APPENDIX C – FEMA FIRMETTE

National Flood Hazard Layer FIRMette

FEMA

119°47'24"W 39°10'24"N

119°46'47"W 39°9'56"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/1/2022 at 1:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

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- With BFE or Depth *Zone AE, AO, AH, VE, AR*
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- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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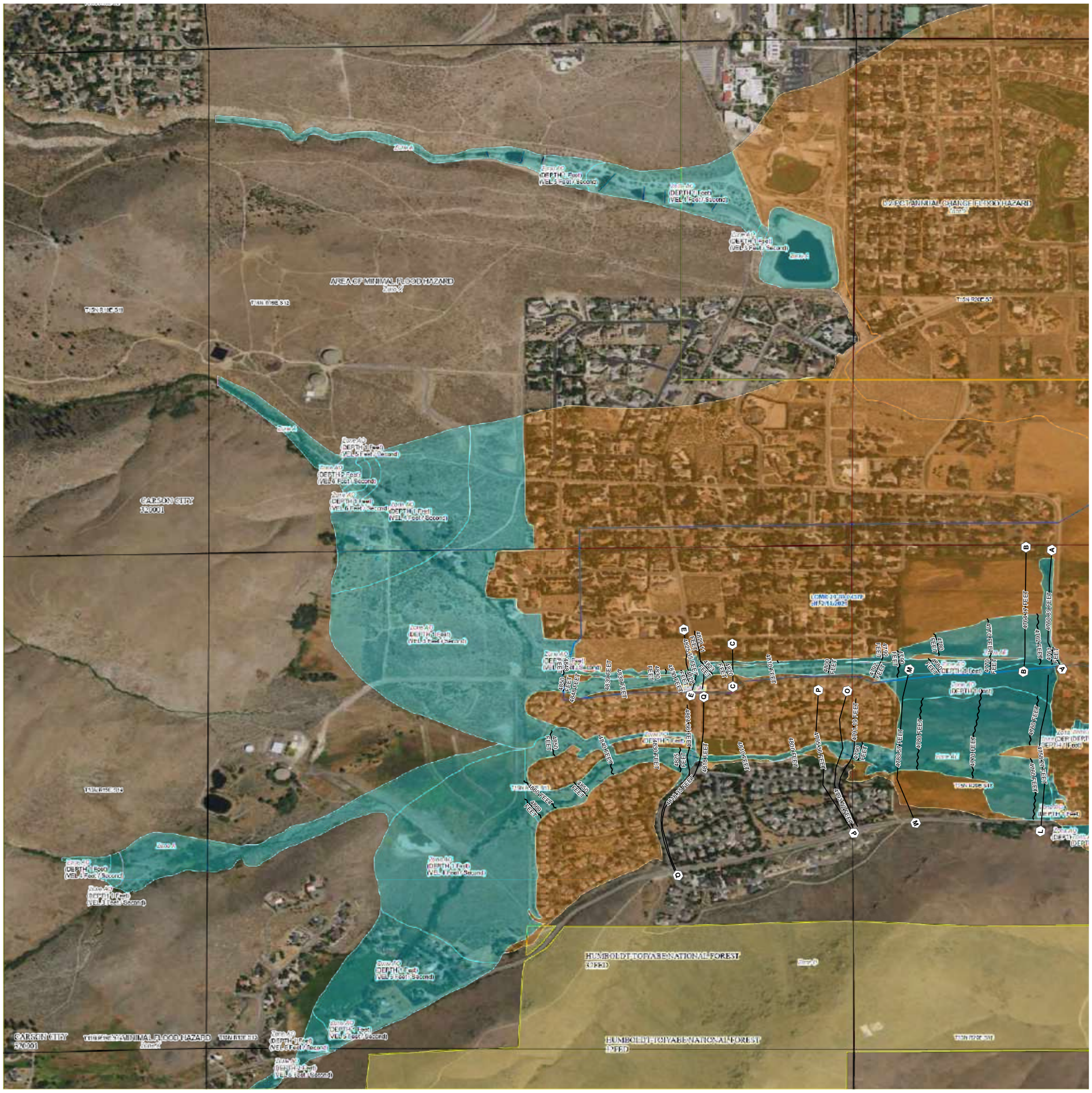
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/2/2022 at 12:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

119°48'45.47"W 39°11'21.61"N



119°46'52.12"W 39°9'15.93"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
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- 17.5 Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **8/2/2022 12:36 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

N

1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 Feet

0 50 100 200 300 400 Meters

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL **91** OF **228**

Panel Contains:

COMMUNITY	NUMBER	PANEL
HUMBOLDT-TOIYABE NATIONAL FOREST	32FED	0091
CARSON CITY	320001	0091

MAP NUMBER
3200010091F
EFFECTIVE DATE
February 19, 2014

APPENDIX D – Hydraulic and Flood Mitigation Analysis

House Moran Consulting, Inc.
Water Resources and Environmental Engineering

September 13, 2022

Mr. Robert Fellows, PE
Chief Stormwater Engineer
Public Works Department
Carson City
3505 Butti Way
Carson City, NV 89701

SUBJECT: Andersen Ranch West – Preliminary CLOMR Results – Carson City, Nevada

Dear Mr. Fellows:

The purpose of this Memo is to present the preliminary results and mitigation associated with the hydraulic analysis of Ash Canyon Creek in support of the FEMA Conditional Letter of Map Revision (CLOMR) to be submitted in association of the proposed Andersen Ranch West development. The proposed development is located within a Zone AE flood zone without a regulatory floodway, which includes Base Flood Elevations (BFEs) that have been determined by detailed methods, as shown on the effective FEMA Flood Insurance Rate Map (FIRM) panel #3200010091F, dated 2/19/2014. Additionally, a LOMR (20-09-0437P) that includes the Andersen Ranch West parcel was completed by House Moran and became effective 2/18/2021. The LOMR revised the existing conditions FEMA model and mapping. The site boundary and effective FEMA mapping are illustrated on Figure 1 below.

Figure 1 – Effective FEMA Mapping and Site Boundary

Approach

To evaluate the proposed changes at Andersen Ranch West and the effect of mitigation, House Moran used the HEC-RAS 2D model prepared in the LOMR referenced above as the base model. The model was updated to the latest version of HEC-RAS (v6.2). A new existing conditions scenario was created using improved details in the vicinity of the site. Proposed conditions scenarios were then created using the proposed grading plans provided by Lumos & Associates.

To minimize the affects of the proposed development on the floodplain the site was designed with the intent to mimic existing conditions flow patterns and floodplain storage as much as possible. No changes were made to the Ash Canyon Creek channel except for improvements made in association of the North Ormsby Blvd/Washington St culvert extension. In existing conditions, a small portion of flood flow enters the southwest corner of the site and then sheet flows east through the existing field to North Ormsby Blvd. To simulate the attenuation associated with sheet flow across the field, a detention basin was added at the southwest corner of the proposed development to capture and attenuate the peak portion of the hydrograph. In existing conditions, the low-lying area along the embankment of North Ormsby Blvd creates a small amount of floodplain storage. To maintain this floodplain storage in proposed conditions a system of basins was created parallel to North Ormsby Blvd and connected by a culvert below the entrance roads.

Southwest Detention Basin

The details of the southwest detention basin are illustrated on Exhibit 01 included in the attachments. As stated in the approach description, the purpose of the detention basin is to capture and attenuate overflow into the left overbank from the existing Ash Canyon Creek culvert crossing just upstream of the proposed Andersen Ranch West Development. To direct flood overflow into the basin a sag in the proposed pedestrian path will be designed. The peak flow conveyed through the sag in the pedestrian path is approximately 30 cfs. The basin has two pipe outlets and an emergency overflow. Outlet 1 is located at the northeast corner of the basin and designed to be the low flow outlet. The invert of outlet 1 will be at the invert of the basin and will connect to the storm drainpipe and conveyed east to the North Ormsby detention basin 2. Outlet 2 is located at the southeast corner of the basin and designed to be the secondary outlet. The invert will be just above the top of the outlet 1 pipe. Outlet 2 will discharge approximately 200 feet east into a small ditch that will run parallel to Ash Canyon Creek and discharge into the North Ormsby detention basin 1. The emergency overflow is located on the south side of the basin and will overflow towards Ash Canyon Creek if activated. Preliminary model results of the southwest detention basin are included in Table 1 below.

Table 1: Southwest Detention Basin – Preliminary Results

Pond Invert (ft)	Max WSE - 100yr (ft)	Max Depth - 100yr (ft)	Volume - 100yr (ac-ft)	Dicharge 100yr (cfs)		
				Outlet 1	Outlet 2	Emergency Overflow
4775.3	4779.5	4.2	1.3	13	15	0

North Ormsby Basins and North Ormsby/West Washington Culvert Extension

The details of North Ormsby detention basin system and the North Ormsby/West Washington culvert extension are illustrated on Exhibit 2 included in the attachments. As stated in the approach description, the purpose of basin system is to maintain floodplain storage similar to existing conditions. Table 2 below contains the floodplain storage volume calculated in existing and proposed conditions at Water Surface Elevation (WSE) 4761-ft.

Table 2: Floodplain Storage Volume parallel to North Ormsby Blvd

Scenario	WSE (ft)	Volume (ac-ft)
Existing Conditions	4761	1.6
Proposed Conditions	4761	1.7

In addition to flow discharged to the basin system from the southwest detention basin, a low area in the pedestrian path/access along the left overbank of Ash Canyon Creek will be designed to connect the basin system with the Ash Canyon Creek floodplain.

The North Ormsby/West Washington culvert will be extended approximately 80 feet upstream and replace the existing culvert under the small dirt road. Approximately 100 feet of the Ash Canyon Creek channel will be improved upstream of the extended culvert to lower the channel and improve the transition into the entrance of the extended culvert.

Water Surface Elevations and Peak Flow Comparison

To ensure the proposed Andersen Ranch Development does not adversely impact flooding to surrounding areas maximum WSE's, average depths, and peak flows from the HEC-RAS 2D Existing and Proposed Conditions model will be analyzed. The attached Exhibit 3 illustrates the different evaluation methods and locations. The different methods are necessary due to the variety of flow directions and types of flooding that occur in this area. Along the main channel of Ash Canyon Creek, a comparison of WSE's is appropriate. South of Ash Canyon Creek, flow that enters the right overbank splits away from Ash Canyon Creek and flows south towards Kings Canyon Creek. In this region floodplain cross-sections are used to ensure the peak flow leaving Ash Canyon Creek has not increased. Existing and proposed conditions peak flows taken at four floodplain cross-sections are included in Table 3 below.

Table 3: Floodplain Cross-Section Peak Flows

Peak Flow XS	EX Cond Peak Flow (cfs)	PR Cond Peak Flow (cfs)
Q-XS 01	850	850
Q-XS 02	507	507
Q-XS 03	239	188
Q-XS 04	167	160

To the east of North Ormsby Blvd, the surface flow transitions to shallow flooding. Due to the small variations in model results between the two scenarios (Existing Conditions vs Proposed Conditions) caused by minor differences in the 2D mesh, variable time steps, and other model parameters that are variable, it is advisable to use an average depth method to evaluate regions affected by shallow flooding. The average depth zonal method was used to divide the regions affected by shallow flooding into

conveyance zones. Zonal statistics are then used to calculate the average depth in each zone. Results for two of the zones are included in Table 4 below. This is the same method that was used in the LOMR referenced at the beginning of the memo.

Table 4: Shallow Flooding Average Depth by Zone

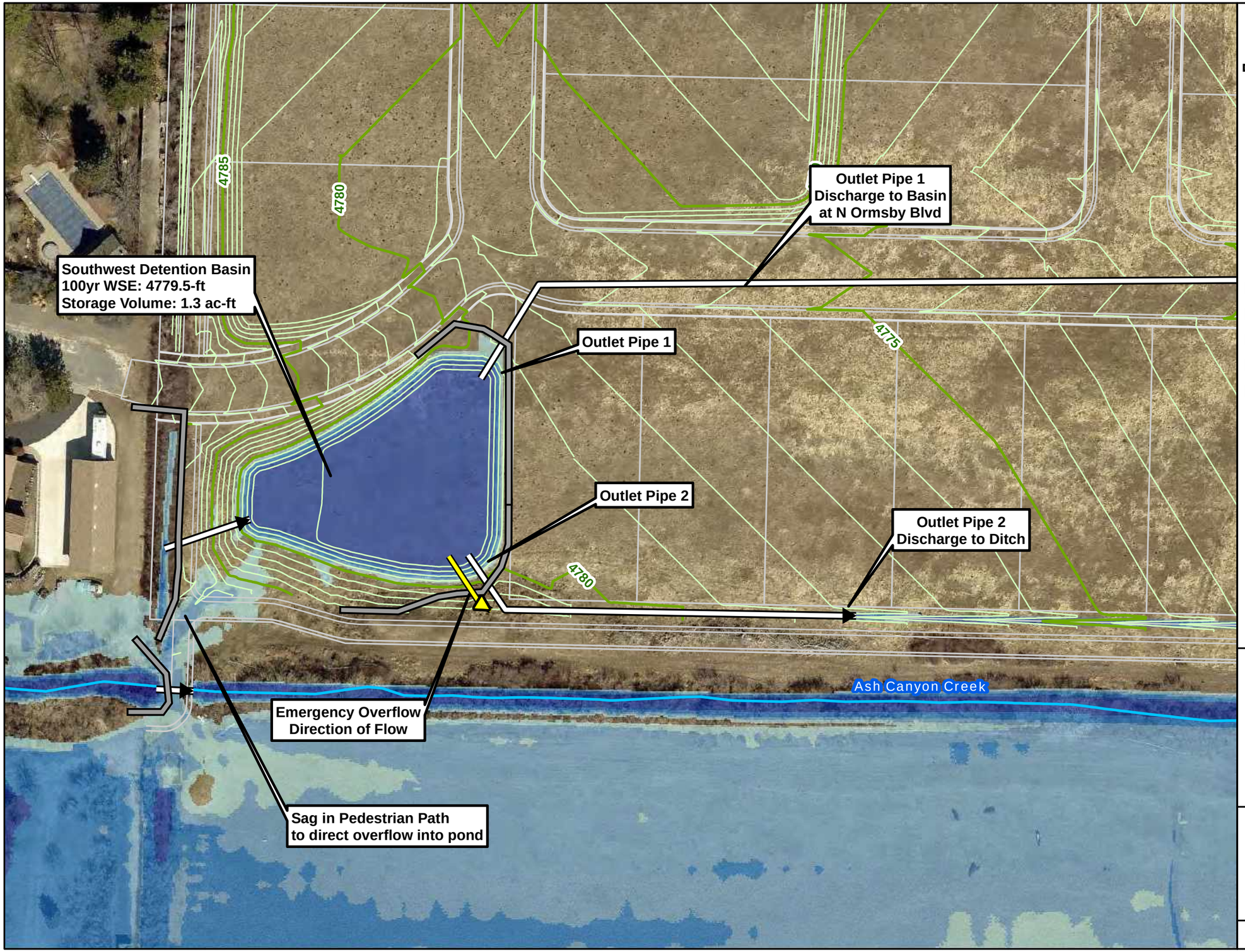
Depth Zone	Average Depth (ft)		Avg Depth Difference (PR minus EX) (ft)
	Existing Cond	Proposed Cond	
1	0.162	0.162	0.000
2	0.249	0.227	-0.023

Very truly yours,
HOUSE MORAN CONSULTING, INC.
Nevada PE Firm No. 23484

Greg Bowers, PE, CFM
Senior Project Manager

ATTACHMENTS

1. Exhibit 01 – Southwest Detention Basin
2. Exhibit 02 – North Ormsby Blvd Detention Basin
3. Exhibit 03 – EX Cond vs PR Cond WSE, Peak Flow, Avg Depth Comparison



Legend

- HEC-RAS 2D Connections - Proposed
- HEC-RAS Culvert Barrels - Proposed
- Proposed Grading Plan Layers

Contours - Proposed

- Major (5-ft)
- Minor (1-ft)

100yr Flood Depths - Proposed (ft)

- 0 - 0.5
- 0.6 - 1
- 1.1 - 2
- 2.1 - 5
- 5.1 - 7.4

0 30 60 Feet

N W E S

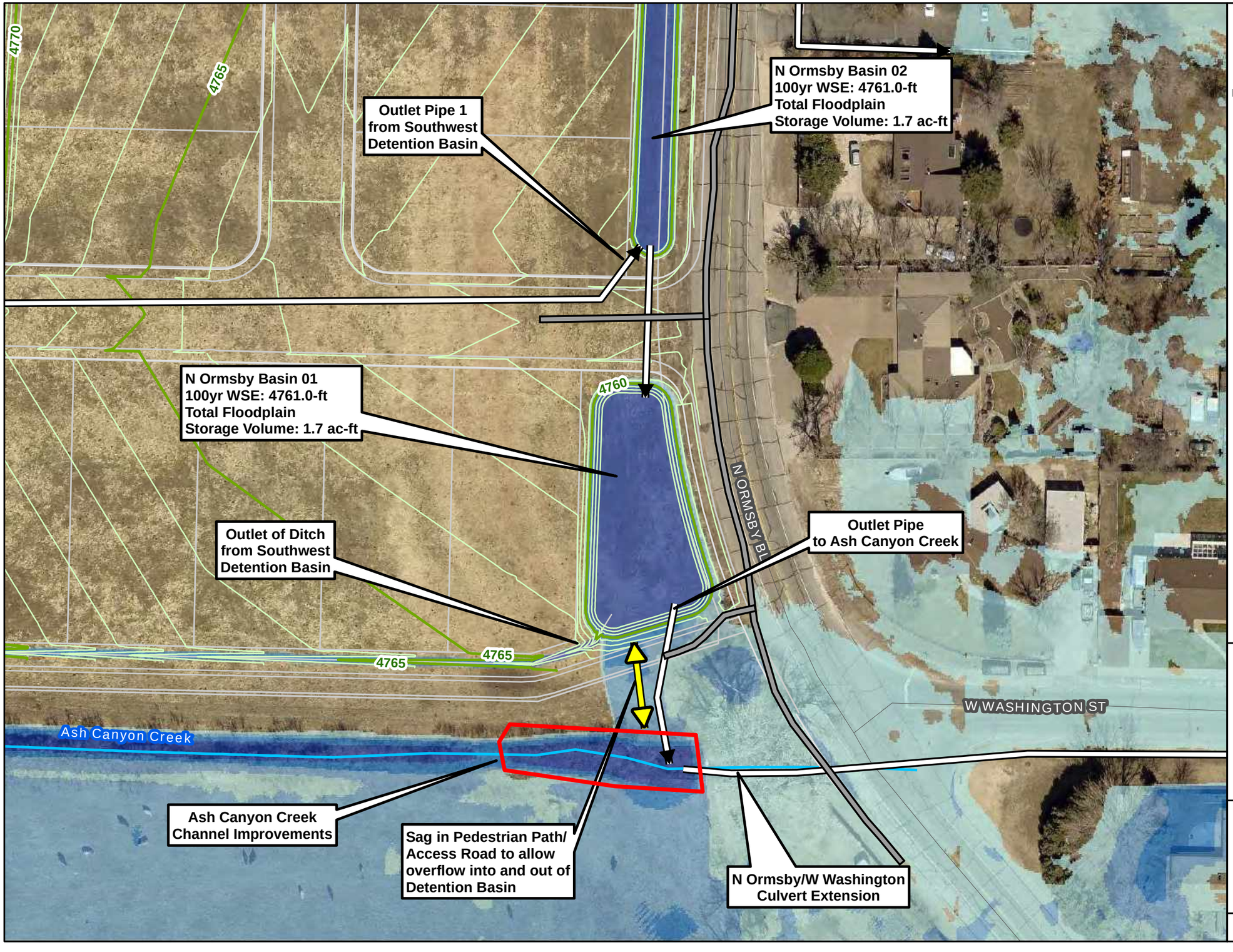
Exhibit 01
Southwest Detention Basin

Andersen Ranch West

Prepared By:

House Moran Consulting, Inc.
Water Resources and Environmental Engineering
10399 Double R Boulevard Suite 110
Reno, NV 89521
Office: (775) 293-4000

Prepared On: 9/13/2022



Legend

- Streets
- HEC-RAS 2D Connections - Proposed
- HEC-RAS Culvert Barrels - Proposed
- Proposed Grading Plan Layers

Contours - Proposed

- Major (5-ft)
- Minor (1-ft)

100yr Flood Depths - Proposed (ft)

- 0 - 0.5
- 0.6 - 1
- 1.1 - 2
- 2.1 - 5
- 5.1 - 7.4

0 30 60 Feet

N W E S

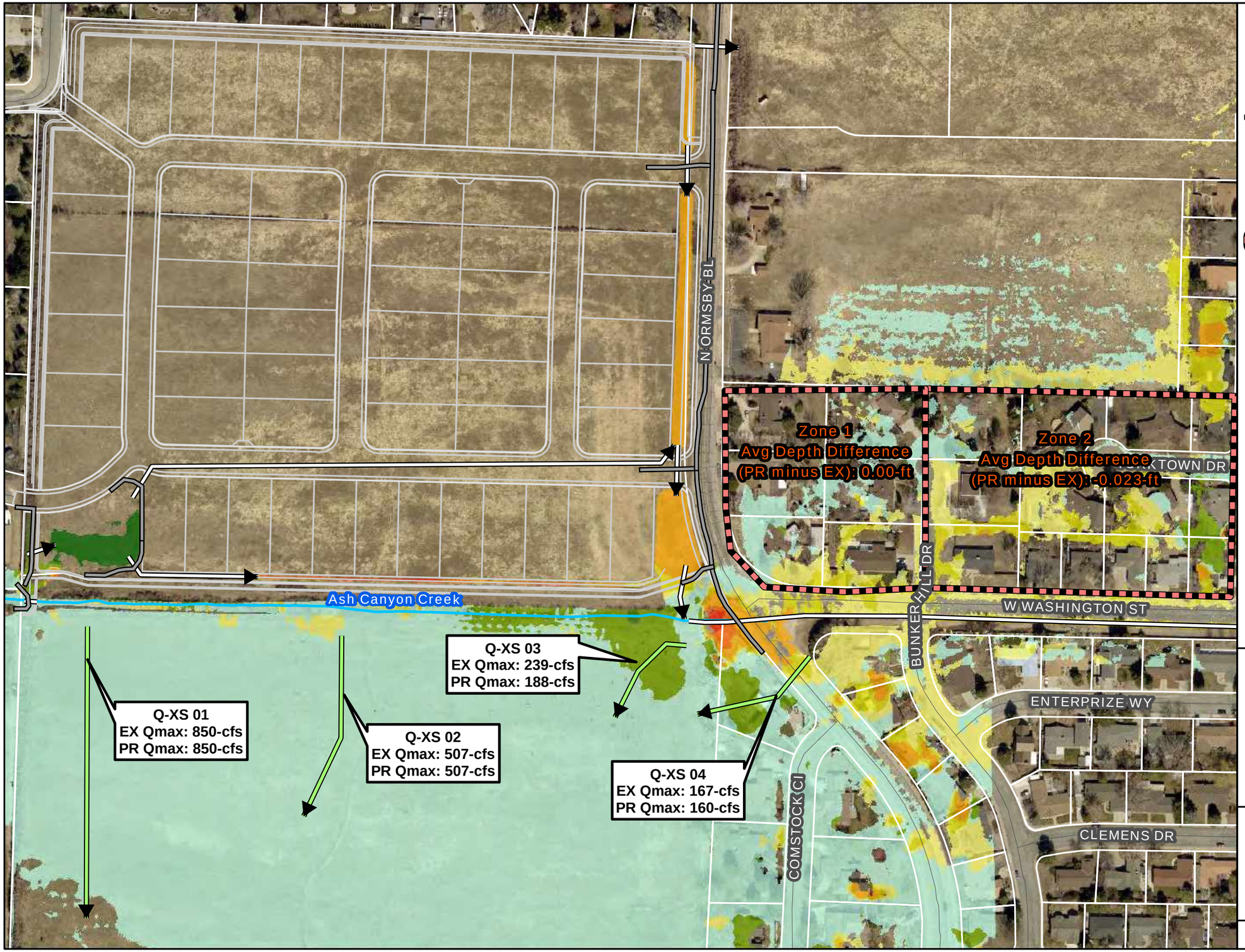
Exhibit 02
North Ormsby Blvd Detention Basin

Andersen Ranch West

Prepared By:

House Moran Consulting, Inc.
Water Resources and Environmental Engineering
10399 Double R Boulevard Suite 110
Reno, NV 89521
Office: (775) 293-4000

Prepared On: 9/13/2022



Legend

- Streets
- Parcels
- HEC-RAS 2D Connections - Proposed
- HEC-RAS Culvert Barrels - Proposed
- Proposed Grading Plan Layers
- ARW EX vs PR Q XSs v2Copy
- Average Depth Zones

WSE Difference (PR minus EX) (ft)

- -6.24 - -2
- -1.99 - -1
- -0.99 - -0.1
- -0.09 - 0.01
- 0.02 - 0.05
- 0.06 - 0.1
- 0.11 - 0.5
- 0.51 - 1
- 1.01 - 1.69

0 90 180 Feet

N W E S

Exhibit 03
EX Cond vs PR Cond WSE, Peak Flow, Avg Depth Comparison

Andersen Ranch West

Prepared By:

House Moran Consulting, Inc.
Water Resources and Environmental Engineering
10399 Double R Boulevard Suite 110
Reno, NV 89521
Office: (775) 293-4000

Prepared On: 9/13/2022

LUMOS & ASSOCIATES

Carson City • Fallon • Lake Tahoe • Reno www.LumosInc.com

Carson City
308 N. Curry Street, Suite 200
Carson City, Nevada 89703
775.883.7077

July 1, 2022

Ms. Hope Sullivan, Director
Carson City Community Development
201 N. Carson Street
Carson City, Nevada 89701

Subject: Andersen Ranch West Tentative Subdivision Map

Dear Hope:

Pursuant to the Carson City requirements, Lumos and Associates has prepared the following water and sewer impact report to support the Tentative Subdivision Map submittal. The project proposes 61 single family residences on 29.7 acres. The project is located west of N. Orbsby Boulevard in Carson City.

WATER

The water demand for the proposed project will be analyzed based off two components, on being the single family (SF) residences and the other being the open space irrigation. The SF demand per 10 State Standards is 0.6 ac-ft/yr per unit under 12,000 square feet or 535 gallons per day. That translates into an average demand of 0.37 gpm per SF unit or 22.57 gpm for all 61 SF units. This flow is in accordance with historical demand for similar facility types in the area. Lastly, the landscaping demand can be estimated at 4 ac-ft/yr per acre. Current estimates for the landscaped areas that will be irrigated are approximately 3.8 acres. This results in a demand of 13,570 gallons per day or 9.42 gpm.

Based on discussions with Tom Grundy at Carson City Public Works, the existing water system has the capacity to serve this development. Looping the water will be required per the conceptual map review letter prepared by Carson City Staff.

FIRE FLOW ANALYSIS

Fire flow analysis was also performed by Mr. Grundy. His fire flow analysis is attached. Fire hydrant testing near the west side on N. Ormsby Boulevard determined an available fire flow of 4,900 gpm.

In summary, it is our opinion that the project will have no appreciable impact on the performance of the water system.

SANITARY SEWER CAPACITY

The proposed project will connect to the City's sewer system for collection and treatment. The developer is proposing a gravity system that will include expanded use of the existing connections to the existing gravity mains in N. Ormsby Boulevard.

The proposed 61 SF residences will connect to the existing main in N. Ormsby Boulevard which is an 8" ACP which runs south and then turns east into Washington Street. The City has provided existing sewer capacity for the existing sewer system:

The northernmost pipe adjacent to the property along N. Ormsby Boulevard has a d/D of 25% at a slope of 1.8%, approximately 0.26 cfs.

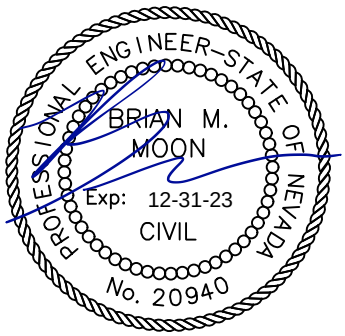
The southernmost pipe adjacent to the property along N. Ormsby Boulevard before turning down Washington Street has a d/D of 45% at a slope of 2.8%, approximately 1.0 cfs.

The average daily residential EDU rate is 250 gallons per day, which equates to 0.004 cfs average. Using a peaking factor of 3.0, the peak flow per houslhold would be 0.0012 cfs. With 61 homes planned, the increase in flow is 0.07 cfs, putting the 8" main in N. Ormsby Boulevard at a d/D of 0.49, approximately 1.07 cfs.

The proposed project overall usage is in accordance with the master plan for which the sewer main was analyzed. Since the proposed project is within these tolerances, it is assumed that the existing sewer system has the available capacity to convey the sewage for proposed project.

If you have any questions, please do not hesitate to contact me at 775.827.6111.

