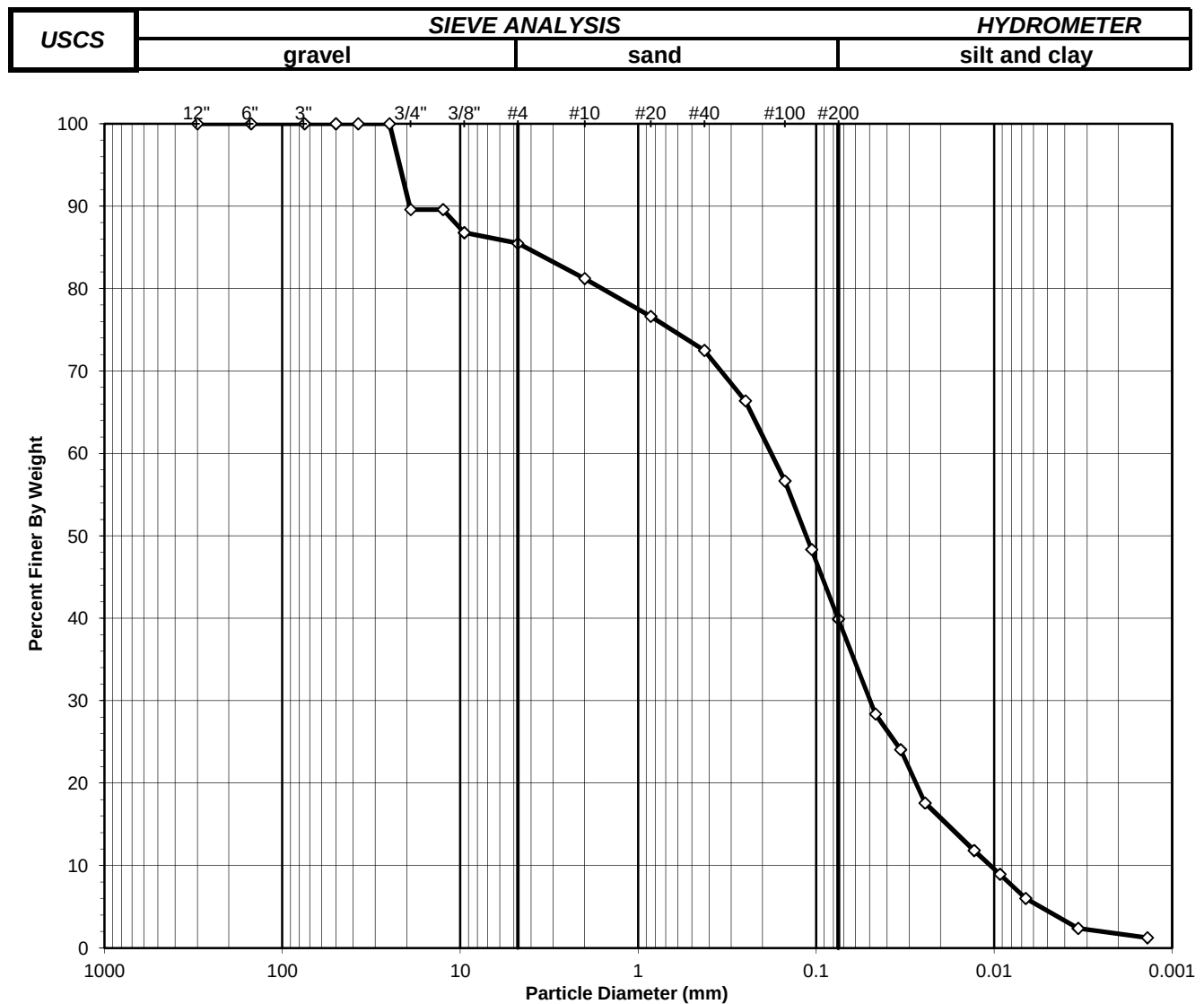
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SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-185

Boring No.: JB5-19-209S
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Soil Color: Brown



USCS Symbol:
SM, TESTED

D50 = 0.11

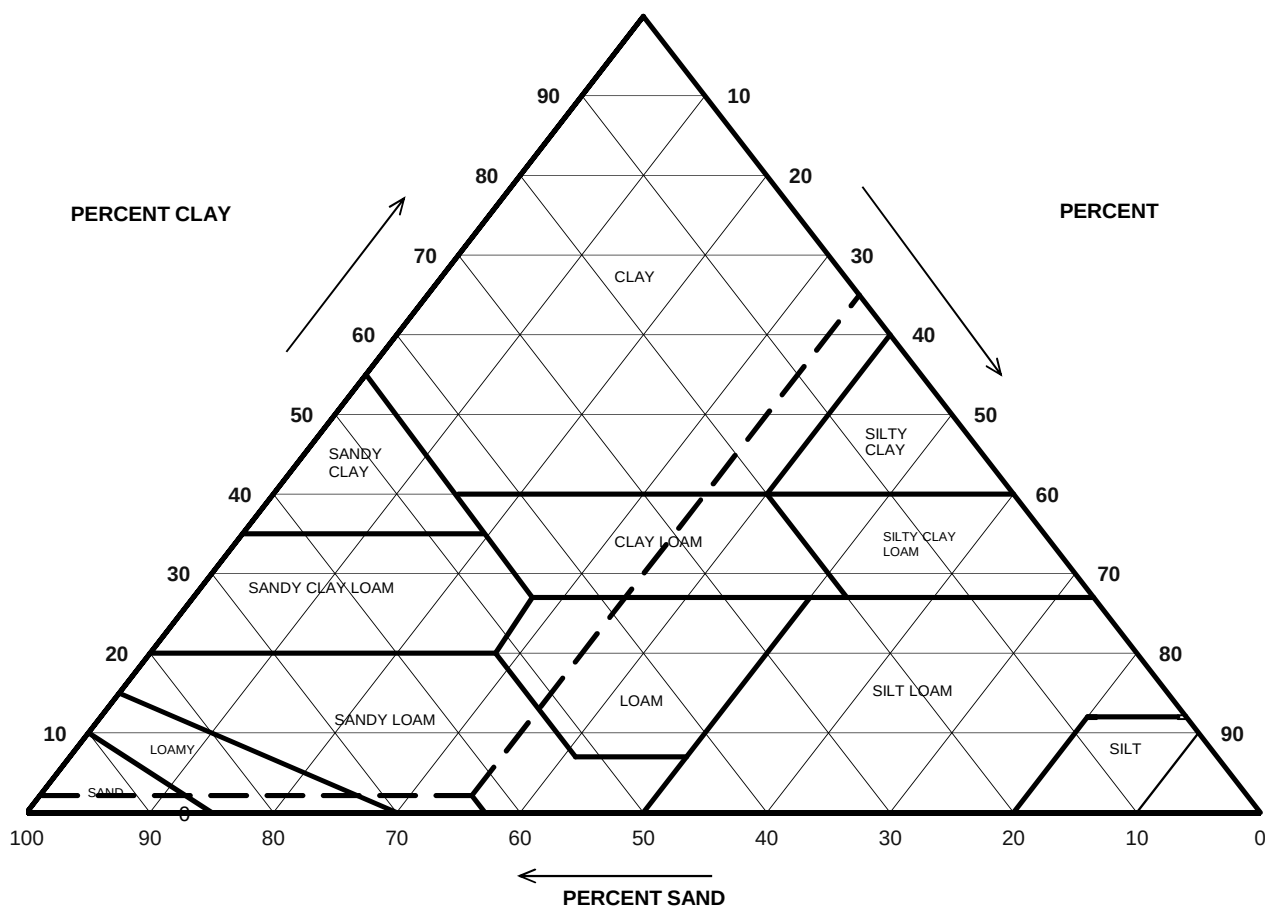
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By	DS	Date	2/13/20	Checked By	JLK	Date	2/17/20

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-185

Boring No.: JB5-19-209S
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	18.78	
2	81.22	Sand	51.05	62.85
0.05	30.17	Silt	28.45	35.02
0.002	1.72	Clay	1.72	2.12

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-185

Boring No.: JB5-19-209S
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1494	Tare No.:	NA	Tare No.:	1494	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	335.77	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	335.77	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	305.92	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	305.92	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	149.95	Weight of Tare (g):	NA	Weight of Tare (g):	149.95	Weight of Tare (g):	NA
Weight of Water (g):	29.85	Weight of Water (g):	NA	Weight of Water (g):	29.85	Weight of Water (g):	NA
Weight of Dry Soil (g):	155.97	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	155.97	Weight of Dry Soil (g):	NA
Moisture Content (%):	19.1	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	155.97	Total Dry Weight of Sample (g):	155.97	Dry Weight of Sample (g):	155.97	Total Dry Weight of Sample (g):	155.97
Tare No. (Sub-Specimen)	1494	Wet Weight of +3/4" Sample (g):	19.35	Tare No. (Sub-Specimen)	1494	Wet Weight of +3/4" Sample (g):	19.35
Wt. of Tare & Wet Sub-Specimen (g):	335.77	Dry Weight of + 3/4" Sample (g):	16.24	Wt. of Tare & Wet Sub-Specimen (g):	335.77	Dry Weight of + 3/4" Sample (g):	16.24
Weight of Tare (g):	149.95	Dry Weight of - 3/4" Sample (g):	139.73	Weight of Tare (g):	149.95	Dry Weight of - 3/4" Sample (g):	139.73
Sub-Specimen Wet Weight (g):	185.82	Dry Weight -3/4" +3/8" Sample (g):	4.36	Sub-Specimen Wet Weight (g):	185.82	Dry Weight -3/4" +3/8" Sample (g):	4.36
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	135.82	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	135.82
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	16.24	10.41	10.41	89.59	90
1/2"	12.5	0.00	(**) 0.00	10.41	89.59	90
3/8"	9.5	4.36	2.80	13.21	86.79	87
#4	4.75	2.04	1.31	14.52	85.48	85
#10	2	6.65	4.26	18.78	81.22	81
#20	0.85	7.16	(**) 4.59	23.37	76.63	77
#40	0.425	6.43	4.12	27.49	72.51	73
#60	0.25	9.54	6.12	33.61	66.39	66
#100	0.15	15.17	9.73	43.34	56.66	57
#140	0.106	12.97	8.32	51.65	48.35	48
#200	0.075	13.17	8.44	60.09	39.91	40
Pan	-	62.24	39.91	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/17/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-209S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	0.0-2.0
Project No.:	2020-002-001	Sample No.:	SpT-1
Lab ID:	2020-002-001-185	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	25.5	22.3	5.78	12.3	0.0464	71.2	28.4
2	22.5	22.3	5.78	12.9	0.0335	60.3	24.1
4	18.0	22.3	5.78	13.7	0.0245	44.1	17.6
15	14.0	22.3	5.78	14.4	0.0130	29.7	11.8
30	12.0	22.3	5.78	14.8	0.0093	22.4	9.0
60	10.0	22.2	5.82	15.1	0.0066	15.1	6.0
240	7.5	22.1	5.84	15.6	0.0034	6.0	2.4
1440	6.5	22.7	5.63	15.8	0.0014	3.1	1.2