Sincerely,



Brian Moon, P.E.
Senior Project Manager

08/16/2022

Fire Flow Test Data Sheet

Location of Test (Street and Cross Street): Ormsby and Washington

Address Nearest Residual Hydrant: 1500 W WASHINGTON ST

Test Date: 3/10/2021 Test Time: 900

Testing Personnel: MT, KA, JR

Pressure Zone: 4960 Main Size: 12"

Comments:

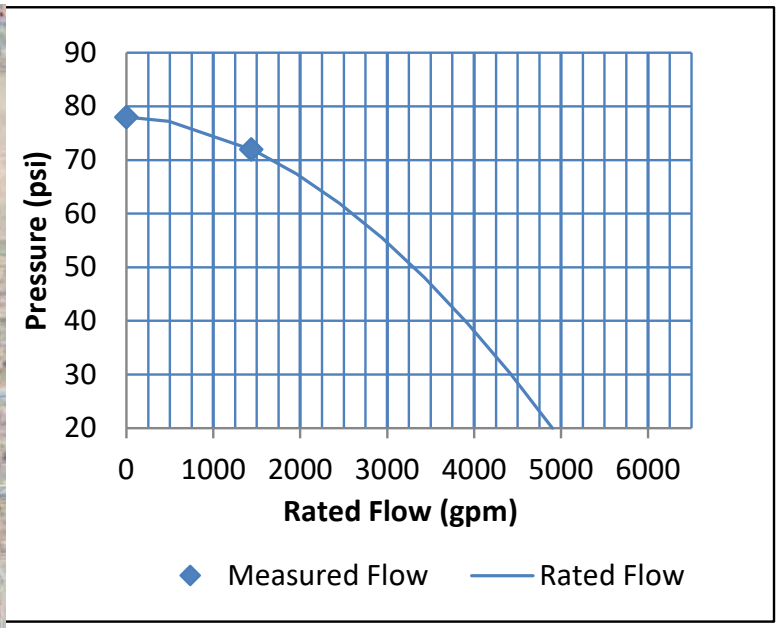
Test Results:

Residual Hydrant	
Static:	78 psi
Residual:	72 psi
Pressure Drop:	6 psi
	8 %

Flow Hydrant(s)	Testing Apparatus	Pitot Pressure (psi)	Discharge Diameter (in)	Outlet Coeff. (c)	Pitot Flow (gpm)
Flow 1	HM2	26	2	1.307	795
Flow 2	HM1	17	2	1.307	643
Flow 3					
				Total	1439

Area Map

Rated Flow



Rated Pressure (for Rated Capacity Calculation) 20 psi

Rated Capacity at 20 psi residual pressure. 4,900 gpm

Based on NFPA 291 - 2019 Edition and APWA Manual 17 - Fourth Edition

Pursuant to NFPA 291, fire flow test data over five years old should not be used.

Hydrant OBJECTID: 2184

Data Sheet File Name: Ormsby-Washington_1.pdf

LUMOS & ASSOCIATES

Carson City • Fallon • Lake Tahoe • Reno

www.LumosInc.com

Carson City
308 N. Curry Street, Suite 200
Carson City, Nevada 89703
775.883.7077

July 7, 2022 8947.004

Andersen Family Associates
Attn: Dennis Collard
PO Box 1746
Carson City, NV 89702

Subject: Andersen Ranch Development
Formerly "The Vintage at King's Canyon"
Geotechnical Investigation - Update

Lumos and Associates has completed a review of the site and original report in order to update the Lumos & Associates geotechnical investigation for "The Vintage at King's Canyon" dated May 2016. This update only pertains to the portion of the site that is west of N. Ormsby Boulevard. This does not cover the area between N. Ormsby Boulevard and Mountain Street. This portion of the project has been mass graded and most of the utilities have been installed. A vicinity map is presented as Plate 1.

Our Geotechnician made a site visit on June 28, 2022 and noted no obvious changes to the portion of the site west of N. Ormsby Boulevard from the original site investigation performed in 2016.

Specifically, this portion of the site investigation included borings 16-24 from the original report. These logs can be seen in the original report as Plates A-16 through A-24. The logs indicate the soils were loose to dense sands with varying amounts of silt and clay. The soils tested from those borings during the original investigation, indicate fine grained soils, as defined in the original report may be encountered. If encountered you shall follow the original soils report for requirements of overexcavation.

As stated in the previous report, once the site is cleared and grubbed, areas to support future improvements and/or areas to receive fill shall then be scarified to a depth of 12 inches, moisture

conditioned to within 2% of optimum, and recompacted to at least 90% (ASTM D1557). All common and structural fill requirements provided in the original report are still applicable and shall be strictly followed.

Carson City has adopted the 2018 building code. Therefore, the seismic parameters provided in the original report need to be updated to the following (refer to Plate 2):

Site Class = D - Default

S_S = 2.143

S_1 = 0.785

S_{MS} = 2.572

S_{DS} = 1.714

F_A = 1.2

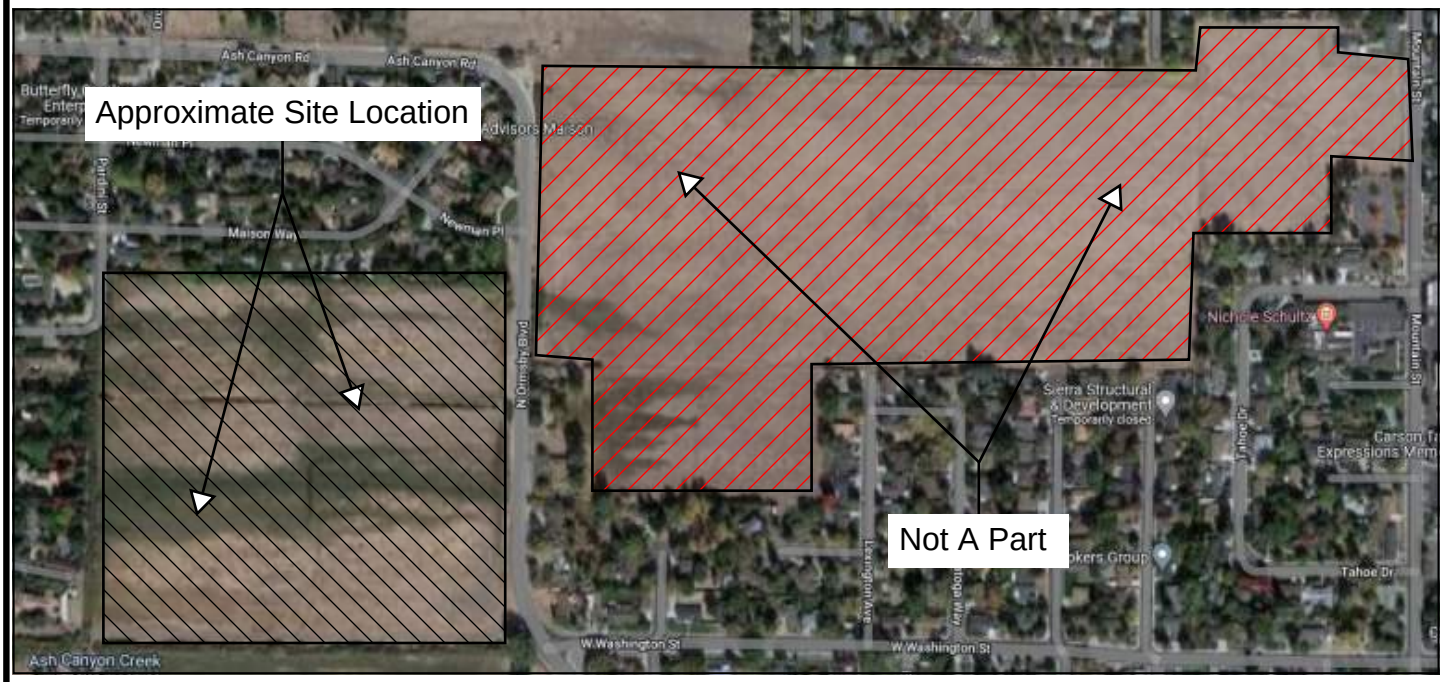
Other recommendations contained within our original geotechnical report are still applicable.

Feel free to contact me regarding this matter at 775-883-7077.

Sincerely,

Bert Sexton, E.I.
Geotechnician
Lumos & Associates, Inc.

Mitch Burns, P.E.
Materials Engineering Manager
Lumos & Associates, Inc.



Lumos & Associates
808 E. College Pkwy Suite 101
Carson City, NV 89706
775-883-7077
Fax: 775-883-7114
mburns@lumosinc.com

Andersen Ranch Development
(AKA The Vintage at King's Canyon)

VICINITY MAP

Job Number: 8947.004

Date: July, 2022

PLATE

1

Hazards by Location

Search Information

Coordinates: 39.170525, -119.784665

Elevation: 4768 ft

Timestamp: 2022-07-05T15:15:46.882Z

Hazard Type: Seismic

Reference Document: ASCE7-16

Risk Category: II

Site Class: D-default

Basic Parameters

Name	Value	Description
S_S	2.143	MCE_R ground motion (period=0.2s)
S_1	0.785	MCE_R ground motion (period=1.0s)
S_{MS}	2.572	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.714	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s

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Andersen Ranch Development
(AKA The Vintage at King's Canyon)

SEISMIC PARAMETERS

Job Number: 8947.004 Date: July, 2022

PLATE 2

GEOTECHNICAL INVESTIGATION REPORT

for

THE VINTAGE AT KING'S CANYON

Carson City, Nevada

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May, 2016

JN: 8947.000

GEOTECHNICAL INVESTIGATION REPORT

THE VINTAGE AT KING'S CANYON

Carson City, Nevada

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GEOTECHNICAL INVESTIGATION REPORT
for
THE VINTAGE AT KING'S CANYON
CARSON CITY, NEVADA

INTRODUCTION

Submitted herewith are the results of Lumos and Associates, Inc. (Lumos) geotechnical investigation for the proposed Vintage at King's Canyon project to be located in Carson City, Nevada. North Ormsby Boulevard bisects the site. The western portion of the site (approximately 25 acres in size) is located in the northwest quarter of section 18, township 15 north, range 20 east and is bounded by residential developments to the north and west, agricultural fields to the south, and North Ormsby Boulevard to the east. The eastern portion of the site (approximately 50 acres in size) is located in the north half of section 18 and the south half of section 7, township 15 north, range 20 east and is partially bounded by residential developments and agricultural fields to the north and south, is bounded on the west by North Ormsby Boulevard, and is bounded on the east by Mountain Street (refer to Plate 1).

It is our understanding that the proposed project will consist of one to two story houses with conventional foundations, Portland cement concrete improvements (sidewalks, curbs, and gutters), and asphalt concrete roadways. Additionally, we understand an office/medical complex has been proposed on the eastern portion of the site (approximately 9 acres in size) along Mountain Street. Structural loads for the residential portion of the project have been assumed not to exceed 1 to 2 kips per lineal foot and 6 to 8 kips for continuous wall and isolated column loads, respectively. Structural loads for the office/medical buildings have been assumed not to exceed three (3) to four (4) kips per lineal foot and 25 to 30 kips for continuous-wall and isolated-column loads, respectively. We have assumed that final grades at the site will be within five (5) feet from the existing grades.

The purpose of our investigation was to characterize the site geology and soil conditions, describe the native soils and determine their engineering properties as they relate to the proposed construction. The investigation was also intended to identify possible adverse geologic, soil, and/or water table conditions. However, this study did not include an environmental assessment or an evaluation for soil and/or groundwater contamination at the site. For your information, we have included, in Appendix E, the State of Nevada EPA Map of Radon Zones.

This report concludes with recommendations for site grading, foundations, footing area preparation, slope stability, utility installation, asphalt concrete, and Portland cement concrete. In addition, information such as logs of all exploratory borings, laboratory test data, allowable soil bearing capacities, estimated total and differential settlements based on static and dynamic loads, lateral earth pressures, and International Building Code (IBC) seismic site class designation are provided in this report.

The recommendations contained herein have been prepared based on our understanding of the proposed construction, as outlined above. Re-evaluation of the recommendations presented in this report should be conducted after the final site grading and construction plans are completed, if there are any variations from the assumptions described herein.

It is possible that subsurface discontinuities may exist between and beyond exploration points. Such discontinuities are beyond the evaluation of the Engineer at this time. No guarantee of the consistency of site geology and sub-surface conditions is implied or intended.

GEOLOGIC SETTING

Carson City is at the extreme western portion of the Great Basin geomorphic province. The Great Basin is characterized by internal drainage and large normal fault-bounded valleys (grabens) separated by high mountain ranges (horst). The Sierra Nevada province to the west is characterized by large granite masses that have been uplifted and tilted a few degrees toward the west. Overlying the granites are older oceanic meta-sedimentary rocks.

Specifically, the site is located near the western foothills of Eagle Valley. The surface geology of the project area has been mapped as a Qal soil type by Dennis T. Trexler (1977). The mapping indicates that pediment alluvial-fan deposits of Eagle Valley underlie the site. They are yellowish-brown to gray, unbedded to poorly bedded, poorly to moderately sorted, fine silty sand, sandy silt, granular muddy coarse sand, and minor sandy gravel, underlies broad surfaces of low gradient. John W. Bell and Dennis T. Trexler (1979) have also mapped this area as an area to experience the greatest severity of shaking during earthquakes and possible severe liquefaction locally.

SEISMIC CONSIDERATIONS

Carson City, similar to many areas of Nevada, is located near active faults, which are capable of producing significant earthquakes. This area can be described as an area that may experience major damage due to earthquakes having intensities of VII or more when evaluated using the Modified Mercalli Intensity Scale of 1931 (Plate 3).

The Carson City area is located within the Sierra Nevada-Great Basin seismic belt and at least four (4) major earthquakes with moment magnitudes greater than 6.0 (Plate 4) have occurred historically within 15 miles of the site. The areas north and south of Carson City have experienced a number of large earthquakes in the past, with a swarm of large events during the single years 1868 and 1869. During these episodes, the three (3) largest events were magnitudes 6.0, 6.1, and 6.7. The causative faults were located approximately 4 to 15 miles southwest of the site within the Genoa Fault area.

According to the Carson City Quadrangle Earthquake Hazards Map by Trexler and Bell (1979) a north/south trending fault is approximately 500-1000 feet north of the site (Plate 5). The fault is mapped as a Holocene, which is <12,000 years old, which is considered potentially active. However, no active Holocene (<12,000 years) age faulting is known to cross the site, nor has any direct evidence of on-site faulting been observed in the field during the current investigation.

Ground shaking should be anticipated at the site and intensities should be governed by a design earthquake occurring within a few miles of the site on faults belonging to the Sierra Nevada – Great Basin seismic belt that crosses Carson City. For design purposes, ground-shaking intensities should be based on a design earthquake occurring on the Carson City or Genoa Fault Zones with a maximum credible earthquake of 7.5 in moment magnitude.

Liquefaction is the phenomena where more commonly loose saturated sands or silty sands lose their shear strength when subjected to cyclic loading, and become unstable. Large earthquakes, as described above, may provide that type of cyclic loading. Liquefaction is most commonly associated with loose, saturated, relatively clean sands. These conditions were not encountered during our investigation. During our field investigation groundwater was encountered in the eastern portion of the site at a depth of 22 and 23 feet (Borings 3 and 4 respectively). Other holes were explored to as deep as 40 feet without encountering groundwater water. However, The Carson City Quadrangle General Ground Water Map by Terry Katzer (1980) indicates the depth to groundwater is at approximately 10 feet. Additionally, mottling, which indicates previous groundwater presence, was observed in samples taken from 20 of the 24 borings at depths of approximately 10 feet, or less.

2012 IBC Design: The mapped maximum considered earthquake spectral response acceleration at short periods (S_S) is 2.377g corresponding to a 0.2 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC Figure 1613.3.1(1)). The mapped maximum considered earthquake spectral response acceleration at a 1-second period (S_1) is 0.875g corresponding to a 1.0 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC Figure 1613.3.1(2). According to section 1613.3.2, when the soil properties are not known in sufficient detail to a depth of 100 feet, site Class D shall be assumed. Therefore, the spectral response accelerations must be adjusted for Site Class effects. The site coefficient for spectral response accelerations adjustment at short periods (F_a) is 1.0 (IBC Table 1613.3.3(1)). The site class effect for spectral response accelerations adjustment at 1-second periods (F_v) is 1.5 (IBC Table 1613.3.3(2)). The maximum considered earthquake spectral response acceleration parameter for short period (S_{MS}) is 2.377g and for 1-second period (S_{M1}) is 1.312g. This corresponds to design spectral response acceleration parameters of 1.585g for short period (S_{DS}) and 0.875g for 1-second period (S_{D1}).

It is emphasized that the above values are the minimum requirements intended to maintain public safety during strong ground shaking. These minimum requirements are meant to safeguard against loss of life and major structural failures, but are not intended

to prevent damage or insure the functionality of the structure during and/or after a large seismic event. Additionally, they do not protect against damage to non-structural components or the contents of the building.

In conclusion, seismic concerns for this site are not unlike other sites in the Carson City area. No evidence of active faulting was found on the site. However, due to the proximity of the site to a number of faults that are considered active, as noted above, strong seismic shaking should be anticipated during the life of the proposed structures.

SITE-SPECIFIC LIQUEFACTION EVALUATION

A simplified liquefaction evaluation was performed in accordance with the Geotechnical Earthquake Engineering Reference Manual by Munfakh et. Al. (1998), Federal Highway Administration Report No. FHWA-HI-99-012.

Data used for the liquefaction evaluation included log information Standard Penetration (SPT) blow counts, unit weight of in-situ soils, depth to groundwater, Atterberg limits, and percent fines (percent passing the #200 sieve). Calculations to evaluate liquefaction included total vertical stress, effective vertical stress, effective confining stress, normalized and standardized SPT blow counts, critical stress ratio induced by the deign earthquake, corrected critical stress ratio resisting liquefaction, and the factor of safety. Experience and engineering judgment were also exercised during our evaluation. The following parameters were used as part of analysis:

Moment Magnitude: (M_W) = 7.5
The Peak Ground Acceleration (adjusted for site class effects) = 0.75g (PGAm)(ASCE7-10)
Unit Weight of Soil Above Groundwater = 115 pounds-per-cubic-foot
Unit Weight of Soil Below Groundwater = 55 pounds-per-cubic-foot
Groundwater Depth = 10 feet (from groundwater map)

The peak ground acceleration of 0.75g was determined utilizing an F_{pga} factor for a Site Class D. Therefore, the critical stress ratio induced by the design earthquake was calculated. The critical stress ratio at which liquefaction is expected to occur during a M=7.5 earthquake was evaluated from the chart showing the relationship between cyclic stress ratio causing liquefaction and corrected SPT blow counts, which shows the liquefaction/no liquefaction for sand with fine content of 5, 15 and 35 percent. The corrected critical stress ratio resisting liquefaction was calculated by multiplying the critical stress ratio at which liquefaction is expected to occur times the magnitude scaling factor (not necessary in this case). Finally, the factor of safety against liquefaction was calculated by dividing the corrected critical stress resisting liquefaction by the stress ratio induced by the design earthquake.

Results of these analyses indicated that on-site soils between 10' and 17.5' (if the groundwater table were to rise to the mapped level) meet the "Chinese Criteria" and have a factor of safety less than one (1.1) against liquefaction; therefore, they are considered potentially liquefiable if they become saturated (Martin and Lew, 1999). Our calculations indicate that between 1 and 1½ inches of settlement (total and differential) induced by liquefaction is possible. This settlement does not include the potential settlement caused by static loading of the future structure and fill. We, therefore, recommend that structures are designed with this settlement in mind. If requested, Lumos can provide alternative foundation design parameters for deep foundations, such as drilled piers, to mitigate against potential liquefaction. A mat foundation, such as a post tensioned slab, may also be an option to mitigate against the effects of settlements associated with the potential liquefaction.

SITE CONDITIONS AND FIELD EXPLORATION

At the time of our investigation the site was in use as grazing pastures. The vegetation generally consists of thick grasses. The site generally slopes downward from west to east.

Field exploration included a site reconnaissance and subsurface soil-exploration. During the site reconnaissance, surface conditions were noted and the locations of the exploratory boring were determined. They were located using survey techniques. Locations and elevations of the exploratory borings should be considered accurate only to the degree implied by the method used.

Twenty-four (24) exploratory borings were excavated to a maximum depth of 41.5 feet below-ground-surface (bgs). The approximate locations of the exploratory borings within the site are shown on Plate 2. The subsurface soils were continuously logged and visually classified in the field by our Geotechnician in accordance with the Unified Soil Classification System. Representative bulk soil samples were collected within the upper five (5) feet. Standard Penetration Testing (SPT) split spoon samples and modified California samples were collected at 2.5 and five (5) foot intervals within the exploratory borings. All the samples, subsequently, were transported to our Carson City and Reno geotechnical laboratories for testing and analysis.

The native subsurface soils consisted generally of loose to medium dense silty sands and clayey sands in the upper five (5) feet, and relatively dense silty sands and clayey sands below five (5) feet. Layers of silts and clays were encountered in a handful of the borings throughout the site.

Groundwater was encountered at the time of our field investigation in Borings 3 and 4 at 22 and 23 feet bgs respectively. However, seasonal groundwater (water table) fluctuations should be anticipated at the site. According to the groundwater map, the approximate depth to groundwater is 10 feet. Many of the samples collected from a majority of borings had mottling, which could indicate groundwater conditions at some

point in time. The depth of Boring 9 was 25 feet bgs, however, no water was encountered. Deeper holes were drilled, heading west, to as deep as 40 feet, and no groundwater was encountered in those holes.

FIELD AND LABORATORY TEST DATA

Field and laboratory data was developed from samples taken and tests conducted during the field exploration and laboratory phases of this project. The borings were advanced utilizing a Jeff Co Speedstar 15 drill rig. Representative bulk soil samples were collected within the upper five (5) feet. Standard Penetration Testing (SPT) split spoon samples and modified California samples were collected at 2.5 and five (5) foot intervals within the exploratory borings. The samplers were driven utilizing a 140 pound hammer free falling 30 inches.

Laboratory tests performed on representative samples included sieve analysis, Atterberg Limits, modified proctor, R-value, direct shear, expansion index, soluble sulfates, pH value, and resistivity. Much of this data is displayed on the "logs" of the exploratory borings to facilitate correlation. Field descriptions presented on the logs have been modified, where appropriate, to reflect laboratory test results. The logs of the exploratory borings are included in Appendix A of this report as Plates A-1 through A-24. Plate A-25 describes the various symbols and nomenclature shown on the logs.

Individual laboratory test results are presented in Appendix B as Plates B-1 through B-6. Laboratory testing was performed per ASTM standards, except when test procedures are briefly described and no ASTM standard is specifically referenced in the report. Atterberg limits were determined using the dry method of preparation (Plate B-2). Special testing conducted for this project is described below.

Analytical Testing: Silver State Analytical Laboratories, Reno, Nevada, conducted this testing. The testing included pH value, resistivity and soluble sulfates. Test results are included (on Silver State letterhead) in Plates B-6.

The soil samples obtained during this investigation will be held in our laboratory for 30 days from the date of this report. The samples may be retained longer at an additional cost to the client or obtained from this office upon request.

DISCUSSION AND RECOMMENDATIONS

General

From a geotechnical viewpoint, the site is considered suitable for the proposed improvements when prepared as recommended herein.

The following recommendations are based upon the construction and our understanding of this project, as outlined in the introduction of this report. If changes in the construction are proposed, they should be presented to the Lumos Geotechnical Department, so that these recommendations can be reviewed and modified in writing, as necessary. As a minimum, final construction drawings should be submitted to the Lumos Geotechnical Department for review prior to actual construction and verification that our geotechnical design recommendations have been implemented.

General Site Grading

Prior to placement of fill and/or the proposed improvements, the areas to receive fill and/or improvements shall be cleared and grubbed. Clearing and grubbing is anticipated to be as much as 12 inches or more where thicker vegetation/roots are present.

Root- or organic-laden soils encountered during excavations, should be stockpiled in a designated area on site for later use in landscaping, or removed off site as directed by the owner. Excavated soils free from any organics, debris or otherwise unsuitable material and with particles no larger than three (3) inches in maximum dimension may be stockpiled and moisture conditioned for later use as compacted fill provided it meets the criteria for acceptable fill soils. Many of the site soils shall be considered "fine

grained" (for the purposes of this report "fine grained" is defined as soils with greater than or equal to 30% passing the #200 sieve). Site "fine grained" soils are not suitable to provide direct foundation support. The onsite soils maybe utilized as common fill, which is defined as fill outside of structural zones, provided they meet the requirements of common fill. Structural fill must be placed in structural zones.

The onsite clayey sands, clays, and silts ("fine grained" soils) will not meet the requirements of structural fill and shall be overexcavated a minimum of 18 inches below footings. This is due to the potential volume change and/or relatively weak nature of the site "fine grained" soils. Additionally, this is recommended due to the relatively low SPT blow counts observed in the upper five (5) feet of the exploratory borings. This indicates a low relative compaction and increases the potential for settlement induced by structural loading. Removals shall extend horizontally beyond the edge of all foundations a minimum of 18 inches, and then replaced with 18 inches of properly prepared and compacted structural fill as mentioned later in the report. We recommend potholing be done during construction to insure the minimum separation requirement is met.

All Surfaces to receive fill and/or improvements should be observed and approved by a Lumos representative prior to placement of fill. The surfaces shall be scarified to a minimum depth of twelve (12) inches, moisture conditioned to at least optimum moisture content, and re-compacted to at least ninety percent (90%) of the ASTM D1557 standard. Upon re-compaction and prior to placing any fill or aggregate base, the re-compacted surface should be proof-rolled to identify any possible yielding surfaces. Proof-rolling should be conducted with a heavy rubber-tire loader with a fully loaded bucket, or a fully loaded water truck, and observed and approved by a Lumos representative. Yielding (pumping) surfaces shall be stabilized to the satisfaction of the Geotechnical Engineer. Material should not be placed, spread or compacted while the ground is frozen or during unfavorable weather conditions. When site grading is interrupted by heavy rain or snow, grading or fill operations should not resume until a Lumos representative approves the moisture content and density conditions of the subgrade or previously placed fill.

Unstable conditions due to yielding and/or pumping soils may be encountered on site. Native soils may yield or pump under heavy equipment loads or where vibratory equipment draws up water. If yielding or pumping conditions are encountered, the soils should be scarified in place, allowed to dry as necessary and re-compacted, where applicable. Alternatively, the unsuitable or saturated soil should be removed, the exposed surface leveled and compacted/tamped as much as practical without causing further pumping, and covered (including the sides) with geotextile stabilizing fabric (Mirafi HP370 or other equivalent). The fabric should then be covered with at least 12 inches of 4- to 8-inch **angular rock fill** with enough fines to fill the inter-rock pore spaces. Placement should be by end dumping. No traffic or other action should be allowed over the fabric, which may cause it to deflect/deform prior to cobble placement. Test sections should be used to determine the minimum thickness and/or number of layers required for stabilization.

Stabilization should be evaluated by proof-rolling standards commensurate with the equipment used, and approved by a Lumos representative. The placement of the stabilizing rock-fill may require additional over-excavation to maintain appropriate grading elevations. A filter fabric (Mirafi 180N or equal) should also be placed over the cobble rock fill to prevent piping of fines from covering soils into the stabilizing rock matrix.

Acceptable structural fill soils to be used for this project should consist of non-expansive material (LL less than 35 and/or a PI less than 12, and/or an Expansion Index less than 20), and should be free of contaminants, organics (less than two percent (2%)), rubble, or natural rock larger than three (3) inches in largest dimension. The soluble sulfate content shall be less than 0.1% and the R-Value shall be a minimum of 30. Any import soils should be tested and approved prior to being placed or delivered on-site (seven (7) day advanced notice). Structural fill soils shall also meet the following gradation requirements (next page):

TABLE 1
STRUCTURAL FILL GRADATION

Sieve Size	% Passing
3"	100
3/4"	70 - 100
#40	15 - 65
#200	10 - 25

Soils not meeting all of the above requirements may be approved for use as structural fill at the discretion of the Geotechnical Engineer. Soils not approved for use as structural fill may be used as common fill, if approved by the Geotechnical Engineer, and placed outside of structural zones, which is defined as zones within 18 inches, laterally and vertically, of building foundations. Common fill shall have 100% passing the 3" sieve, a maximum of 50% passing the #200 sieve, LL less than 45, PI less than 25, and an EI less than 50. Common fill should be placed only on properly compacted sub-grade or on properly compacted fill in lifts not exceeding eight (8) inches in loose thickness, moisture conditioned to at least optimum moisture content, and compacted to at least ninety percent (90%) relative compaction, as determined by the ASTM D1557 standard. Structural fill, fill within 18 inches of building foundations, shall be placed in eight (8) inch loose lifts, moisture conditioned to within two percent (2%) of optimum, and compacted to a minimum of 95% of the ASTM D1557 Standard. It is anticipated that site soils encountered during grading will meet the requirements for common fill, but not for structural fill. Therefore, structural fill material will need to be imported. If fill is to be placed on a slope greater than 5:1, the slope shall be benched at least the width of the equipment being used to prevent the migration of fill soils down slope.

Landscaped areas should be cleared of all organic and objectionable material such as wood, root stumps, etc., if any. In cut areas, no other work is necessary except grading to proper elevation and drainage conditions. In landscape fill areas, fill should be placed in loose lifts not exceeding eight (8) inches, moisture conditioned to at least optimum moisture, and compacted to at least ninety percent (90%) relative compaction to prevent erosion.

A representative of Lumos should be present during all site clearing, excavation removals, and grading operations to ensure that any unforeseen or concealed conditions within the site are identified and properly mitigated, and to test and observe earthwork construction. This testing and observation is an integral part of our services as acceptance of earthwork construction and is dependent upon compaction and stability of the subgrade soils. The soils engineer may reject any material that does not meet acceptable fill, compaction, and stability requirements. Further, recommendations in this report are provided upon the assumption that earthwork construction will conform to recommendations set forth in this section of the report.

FOUNDATION DESIGN CRITERIA

Conventional spread footings founded on 18 inches of properly prepared structural fill and underlain by properly prepared subgrade/common fill soils may be used to support the proposed building foundations within the project site.

Spread footings: Footings should have a minimum embedment of 24 inches below lowest adjacent grade for frost protection. Footings founded on 18 inches of properly prepared structural fill underlain by properly prepared subgrade/common fill soils may be designed for a net allowable bearing pressure of 2,000 pounds-per-square-foot (psf).

Footing Settlements: The maximum anticipated settlements, caused by static loading, for continuous or isolated footings bearing on 18 inches of properly prepared structural fill and underlain by properly prepared subgrade/common fill soils and designed for a 2,000 psf bearing pressure is estimated at three-quarters (¾) of an inch or less. Differential settlements are generally expected to be half of the total settlements. Settlements in granular soils are primarily expected to occur shortly after dead and sustained live loads are applied. Settlements in clay soils occur over a longer period of time. If settlements due to liquefaction are also considered, total settlement, due to static and dynamic loading, is anticipated to be approximately two (2) inches. Keep in mind, the groundwater level would have to rise to the mapped level, which is 10 feet below existing ground, for the anticipated settlements, due to liquefaction, to be possible.

Lateral Loading: Resistance to lateral loads can be provided by friction acting at the base of foundations and by lateral earth resistance. A coefficient of friction of 0.40 may be assumed at the base of footings bearing on structural fill soils. An allowable passive earth resistance of 250 psf per foot of depth starting six (6) inches below lowest adjacent grade may be used for the sides of footings poured against properly compacted structural fill. Passive resistance should not exceed 2,000 psf. The at-rest lateral pressure can be calculated utilizing an equivalent fluid pressure of 40 pcf.

Dynamic Factors: Vertical and lateral bearing values indicated above are for total dead-load and frequently applied live loads. If normal code requirements are applied for design, the above vertical bearing values may be increased by thirty-three percent (33%) for short duration loading due to wind or seismic forces. The additional Dynamic Lateral earth pressure can be calculated utilizing the following equation.

Dynamic Lateral Force = $42H^2K_h$
H = height of wall
K_h = Horizontal Acceleration (which is 0.75 g per ASCE 7-10)

This force should be assumed to act at a height of 0.6H above the bottom of the wall.

RETAINING WALLS

Retaining structures over three (3) feet in height, if used, will require local code compliance and engineered based on parameters described in this section of the report. Retaining structures should be designed to resist the appropriate lateral earth pressures. Cantilevered walls, which are able to deflect at least 0.01 radians, can be designed using an equivalent fluid (backfill) unit weight of 40 pounds-per-cubic-foot (pcf). However, if the wall is fixed against rotation, the wall should be designed using an equivalent fluid (backfill) unit weight of 60 pcf. These design parameters are based upon the assumption that walls will retain only level backfill and no hydrostatic pressure will be present. Any other surcharge pressures should be added to the above recommended lateral earth pressures. Retaining walls should be backfilled with free draining granular material that extends vertically to the bottom of the stem and laterally at least six (6) inches beyond the face of the stem (wall) and wrapped with a Mirafi 180 N or equivalent non-woven filter fabric. Weep holes should be provided on the walls at regular intervals, or a slotted drainpipe placed at the bottom of the wall (bottom of granular material) to relieve any possible build-up of hydrostatic pressure. Backfill material within two (2) feet of the wall should be compacted with hand-held equipment only, and to at least 90% of the maximum ASTM D1557 standard.

CONCRETE SLAB DESIGN

Interior structural concrete slabs should be underlain with at least six (6) inches of Type 2, Class B Aggregate Base, compacted to a minimum of ninety-five percent (95%) relative compaction, as determined by the ASTM D1557 Standard, and supported on 18 inches of properly compacted structural fill and underlain by properly prepared subgrade/common fill soils. We recommend the aggregate base be placed after utility trenches are excavated and backfilled. A vapor barrier should be provided for all interior concrete slabs where floor moisture is undesirable. The vapor barrier shall meet the requirements of ASTM E1745, Class A, and be at least ten (10) mils thick. The vapor barrier shall be installed per the manufacturer's recommendations

Slab thickness design should be based on a Modulus of Subgrade Reaction equal to two-hundred (200) pounds-per-cubic-inch (pci) for construction on 18 inches of properly compacted structural fill. Reinforcement of concrete slabs should be as specified by the Project Structural Engineer.

Exterior concrete improvements (sidewalks, curbs, gutter, etc.) should be underlain with at least six (6) inches of Type 2, Class B aggregate base and at least 12 inches of properly prepared subgrade soils. All subgrade and fill should be prepared and placed as described in the grading section of this report, while the aggregate base material should be compacted to at least ninety-five percent (95%) relative compaction as determined by the ASTM D1557 standard.

PAVEMENT DESIGN

Subgrade soils in areas to be paved shall be scarified in place to a depth of at least 12 inches, moisture conditioned to at least optimum moisture content, and compacted to at least ninety percent (90%) of the laboratory maximum dry density determined by the ASTM D1557 standard. Pavement structural section for the asphalt concrete utilizing an R-value of 21 (laboratory test results) is provided in Table 2, "Recommended Asphalt Pavement Sections". A Traffic Index (TI) value of 5.0 was utilized for design. Prior to placement of aggregate base, we recommend roadway subgrade soils be proof rolled utilizing a loader with a full bucket, or a fully loaded 10 wheel water truck. Observed pumping and/or yielding subgrade soils located during the proof rolling, shall be stabilized to the satisfaction of the Geotechnical Engineer. Aggregate base should consist of Type 2, Class B material and meet the requirements of the Standard Specifications for Public Works Construction (SPPWC). Aggregate base material should be moisture conditioned to within two percent (2%) of optimum and compacted to at least ninety-five percent (95%) of the laboratory maximum density, as determined by the ASTM D1557 standard.

TABLE 2
RECOMMENDED ASPHALT PAVEMENT SECTIONS

Pavement Area	Minimum Asphalt Pavement	Minimum Aggregate Base	Properly Prepared Subgrade Soils
T.I. = 5	3"	8"	12"

See Appendix C for Test Results and Calculations

In all areas of the project, asphalt concrete should consist of PG64-28NV, and Type 3 asphalt aggregate per the "Orange Book" standards. We recommend a 50-blow Marshall mix that targets three percent (3%) air voids. Asphalt concrete, in any case, should be compacted to between ninety-two percent (92%) and ninety-seven percent (97%) of the Rice theoretical maximum density.

All mix designs for asphalt concrete should be submitted to the Geotechnical Engineer for review and approval a minimum of seven (7) days prior to paving.

CORROSION AND CHEMICAL ATTACK

On-site soils have a negligible water soluble sulfate content of less than 0.10% (<0.01% actual). No specific type of cement is required for concrete in direct contact with on-site soils, as required by the International Building Code. However, Type II cement (meeting ASTM C150) is recommended for concrete in direct contact with on-site soils.

All exterior concrete should have between 4.5 and 7.5 percent entrained air, a maximum water-cement ratio of 0.45, and comply with all other ACI recommendations for concrete placed in areas subject to freezing. A minimum compressive strength of 4,000 psi is recommended for all external concrete. All interior concrete should also be placed pursuant to ACI recommendations.

Native soils have a pH of between 6.34 and 7.05 and have a resistivity of between 2,178 and 6,398 ohm-cm under saturated conditions. This indicates a corrosive potential for ferrous metals in contact with these soils. Corrosion mitigation measures, such as protective coatings, wrappings, and cathodic protection are therefore recommended. If protective coatings are used, the type and quantity will depend on the kind of steel and specific construction application. Steel and wire concrete reinforcement cover of at least three (3) inches where cast against soil, unformed, is recommended.

SLOPE STABILITY AND EROSION CONTROL

The results of our exploration and testing confirm that 2:1 (H:V) maximum slopes will be stable for on-site materials both in cut and fill. All slopes shall incorporate a brow ditch to direct surface drainage away from the slope face. Slopes steeper than 2:1 will require stabilization, such as retaining walls.

The potential for dust generation is high at this project. Dust control will be mandatory on this project in order to comply with air quality standards. The contractor shall be responsible for submitting a dust control plan and securing any required permits.

Stabilization of all slopes and areas disturbed by construction will be required to prevent erosion and to control dust. Stabilization may consist of rip-rap, revegetation, or dust pallative, depending on the inclination of the slope.

In order to minimize storm water discharge from this site, best management practices should be implemented.

UTILITY EXCAVATIONS

On-site soils are anticipated to be excavatable with conventional construction equipment. Compliance with OSHA regulations should be enforced for Type C soils. Excavated soils will be suitable for backfill of utility trenches after screening any oversize material and debris, are moisture conditioned to at least optimum moisture content, placed in eight (8) inch maximum loose lifts, and compacted to a minimum of ninety percent (90%) (ASTM D1557). However, on-site soils are not suitable for use as, and do not meet the minimum requirements for, Class A bedding and should be imported, where required.

MOISTURE PROTECTION, EROSION AND DRAINAGE

The finish surfaces around all structures should slope away from the building and toward appropriate drop inlets or other surface drainage devices. It is recommended that within ten (10) feet of the buildings a minimum slope of five percent (5%) be used for soil subgrades and one percent (1%) be used for pavements. These grades should be maintained for the life of the structures.

Landscaping and downspouts should be planned to prevent discharge adjacent to buildings. Instead, water flow should be conveyed and re-routed to discharge areas away from any improvements. Additionally, foundation drains should be utilized, due to the potential for the groundwater table to rise to its mapped elevation (10 feet below existing grade) and the fact that mottling was observed in many samples from a majority of the borings at depths of 10 feet and less. Foundation drains may consist of perforated pipe, wrapped with Geotextile filter fabric, located at an elevation of approximately 1 foot below bottom of footing elevation and 1 foot laterally outside of foundations, sloped to drain toward appropriate inlets.

Backfill adjacent to the proposed building perimeters should be properly compacted to minimize water infiltration into the foundation soils.

CONSTRUCTION SPECIFICATIONS

All work on-site shall be governed by the latest edition of the International Building Code (IBC) as accepted by Carson City, except where modified herein.

All work off-site shall be governed by the Standard Specifications and Standard Details for Public Works Construction (SSPWC), as distributed by Carson City, except as modified herein.

LIMITATIONS

This report has been prepared in accordance with the currently accepted engineering practices in Northern Nevada and Northern California. The analysis and recommendations in this report are based upon exploration performed at the locations shown on the site plan, the proposed improvements as described in the Introduction section of this report and upon the property in its condition as of the date of this report. Lumos makes no guarantee as to the continuity of conditions as subsurface variations may occur between or beyond exploration points and over time. Any subsurface variations encountered during construction should be immediately reported to Lumos so that, if necessary, Lumos' recommendations may be modified.

This report has been prepared for and provided directly to The Vintage at Kings Canyon, LP ("The Client"), and any and all use of this report is expressly limited to the exclusive use of the Client. The Client is responsible for determining who, if anyone, shall be provided this report, including any designers and subcontractors whose work is related to this project. Should the Client decide to provide this report to any other individual or entity, Lumos shall not be held liable for any use by those individuals or entities to whom this report is provided. The Client agrees to indemnify, defend and hold harmless Lumos, its agents and employees from any claims resulting from unauthorized users.

If this report is utilized in the preparation of an Engineer's Estimate of Probable Construction Costs, then the preparer of the estimate acknowledges that the report recommendations are based on the subsurface conditions found at the specific locations investigated on site; that subsurface conditions may vary outside these locations; and that no guaranty or warranty, express or implied, is made that the conditions encountered are representative of the entire site. The preparer of the estimate agrees to indemnify, defend and hold harmless Lumos & Associates, its agents and employees from any and all claims, causes of action or liability arising from any claims resulting from the use of the report in the preparation of an Engineer's Cost Estimate.

This report is not intended for, nor should be utilized for, bidding purposes. If it is utilized for bidding purposes, Client acknowledges that the report recommendations are based on the subsurface conditions found at the specific locations investigated on site; that subsurface conditions may vary outside these locations; and that no guaranty or warranty, express or implied, is made that the conditions encountered are representative of the entire site. The Client agrees to indemnify, defend and hold harmless Lumos & Associates, its agents and employees from any and all claims, causes or action or liability arising from any claims resulting from the use of the report for bidding purposes.

As explained above, subsurface variations may exist and as such, beyond the express findings located in this report, no warranties express, or implied, are made by this report. No affirmation of fact, including but not limited to statements regarding suitability for use of performance shall be deemed to be a warranty or guaranty for any purpose.

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Construction Services Engineer
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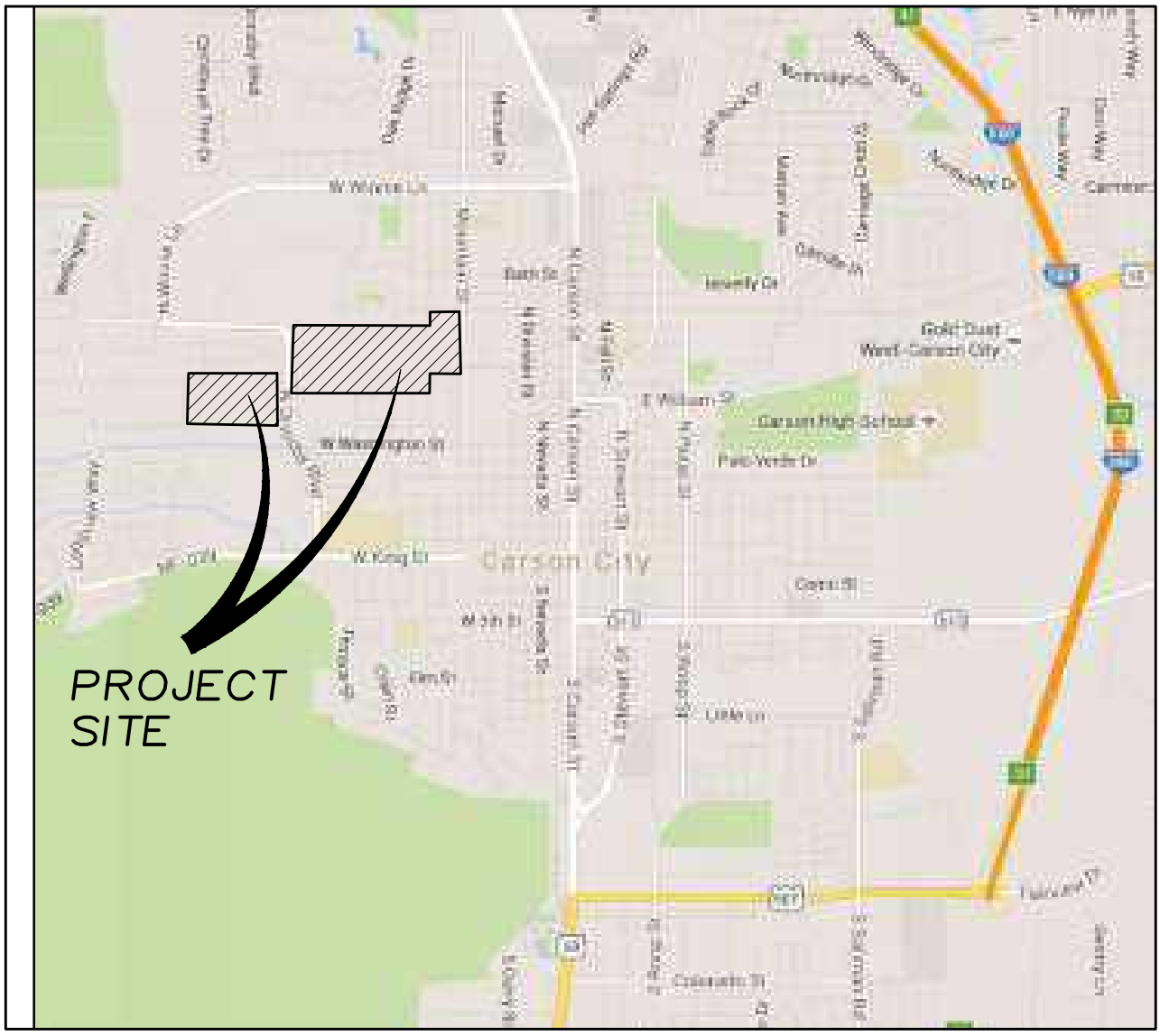

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The Vintage at King's Canyon

VICINITY MAP

Carson City Nevada

Date:	May 2016
Scale:	N.T.S.
Job No:	8947.000
PLATE	1

LEGEND

BH- ⊕ = APPROXIMATE EXPLORATORY BORING LOCATION

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The Vintage at King's Canyon

SITE MAP

Carson City Nevada

Date:	May 2016
Scale:	N.T.S.
Job No:	8947.000
PLATE	2.1

LEGEND

BH- = APPROXIMATE EXPLORATORY BORING LOCATION

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The Vintage at King's Canyon

SITE MAP

Carson City Nevada

Date:	May 2016
Scale:	N.T.S.
Job No:	8947.000
PLATE	2.2

MODIFIED MERCALLI INTENSITY SCALE

INTENSITY	EFFECTS
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeable indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.
IV	During the day felt indoors by many, outdoors by few. At night some awaken. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building; standing motor cars rock noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well- built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Disturbs persons driving motor cars.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures with foundations destroyed; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (sloped) over banks.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipe lines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

From Wood and Neumann, 1931, by U.S. Geological Survey, 1974, Earthquake Information Bulletin, v. 6, no. 5, p. 28

Richter Magnitude	Intensity (maximum expected Modified Mercalli)
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - VIII
7.0 - 7.9	IX - X
8.0 - 8.9	XI - XII

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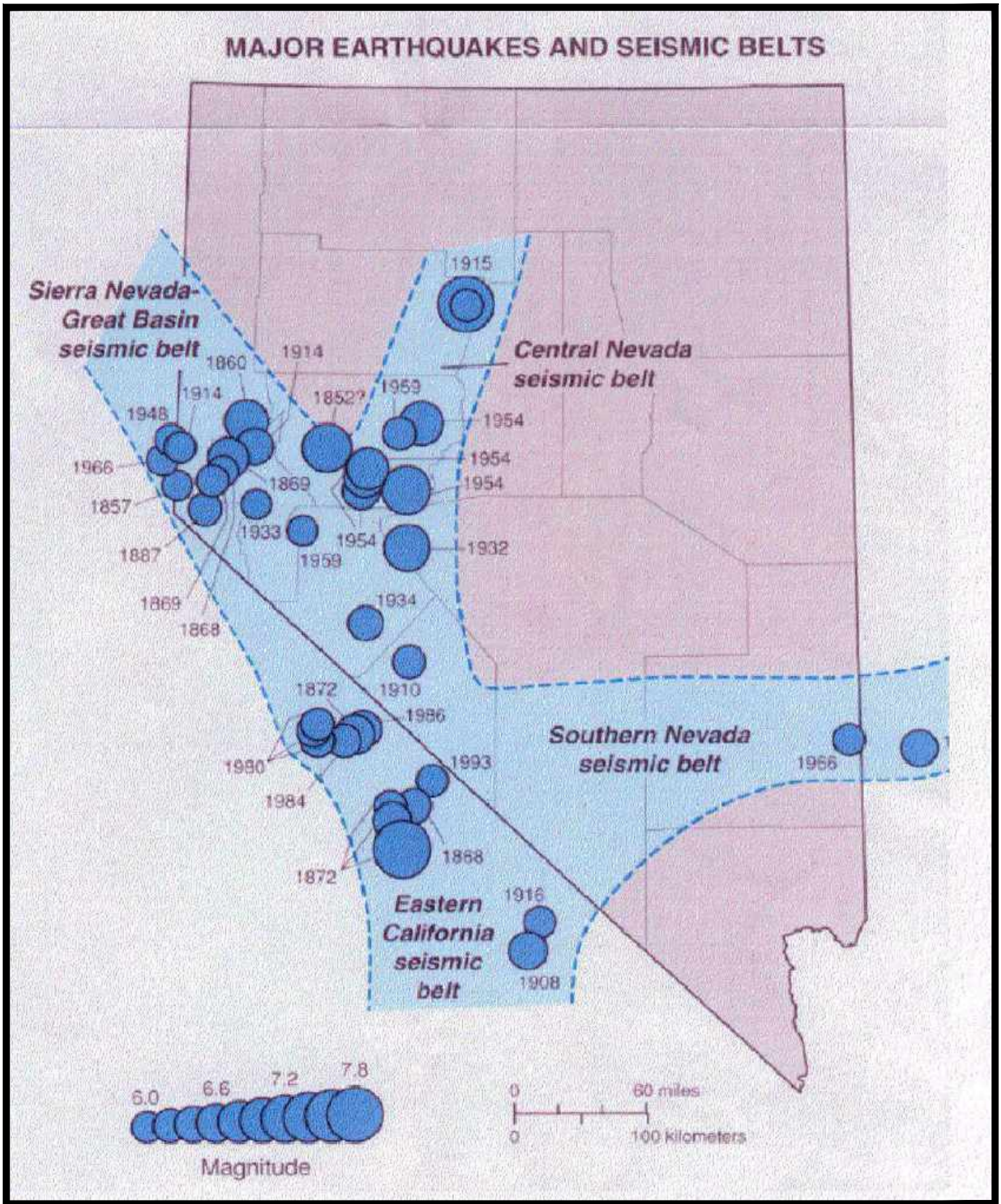
MODIFIED MERCALLI SCALE

Carson City Nevada

Date:	May 2016
Scale:	N.T.S.
Job No:	8947.000
PLATE	3



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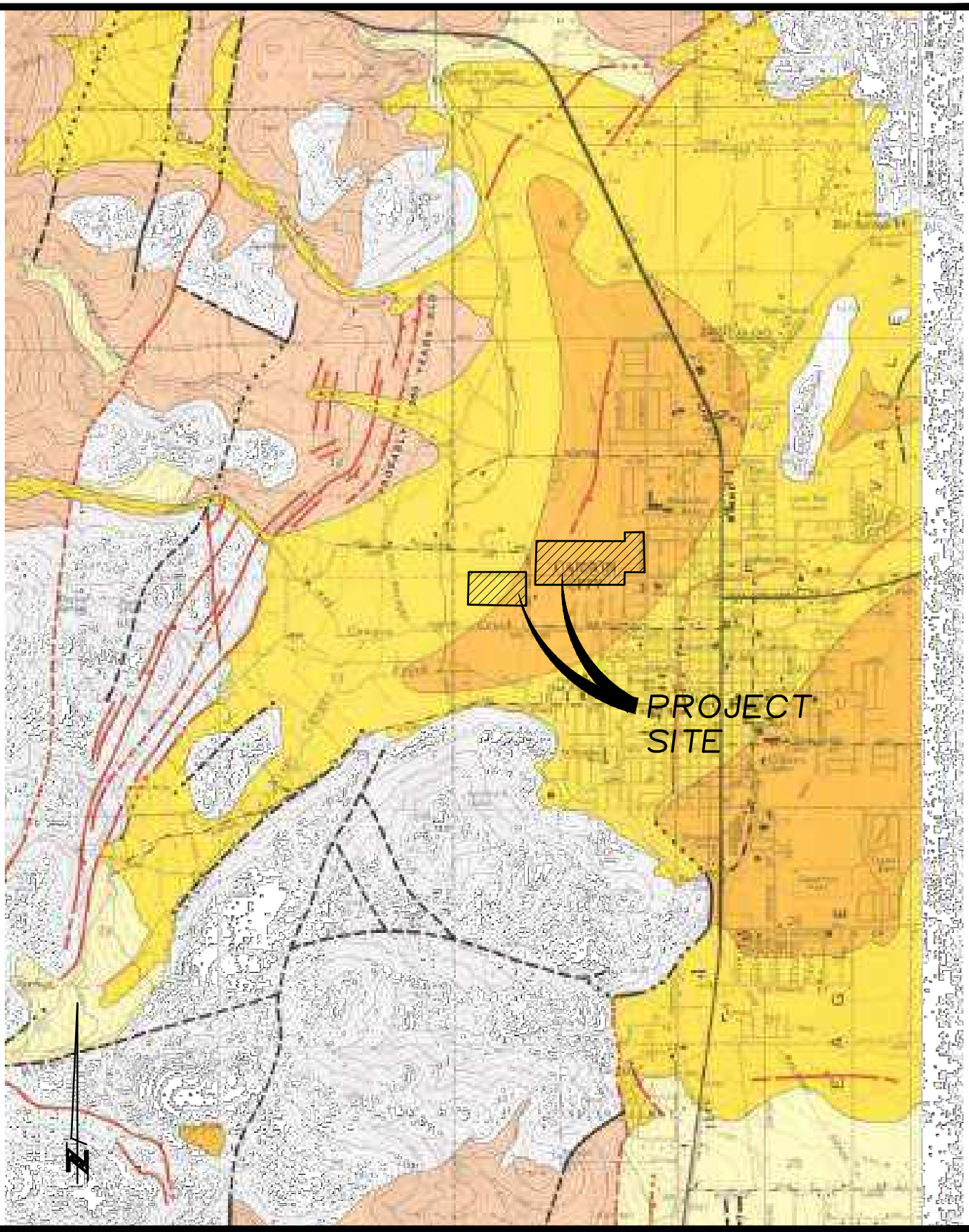
The Vintage at King's Canyon

MAJOR EARTHQUAKES/ SEISMIC BELTS

Carson City Nevada

Date:	May 2016
Scale:	N.T.S.
Job No:	8947.000
PLATE	4



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The Vintage at King's Canyon

FAULT MAP

Carson City Nevada

Date:	May 2016
Scale:	N.T.S.
Job No:	8947.000
PLATE	5

APPENDIX A

TEST PIT No. B-01

Logged By: **B. Sexton** | Total Depth: **21.5 feet**
Date Logged: **4-18-2016** | Water Depth: **No groundwater encountered**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
		B	**Brown Clayey SAND (SC),** Moist, Medium Dense, with Roots.	6.7			36	14	0.8	61.3	38.0	43	
5		B	**Reddish Brown Clayey SAND (SC),** Moist, Medium Dense, with Mottling.	14.1			34	18	0.0	71.4	28.6		
10		Z	**Brown Silty SAND (SM),** Moist, Medium Dense. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt.										
15		Z	**Reddish Gray Brown Sandy SILT (ML),** Moist, Stiff, with Mottling. Estimated 30% Medium to Fine Sand and 70% Non-Plastic Silt.										
		Z	**Reddish Brown Poorly Graded SAND with Silt (SP-SM),** Moist, Medium Dense. Estimated 10% Fine Gravel, 80% Coarse to Fine Sand, and 10% Non-Plastic Silt.										
			Brown Clayey SAND (SC), Moist, Medium Dense. Estimated 55% Coarse to Fine Sand and 45% Clay.										
20			**Gray Brown Silty SAND (SM),** Moist, Medium Dense.	17.1			NP	NP	0.5	83.0	16.5		

5.0 | 10.5 | 15.0 | 15.5 | 16.0 | 17.5 | 21.5

Test pit terminated at 21.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE A-1

TEST PIT No. B-02

Logged By: **B. Sexton** | Total Depth: **21.5 feet**
Date Logged: **4-18-2016** | Water Depth: **No groundwater encountered**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
		B	**Brown Clayey SAND (SC),** Moist, Medium Dense, Roots. See Plate A-1 for Test Results.										
5			5.0										
			Reddish Brown Silty SAND (SM), Moist, Dense.	5.5			NP	NP	2.2	82.6	15.2		
10			10.0										
			Gray Brown Poorly Graded SAND with Silt (SP-SM), Moist, Dense, with Slight Verticle Mottling. Estimated 5% Fine Gravel, 85% Coarse to Fine Sand, and 10% Non-Plastic Silt.										
15			15.7										
		Z	16.0 **Gray Brown Clayey SAND (SC),** Miost, Medium Dense. Estimated 60% Coarse to Fine Sand and 40% Clay.										
			Gray Brown Poorly Graded SAND (SP), Moist, Medium Dense. Estimated 95% Coarse to Fine Sand and 5% Non-Plastic Silt.										
20			20.0										
			Gray Brown Clayey SAND (SC), Miost, Medium Dense. Estimated 60% Coarse to Fine Sand and 40% Clay.										
		Z	21.0 21.5 **Gray Brown Poorly Graded SAND (SP),** Moist, Medium Dense. Estimated 95% Coarse to Fine Sand and 5% Non-Plastic Silt.										