Soil Specimen Data

Tare No.:	633	Percent Finer than # 200:	39.91
Wt. of Tare & Dry Material (g):	126.44		
Weight of Tare (g):	94.04	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	27.40		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/13/20	Checked By	JLK	Date	2/17/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-185

Boring No.: JB5-19-209S
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	43
Wt. of Tare & Wet Sample (g)	22.09
Wt. of Tare & Dry Sample (g)	19.75
Weight of Tare (g)	8.46
Weight of Water (g)	2.34
Weight of Dry Sample (g)	11.29

Water Content (%)	20.7

NON - PLASTIC MATERIAL

Tested By	FS	Date	2/11/20	Checked By	JLK	Date	2/11/20

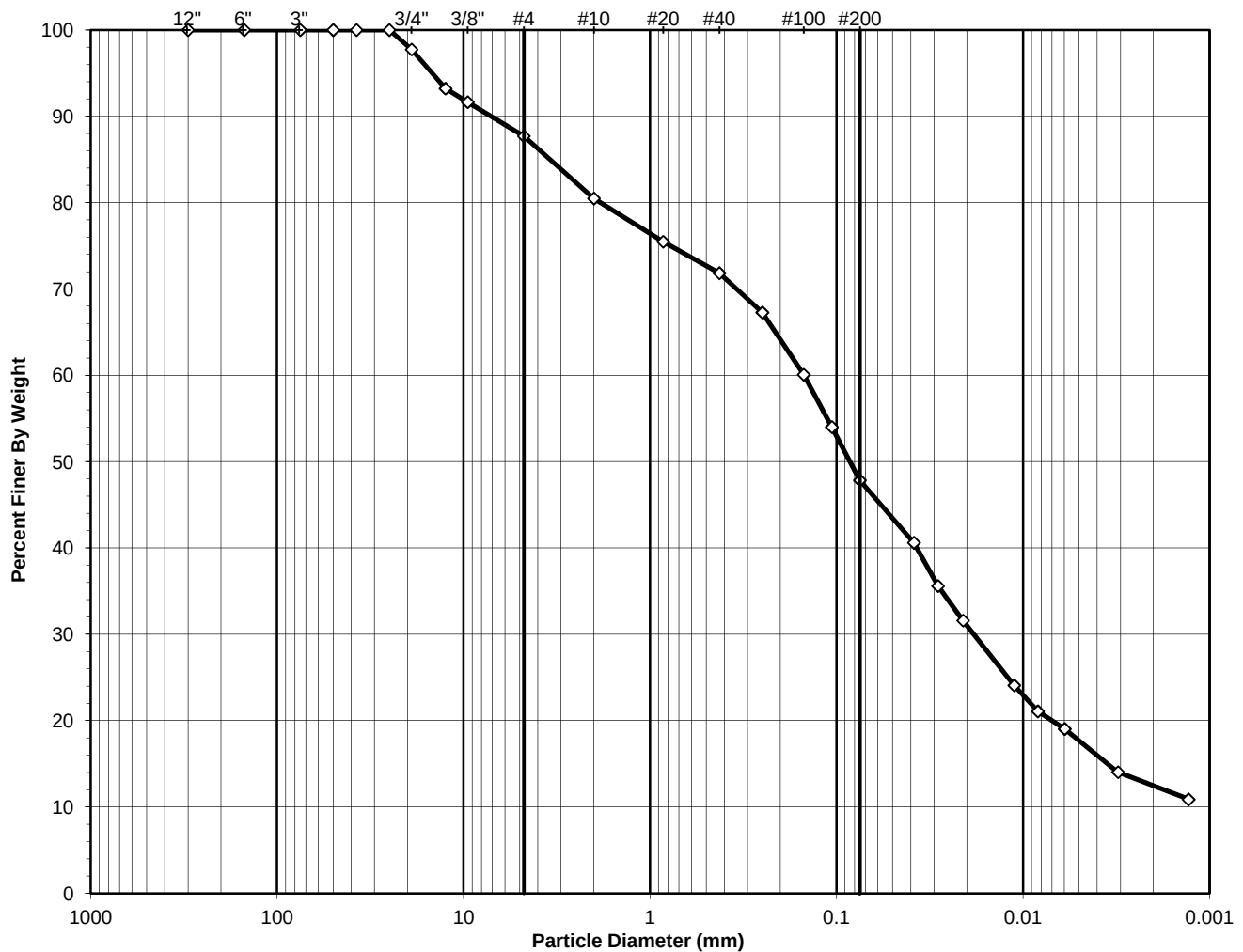
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-186

Boring No.: JB5-19-209S
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.08

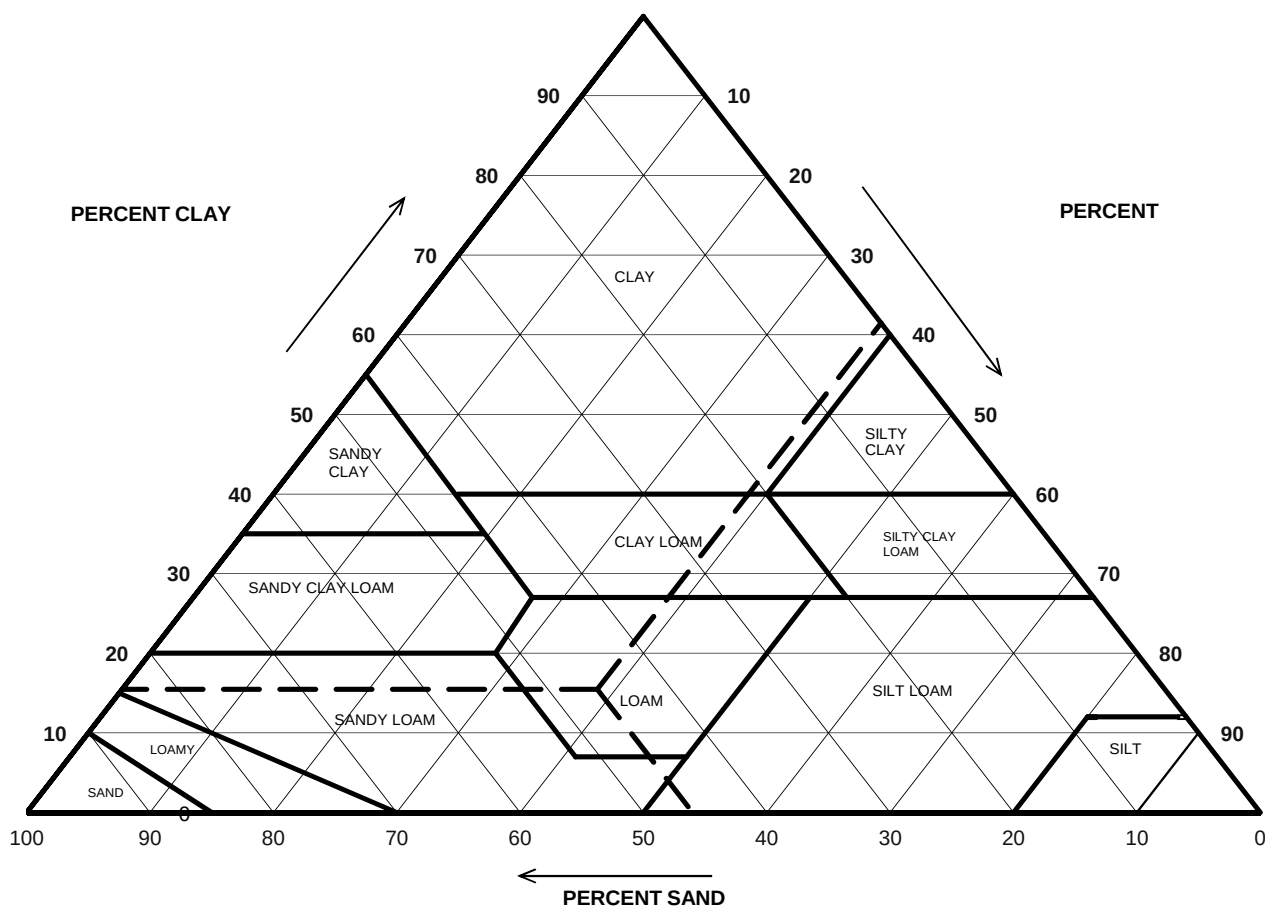
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/19/20 Checked By KC Date 2/21/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-186

Boring No.: JB5-19-209S
Depth (ft): 4.0-8.0
Sample No.: SpT-3/4
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	19.51	
2	80.49	Sand	37.04	46.02
0.05	43.45	Silt	31.00	38.51
0.002	12.45	Clay	12.45	15.47