Test pit terminated at 21.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE A-2

TEST PIT No. B-03

Logged By: **B. Sexton** | Total Depth: **41.5 feet**
Date Logged: **4-18-2016** | Water Depth: **22 feet ±**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
		B	**Brown Clayey SAND (SC),** Moist, Dense. See Test Results on Plate A-1.										
5			5.5										
		Z	**Light Gray Brown Poorly Graded SAND with Silt (SP-SM),** Moist, Dense. Estimated 5% Fine Gravel, 85% Coarse to Fine Sand, and 10% Non-Plastic Silt.										
			10.0										
10			10.5										
		Z	**Brown Silty SAND (SM),** Moist, Dense. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt.										
			11.0										
			Gray Brown Clayey SAND (SC), Moist, Dense. Estimated 70% Coarse to Fine Sand and 30% Clay.										
15			15.5										
			Reddish Brown Silty SAND (SM), Moist, Dense, with Mottling. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt.										
			Gray Brown Clayey SAND (SC), Moist, Dense. Estimated 60% Coarse to Fine Sand and 40% Clay.										
20			20.0										
		Z	**Gray Brown Silty SAND (SM),** Moist, Dense. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt. Groundwater Encountered at 22' Below Ground Surface. Switch to Mud Rotary at 22' Due to Slight Heaving of the Hole after Obtaing the Sample.										
25													
			30.0										
30			**Red Brown Poorly Graded SAND with Silt (SP-SM),** Wet, Dense, with Mottling.	16.9			NP	NP	13.0	75.1	11.9		
35			37.0										
		Z	**Red Brown Silty SAND (SM),** Wet, Dense, with Mottling. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt.										
40			40.0										
			Gray Poorly Graded SAND (SP), Wet, Dense, with Layered Mottling.										
			41.5										

Test pit terminated at 41.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE A-3

TEST PIT No. B-04

Logged By: **B. Sexton** | Total Depth: **25 feet**
Date Logged: **4-21-2016** | Water Depth: **23 feet ±**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Brown Clayey SAND (SC), Moist, Medium Dense. Estimated 60% Coarse to Fine Sand and 40% Clay.										
			5.0										
5			**Reddish Brown Silty SAND (SM),** Moist, Medium Dense. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
			5.5										
			Light Brown Silty SAND (SM), Moist, Medium Dense, with Mottling.										
10				8.8			NP	NP	1.2	68.5	30.3		
15			Color Change at 15' to Brown.										
			Pocket Penetrometer Field Test at 16' = 1.7tsf										
			16.0										
			Gray Brown Clayey SAND (SC), Moist, Medium Dense.	18.0			31	15	0.0	53.9	46.1		
20			Color Change at 20' to Reddish Brown.										
			21.0										
			Reddish Brown Silty SAND (SM), Wet, Dense. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt.										
			Continued to Drill Straight to 25'. Encountered Groundwater at 23'.										
25			25.0										
			Test pit terminated at 25 feet. Test Pits backfilled without compaction verification										

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE A-4

TEST PIT No. B-05

Logged By:	**B. Sexton**	Total Depth:	**11.5 feet**
Date Logged:	**4-21-2016**	Water Depth:	**No groundwater encountered**
Drill Type:	**Jeff Co Speedstar 15**	Ground Elev.:	**E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Clayey SAND (SC),** Moist, Medium Dense.										
2													
3				11.1			32	11	0.7	65.5	33.8		
4													
5													
6													
7			Mottling Noted at 7.5'.										
8													
9													
10			10.0										
11			**Reddish Brown Lean CLAY with Sand (CL),** Moist, Medium Stiff, Mottling. Estimated 20% Medium to Fine Sand and 80% Moderately Plastic Clay. 11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 Date: May 2016

PLATE

A-5

TEST PIT No. B-06

Logged By: **B. Sexton** | Total Depth: **41.5 feet**
Date Logged: **4-19-2016** | Water Depth: **No groundwater encountered**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION		Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
5			**Brown Clayey SAND (SC),** Moist, Dense, Slight Mottling. Estimated 60% Coarse to Fine Sand and 40% Clay. Entire Hole Drilled Utilizing Mud Rotary Technique.	10.0										
10			**Gray Brown Poorly Graded SAND with Silt (SP-SM),** Moist, Dense. Estimated 90% Coarse to Fine Sand and 10% Non-Plastic Silt.	15.0										
15			**Reddish Brown Silty SAND (SM)** Moist, Dense. Estimated 5% Fine Gravel, 80% Coarse to Fine Sand, and 15% Non-Plastic Silt.	20.0										
20		Z	**Gray Brown Lean CLAY with Sand (CL)** Moist, Stiff, with Mottling.	21.0	32.2			37	16	0.0	18.8	81.2		
			Gray Brown Silty SAND (SM) Moist, Dense, Mottling. Estimated 5% Fine Gravel, 80% Coarse to Fine Sand, and 15% Non-Plastic Silt.	25.0										
25			**Reddish Brown Silty SAND (SM)** Moist, Dense. Estimated 5% Fine Gravel, 80% Coarse to Fine Sand, and 15% Non-Plastic Silt.											
30			2" Layer of Purple SM at 31'.											
35			Heavy Mottling Noted at 35'.											
40				41.0										
		Z	**Gray Reddish Brown Lean CLAY with Sand (CL),** Moist, Stiff, with Mottling. Estimated 20% Medium to Fine Sand and 80% Moderately Plastic Clay.	41.5										

Test pit terminated at 41.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE A-6

TEST PIT No. B-07

Logged By: **B. Sexton**
Date Logged: **4-21-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Clayey SAND (SC)** Moist, Medium Dense. Estimated 60% Coarse to Fine Sand and 40% Clay.										
2													
3			3.0										
		B	**Gray Brown Silty SAND (SM),** Moist, Medium Dense, with Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
4													
5			5.0										
			Gray Brown Clayey SAND (SC) Moist, Medium Dense. Estimated 70% Coarse to Fine Sand and 30% Clay.										
6													
7													
8													
9													
10			Color Change at 10' to Brown.										
			10.8										
11		Z	**Gray Brown Poorly Graded SAND with Silt (SP-SM),** Moist, Dense.	4.4			NP	NP	0.5	88.8	10.8		
			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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The Vintage at King's Canyon

LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-7

TEST PIT No. B-08

Logged By: **B. Sexton** | Total Depth: **21.5 feet**
Date Logged: **4-21-2016** | Water Depth: **No groundwater encountered**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
5			**Brown Clayey SAND (SC)** Moist, Medium Dense. Estimated 60% Coarse to Fine Sand and 40% Clay. 5.5										
		Z	**Reddish Brown Clayey SAND (SC)** Moist, Medium Dense, with Mottling. 10.0	13.5			45	24	0.2	49.9	49.9		
10			**Gray Brown Silty SAND (SM)** Moist, Medium Dense, Roots. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt.										
15			Color Change at 15' to Brown. 16.0										
		Z	**Light Gray Brown Silty SAND (SM)** Moist, Dense. Estimated 10% Fine Gravel, 60% Coarse to Fine Sand, and 30% Non-Plastic Silt. 20.0										
20			**Gray Reddish Brown Silty Gravel (GM),** Moist, Very Dense, with Mottling. Estimated 40% Coarse to Fine Gravel, 40% Coarse to Fine Sand, and 20% Non-Plastic Silt. 21.5										

Test pit terminated at 21.5 feet.
Test Pits backfilled without compaction verification

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The Vintage at King's Canyon

LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE A-8

TEST PIT No. B-09

Logged By:	**B. Sexton**	Total Depth:	**25 feet**
Date Logged:	**4-21-2016**	Water Depth:	**No groundwater encountered**
Drill Type:	**Jeff Co Speedstar 15**	Ground Elev.:	**E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0		B	**Brown Clayey SAND (SC)** Moist, Medium Dense.	8.0			40	24	3.2	48.9	47.9		35
5			Color Change to Reddish Brown at 5'.										
10			**Reddish Brown Silty SAND (SM)** Moist, Dense. Estimated 10% Fine Gravel, 60% Coarse to Fine Sand, and 30% Non-Plastic Silt.										
15			**Gray Brown Clayey SAND (SC)** Moist, Dense. Estimated 70% Coarse to Fine Sand and 30% Clay.										
20			**Gray Brown Silty SAND (SM)** Moist, Dense. Estimated 10% Fine Gravel, 60% Coarse to Fine Sand, and 30% Non-Plastic Silt.										
25			Drilled Straight from 21.5' to 25' to Search for Water. No Water Present in Boring Hole at 25' After Waiting 2 Hours.										

Test pit terminated at 25 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 Date: May 2016

PLATE

A-9

TEST PIT No. B-10

Logged By:	**B. Sexton**	Total Depth:	**11.5 feet**
Date Logged:	**4-21-2016**	Water Depth:	**No groundwater encountered**
Drill Type:	**Jeff Co Speedstar 15**	Ground Elev.:	**E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Clayey SAND (SC)** Moist, Dense. Estimated 55% Coarse to Fine Sand and 45% Clay.										
2													
3			3.5										
4		Z	**Gray Brown Silty SAND (SM)** Moist, Dense, with Roots. Estimated 60% Coarse to Fine Sand, and 40% Non-Plastic Silt.										
5													
6													
7													
8			8.0										
9			**Gray Brown Clayey SAND (SC)** Moist, Dense, with Mottling.	7.9			26	9	0.1	56.3	43.7		
10													
11			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 Date: May 2016

PLATE A-10

TEST PIT No. B-11

Logged By: **B. Sexton**
Date Logged: **4-21-2016**
Drill Type: **Jeff Co Speedstar 15**

Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Clayey SAND (SC)** Moist, Medium Dense.										
1		B											
2													
3			Slight Mottling Noted at 3.5'.										
4													
5													
6			Color Change to Light Brown and Contains Roots at 5.7'.	7.6			31	13	1.0	49.0	49.9		
7													
8													
9													
10			10.0										
11			**Reddish Brown Silty SAND (SM)** Moist, Medium Dense, with Heavy Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt. 11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-11

TEST PIT No. B-12

Logged By: **B. Sexton**
Date Logged: **4-21-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Clayey SAND (SC)** Moist, Medium Dense. Estimated 55% Coarse to Fine Sand and 45% Clay.										
2													
3			Slight Mottling Noted at 3.5'.										
4													
5			Heavier Mottling Noted at 5'.										
6													
7													
8			8.0										
9			**Gray Brown Sandy SILT (ML),** Moist, Stiff.	6.6			38	10	0.3	30.4	69.3		
10			Slightly More Coarse at 10'.										
11			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-12

TEST PIT No. B-13

Logged By: **B. Sexton**
Date Logged: **4-21-2016**
Drill Type: **Jeff Co Speedstar 15**

Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Clayey SAND (SC)** Moist, Medium Dense.										
2													
3													
4													
5													
6				5.8			30	11	0.8	61.7	37.6		
			6.5										
7			**Gray Brown Silty SAND (SM),** Moist, Medium Dense to Dense, Roots, and Slight Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
8													
9													
10													
11													
			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-13

TEST PIT No. B-14

Logged By: **B. Sexton** | Total Depth: **41.5 feet**
Date Logged: **4-19-2016** | Water Depth: **No groundwater encountered**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Clayey SAND (SC),** Moist, Medium Dense. Estimated 55% Coarse to Fine Sand and 45% Clay.										
			Entire Hole Drilled Utilizing Mud Rotary Technique.										
10		Z	10.0										
			Reddish Brown Silty SAND (SM), Moist, Medium Dense, with Roots and Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
			Gray Brown Silty SAND (SM), Moist, Medium Dense to Very Dense, with Roots and Mottling. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt. No Mottling Noted but Still Containing Roots at 15'. Also a 1" Layer of a Black Silty SAND (SM). No Odor.										
20			20.0										
			Gray Reddish Brown Poorly Graded SAND with Silt (SP-SM), Moist, Dense to Very Dense. Estimated 10% Angular Fine Gravel, 80% Coarse to Fine Sand, and 10% Non-Plastic Silt.										
			Color Change to just Reddish Brown at 25'.										
30			30.0										
			Reddish Brown Silty SAND (SM), Moist, Dense, with Mottling.	19.8			NP	NP	0.3	59.6	40.1		
40			Slightly More Coarse at 40'.										
			41.5										
			Test pit terminated at 41.5 feet. Test Pits backfilled without compaction verification										

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE
A-14

TEST PIT No. B-15

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Sandy SILT (ML),** Moist, Medium Stiff, with Roots, and Mottling.										
2													
3				15.5			36	7	0.8	38.3	61.0		
4													
5			5.5										
6		N	**Gray Brown Silty SAND (SM),** Moist, Medium Dense, Slight Roots, and Slight Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
7													
8													
9													
10													
11			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-15

TEST PIT No. B-16

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Moist, Loose.	6.5			33	6	1.4	62.7	35.9	21	0
2													
3													
4													
5			5.0										
6			**Gray Brown Silty SAND (SM),** Moist, Medium Dense to Dense. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
7													
8													
9													
10													
11			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-16

TEST PIT No. B-17

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Moist, Loose.										
2													
3		N		17.5			30	5	0.5	54.5	44.9		
3.7													
4			**Gray Brown Silty SAND (SM),** Moist, Medium Dense, with Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
5													
6													
7			Small Roots Noted at 7.5'.										
8													
9													
10													
10.0			**Brown Clayey SAND (SC),** Moist, Dense, with Roots, and Mottling. Estimated 55% Coarse to Fine Sand and 45% Clay.										
11													
11.5													

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-17

TEST PIT No. B-18

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Moist, Loose, with Roots. Estimated 55% Coarse to Fine Sand and 45% Plastic Silt.										
2													
3													
4													
5			5.0										
5			**Brown Clayey SAND (SC),** Moist, Medium Dense, with Slight Mottling. Estimated 55% Coarse to Fine Sand and 45% Clay.										
6													
7													
8													
9													
10			10.0										
10			**Gray Brown Clayey SAND (SC),** Moist, Medium Dense, with Mottling.										
11			11.5	8.4			29	11	0.1	51.7	48.1		

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-18

TEST PIT No. B-19

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**

Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Moist, Medium Dense, with Roots. See Plate A-16 for Test Results.										
2													
3													
4													
5													
6													
7													
8			8.5										
9			**Gray Brown Silty SAND (SM),** Moist, Medium Dense, with Mottling and Roots. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
10													
11			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-19

TEST PIT No. B-20

Logged By: **B. Sexton** | Total Depth: **41.5 feet**
Date Logged: **4-19-2016** | Water Depth: **No groundwater encountered**
Drill Type: **Jeff Co Speedstar 15** | Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Silty SAND (SM),** Moist, Medium Dense, with Roots. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
10.0			**Gray Reddish Brown Silty SAND (SM),** Moist, Medium Dense, with Mottling. Estimated 5% Fine Gravel, 55% Coarse to Fine Sand and 40% Non-Plastic Silt.										
15.0			**Gray Brown Clayey SAND (SC),** Moist, Medium Dense.	21.9			32	9	3.1	53.6	43.3		
20.0			**Gray Brown Silty SAND (SM),** Moist, Dense, with Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
30.0			**Gray Brown Poorly Graded SAND with Silt (SP-SM),** Moist, Dense. Estimated 10% Fine Angular Gravel, 90% Coarse to Fine Sand, and 10% Non-Plastic Silt.										
35.0			**Brown Silty SAND (SM),** Moist, Dense, with Mottling. Estimated 70% Coarse to Fine Sand and 30% Non-Plastic Silt.										
40.0			**Gray Brown Poorly Graded SAND with Silt (SP-SM),** Moist, Dense. Estimated 10% Fine Angular Gravel, 90% Coarse to Fine Sand, and 10% Non-Plastic Silt.										
41.5			Test pit terminated at 41.5 feet. Test Pits backfilled without compaction verification										

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 | Date: May 2016

PLATE A-20

TEST PIT No. B-21

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **40 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0		B	**Brown Silty SAND (SM),** Moist, Loose, with Roots. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
5			Slight Mottling Noted at 6'.										
		Z	8.5										
			Gray Brown Clayey SAND (SC), Moist, Medium Dense, with Mottling. Color Change to Brown at 10'.	6.6			30	8	0.3	53.9	45.9		
10			11.5										
			Drilled First Down to 25'. No Water Noted. Then Proceded to Drill to 40'. No Water Noted. Left the Hole Open for Approximately 2 Hours. No Water Noted within the Boring Hole to 40' Below Ground Surface.										
15													
20													
25													
30													
35													
40			40.0										

Test pit terminated at 40 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE_8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16

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The Vintage at King's Canyon

LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-21

TEST PIT No. B-22

Logged By:	**B. Sexton**	Total Depth:	**11.5 feet**
Date Logged:	**4-20-2016**	Water Depth:	**No groundwater encountered**
Drill Type:	**Jeff Co Speedstar 15**	Ground Elev.:	**E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Moist, Loose to Medium Dense. See Plate A-6 for Test Results.										
2													
3													
4													
5		N	5.7										
6			**Gray Brown Silty SAND (SM),** Moist, Loose, with Mottling. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
7													
8													
9													
10													
11			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000 Date: May 2016

PLATE A-22

TEST PIT No. B-23

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**
Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty, Clayey SAND (SC-SM),** Moist, Loose to Dense, with Roots.										
2													
3													
4													
5				8.5			28	6	3.4	62.6	33.9		
6			6.2										
			Gray Reddish Brown Silty SAND (SM), Moist, Loose, with Mottling and Roots. Estimated 60% Coarse to Fine Sand and 40% Non-Plastic Silt.										
7			7.5										
8			**Gray Brown Clayey SAND (SC),** Moist, Medium Dense, with Mottling. Estimated 60% Coarse to Fine Sand and 40% Clay.										
9													
10													
11			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-23

TEST PIT No. B-24

Logged By: **B. Sexton**
Date Logged: **4-20-2016**
Drill Type: **Jeff Co Speedstar 15**

Total Depth: **11.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Moist, Loose to Medium Dense, with Roots.										
2													
3				9.8			29	7	6.8	65.5	27.7		
4													
5			Roots and Mottling Noted at 5'.										
6													
7													
8													
9													
10			10.0										
11			**Reddish Brown Silty SAND (SM),** Moist, Loose, with Heavy Mottling. Estimated 60% Coarse to Fine Sand and 40% Plastic Silt.										
			11.5										

Test pit terminated at 11.5 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16

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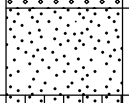
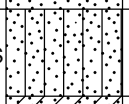
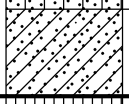
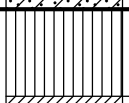
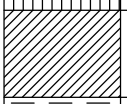
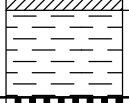
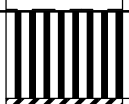
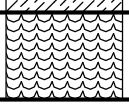
LOG OF EXPLORATORY TEST PIT

Job Number: 8947.000
Date: May 2016

PLATE
A-24

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Other Tests

AN	ANALYTICAL TEST (pH, Soluble Sulfate, and Resistivity)
C	CONSOLIDATION TEST
DS	DIRECT SHEAR TEST
MD	MOISTURE DENSITY CURVE

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The Vintage at King's Canyon

LEGEND

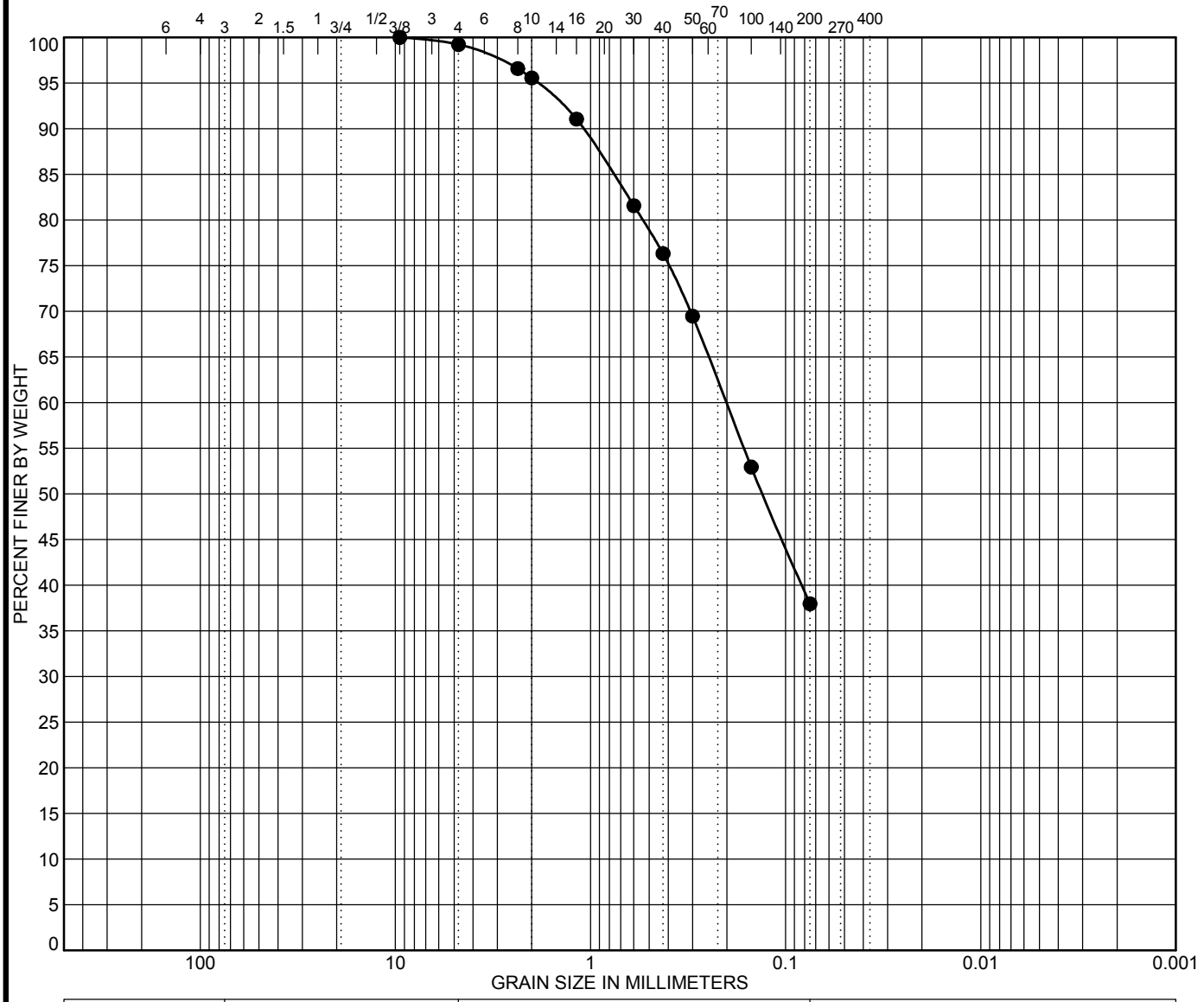
Job Number: 8947.000

Date: May 2016

PLATE

A-25

APPENDIX B



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Date: 5-6-2016						
B-01	Classification	LL	PL	PI	Cc	Cu
Depth: 0	Clayey SAND (SC)	36	23	13		
Sample Location	Comb. Samp. B-1, 2, 3, & 5 from 0'-3'					
USCS	SC					
AASHTO						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-01								
Depth: 0	9.5	0.202			0.8	61.3	38.0	

Natural Moisture	6.7 %	**S.E.**		**Absorption %**		
R-Value	43	**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	35	

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The Vintage at King's Canyon

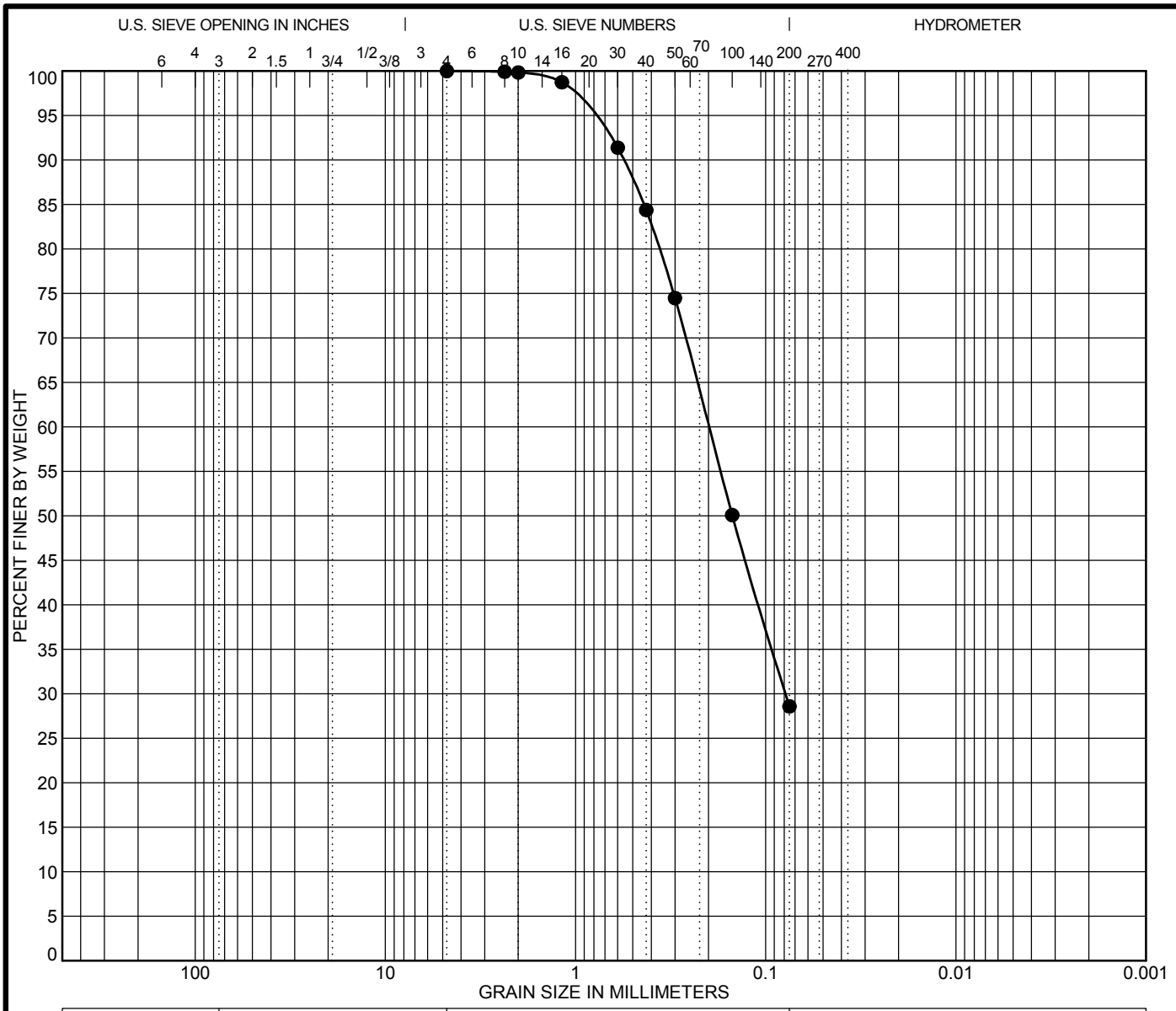
GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.1

LUMOS_GRAIN_SIZE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016							
●	**B-01**	Classification			LL	PL	PI	Cc	Cu
	Depth: 5	Clayey SAND (SC)			34	16	18		
	Sample Location	Boring 1 from 5' - 6.5'							
	USCS	SC							
	AASHTO								

	Specimen Identification								
●	**B-01**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 5	4.75	0.199	0.079		0.0	71.4	28.6	

Natural Moisture	14.1 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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The Vintage at King's Canyon

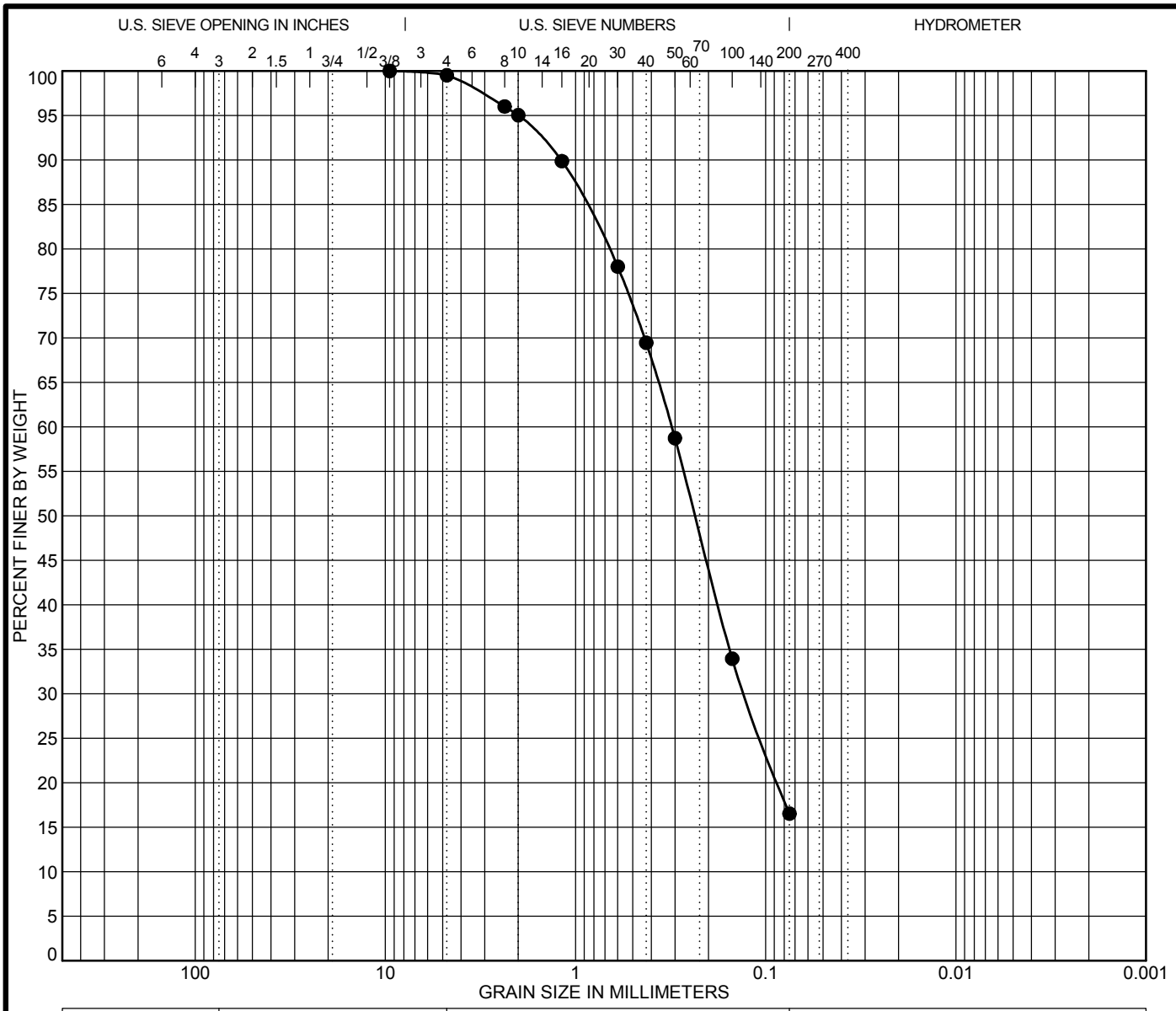
GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.2

LUMOS_GRAIN_SIZE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-01**	Classification	LL	PL	PI	Cc	Cu
	Depth: 21	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Boring 1 from 21' - 21.5'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**B-01**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 21	9.5	0.313	0.128		0.5	83.0	16.5	

Natural Moisture	17.1 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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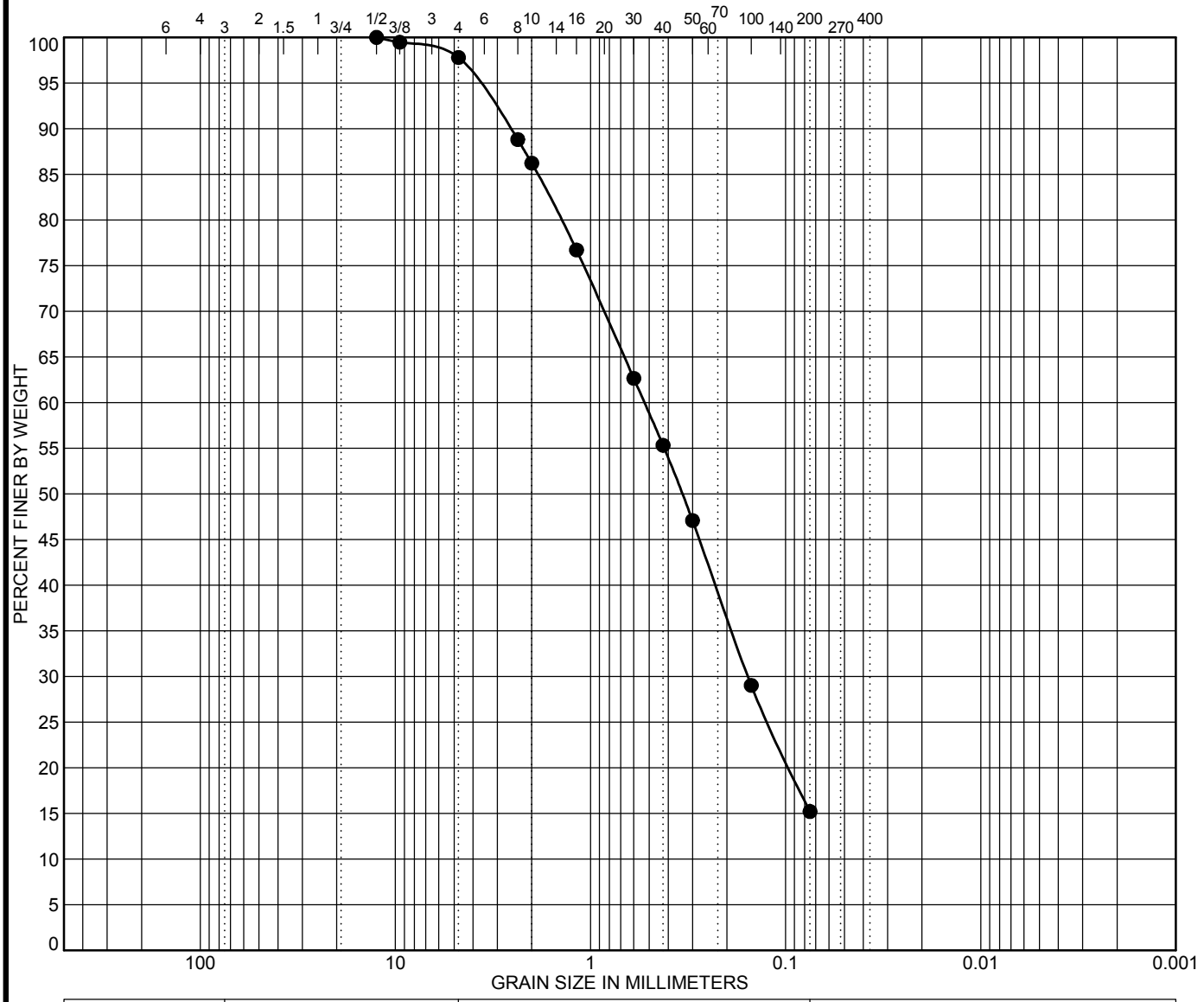
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-02**	Classification	LL	PL	PI	Cc	Cu
	Depth: 5	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Boring 2 from 5' - 6.5'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**B-02**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 5	12.5	0.53	0.156		2.2	82.6	15.2	

Natural Moisture	5.5 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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The Vintage at King's Canyon

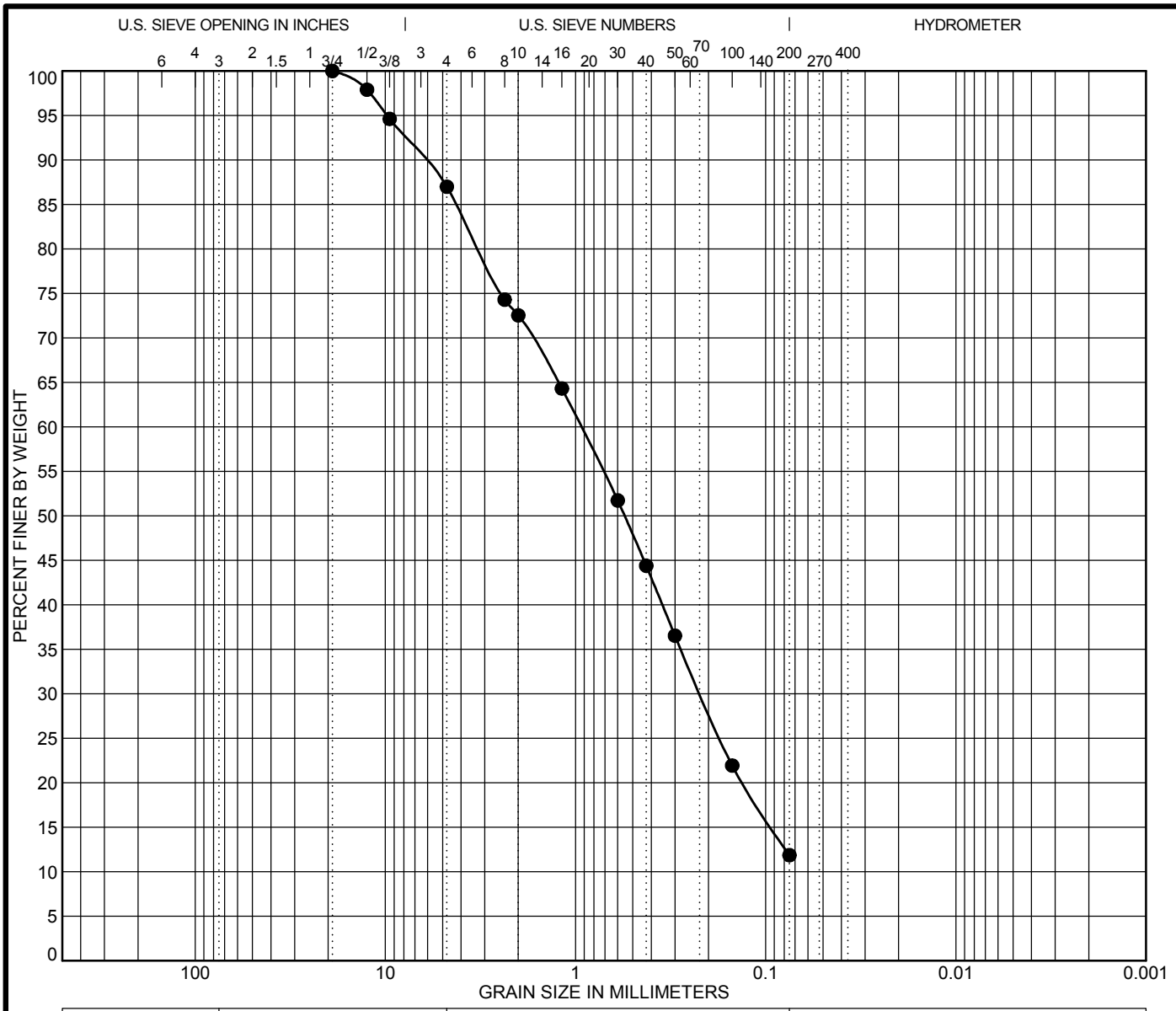
GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.4

LUMOS_GRAIN_SIZE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16



Specimen Identification	Date: 5-2-2016					
● **B-03**	Classification	LL	PL	PI	Cc	Cu
Depth: 30	Poorly Graded SAND w/Silt (SP-SM)	NP	NP	NP	0.8	14.2
Sample Location	Boring 3 from 30' - 31.5'					
USCS	SP-SM					
AASHTO						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **B-03**								
Depth: 30	19	0.936	0.22		13.0	75.1	11.9	

Natural Moisture	16.9 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

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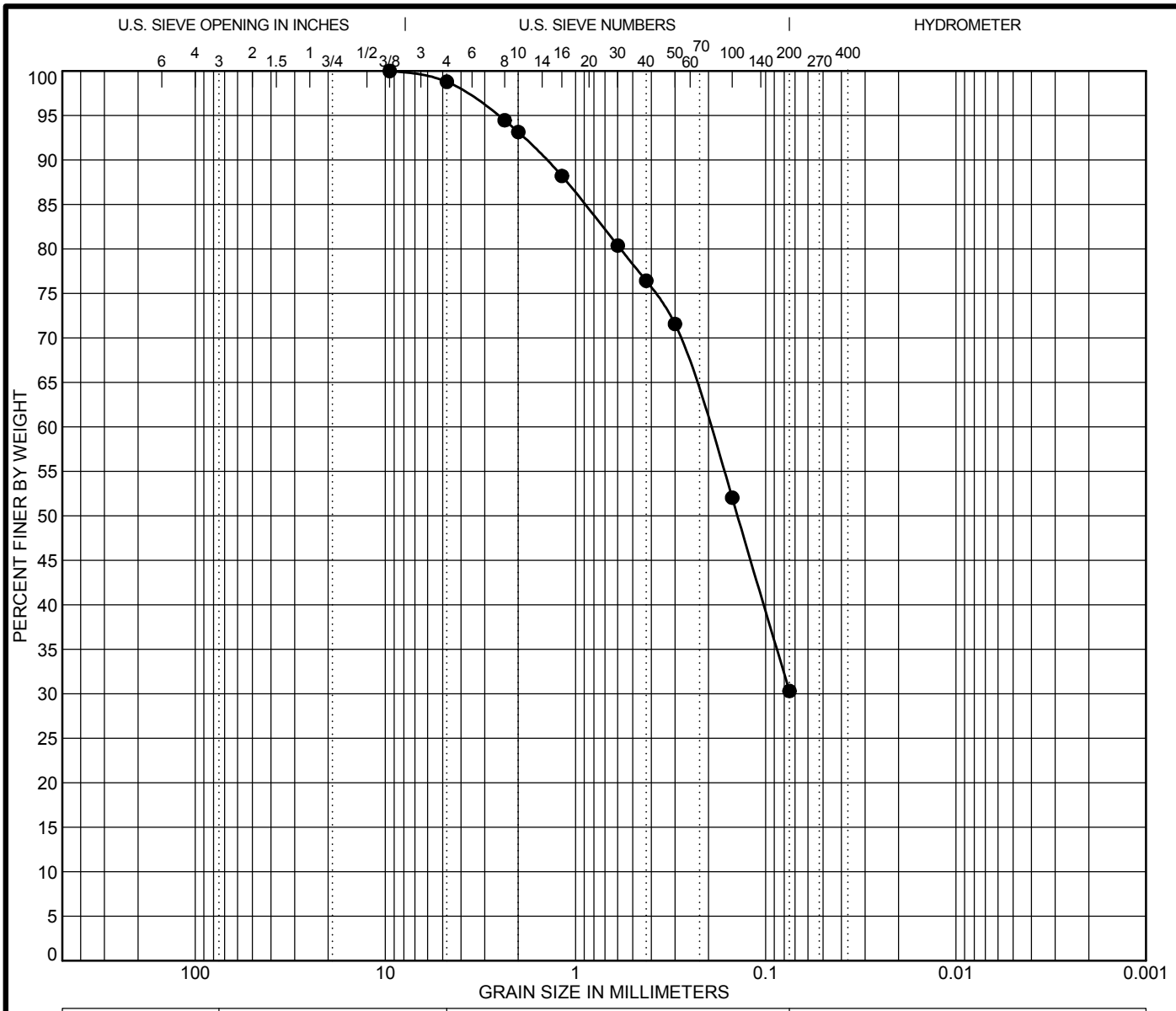
GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-04**	Classification	LL	PL	PI	Cc	Cu
	Depth: 10	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Boring 4 from 10' - 11.5'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**B-04**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 10	9.5	0.199			1.2	68.5	30.3	

Natural Moisture	8.8 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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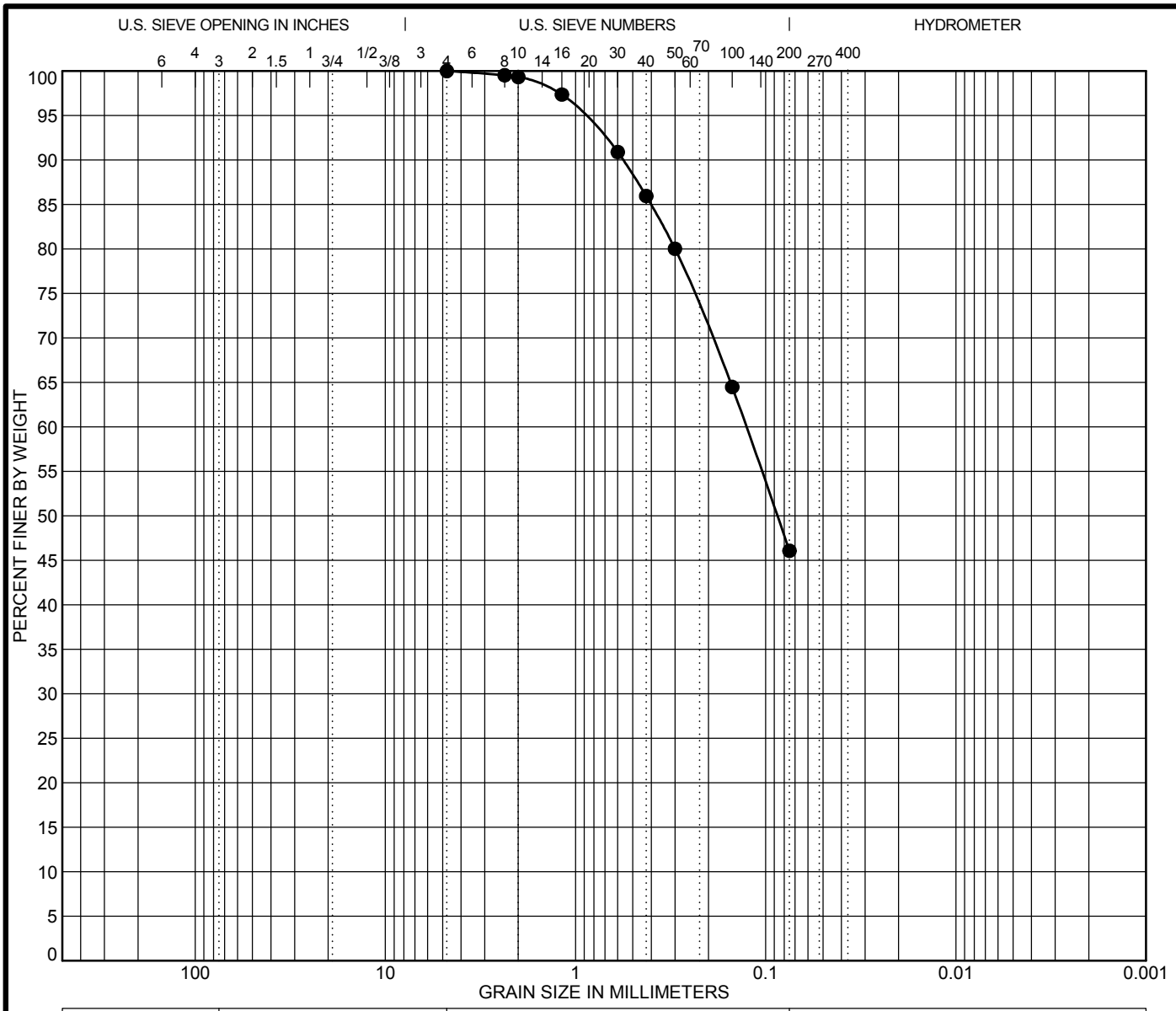
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.6



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016							
●	**B-04**	Classification			LL	PL	PI	Cc	Cu
	Depth: 16	Clayey SAND (SC)			31	16	15		
	Sample Location	Boring 4 from 16' - 16.5'							
	USCS	SC							
	AASHTO								

	Specimen Identification								
●	**B-04**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 16	4.75	0.127			0.0	53.9	46.1	

Natural Moisture	18 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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GRAIN SIZE DISTRIBUTION

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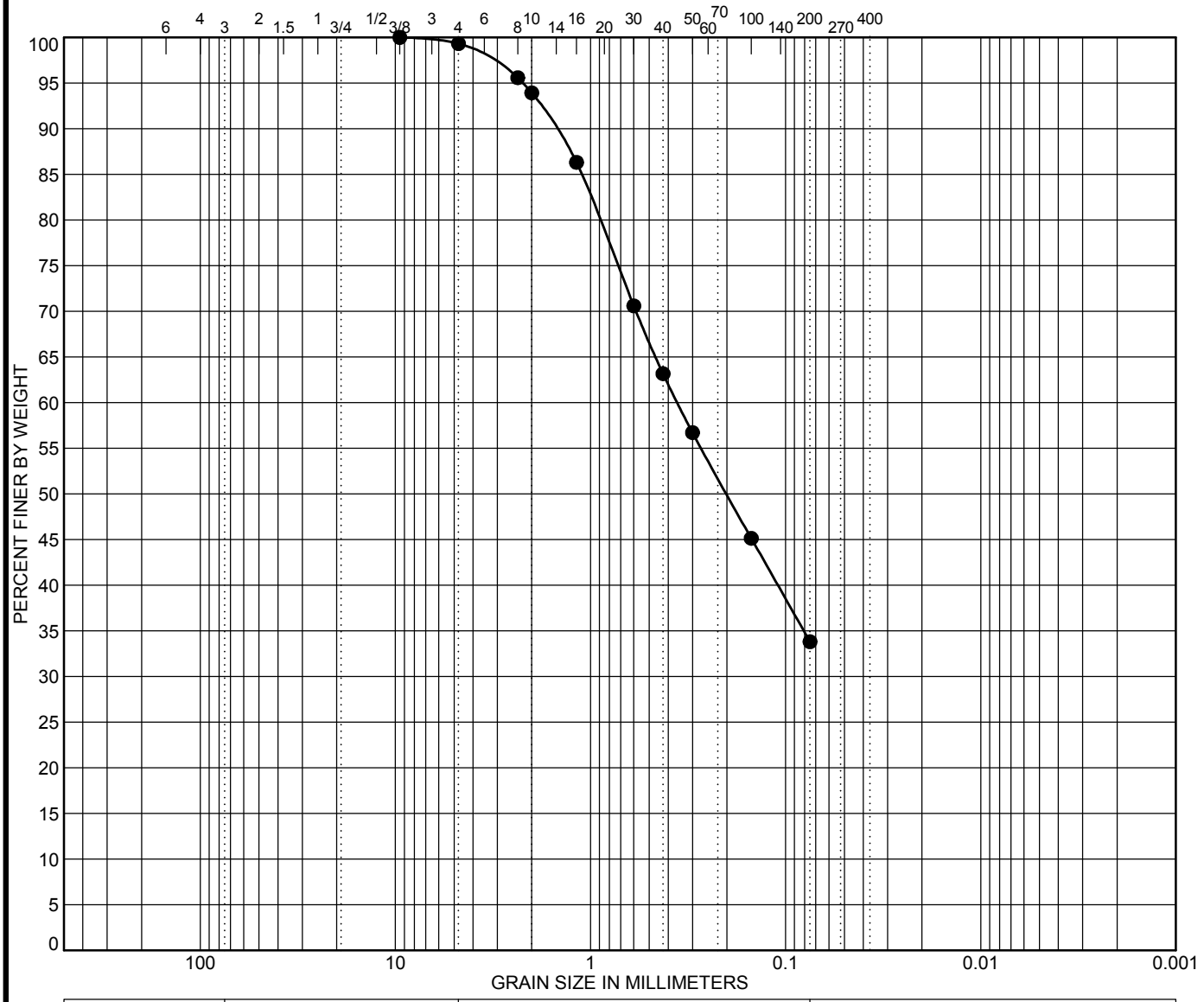
PLATE

B-1.7



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016					
●	**B-05**	Classification	LL	PL	PI	Cc	Cu
	Depth: 3	Clayey SAND (SC)	32	21	11		
	Sample Location	Boring 5 from 3' - 3.5'					
	USCS	SC					
	AASHTO						

	Specimen Identification								
●	**B-05**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	9.5	0.358			0.7	65.5	33.8	

Natural Moisture	11.1 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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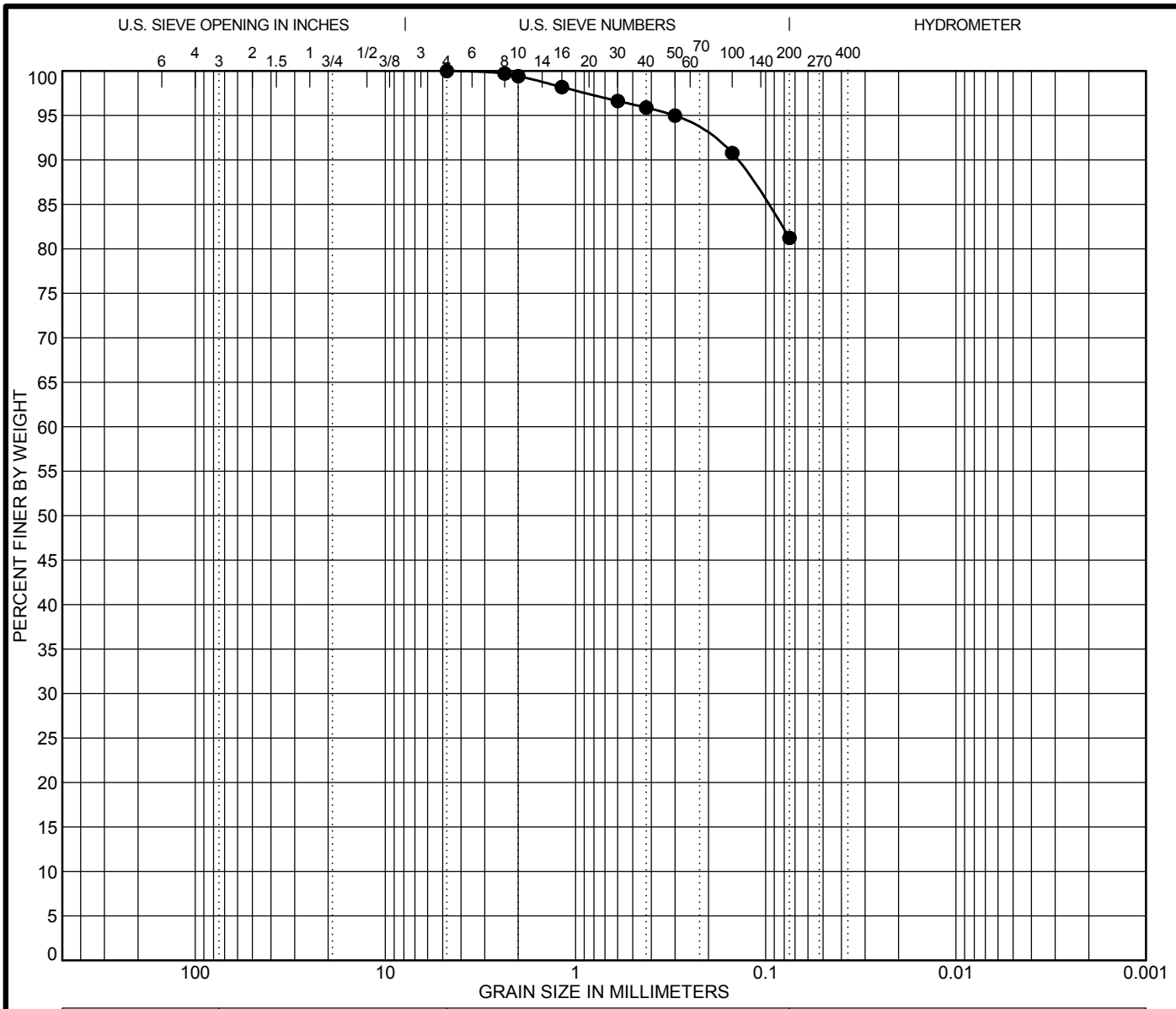
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.8



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016							
●	**B-06**	Classification				LL	PL	PI	Cc	Cu
	Depth: 20	Lean CLAY with Sand (CL)				37	21	16		
	Sample Location	Boring 6 from 20' - 21'								
	USCS	CL								
	AASHTO									

	Specimen Identification								
●	**B-06**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 20	4.75				0.0	18.8	81.2	

Natural Moisture	32.2 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

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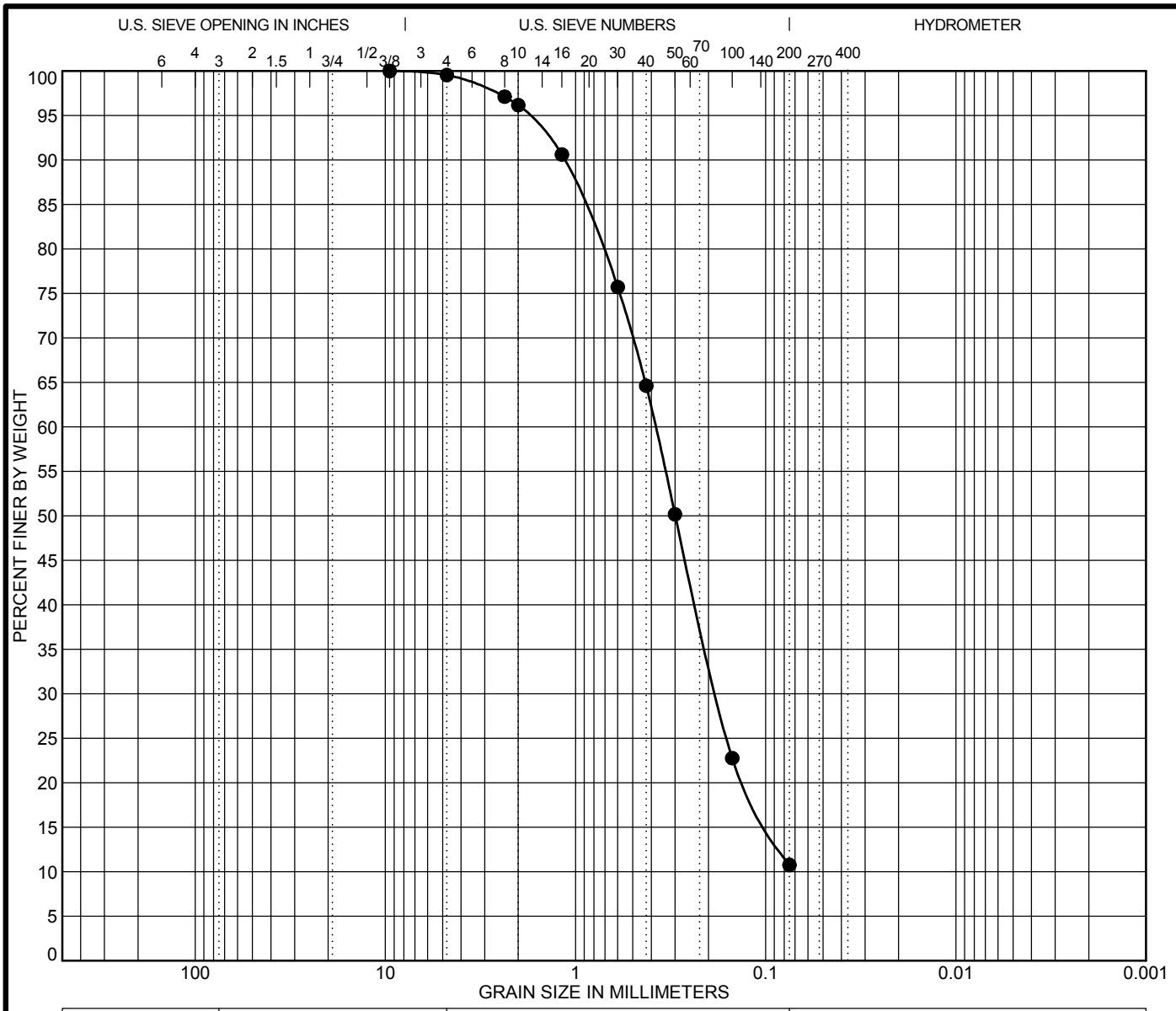
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.9



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016	LL	PL	PI	Cc	Cu
●	**B-07**	Classification					
	Depth: 11	Poorly Graded SAND w/Silt (SP-SM)	NP	NP	NP	1.2	5.3
	Sample Location	Boring 7 from 11' - 11.5'					
	USCS	SP-SM					
	AASHTO						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-07**								
	Depth: 11	9.5	0.38	0.18		0.5	88.8	10.8	