USDA Classification: LOAM

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-186

Boring No.: JB5-19-209S
Depth (ft): 4.0-8.0
Sample No.: SpT-3/4
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1477	Tare No.:	NA	Tare No.:	1477	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	473.83	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	473.83	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	473.83	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	473.83	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.24	Weight of Tare (g):	NA	Weight of Tare (g):	144.24	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	329.59	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	329.59	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	329.59	Total Dry Weight of Sample (g):	329.59	Dry Weight of Sample (g):	329.59	Total Dry Weight of Sample (g):	329.59
Tare No. (Sub-Specimen)	1477	Wet Weight of +3/4" Sample (g):	7.43	Tare No. (Sub-Specimen)	1477	Wet Weight of +3/4" Sample (g):	7.43
Wt. of Tare & Wet Sub-Specimen (g):	473.83	Dry Weight of + 3/4" Sample (g):	7.43	Wt. of Tare & Wet Sub-Specimen (g):	473.83	Dry Weight of + 3/4" Sample (g):	7.43
Weight of Tare (g):	144.24	Dry Weight of - 3/4" Sample (g):	322.16	Weight of Tare (g):	144.24	Dry Weight of - 3/4" Sample (g):	322.16
Sub-Specimen Wet Weight (g):	329.59	Dry Weight -3/4" +3/8" Sample (g):	20.10	Sub-Specimen Wet Weight (g):	329.59	Dry Weight -3/4" +3/8" Sample (g):	20.10
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	302.51	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	302.51
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	7.43	2.25	2.25	97.75	98
1/2"	12.5	14.93	(**)	6.78	93.22	93
3/8"	9.5	5.17	1.57	8.35	91.65	92
#4	4.75	13.00	3.94	12.30	87.70	88
#10	2	23.78	7.22	19.51	80.49	80
#20	0.85	16.50	(**)	24.52	75.48	75
#40	0.425	12.00	3.64	28.16	71.84	72
#60	0.25	15.04	4.56	32.72	67.28	67
#100	0.15	23.73	7.20	39.92	60.08	60
#140	0.106	20.00	6.07	45.99	54.01	54
#200	0.075	20.31	6.16	52.15	47.85	48
Pan	-	157.70	47.85	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/19/20 Checked By KC Date 2/21/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-209S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	4.0-8.0
Project No.:	2020-002-001	Sample No.:	SpT-3/4
Lab ID:	2020-002-001-186	Soil Color:	Brown

Elapsed Time (min)	Reading mm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	46.0	23.2	5.45	8.6	0.0385	84.9	40.6
2	41.0	23.2	5.45	9.5	0.0286	74.4	35.6
4	37.0	23.2	5.45	10.3	0.0210	66.0	31.6
16	29.5	23.2	5.45	11.6	0.0112	50.3	24.1
30	26.5	23.2	5.45	12.2	0.0083	44.1	21.1
60	24.5	23.1	5.48	12.5	0.0060	39.8	19.0
240	19.5	23.1	5.48	13.4	0.0031	29.3	14.0
1440	16.5	22.7	5.63	14.0	0.0013	22.7	10.9

Soil Specimen Data

Tare No.:	947	Percent Finer than # 200:	47.85
Wt. of Tare & Dry Material (g):	150.33		
Weight of Tare (g):	98.08	Specific Gravity:	2.70 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	47.25		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/19/20	Checked By	KC	Date	2/21/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-186

Boring No.: JB5-19-209S
Depth (ft): 4.0-8.0
Sample No.: SpT-3/4
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	5
Wt. of Tare & Wet Sample (g)	51.47
Wt. of Tare & Dry Sample (g)	47.64
Weight of Tare (g)	8.32
Weight of Water (g)	3.83
Weight of Dry Sample (g)	39.32

Water Content (%) **9.7**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-209S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	4.0-8.0
Project No.:	2020-002-001	Sample No.:	SpT-3/4
Lab ID:	2020-002-001-186	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.68	748.92
Temperature (°C):	24.1	24.1
Weight of Pycnometer & Water (g):	684.09	684.64
Tare Number:	1920	685
Weight of Tare & Dry Soil (g):	195.82	200.04
Weight of Tare (g):	95.03	99.08
Weight of Dry Soil (g):	100.79	100.96
Specific Gravity of Soil @ Measured Temperature:	2.638	2.752
Specific Gravity of Water @ Measured Temperature:	0.99728	0.99728
Conversion Factor for Measured Temperature:	0.99907	0.99907
Specific Gravity @ 20° Celsius:	2.641	2.755

Average Specific Gravity @ 20° Celsius	2.70

Tested By TO Date 2/14/20 Checked By JLK Date 2/17/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

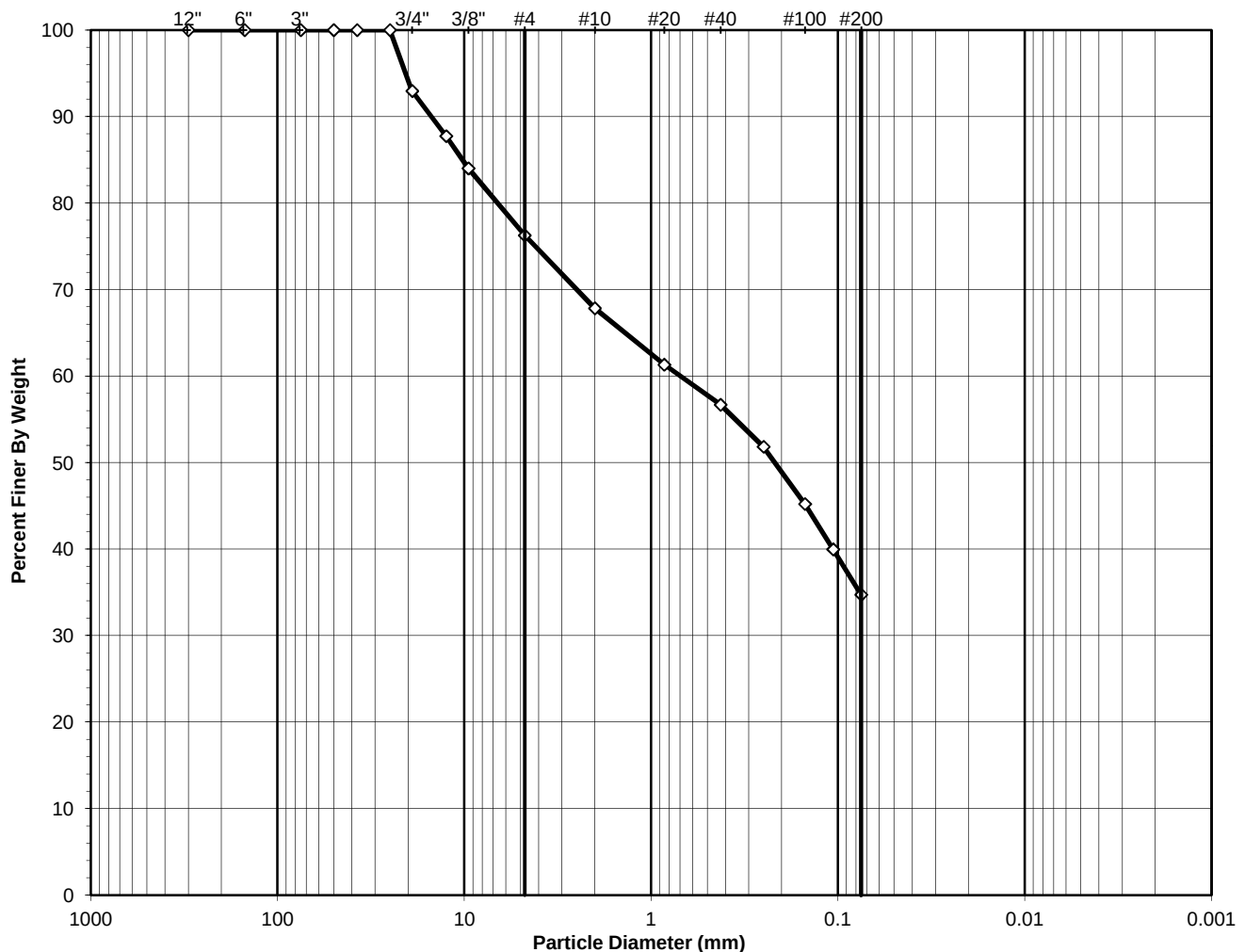
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-187

Boring No.: JB5-19-209S
 Depth (ft): 12.2-16.0
 Sample No.: SpT-7/8
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.22

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-187

Boring No.: JB5-19-209S
Depth (ft): 12.2-16.0
Sample No.: SpT-7/8
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2039	Tare No.:	NA	Tare No.:	2039	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	754.15	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	754.15	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	726.36	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	726.36	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.90	Weight of Tare (g):	NA	Weight of Tare (g):	145.90	Weight of Tare (g):	NA
Weight of Water (g):	27.79	Weight of Water (g):	NA	Weight of Water (g):	27.79	Weight of Water (g):	NA
Weight of Dry Soil (g):	580.46	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	580.46	Weight of Dry Soil (g):	NA
Moisture Content (%):	4.8	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	580.46	Total Dry Weight of Sample (g):	580.46	Dry Weight of Sample (g):	580.46	Total Dry Weight of Sample (g):	580.46
Tare No. (Sub-Specimen)	2039	Wet Weight of +3/4" Sample (g):	42.84	Tare No. (Sub-Specimen)	2039	Wet Weight of +3/4" Sample (g):	42.84
Wt. of Tare & Wet Sub-Specimen (g):	754.15	Dry Weight of + 3/4" Sample (g):	40.88	Wt. of Tare & Wet Sub-Specimen (g):	754.15	Dry Weight of + 3/4" Sample (g):	40.88
Weight of Tare (g):	145.90	Dry Weight of - 3/4" Sample (g):	539.58	Weight of Tare (g):	145.90	Dry Weight of - 3/4" Sample (g):	539.58
Sub-Specimen Wet Weight (g):	608.25	Dry Weight -3/4" +3/8" Sample (g):	51.92	Sub-Specimen Wet Weight (g):	608.25	Dry Weight -3/4" +3/8" Sample (g):	51.92
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	491.32	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	491.32
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	40.88	7.04	7.04	92.96	93
1/2"	12.5	30.26	(**)	12.26	87.74	88
3/8"	9.5	21.66	3.73	15.99	84.01	84
#4	4.75	44.96	7.75	23.73	76.27	76
#10	2	48.92	8.43	32.16	67.84	68
#20	0.85	37.85	(**)	38.68	61.32	61
#40	0.425	26.87	4.63	43.31	56.69	57
#60	0.25	28.21	4.86	48.17	51.83	52
#100	0.15	38.42	6.62	54.79	45.21	45
#140	0.106	30.43	5.24	60.03	39.97	40
#200	0.075	30.45	5.25	65.28	34.72	35
Pan	-	201.55	34.72	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-187