Natural Moisture	4.4 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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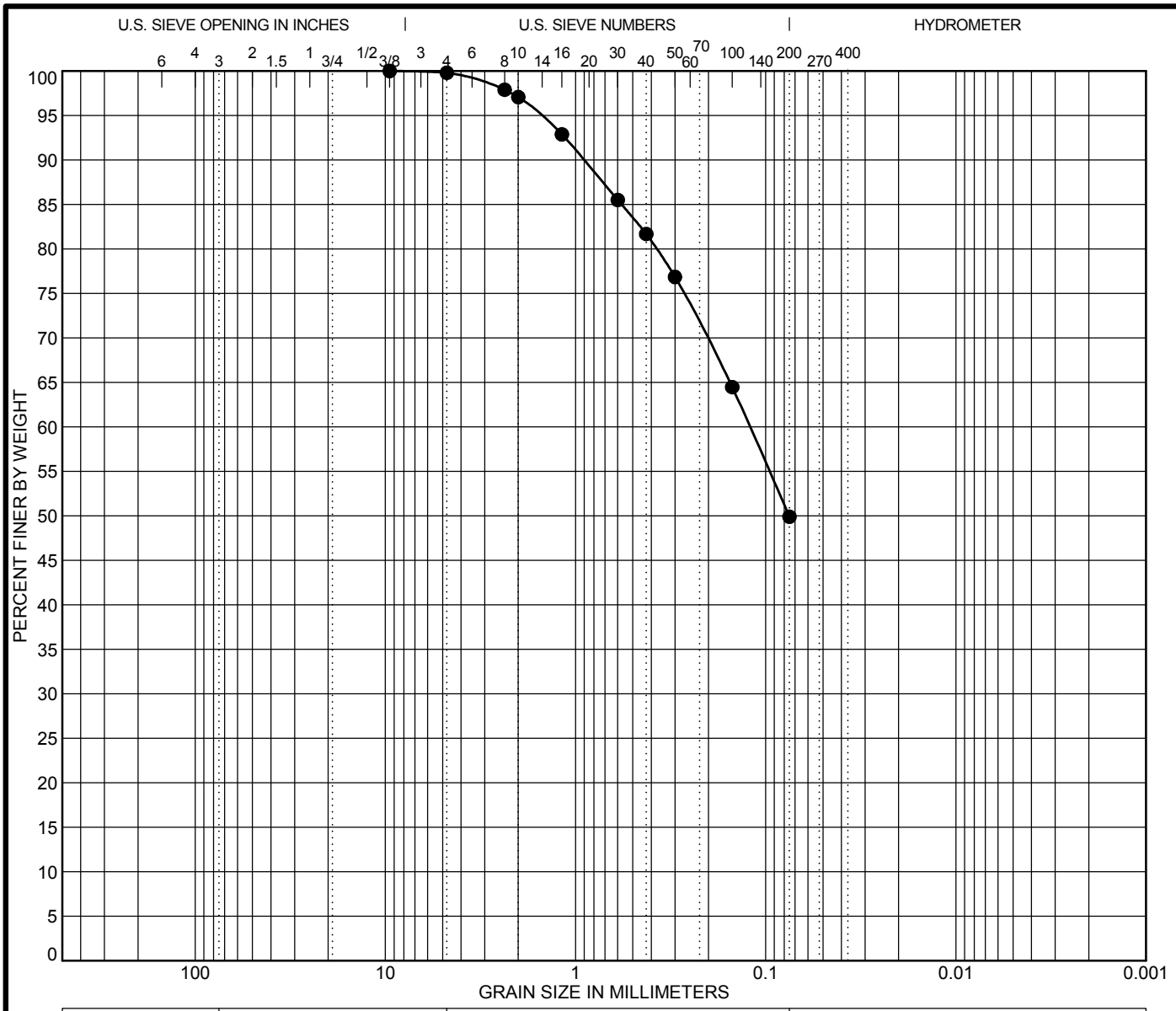
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.10



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016					
●	**B-08**	Classification	LL	PL	PI	Cc	Cu
	Depth: 5.5	Clayey SAND (SC)	45	21	24		
	Sample Location	Boring 8 from 5.5' - 6'					
	USCS	SC					
	AASHTO						

	Specimen Identification								
●	**B-08**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 5.5	9.5	0.121			0.2	49.9	49.9	

	Natural Moisture	13.5 %		**S.E.**		**Absorption %**	
	R-Value			**Durability Index**		**Soundness**	
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

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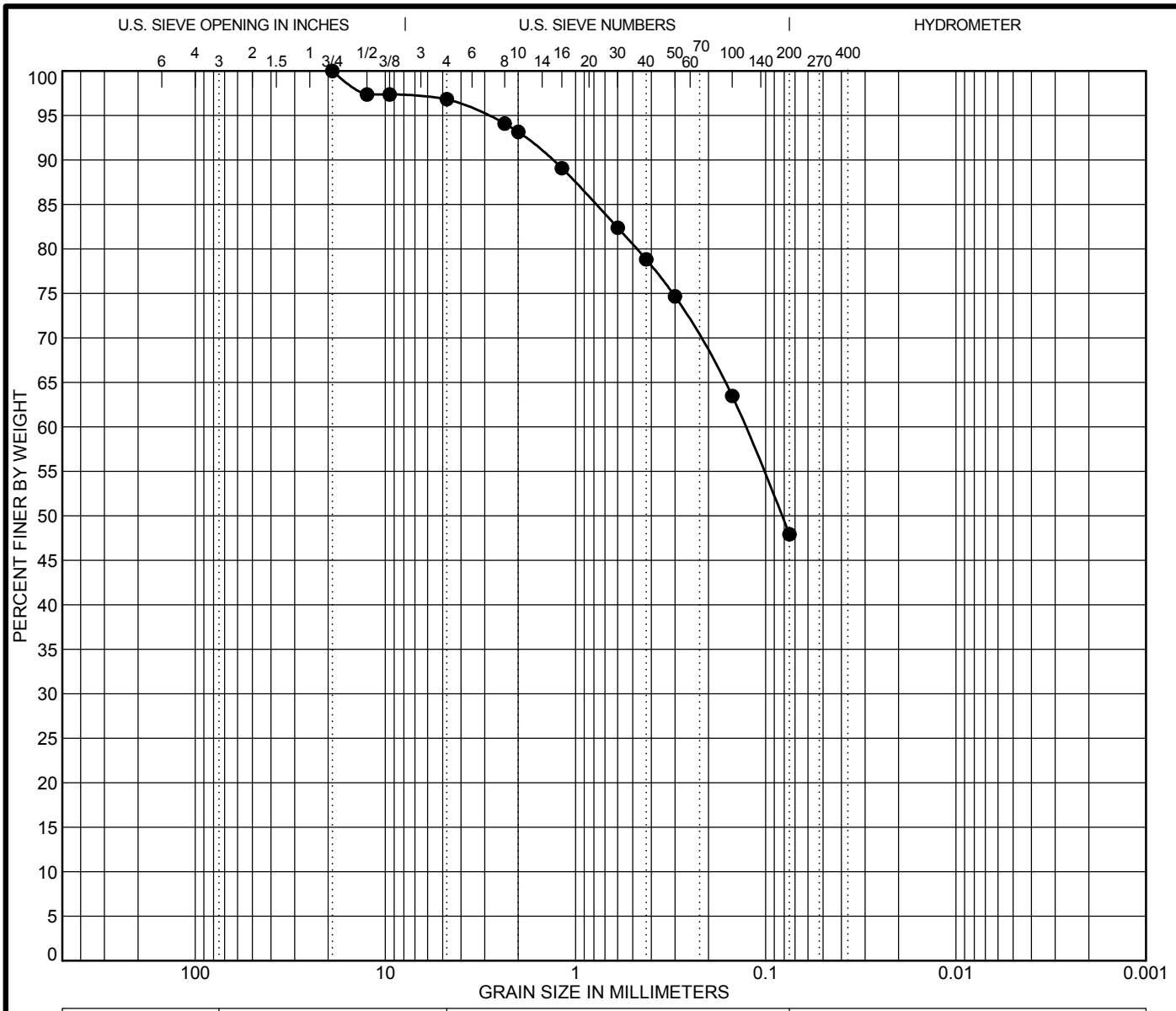
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.11



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016					
●	**B-09**	Classification	LL	PL	PI	Cc	Cu
	Depth: 0	Clayey SAND (SC)	40	16	24		
	Sample Location	Boring 9 from 0' - 5'					
	USCS	SC					
	AASHTO						

	Specimen Identification								
●	**B-09**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 0	19	0.128			3.2	48.9	47.9	
	Natural Moisture	8.0 %		**S.E.**		**Absorption %**			
	R-Value			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

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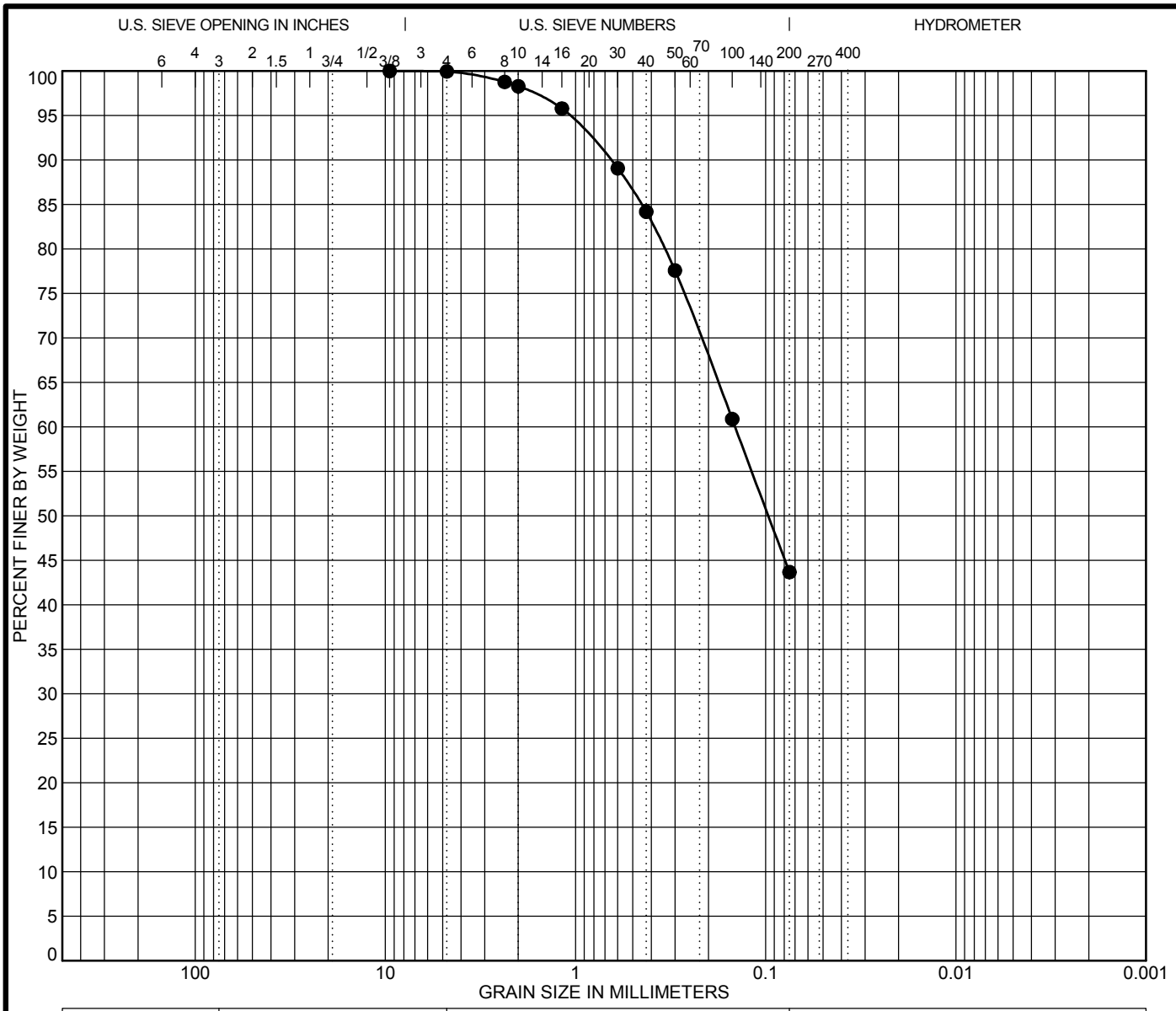
GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.12



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016							
●	**B-10**	Classification			LL	PL	PI	Cc	Cu
	Depth: 8.5	Clayey SAND (SC)			26	16	10		
	Sample Location	Boring 10 from 8.5' - 9'							
	USCS	SC							
	AASHTO								

	Specimen Identification								
●	**B-10**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 8.5	9.5	0.145			0.1	56.3	43.7	

Natural Moisture	7.9 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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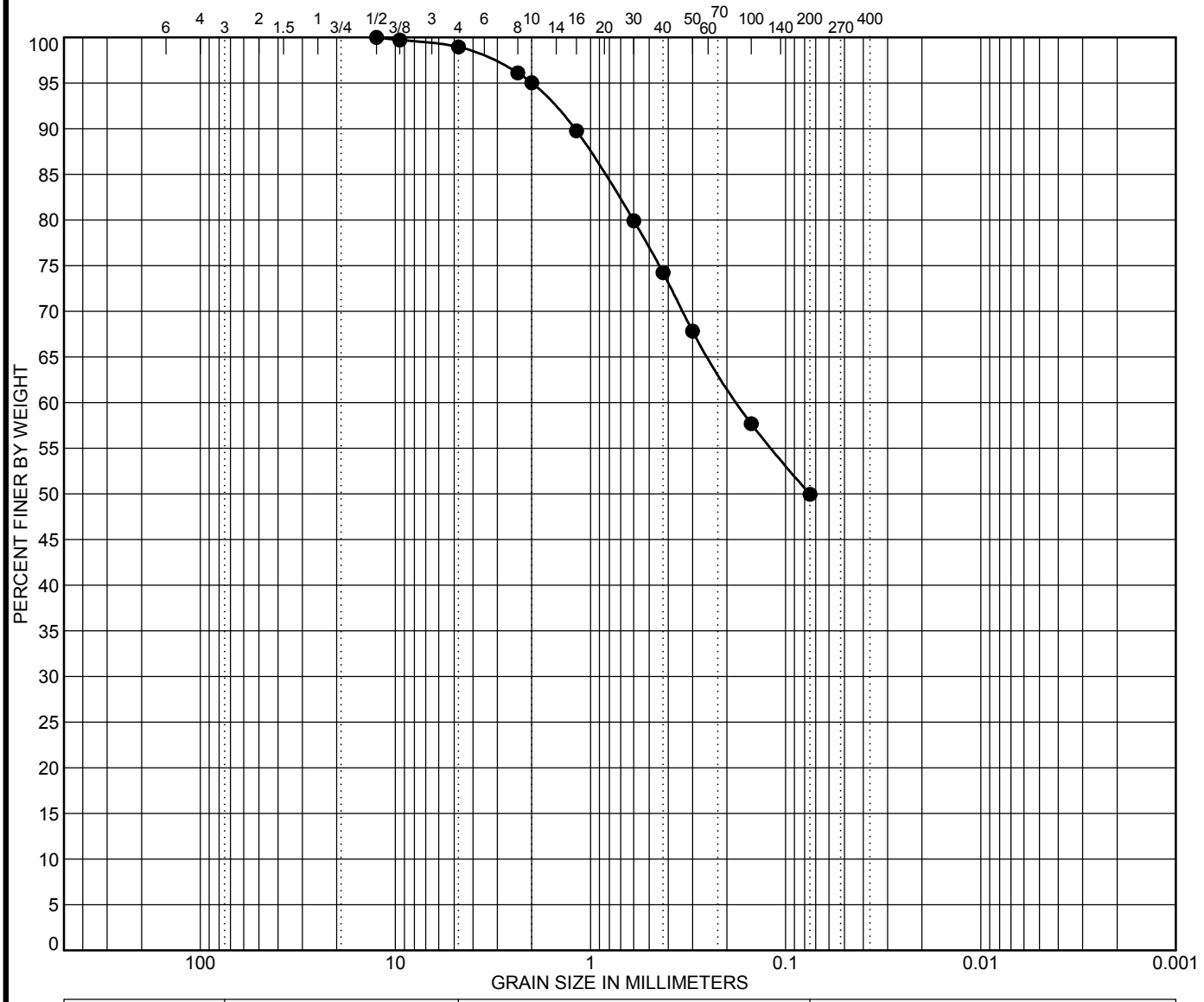
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.13



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016					
●	**B-11**	Classification	LL	PL	PI	Cc	Cu
	Depth: 6	Clayey SAND (SC)	31	19	12		
	Sample Location	Boring 11 from 6' - 6.5'					
	USCS	SC					
	AASHTO						

	Specimen Identification								
●	**B-11**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 6	12.5	0.176			1.0	49.0	49.9	

Natural Moisture	7.6 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

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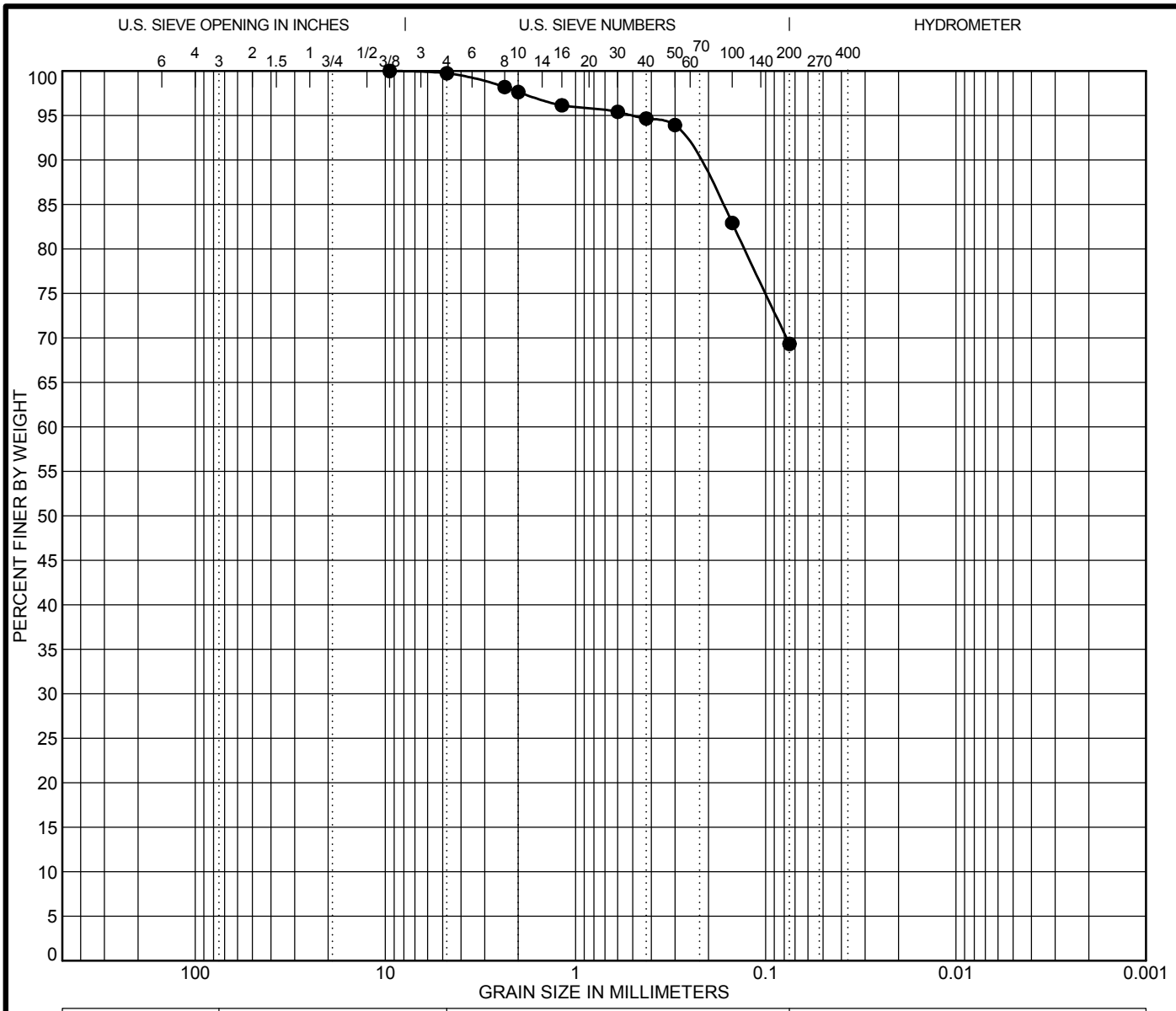
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.14



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-12**	Classification	LL	PL	PI	Cc	Cu
	Depth: 8	Sandy SILT (ML)	38	28	10		
	Sample Location	Boring 12 from 8' - 8.5'					
	USCS	ML					
	AASHTO						

	Specimen Identification								
●	**B-12**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 8	9.5				0.3	30.4	69.3	
	Natural Moisture	6.6 %		**S.E.**		**Absorption %**			
	R-Value			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

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The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

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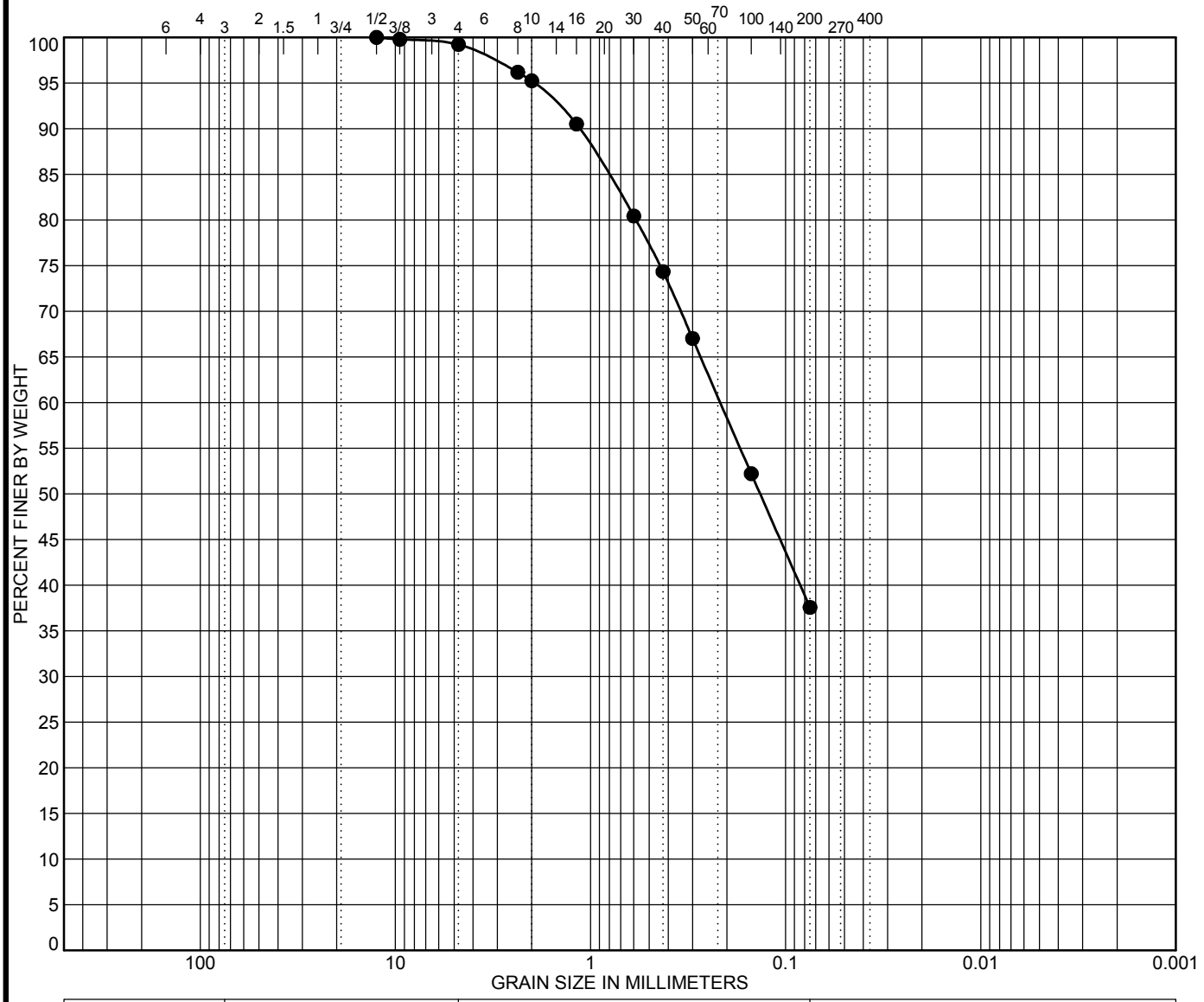
PLATE

B-1.15



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016					
●	**B-13**	Classification	LL	PL	PI	Cc	Cu
	Depth: 5.5	Clayey SAND (SC)	30	19	11		
	Sample Location	Boring 13 from 5.5' - 6'					
	USCS	SC					
	AASHTO						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-13**								
	Depth: 5.5	12.5	0.216			0.8	61.7	37.6	

Natural Moisture	5.8 %	**S.E.**		**Absorption %**		
R-Value		**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**		

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GRAIN SIZE DISTRIBUTION

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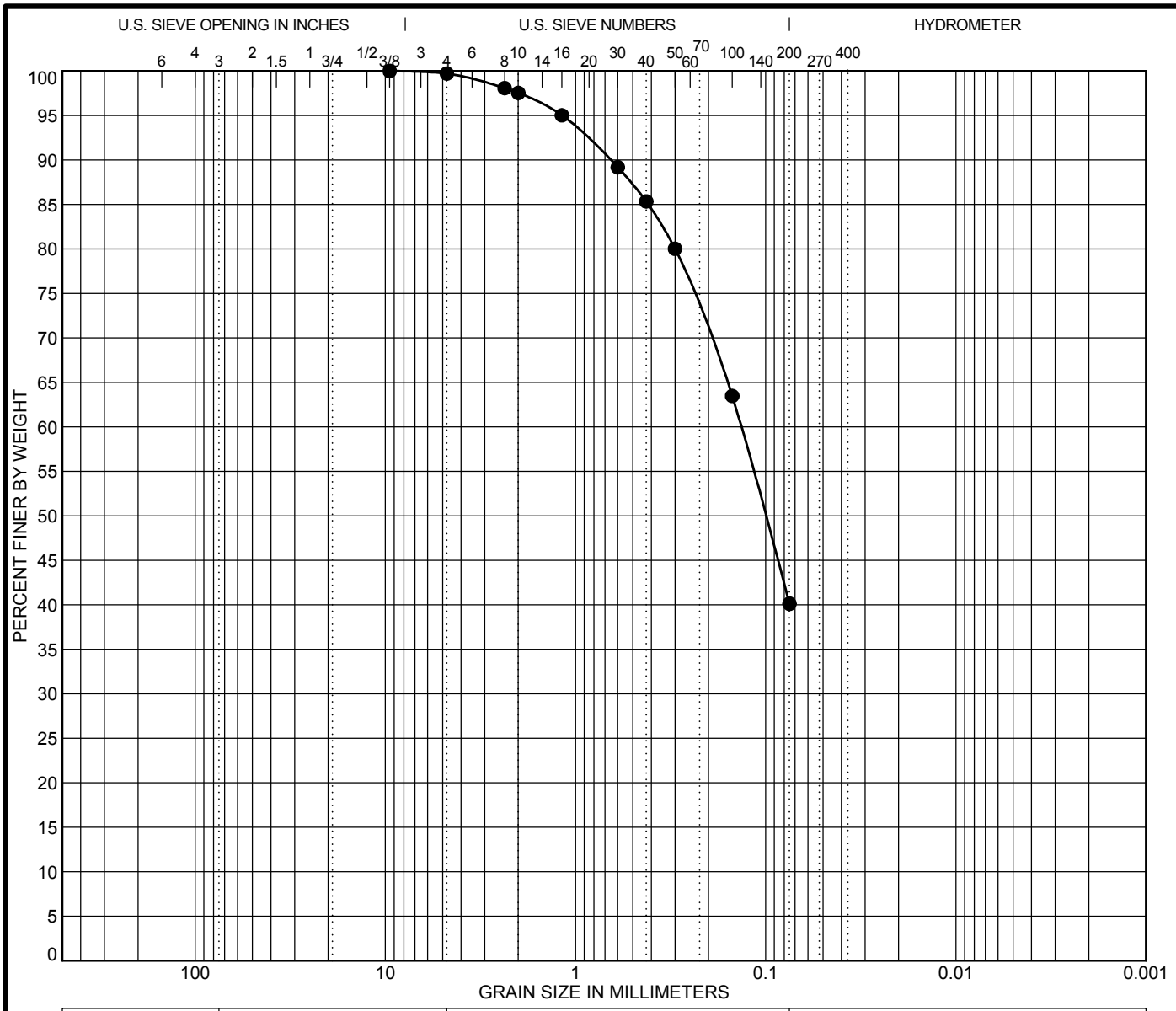
PLATE

B-1.16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-14**	Classification	LL	PL	PI	Cc	Cu
	Depth: 30	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Boring 14 from 30' - 31.5'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**B-14**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 30	9.5	0.135			0.3	59.6	40.1	
	Natural Moisture	19.8 %		**S.E.**		**Absorption %**			
	R-Value			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