Boring No.: JB5-19-209S
Depth (ft): 12.2-16.0
Sample No.: SpT-7/8
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	28
Wt. of Tare & Wet Sample (g)	47.17
Wt. of Tare & Dry Sample (g)	44.46
Weight of Tare (g)	8.27
Weight of Water (g)	2.71
Weight of Dry Sample (g)	36.19

Water Content (%) **7.5**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-209S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	12.2-16.0
Project No.:	2020-002-001	Sample No.:	SpT-7/8
Lab ID:	2020-002-001-187	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	742.69	743.6
Temperature (°C):	24.5	24.6
Weight of Pycnometer & Water (g):	684.04	684.58
Tare Number:	957	970
Weight of Tare & Dry Soil (g):	194.33	191.93
Weight of Tare (g):	99.36	98.87
Weight of Dry Soil (g):	94.97	93.06
Specific Gravity of Soil @ Measured Temperature:	2.615	2.734
Specific Gravity of Water @ Measured Temperature:	0.99718	0.99715
Conversion Factor for Measured Temperature:	0.99897	0.99895
Specific Gravity @ 20° Celsius:	2.617	2.737

Average Specific Gravity @ 20° Celsius	2.68

Tested By TO Date 2/4/20 Checked By JLK Date 2/5/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

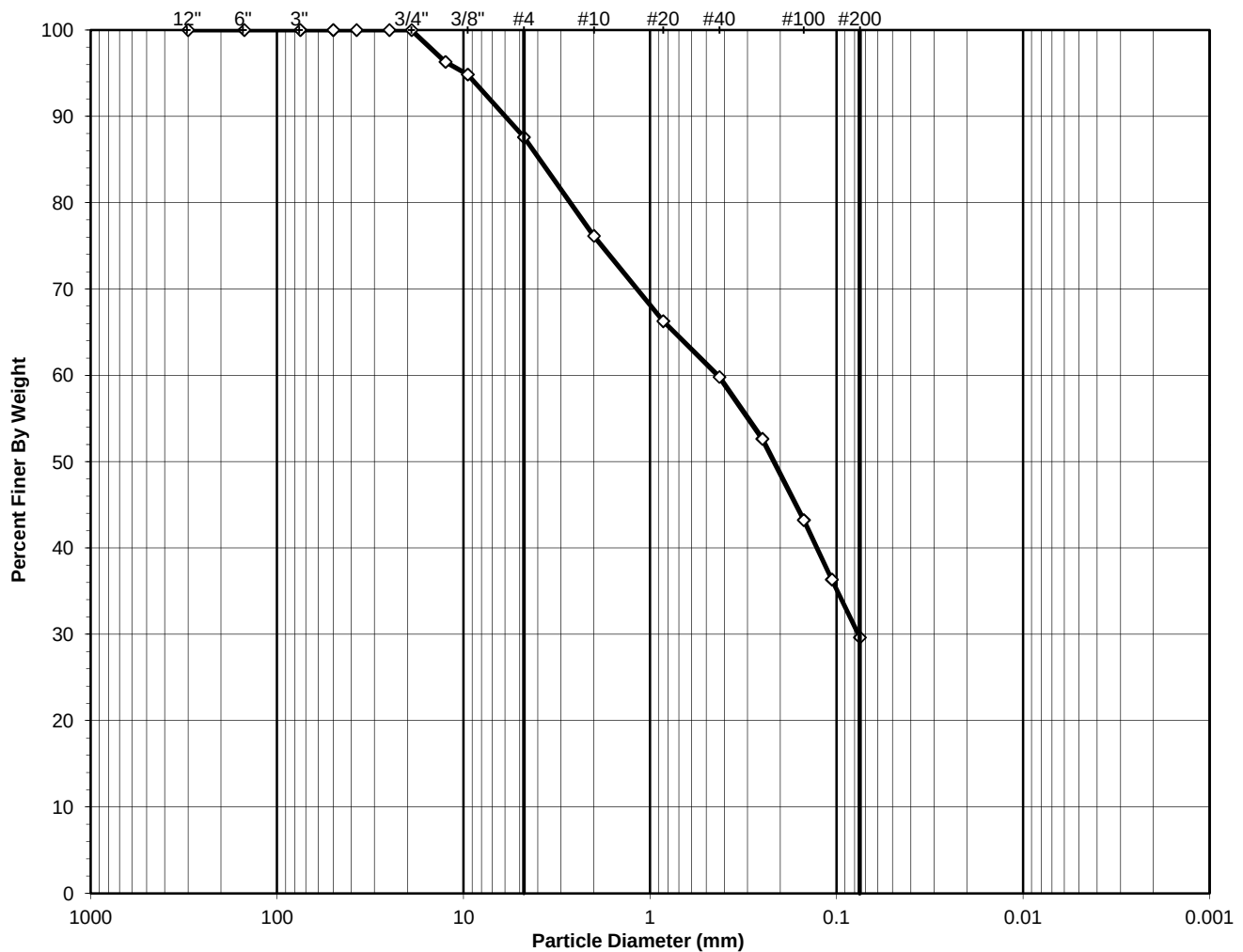
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-188

Boring No.: JB5-19-209S
 Depth (ft): 18.0-22.0
 Sample No.: SpT-10/11
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
sm, ASSUMED

D50 = 0.22

USCS Classification:
SILTY SAND

Tested By DS Date 2/5/20 Checked By JLK Date 2/5/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-188

Boring No.: JB5-19-209S
 Depth (ft): 18.0-22.0
 Sample No.: SpT-10/11
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1469	Tare No.:	NA	Tare No.:	1469	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	630.70	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	630.70	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	590.00	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	590.00	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.55	Weight of Tare (g):	NA	Weight of Tare (g):	144.55	Weight of Tare (g):	NA
Weight of Water (g):	40.70	Weight of Water (g):	NA	Weight of Water (g):	40.70	Weight of Water (g):	NA
Weight of Dry Soil (g):	445.45	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	445.45	Weight of Dry Soil (g):	NA
Moisture Content (%):	9.1	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	445.45	Total Dry Weight of Sample (g):	445.45	Dry Weight of Sample (g):	445.45	Total Dry Weight of Sample (g):	445.45
Tare No. (Sub-Specimen)	1469	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1469	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	630.70	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	630.70	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	144.55	Dry Weight of - 3/4" Sample (g):	445.45	Weight of Tare (g):	144.55	Dry Weight of - 3/4" Sample (g):	445.45
Sub-Specimen Wet Weight (g):	486.15	Dry Weight -3/4" +3/8" Sample (g):	22.94	Sub-Specimen Wet Weight (g):	486.15	Dry Weight -3/4" +3/8" Sample (g):	22.94
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	422.51	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	422.51
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	16.43	(**)	3.69	96.31	96
3/8"	9.5	6.51	1.46	5.15	94.85	95
#4	4.75	32.34	7.26	12.41	87.59	88
#10	2	50.93	11.43	23.84	76.16	76
#20	0.85	44.00	(**)	33.72	66.28	66
#40	0.425	28.81	6.47	40.19	59.81	60
#60	0.25	31.91	7.16	47.35	52.65	53
#100	0.15	41.89	9.40	56.76	43.24	43
#140	0.106	30.69	6.89	63.65	36.35	36
#200	0.075	29.87	6.71	70.35	29.65	30
Pan	-	132.07	29.65	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/5/20 Checked By JLK Date 2/5/20

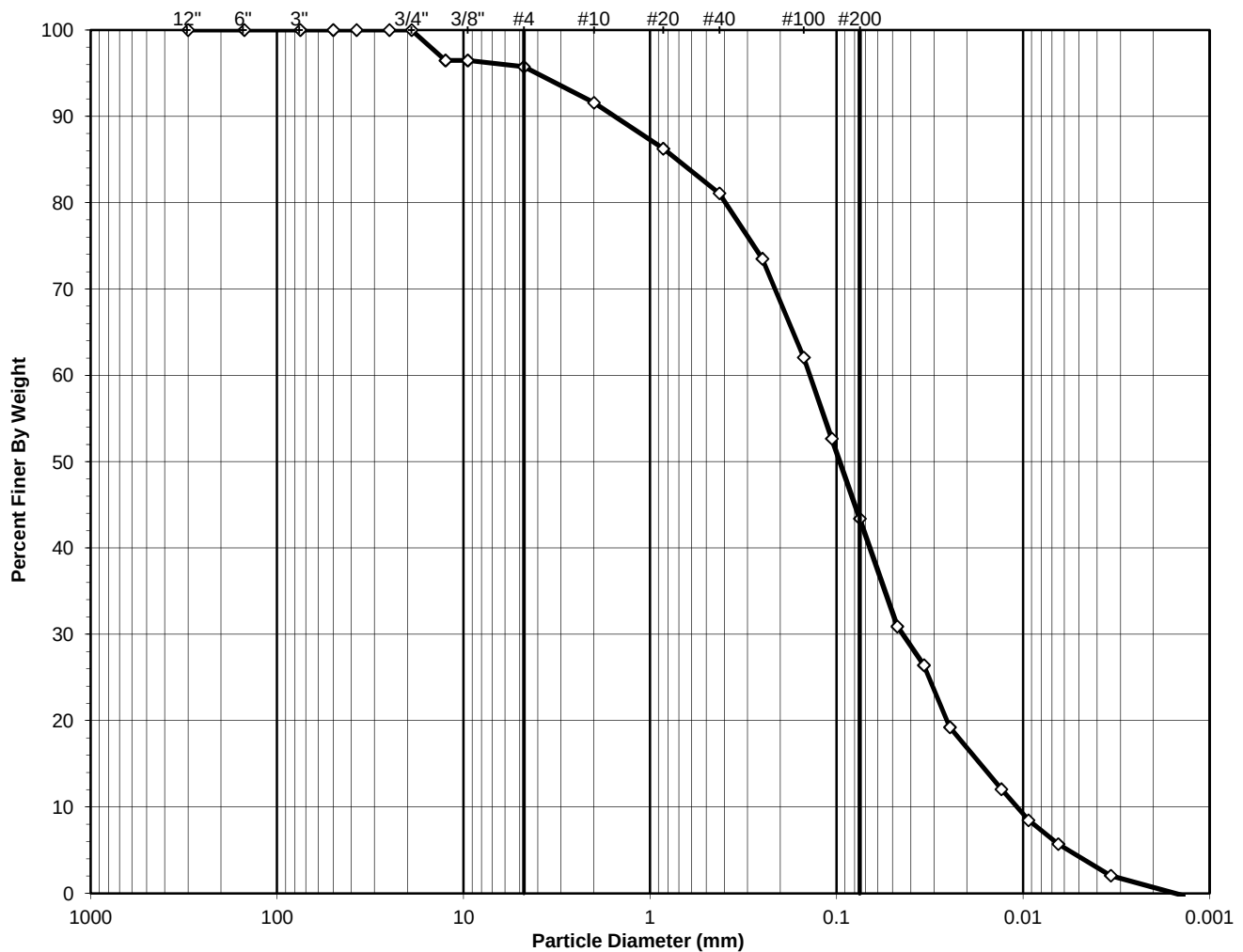
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-189

Boring No.: JB5-19-210S
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.10

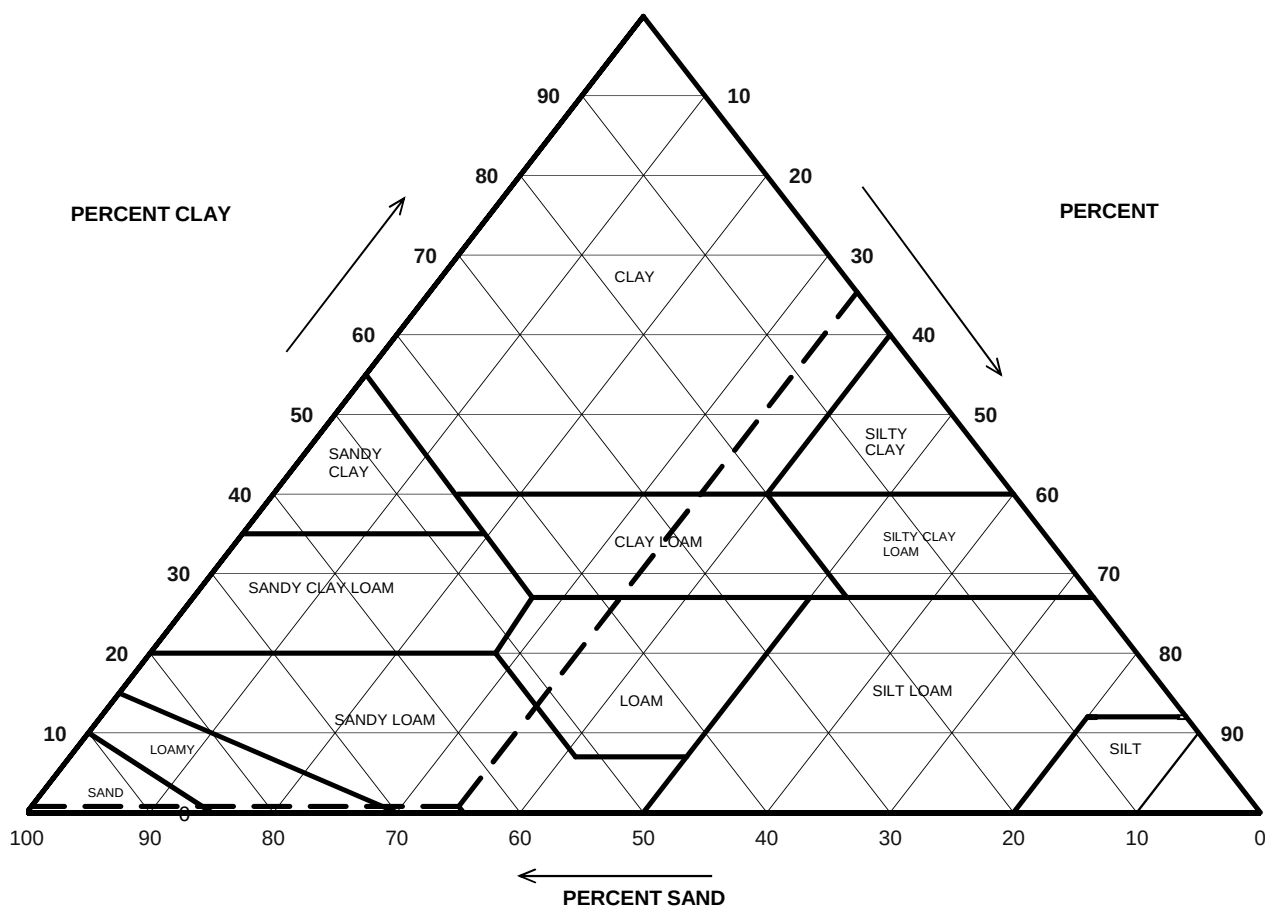
USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/13/20 Checked By JLK Date 2/17/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-189

Boring No.: JB5-19-210S
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	8.42	
2	91.58	Sand	59.15	64.59
0.05	32.43	Silt	31.73	34.64
0.002	0.70	Clay	0.70	0.77

USDA Classification: **SANDY LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-189

Boring No.: JB5-19-210S
 Depth (ft): 0.0-2.0
 Sample No.: SpT-1
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1621	Tare No.:	NA	Tare No.:	1621	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	300.05	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	300.05	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	273.03	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	273.03	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	147.11	Weight of Tare (g):	NA	Weight of Tare (g):	147.11	Weight of Tare (g):	NA
Weight of Water (g):	27.02	Weight of Water (g):	NA	Weight of Water (g):	27.02	Weight of Water (g):	NA
Weight of Dry Soil (g):	125.92	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	125.92	Weight of Dry Soil (g):	NA
Moisture Content (%):	21.5	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	125.92	Total Dry Weight of Sample (g):	125.92	Dry Weight of Sample (g):	125.92	Total Dry Weight of Sample (g):	125.92
Tare No. (Sub-Specimen)	1621	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1621	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	300.05	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	300.05	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	147.11	Dry Weight of - 3/4" Sample (g):	125.92	Weight of Tare (g):	147.11	Dry Weight of - 3/4" Sample (g):	125.92
Sub-Specimen Wet Weight (g):	152.94	Dry Weight -3/4" +3/8" Sample (g):	4.44	Sub-Specimen Wet Weight (g):	152.94	Dry Weight -3/4" +3/8" Sample (g):	4.44
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	121.48	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	121.48
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	4.44	(**)	3.53	96.47	96
3/8"	9.5	0.00	0.00	3.53	96.47	96
#4	4.75	0.93	0.74	4.26	95.74	96
#10	2	5.23	4.15	8.42	91.58	92
#20	0.85	6.71	(**)	13.75	86.25	86
#40	0.425	6.50	5.16	18.91	81.09	81
#60	0.25	9.55	7.58	26.49	73.51	74
#100	0.15	14.40	11.44	37.93	62.07	62
#140	0.106	11.84	9.40	47.33	52.67	53
#200	0.075	11.67	9.27	56.60	43.40	43
Pan	-	54.65	43.40	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/17/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-210S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	0.0-2.0
Project No.:	2020-002-001	Sample No.:	SpT-1
Lab ID:	2020-002-001-189	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	23.0	22.3	5.78	12.8	0.0473	71.2	30.9
2	20.5	22.3	5.78	13.2	0.0340	60.9	26.4
4	16.5	22.3	5.78	14.0	0.0247	44.3	19.2
15	12.5	22.3	5.78	14.7	0.0131	27.8	12.1
30	10.5	22.3	5.78	15.0	0.0094	19.5	8.5
64	9.0	22.2	5.82	15.3	0.0065	13.2	5.7
240	7.0	22.1	5.86	15.7	0.0034	4.7	2.1
1440	5.5	22.7	5.63	15.9	0.0014	-0.6	-0.2

Soil Specimen Data

Tare No.:	972	Percent Finer than # 200:	43.40
Wt. of Tare & Dry Material (g):	128.33		
Weight of Tare (g):	99.43	Specific Gravity:	2.70 Assumed
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	23.90		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/13/20	Checked By	JLK	Date	2/17/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-189

Boring No.: JB5-19-210S
Depth (ft): 0.0-2.0
Sample No.: SpT-1
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	19
Wt. of Tare & Wet Sample (g)	21.89
Wt. of Tare & Dry Sample (g)	19.54
Weight of Tare (g)	8.27
Weight of Water (g)	2.35
Weight of Dry Sample (g)	11.27

Water Content (%)	20.9

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>FS</i>	<i>Date</i>	<i>2/11/20</i>	<i>Checked By</i>	<i>JLK</i>	<i>Date</i>	<i>2/11/20</i>