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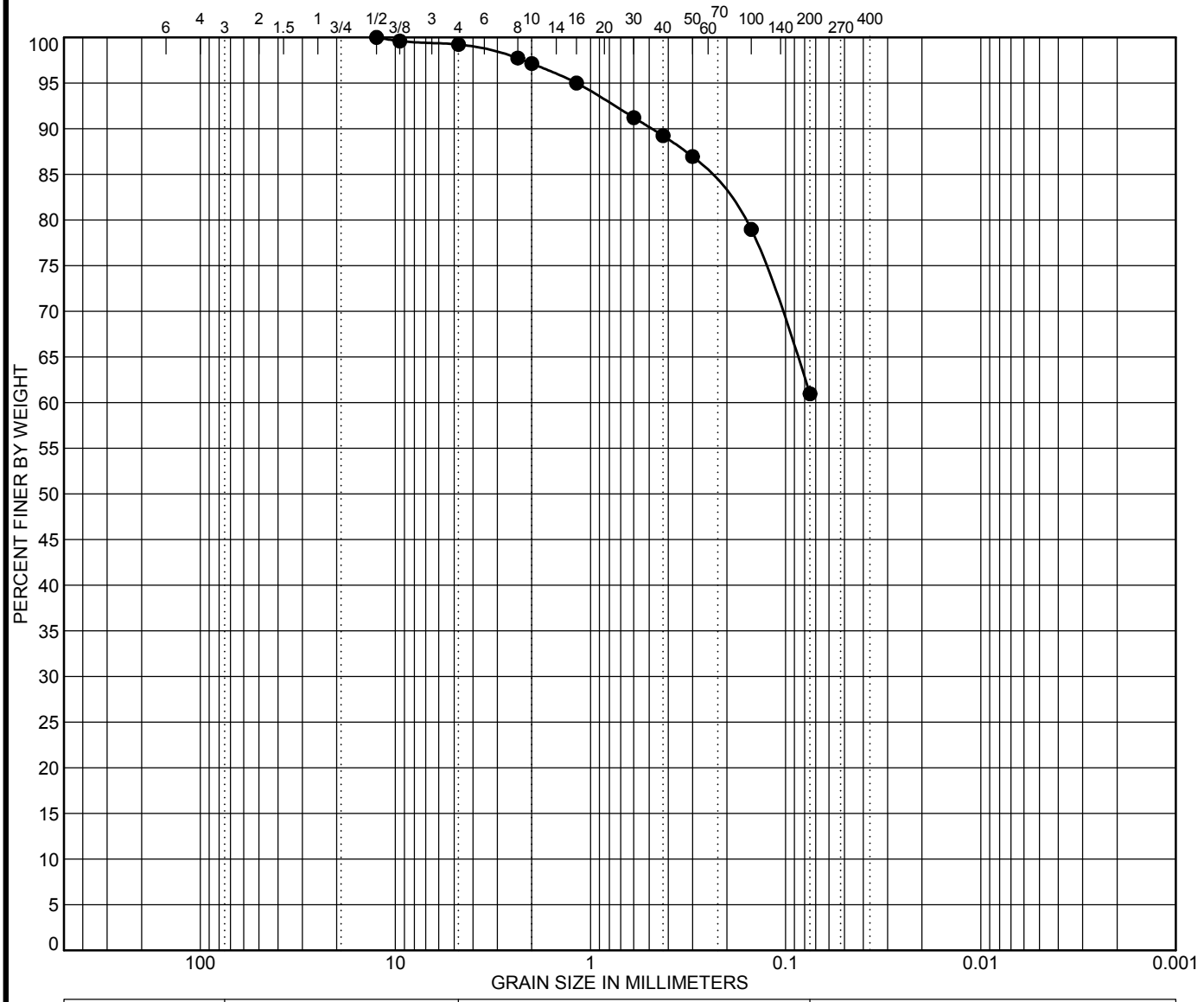
GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.17



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016							
●	**B-15**	Classification				LL	PL	PI	Cc	Cu
	Depth: 3	Sandy SILT (ML)				36	29	7		
	Sample Location	Boring 15 from 3' - 3.5'								
	USCS	ML								
	AASHTO									

	Specimen Identification								
●	**B-15**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	12.5				0.8	38.3	61.0	

Natural Moisture	15.5 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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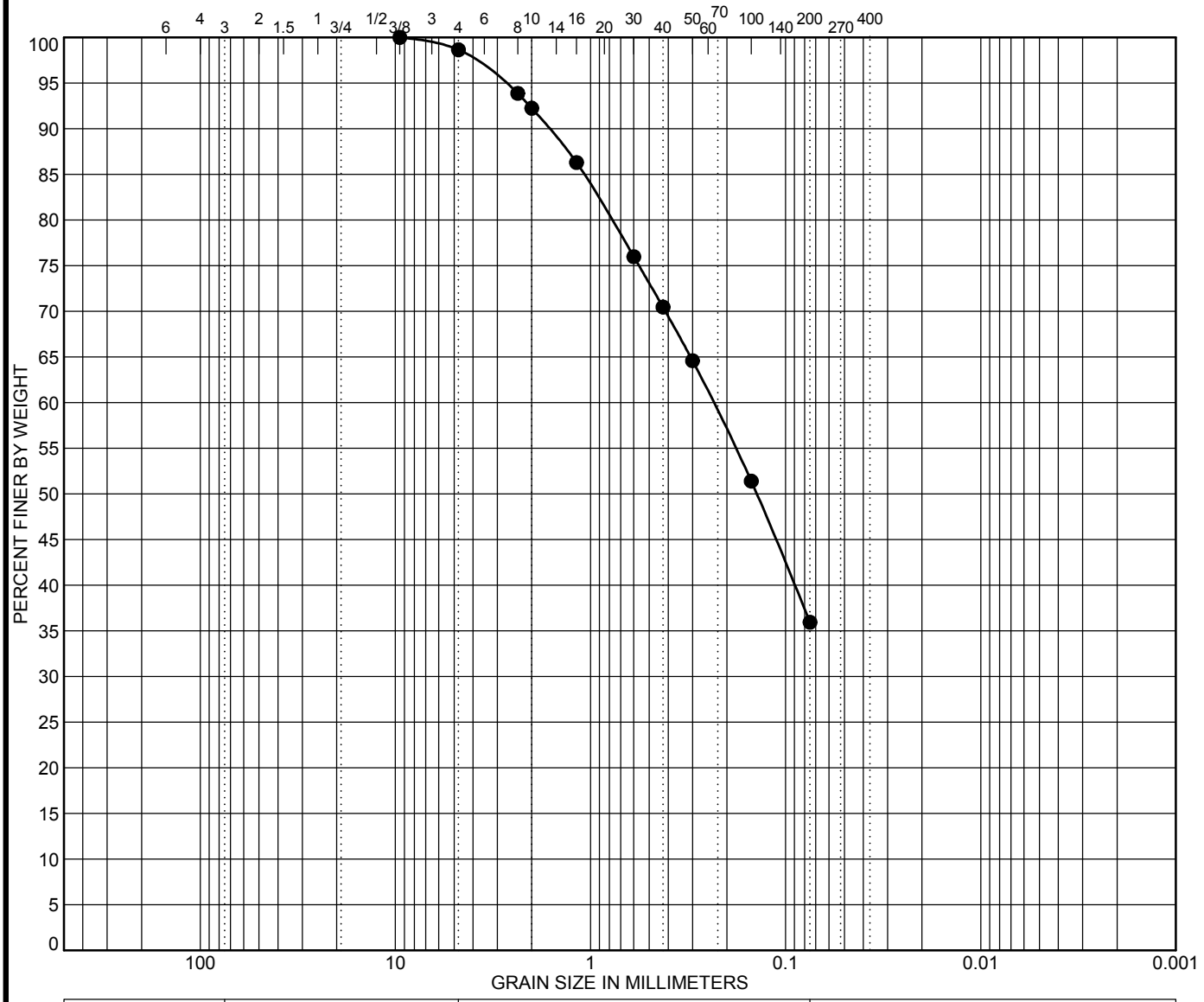
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.18



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016					
●	**B-16**	Classification	LL	PL	PI	Cc	Cu
	Depth: 0	Silty SAND (SM)	33	26	7		
	Sample Location	Comb. Samp. B-16, 19, & 22 from 0'-5'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**B-16**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 0	9.5	0.236			1.4	62.7	35.9	

Natural Moisture	6.5 %		**S.E.**		**Absorption %**	
R-Value	21		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	30

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The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

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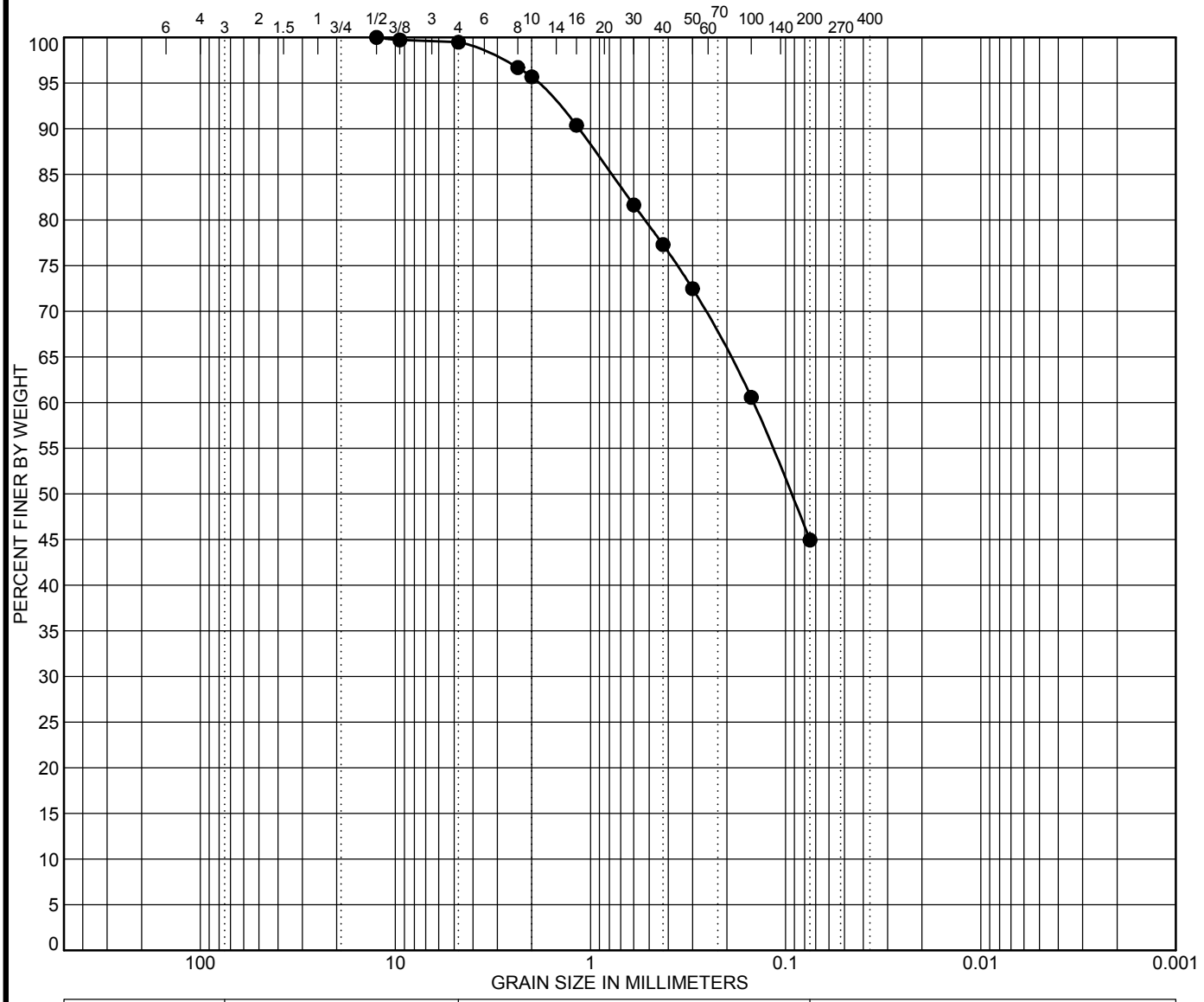
PLATE

B-1.19

LUMOS_GRAIN_SIZE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016							
●	**B-17**	Classification			LL	PL	PI	Cc	Cu
	Depth: 3	Silty SAND (SM)			30	25	5		
	Sample Location	Boring 17 from 3' - 3.5'							
	USCS	SM							
	AASHTO								

	Specimen Identification								
●	**B-17**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	12.5	0.146			0.5	54.5	44.9	

Natural Moisture	17.5 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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GRAIN SIZE DISTRIBUTION

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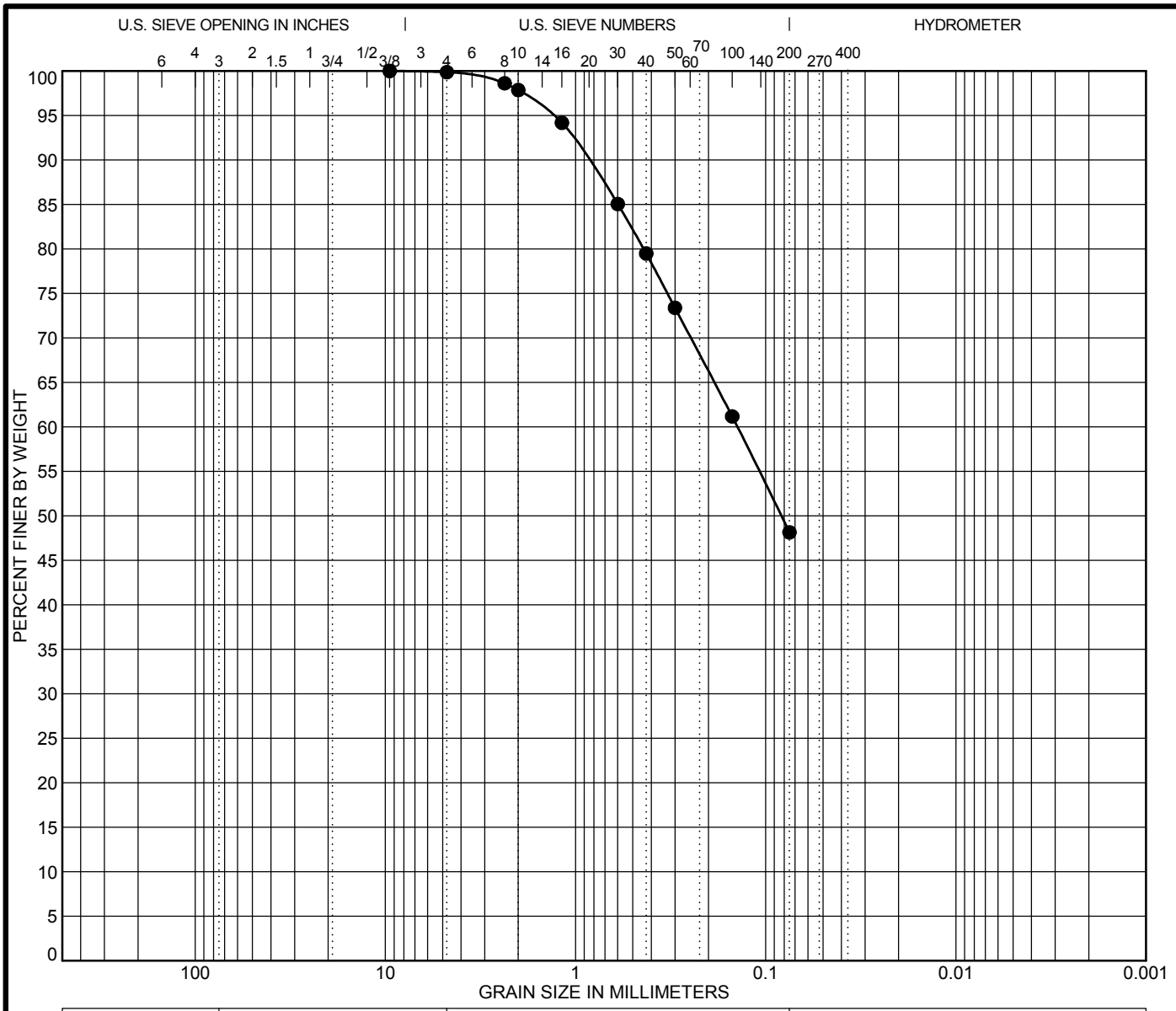
PLATE

B-1.20

LUMOS_GRAIN_SIZE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-18**	Classification	LL	PL	PI	Cc	Cu	
	Depth: 11	Clayey SAND (SC)	29	19	10			
	Sample Location	Boring 18 from 11' - 11.5'						
	USCS	SC						
	AASHTO							

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-18**								
	Depth: 11	9.5	0.141			0.1	51.7	48.1	

Natural Moisture	8.4 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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GRAIN SIZE DISTRIBUTION

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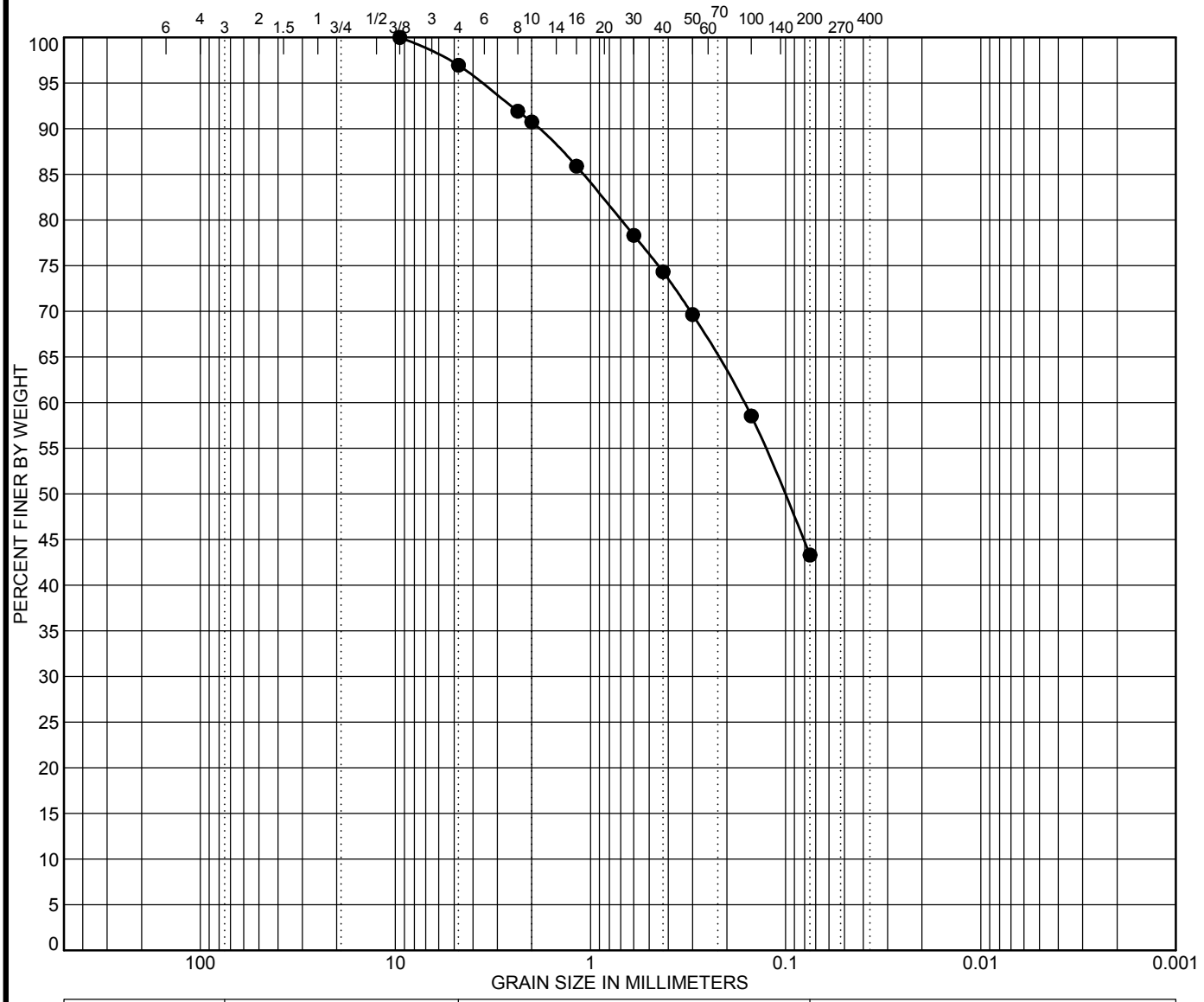
PLATE

B-1.21



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-20**	Classification	LL	PL	PI	Cc	Cu
	Depth: 15	Clayey SAND (SC)	32	23	9		
	Sample Location	Boring 20 from 15' - 16.5'					
	USCS	SC					
	AASHTO						

	Specimen Identification								
●	**B-20**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 15	9.5	0.164			3.1	53.6	43.3	

Natural Moisture	21.9 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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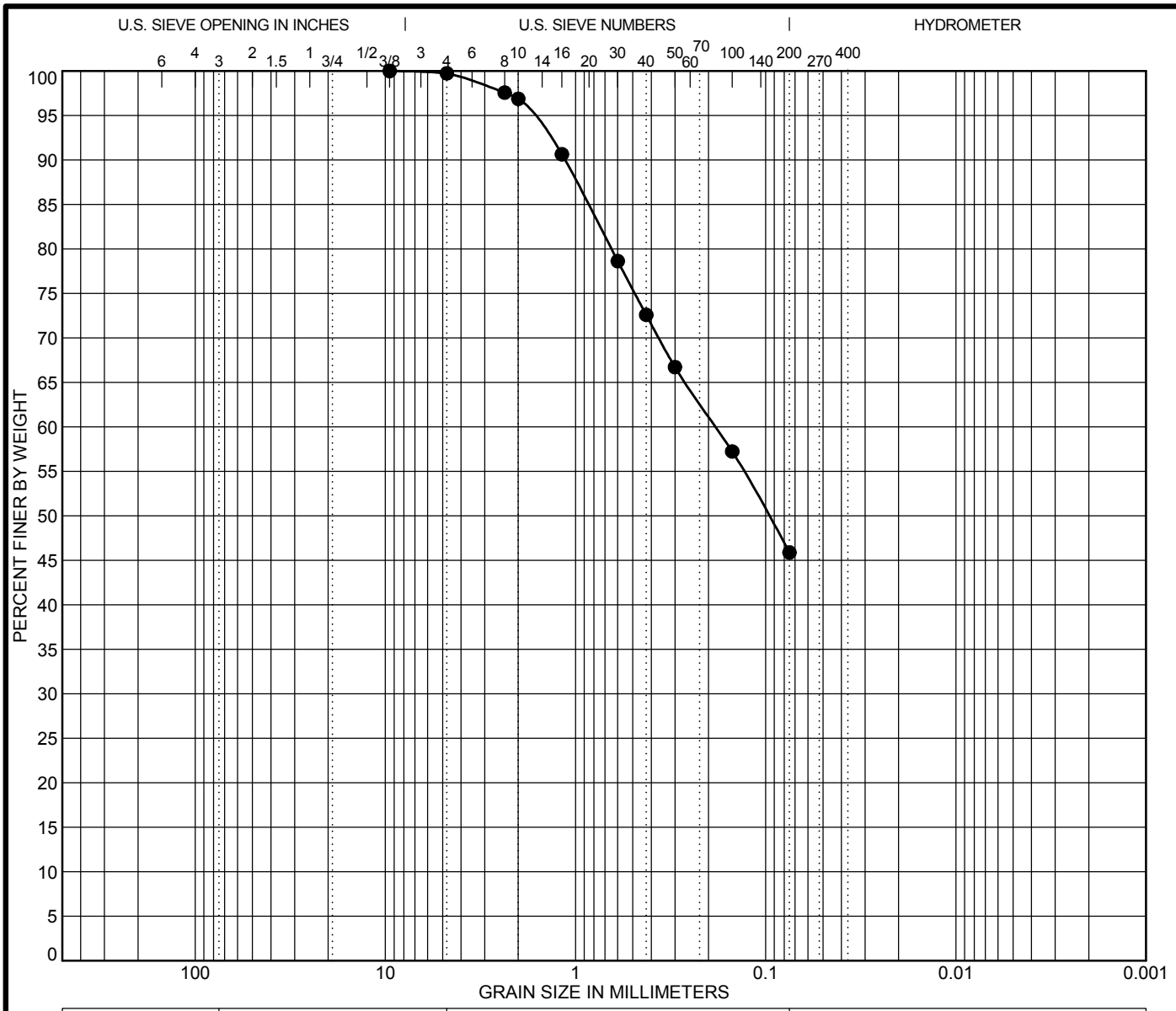
PLATE

B-1.22



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016						
●	**B-21**	Classification	LL	PL	PI	Cc	Cu	
	Depth: 8.5	Clayey SAND (SC)	30	22	8			
	Sample Location	Boring 21 from 8.5' - 9'						
	USCS	SC						
	AASHTO							

	Specimen Identification								
●	**B-21**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 8.5	9.5	0.184			0.3	53.9	45.9	

Natural Moisture	6.6 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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GRAIN SIZE DISTRIBUTION

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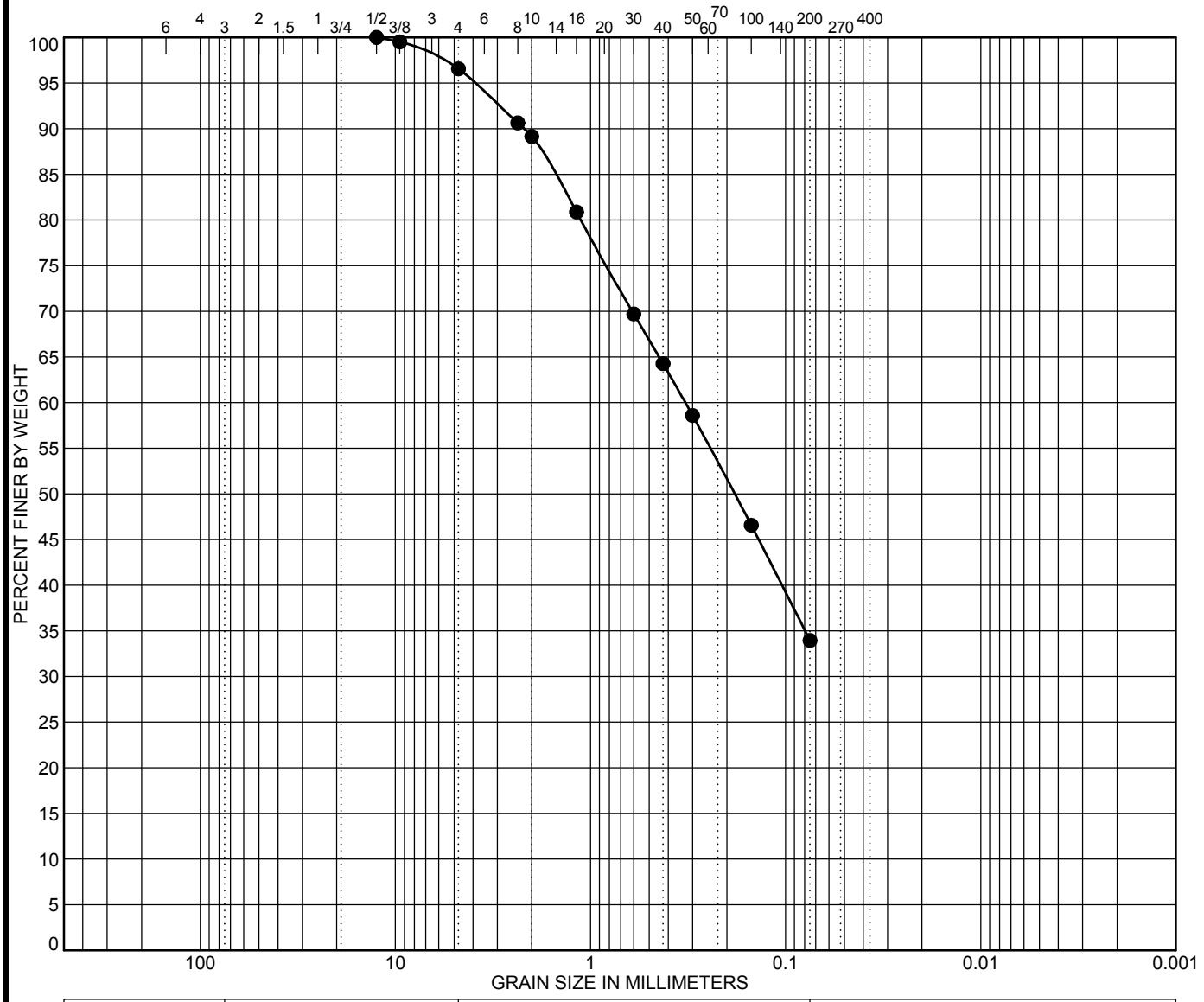
PLATE

B-1.23

LUMOS_GRAIN_SIZE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 5-2-2016							
●	**B-23**	Classification			LL	PL	PI	Cc	Cu
	Depth: 5	Silty, Clayey SAND (SC-SM)			28	22	6		
	Sample Location	Boring 23 from 5' - 5.5'							
	USCS	SC-SM							
	AASHTO								

	Specimen Identification								
●	**B-23**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 5	12.5	0.327			3.4	62.6	33.9	