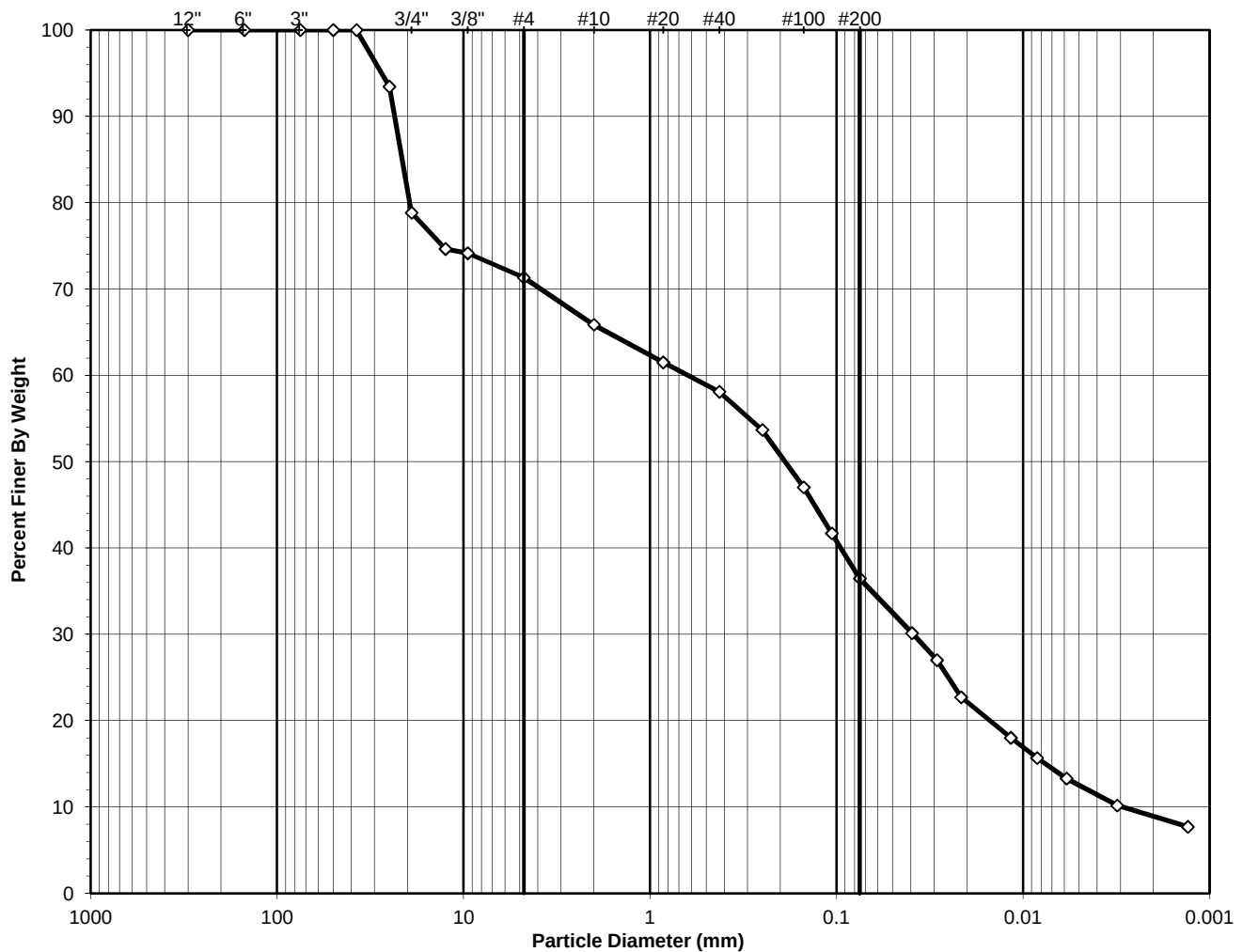
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-190

Boring No.: JB5-19-210S
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.19

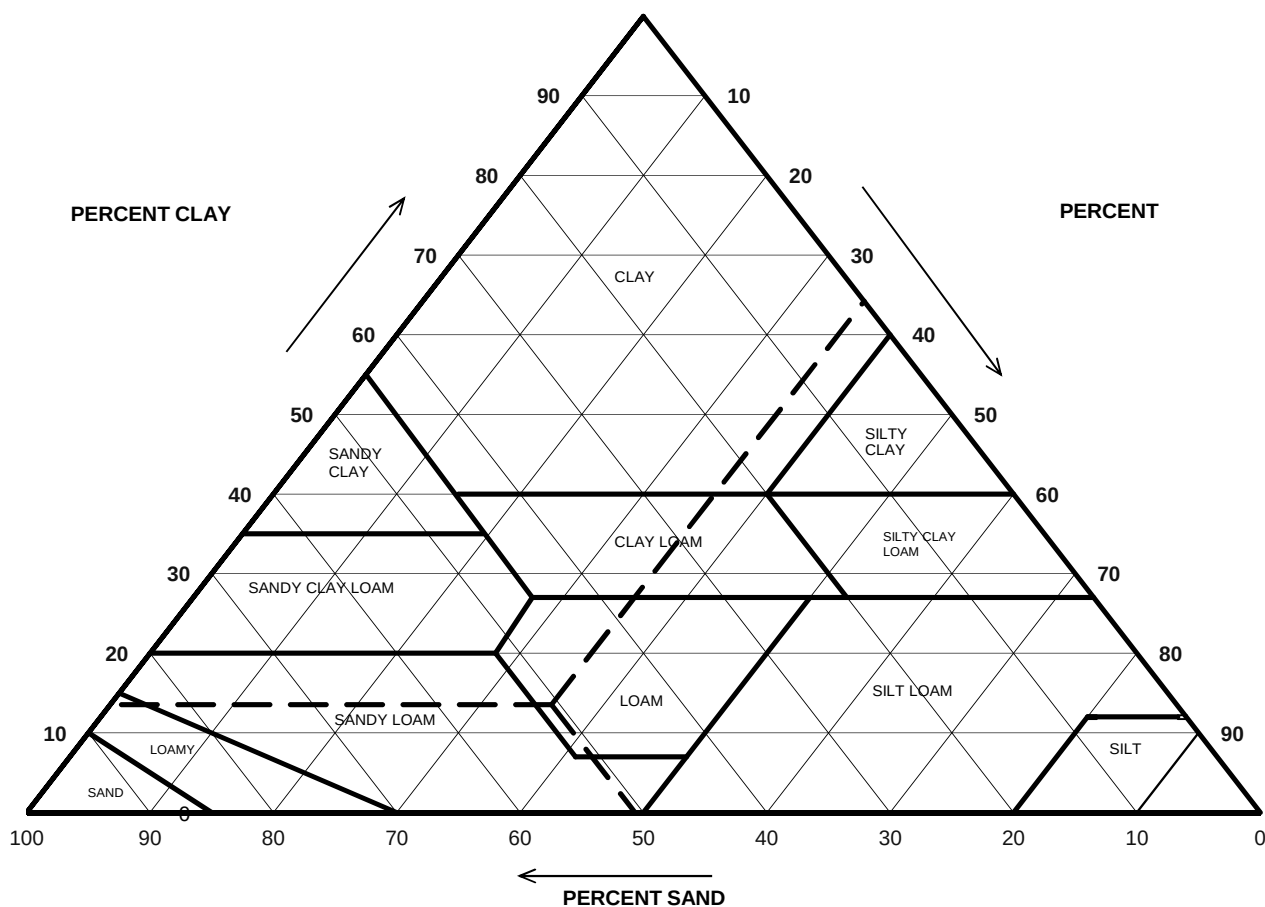
USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/19/20 Checked By KC Date 2/21/20
 page 1 of 4 DCN: CT-S73J, DATE 5/22/17, REV. 1e

USDA CLASSIFICATION CHART

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-190

Boring No.: JB5-19-210S
Depth (ft): 4.0-8.0
Sample No.: SpT-3/4
Soil Color: Brown



USDA SUMMARY				
Particle Size (mm)	Percent Finer		Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		Gravel	34.13	
2	65.87	Sand	33.39	50.69
0.05	32.48	Silt	23.57	35.78
0.002	8.91	Clay	8.91	13.53

USDA Classification: **LOAM**

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-190

Boring No.: JB5-19-210S
 Depth (ft): 4.0-8.0
 Sample No.: SpT-3/4
 Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1486	Tare No.:	NA	Tare No.:	1486	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	512.13	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	512.13	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	512.13	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	512.13	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.95	Weight of Tare (g):	NA	Weight of Tare (g):	144.95	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	367.18	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	367.18	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	367.18	Total Dry Weight of Sample (g):	367.18	Dry Weight of Sample (g):	367.18	Total Dry Weight of Sample (g):	367.18
Tare No. (Sub-Specimen)	1486	Wet Weight of +3/4" Sample (g):	77.71	Tare No. (Sub-Specimen)	1486	Wet Weight of +3/4" Sample (g):	77.71
Wt. of Tare & Wet Sub-Specimen (g):	512.13	Dry Weight of + 3/4" Sample (g):	77.71	Wt. of Tare & Wet Sub-Specimen (g):	512.13	Dry Weight of + 3/4" Sample (g):	77.71
Weight of Tare (g):	144.95	Dry Weight of - 3/4" Sample (g):	289.47	Weight of Tare (g):	144.95	Dry Weight of - 3/4" Sample (g):	289.47
Sub-Specimen Wet Weight (g):	367.18	Dry Weight -3/4" +3/8" Sample (g):	17.21	Sub-Specimen Wet Weight (g):	367.18	Dry Weight -3/4" +3/8" Sample (g):	17.21
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	275.90	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	275.90
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*) 0.00	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	24.08	6.56	6.56	93.44	93
3/4"	19	53.63	14.61	21.16	78.84	79
1/2"	12.5	15.40	(**) 4.19	25.36	74.64	75
3/8"	9.5	1.81	0.49	25.85	74.15	74
#4	4.75	10.40	2.83	28.68	71.32	71
#10	2	20.00	5.45	34.13	65.87	66
#20	0.85	16.04	(**) 4.37	38.50	61.50	62
#40	0.425	12.50	3.40	41.90	58.10	58
#60	0.25	16.22	4.42	46.32	53.68	54
#100	0.15	24.42	6.65	52.97	47.03	47
#140	0.106	19.58	5.33	58.30	41.70	42
#200	0.075	19.22	5.23	63.54	36.46	36
Pan	-	133.88	36.46	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/19/20 Checked By KC Date 2/21/20

HYDROMETER ANALYSIS

ASTM D7928-17

Client:	D'Appolonia	Boring No.:	JB5-19-210S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	4.0-8.0
Project No.:	2020-002-001	Sample No.:	SpT-3/4
Lab ID:	2020-002-001-190	Soil Color:	Brown

Elapsed Time (min)	Reading rm	Temp. (C°)	Offset rd,m	Effective Depth, Hm (cm)	D (mm)	Mass Percent (%) Finer, Nm	Mass Percent (%) Finer, Nm'
0	NA	NA	NA	NA	NA	NA	NA
1	44.0	23.2	5.45	9.0	0.0394	82.7	30.1
2	40.0	23.2	5.45	9.7	0.0289	74.1	27.0
4	34.5	23.2	5.45	10.7	0.0215	62.3	22.7
15	28.5	23.2	5.45	11.8	0.0116	49.4	18.0
30	25.5	23.2	5.45	12.3	0.0084	43.0	15.7
65	22.5	23.1	5.48	12.9	0.0058	36.5	13.3
240	18.5	23.1	5.48	13.6	0.0031	27.9	10.2
1440	15.5	22.7	5.63	14.1	0.0013	21.2	7.7

Soil Specimen Data

Tare No.:	1019	Percent Finer than # 200:	36.46
Wt. of Tare & Dry Material (g):	150.93		
Weight of Tare (g):	99.71	Specific Gravity:	2.69 Measured
Weight of Deflocculant (g):	5.0		
Weight of Dry Material (g):	46.22		

Notes: Hydrometer test is performed on - # 200 sieve material.

Hydrometer - 152H	G- 1819
Cylinder	G- 771
Thermometer	G- 1505
Balance	G- 657
#200 Sieve	G- 1944
Foam Inhibitor Used	No

Tested By	TO	Date	2/19/20	Checked By	KC	Date	2/21/20

page 4 of 4

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-190

Boring No.: JB5-19-210S
Depth (ft): 4.0-8.0
Sample No.: SpT-3/4
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	2
Wt. of Tare & Wet Sample (g)	49.56
Wt. of Tare & Dry Sample (g)	46.20
Weight of Tare (g)	8.29
Weight of Water (g)	3.36
Weight of Dry Sample (g)	37.91

Water Content (%) **8.9**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-210S
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	4.0-8.0
Project No.:	2020-002-001	Sample No.:	SpT-3/4
Lab ID:	2020-002-001-190	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.95	748.81
Temperature (°C):	25.2	25.0
Weight of Pycnometer & Water (g):	683.95	684.53
Tare Number:	708	506
Weight of Tare & Dry Soil (g):	195.19	197.65
Weight of Tare (g):	93.61	96.65
Weight of Dry Soil (g):	101.58	101.00
Specific Gravity of Soil @ Measured Temperature:	2.633	2.751
Specific Gravity of Water @ Measured Temperature:	0.99700	0.99705
Conversion Factor for Measured Temperature:	0.99879	0.99884
Specific Gravity @ 20° Celsius:	2.636	2.754

Average Specific Gravity @ 20° Celsius	2.69

Tested By TO Date 2/14/20 Checked By JLK Date 2/17/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

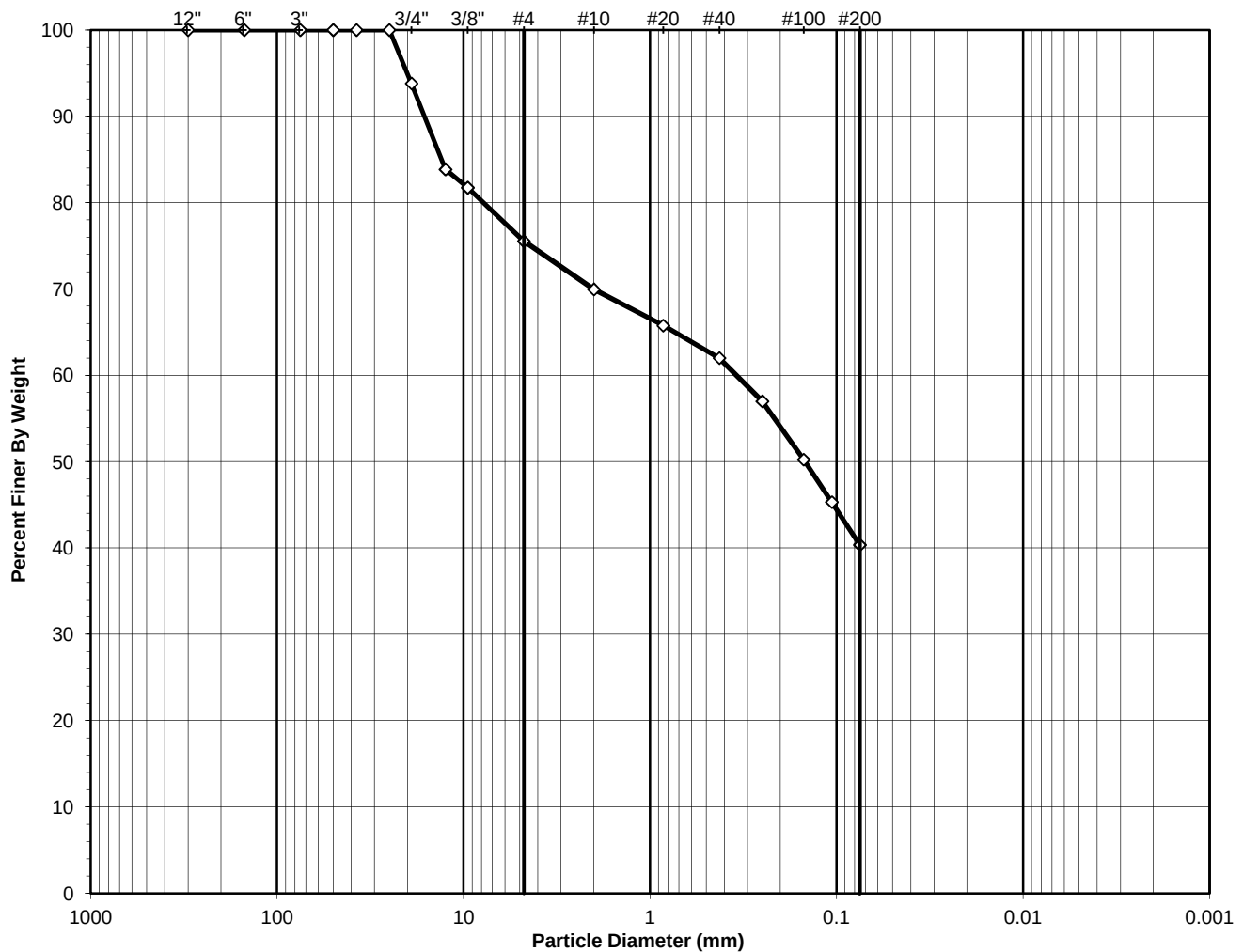
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-191

Boring No.: JB5-19-210SA
 Depth (ft): 12.0-14.9
 Sample No.: SpT-2/3
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.15

USCS Classification:
SILTY SAND WITH GRAVEL
(NON-PLASTIC FINES)

Tested By DS Date 2/18/20 Checked By JLK Date 2/18/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client:	D'Appolonia	Boring No.:	JB5-19-210SA
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	12.0-14.9
Project No.:	2020-002-001	Sample No.:	SpT-2/3
Lab ID:	2020-002-001-191	Soil Color:	Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	2020	Tare No.:	NA	Tare No.:	2020	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	544.08	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	544.08	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	544.08	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	544.08	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.94	Weight of Tare (g):	NA	Weight of Tare (g):	145.94	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA	Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	398.14	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	398.14	Weight of Dry Soil (g):	NA
Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	398.14	Total Dry Weight of Sample (g):	398.14	Dry Weight of Sample (g):	398.14	Total Dry Weight of Sample (g):	398.14
Tare No. (Sub-Specimen)	2020	Wet Weight of +3/4" Sample (g):	24.66	Tare No. (Sub-Specimen)	2020	Wet Weight of +3/4" Sample (g):	24.66
Wt. of Tare & Wet Sub-Specimen (g):	544.08	Dry Weight of + 3/4" Sample (g):	24.66	Wt. of Tare & Wet Sub-Specimen (g):	544.08	Dry Weight of + 3/4" Sample (g):	24.66
Weight of Tare (g):	145.94	Dry Weight of - 3/4" Sample (g):	373.48	Weight of Tare (g):	145.94	Dry Weight of - 3/4" Sample (g):	373.48
Sub-Specimen Wet Weight (g):	398.14	Dry Weight -3/4" +3/8" Sample (g):	48.05	Sub-Specimen Wet Weight (g):	398.14	Dry Weight -3/4" +3/8" Sample (g):	48.05
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	328.41	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	328.41
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	24.66	6.19	6.19	93.81	94
1/2"	12.5	39.62	9.95	16.15	83.85	84
3/8"	9.5	8.43	(**)	2.12	81.74	82
#4	4.75	24.68	6.20	24.46	75.54	76
#10	2	22.22	5.58	30.04	69.96	70
#20	0.85	16.67	(**)	34.23	65.77	66
#40	0.425	15.01	3.77	38.00	62.00	62
#60	0.25	19.93	5.01	43.00	57.00	57
#100	0.15	26.92	6.76	49.77	50.23	50
#140	0.106	19.57	4.92	54.68	45.32	45
#200	0.075	19.77	4.97	59.65	40.35	40
Pan	-	160.66	40.35	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By	DS	Date	2/18/20	Checked By	JLK	Date	2/18/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-191

Boring No.: JB5-19-210SA
Depth (ft): 12.0-14.9
Sample No.: SpT-2/3
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	30
Wt. of Tare & Wet Sample (g)	41.29
Wt. of Tare & Dry Sample (g)	38.11
Weight of Tare (g)	8.46
Weight of Water (g)	3.18
Weight of Dry Sample (g)	29.65

Water Content (%)	10.7

NON - PLASTIC MATERIAL

<i>Tested By</i>	<i>FS</i>	<i>Date</i>	<i>2/11/20</i>	<i>Checked By</i>	<i>JLK</i>	<i>Date</i>	<i>2/11/20</i>

SPECIFIC GRAVITY

ASTM D 854-14

Client:	D'Appolonia	Boring No.:	JB5-19-210SA
Client Reference:	NRCS-Jewell Brook 172719-17	Depth (ft):	12.0-14.9
Project No.:	2020-002-001	Sample No.:	SpT-2/3
Lab ID:	2020-002-001-191	Visual Description:	Brown Silty Clay

(Minus No.4 sieve material, oven dried)

Replicate Number	1	2
Pycnometer ID:	G 1917	G 1991
Weight of Pycnometer & Soil & Water (g):	746.34	747.98
Temperature (°C):	25.7	26.4
Weight of Pycnometer & Water (g):	683.89	684.35
Tare Number:	704	960
Weight of Tare & Dry Soil (g):	191.42	193.1
Weight of Tare (g):	90.43	92.75
Weight of Dry Soil (g):	100.99	100.35
Specific Gravity of Soil @ Measured Temperature:	2.620	2.733
Specific Gravity of Water @ Measured Temperature:	0.99687	0.99669
Conversion Factor for Measured Temperature:	0.99866	0.99848
Specific Gravity @ 20° Celsius:	2.624	2.737

Average Specific Gravity @ 20° Celsius	2.68

Tested By TO Date 2/14/20 Checked By JLK Date 2/17/20

DCN: CT-S5 Date: 3/26/18 Revision: 21

S:\Excel\Excel QA\Spreadsheets\Specific Gravity.xls

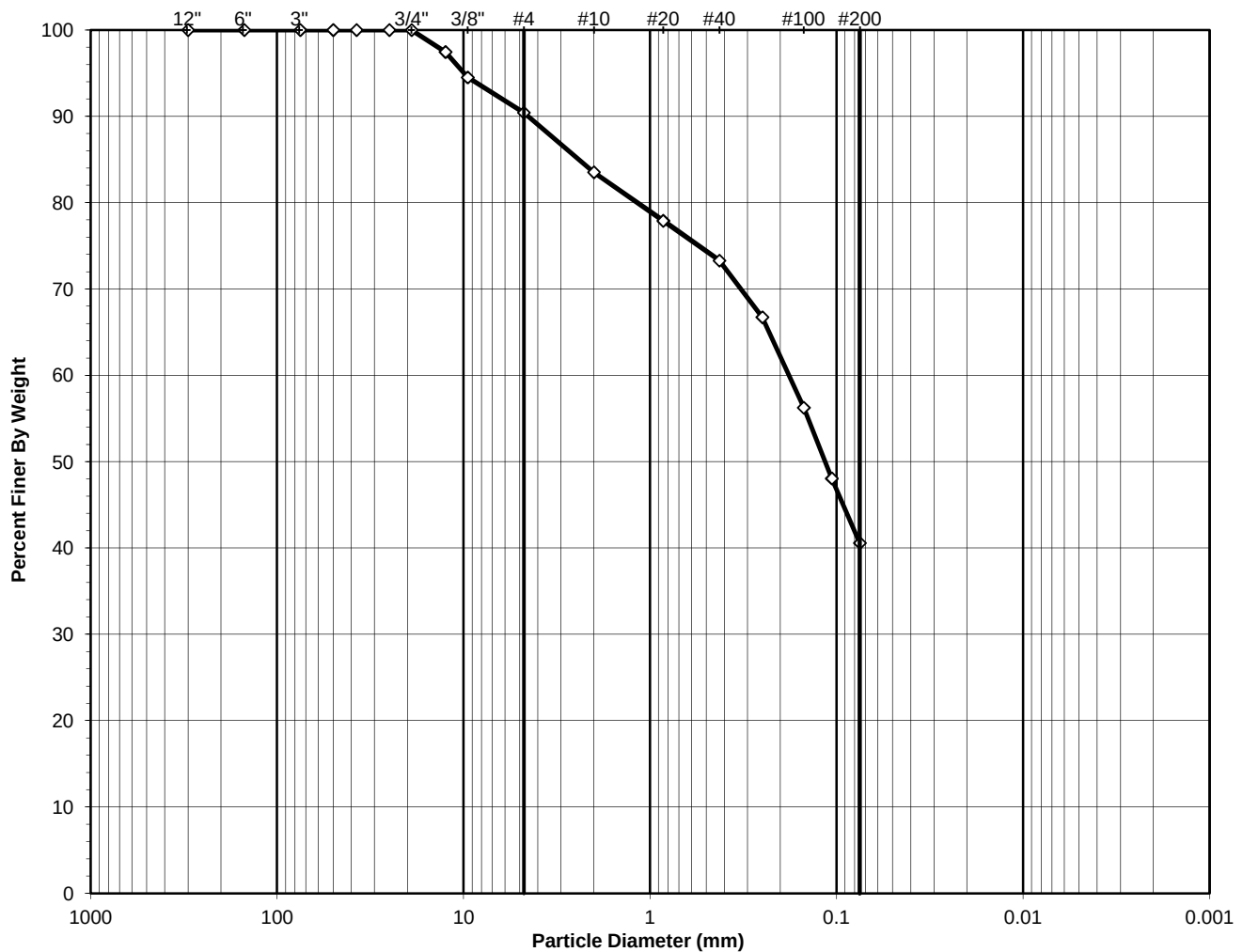
SIEVE AND HYDROMETER ANALYSIS

ASTM D6913 / D7928

Client: D'Appolonia
 Client Reference: NRCS-Jewell Brook 172719-17
 Project No.: 2020-002-001
 Lab ID: 2020-002-001-192

Boring No.: JB5-19-210SA
 Depth (ft): 20.5-21.3
 Sample No.: SpT-6
 Soil Color: Brown

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
SM, TESTED

D50 = 0.12

USCS Classification:
SILTY SAND
(NON-PLASTIC FINES)

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20
 page 1 of 2 DCN: CT-S73J, DATE 5/22/17, REV. 1e

WASH SIEVE ANALYSIS

ASTM D6913-17



Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-192

Boring No.: JB5-19-210SA
Depth (ft): 20.5-21.3
Sample No.: SpT-6
Soil Color: Brown

Moisture Content of Passing 3/4" Material				Moisture Content of Retained 3/4" Material			
Tare No.:	1448	Tare No.:	NA	Tare No.:	1448	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	339.68	Weight of Tare & Wet Sample (g):	NA	Wt. of Tare & Wet Sample (g):	339.68	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	322.41	Weight of Tare & Dry Sample (g):	NA	Wt. of Tare & Dry Sample (g):	322.41	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	137.88	Weight of Tare (g):	NA	Weight of Tare (g):	137.88	Weight of Tare (g):	NA
Weight of Water (g):	17.27	Weight of Water (g):	NA	Weight of Water (g):	17.27	Weight of Water (g):	NA
Weight of Dry Soil (g):	184.53	Weight of Dry Soil (g):	NA	Weight of Dry Soil (g):	184.53	Weight of Dry Soil (g):	NA
Moisture Content (%):	9.4	Moisture Content (%):	0.0	Moisture Content (%):	0.0	Moisture Content (%):	0.0
Dry Weight of Sample (g):	184.53	Total Dry Weight of Sample (g):	184.53	Dry Weight of Sample (g):	184.53	Total Dry Weight of Sample (g):	184.53
Tare No. (Sub-Specimen)	1448	Wet Weight of +3/4" Sample (g):	0.00	Tare No. (Sub-Specimen)	1448	Wet Weight of +3/4" Sample (g):	0.00
Wt. of Tare & Wet Sub-Specimen (g):	339.68	Dry Weight of + 3/4" Sample (g):	0.00	Wt. of Tare & Wet Sub-Specimen (g):	339.68	Dry Weight of + 3/4" Sample (g):	0.00
Weight of Tare (g):	137.88	Dry Weight of - 3/4" Sample (g):	184.53	Weight of Tare (g):	137.88	Dry Weight of - 3/4" Sample (g):	184.53
Sub-Specimen Wet Weight (g):	201.80	Dry Weight -3/4" +3/8" Sample (g):	10.14	Sub-Specimen Wet Weight (g):	201.80	Dry Weight -3/4" +3/8" Sample (g):	10.14
Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	174.39	Tare No. (-3/8" Sub-Specimen):	NA	Dry Weight of -3/8" Sample (g):	174.39
Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA	Wt. of Tare & Wet -3/8" Sub-Specimen (g):	NA	J - Factor (% Finer than 3/4"):	NA
Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA	Weight of Tare (g):	NA	J - Factor (% Finer than 3/8"):	NA
Sub-Specimen -3/8" Wet Weight (g):	NA			Sub-Specimen -3/8" Wet Weight (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100
6"	150	0.00	0.00	0.00	100.00	100
3"	75	0.00	0.00	0.00	100.00	100
2"	50	0.00	(*)	0.00	100.00	100
1 1/2"	37.5	0.00	0.00	0.00	100.00	100
1"	25	0.00	0.00	0.00	100.00	100
3/4"	19	0.00	0.00	0.00	100.00	100
1/2"	12.5	4.69	(**)	2.54	97.46	97
3/8"	9.5	5.45	2.95	5.50	94.50	95
#4	4.75	7.53	4.08	9.58	90.42	90
#10	2	12.73	6.90	16.47	83.53	84
#20	0.85	10.38	(**)	22.10	77.90	78
#40	0.425	8.50	4.61	26.71	73.29	73
#60	0.25	12.11	6.56	33.27	66.73	67
#100	0.15	19.32	10.47	43.74	56.26	56
#140	0.106	15.14	8.20	51.94	48.06	48
#200	0.075	13.80	7.48	59.42	40.58	41
Pan	-	74.88	40.58	100.00	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" and - 3/8" sieve analysis is based on the Weight of the Dry Specimen

Tested By DS Date 2/13/20 Checked By JLK Date 2/14/20

ATTERBERG LIMITS

ASTM D 4318-17

Client: D'Appolonia
Client Reference: NRCS-Jewell Brook 172719-17
Project No.: 2020-002-001
Lab ID: 2020-002-001-192

Boring No.: JB5-19-210SA
Depth (ft): 20.5-21.3
Sample No.: SpT-6
Color: Brown
(Minus No. 40 sieve material)

As Received Water Content

Tare Number	21
Wt. of Tare & Wet Sample (g)	35.19
Wt. of Tare & Dry Sample (g)	32.71
Weight of Tare (g)	8.34
Weight of Water (g)	2.48
Weight of Dry Sample (g)	24.37

Water Content (%) **10.2**

NON - PLASTIC MATERIAL

Tested By *FS* *Date* *2/11/20* *Checked By* *JLK* *Date* *2/11/20*

APPENDIX C
GEOLOGIC MAPS