Natural Moisture	8.5 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

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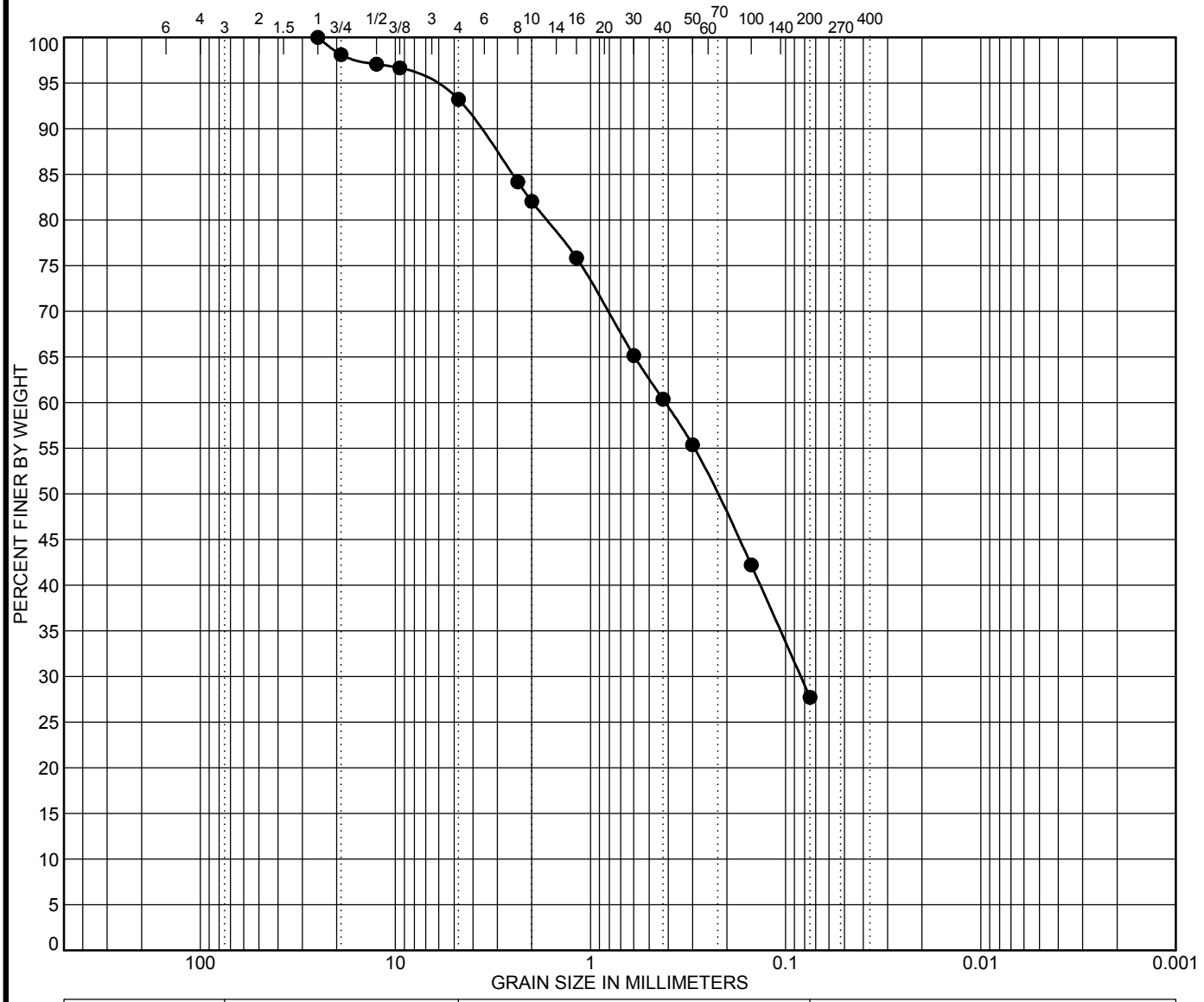
PLATE

B-1.24



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Date: 5-2-2016						
● **B-24**	Classification	LL	PL	PI	Cc	Cu
Depth: 3	Silty SAND (SM)	29	23	6		
Sample Location	Boring 24 from 3' - 3.5'					
USCS	SM					
AASHTO						

Specimen Identification								
● **B-24**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
Depth: 3	25	0.414	0.084		6.8	65.5	27.7	

Natural Moisture	9.8 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

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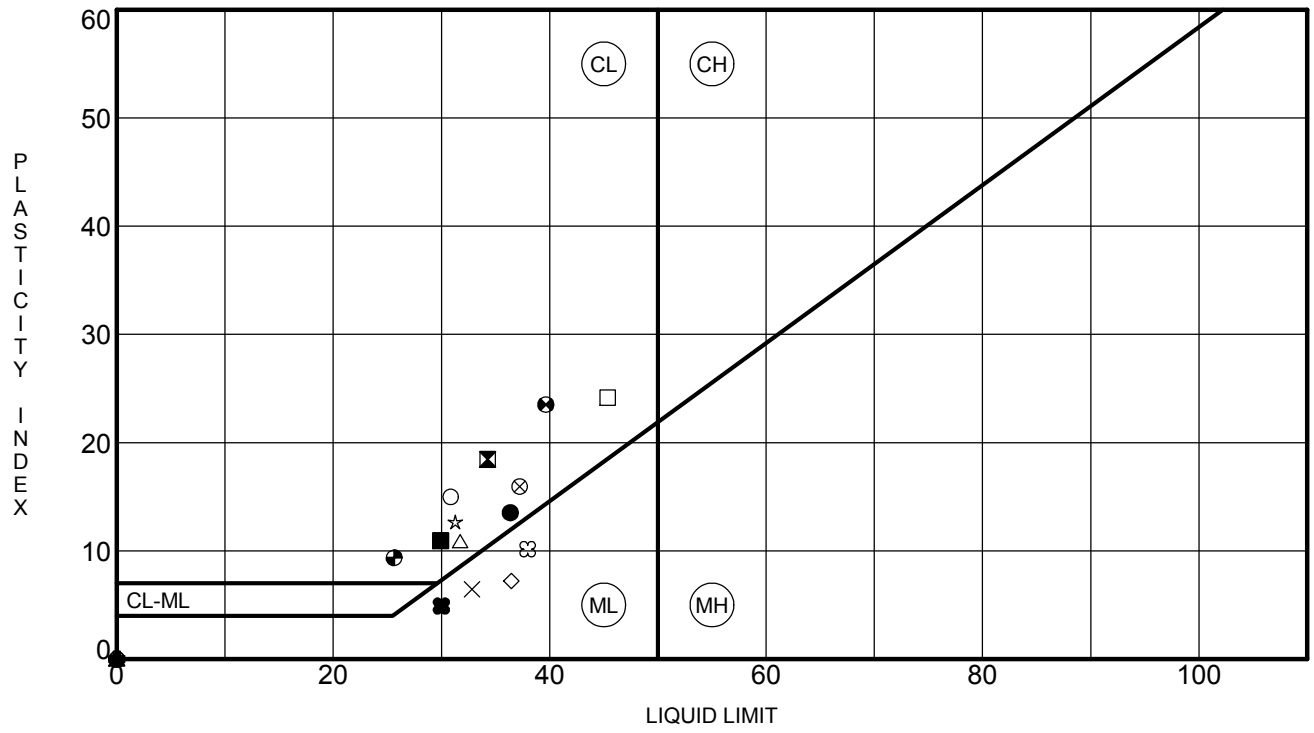
The Vintage at King's Canyon

GRAIN SIZE DISTRIBUTION

Job Number: 8947.000 Date: May 2016

PLATE

B-1.25



Specimen Identification			LL	PL	PI	Fines	Classification
●	**B-01**	**0.0**	**36**	**23**	**13**	**38**	Clayey SAND (SC)
⊠	**B-01**	**5.0**	**34**	**16**	**18**	**29**	Clayey SAND (SC)
▲	**B-01**	**21.0**	**NP**	**NP**	**NP**	**17**	Silty SAND (SM)
★	**B-02**	**5.0**	**NP**	**NP**	**NP**	**15**	Silty SAND (SM)
⊙	**B-03**	**30.0**	**NP**	**NP**	**NP**	**12**	Poorly Graded SAND w/Silt (SP-SM)
✿	**B-04**	**10.0**	**NP**	**NP**	**NP**	**30**	Silty SAND (SM)
○	**B-04**	**16.0**	**31**	**16**	**15**	**46**	Clayey SAND (SC)
△	**B-05**	**3.0**	**32**	**21**	**11**	**34**	Clayey SAND (SC)
⊗	**B-06**	**20.0**	**37**	**21**	**16**	**81**	Lean CLAY with Sand (CL)
⊕	**B-07**	**11.0**	**NP**	**NP**	**NP**	**11**	Poorly Graded SAND w/Silt (SP-SM)
□	**B-08**	**5.5**	**45**	**21**	**24**	**50**	Clayey SAND (SC)
⊛	**B-09**	**0.0**	**40**	**16**	**24**	**48**	Clayey SAND (SC)
◕	**B-10**	**8.5**	**26**	**16**	**10**	**44**	Clayey SAND (SC)
☆	**B-11**	**6.0**	**31**	**19**	**12**	**50**	Clayey SAND (SC)
⊠	**B-12**	**8.0**	**38**	**28**	**10**	**69**	Sandy SILT (ML)
■	**B-13**	**5.5**	**30**	**19**	**11**	**38**	Clayey SAND (SC)
◆	**B-14**	**30.0**	**NP**	**NP**	**NP**	**40**	Silty SAND (SM)
◇	**B-15**	**3.0**	**36**	**29**	**7**	**61**	Sandy SILT (ML)
×	**B-16**	**0.0**	**33**	**26**	**7**	**36**	Silty SAND (SM)
✖	**B-17**	**3.0**	**30**	**25**	**5**	**45**	Silty SAND (SM)

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The Vintage at King's Canyon

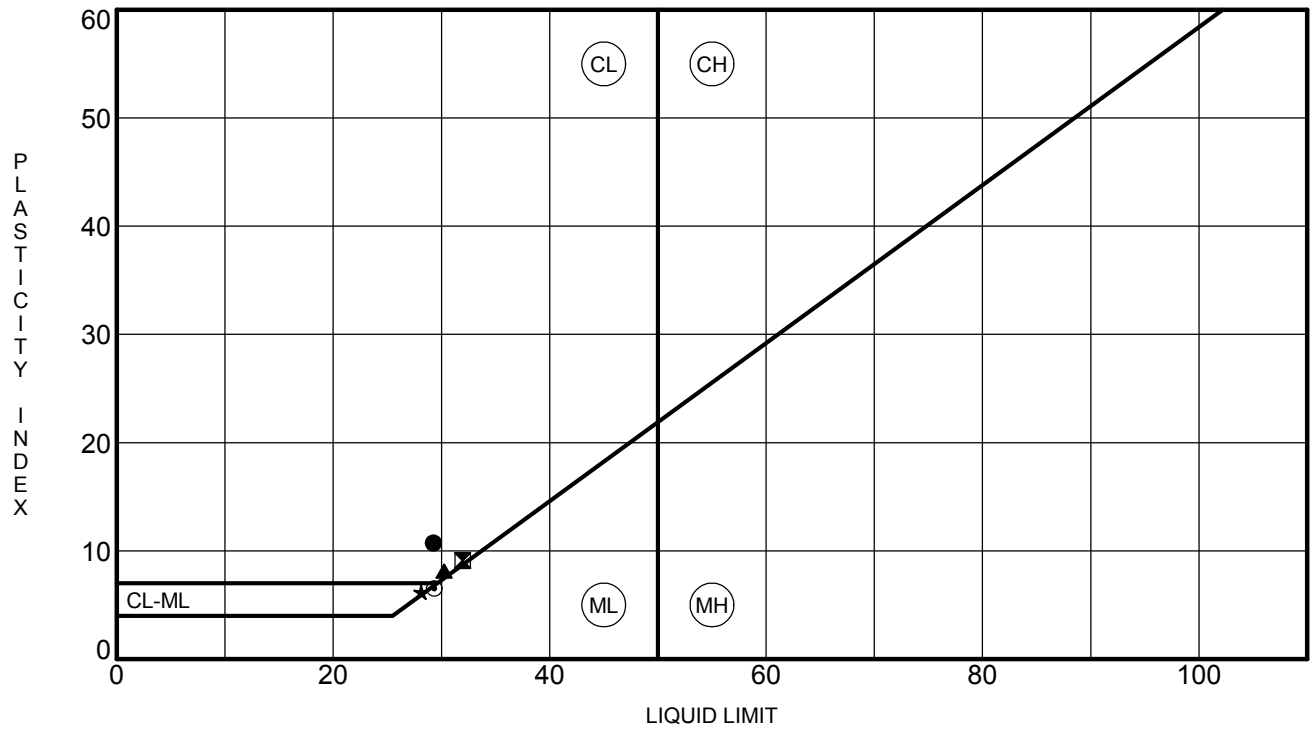
ATTERBERG LIMITS' RESULTS

Job Number: 8947.000 Date: May 2016

PLATE

B-2.1

LUMOS_ATTERBERG_LIMITS 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16



Specimen Identification			LL	PL	PI	Fines	Classification
●	**B-18**	**11.0**	**29**	**19**	**10**	**48**	Clayey SAND (SC)
⊠	**B-20**	**15.0**	**32**	**23**	**9**	**43**	Clayey SAND (SC)
▲	**B-21**	**8.5**	**30**	**22**	**8**	**46**	Clayey SAND (SC)
★	**B-23**	**5.0**	**28**	**22**	**6**	**34**	Silty, Clayey SAND (SC-SM)
⊙	**B-24**	**3.0**	**29**	**23**	**6**	**28**	Silty SAND (SM)

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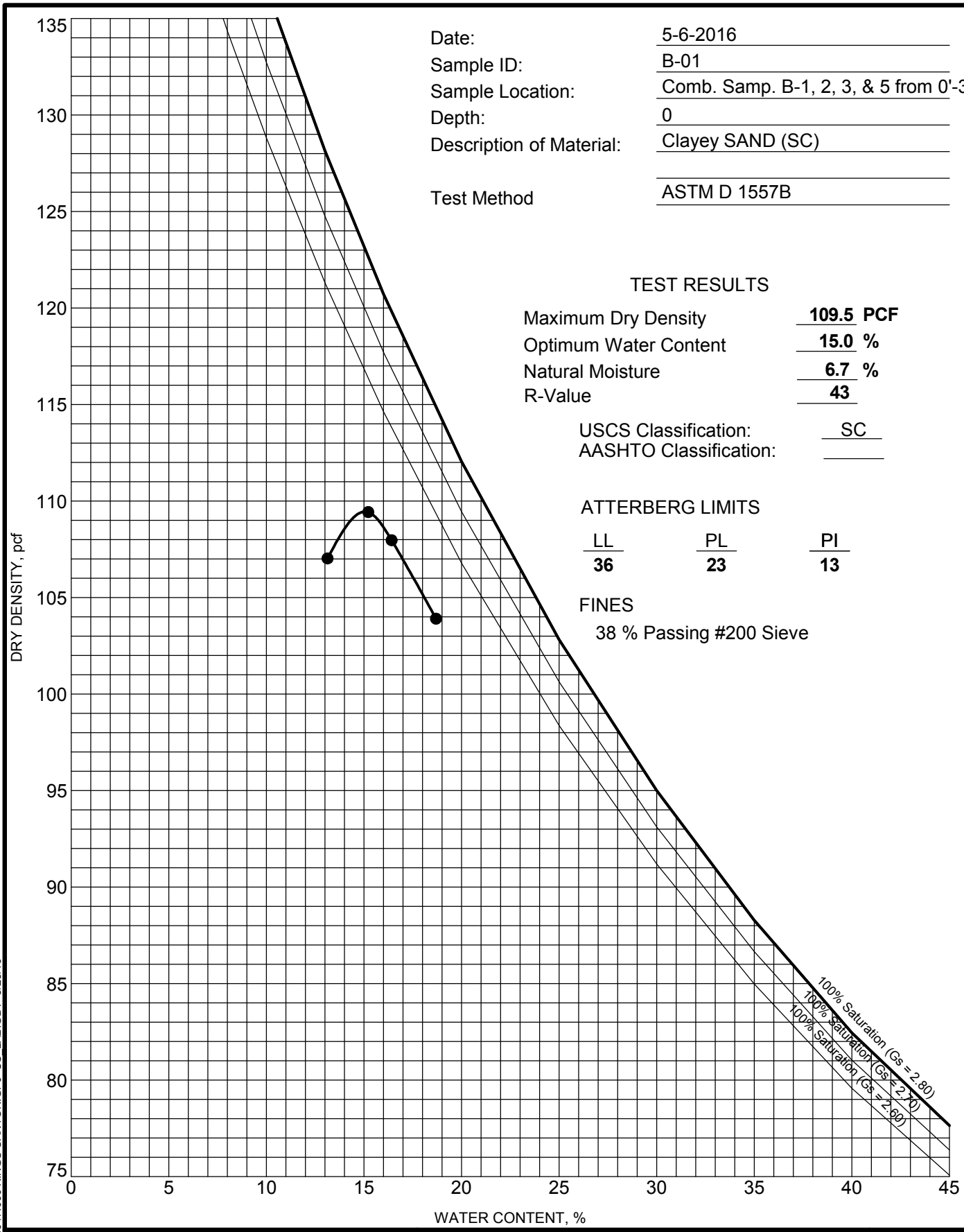
The Vintage at King's Canyon

ATTERBERG LIMITS' RESULTS

Job Number: 8947.000 Date: May 2016

PLATE

B-2.2



Date: 5-6-2016
Sample ID: B-01
Sample Location: Comb. Samp. B-1, 2, 3, & 5 from 0'-3'
Depth: 0
Description of Material: Clayey SAND (SC)

Test Method: ASTM D 1557B

TEST RESULTS

Maximum Dry Density	**109.5**	**PCF**
Optimum Water Content	**15.0**	**%**
Natural Moisture	**6.7**	**%**
R-Value	**43**	

USCS Classification: SC
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
36	**23**	**13**

FINES
38 % Passing #200 Sieve

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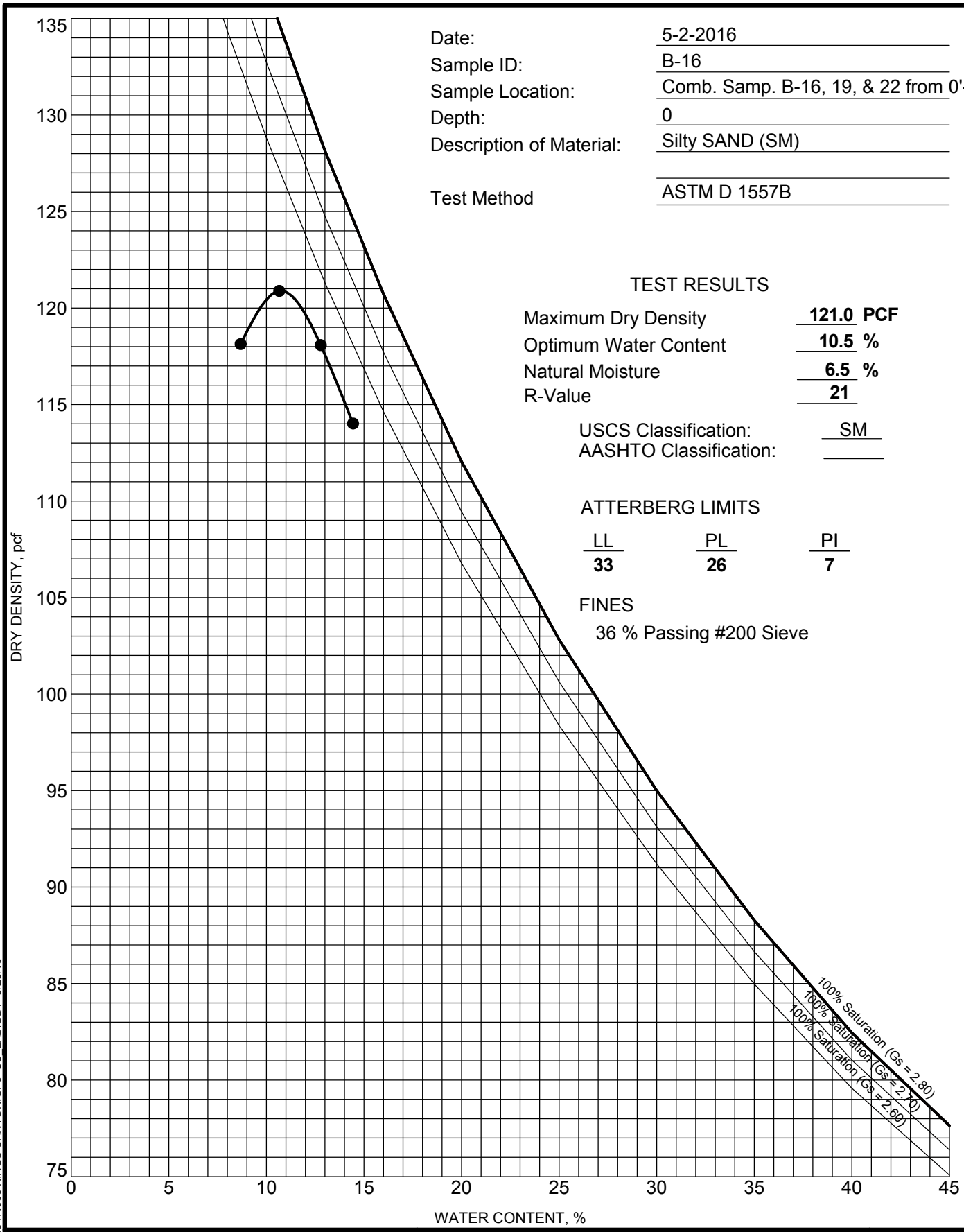
The Vintage at King's Canyon

MOISTURE-DENSITY CURVE

Job Number: 8947.000 Date: May 2016

PLATE

B-3.1



Date: 5-2-2016
Sample ID: B-16
Sample Location: Comb. Samp. B-16, 19, & 22 from 0'-5'
Depth: 0
Description of Material: Silty SAND (SM)

Test Method: ASTM D 1557B

TEST RESULTS

Maximum Dry Density	**121.0 PCF**
Optimum Water Content	**10.5 %**
Natural Moisture	**6.5 %**
R-Value	**21**

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
33	**26**	**7**

FINES
36 % Passing #200 Sieve

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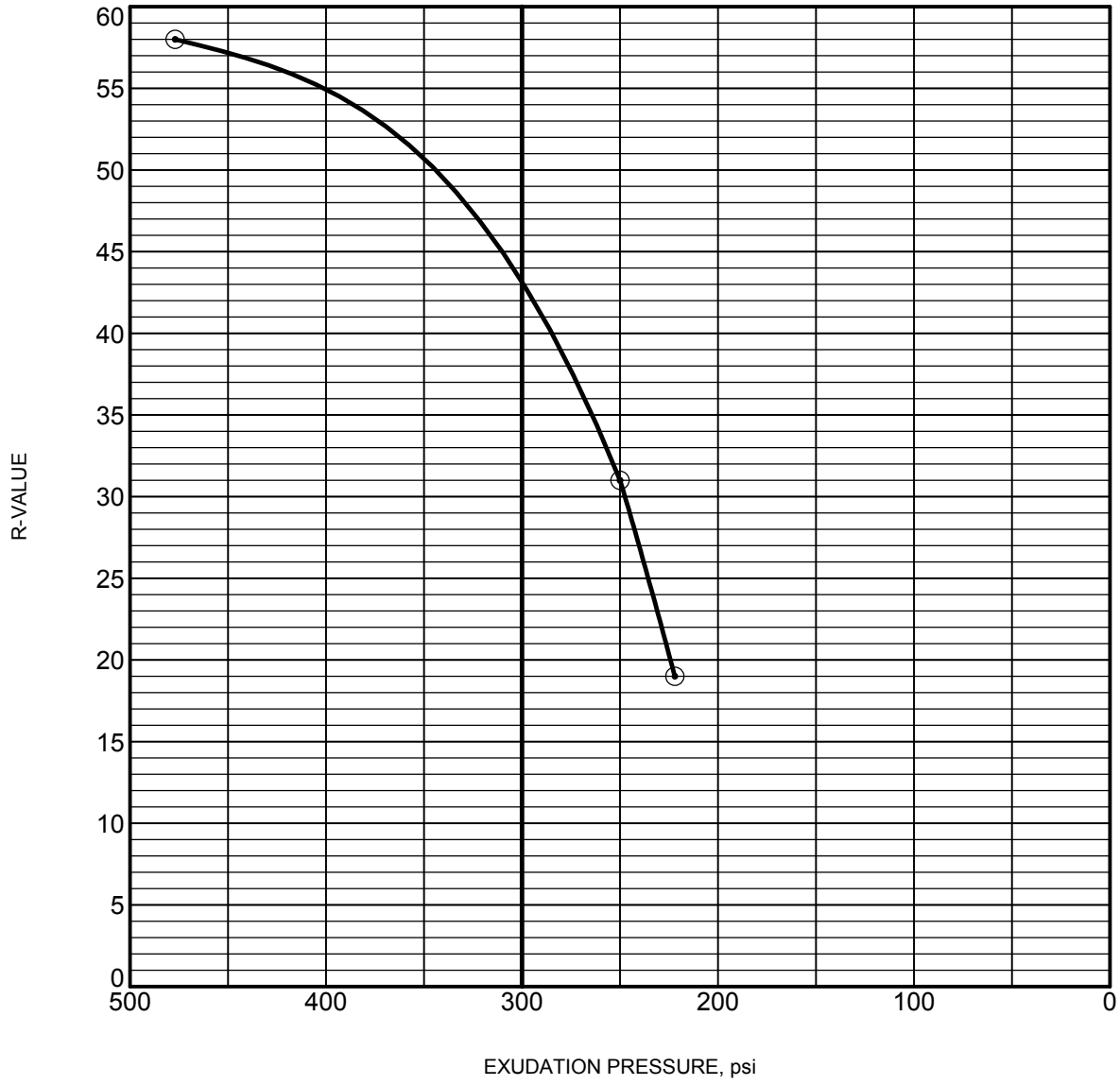
The Vintage at King's Canyon

MOISTURE-DENSITY CURVE

Job Number: 8947.000 Date: May 2016

PLATE

B-3.2



Test Data

Specimen No.	Water Content (%)	Dry Density (pcf)	Expansion (psf)	Exudation (psi)	Test R-Value*
1	**14.7**	**110.7**	**281.0**	**477.0**	**58.0**
2	**15.7**	**110.5**	**139.0**	**250.0**	**31.0**
3	**17.9**	**108.4**	**74.0**	**222.0**	**19.0**

* Reported values have been corrected for sample height, where required.

Test Result

Specimen Identification		Classification	R-Value
B-01	**0.0**	**Clayey SAND (SC)**	**43**

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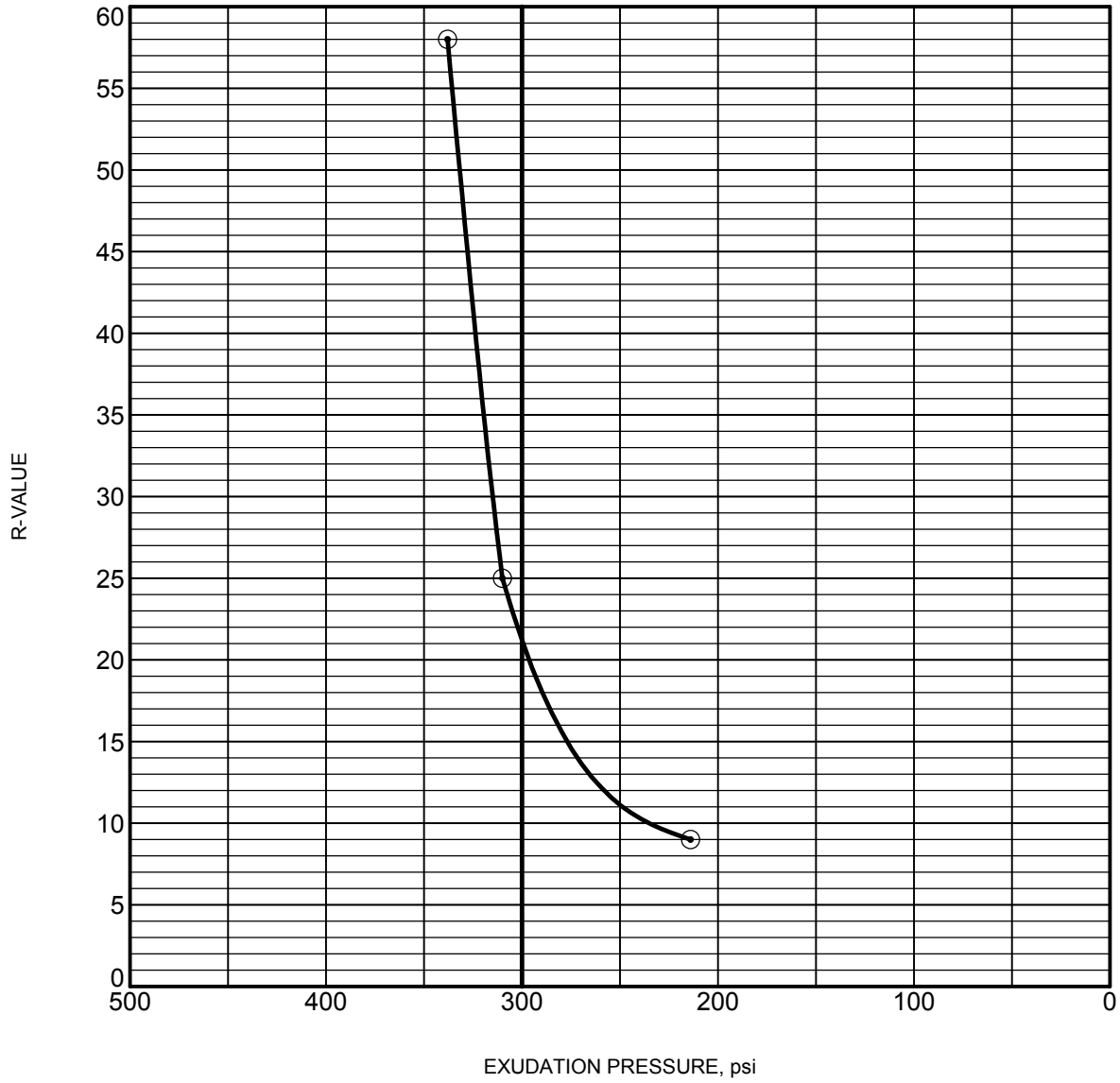
The Vintage at King's Canyon

RESISTANCE VALUE TEST

Job Number: 8947.000 Date: May 2016

PLATE

B-4.1



Test Data

Specimen No.	Water Content (%)	Dry Density (pcf)	Expansion (psf)	Exudation (psi)	Test R-Value*
1	**13.5**	**111.9**	**100.0**	**338.0**	**58.0**
2	**15.1**	**119.0**	**43.0**	**310.0**	**25.0**
3	**16.1**	**109.3**	**9.0**	**214.0**	**9.0**

* Reported values have been corrected for sample height, where required.

Test Result

Specimen Identification		Classification	R-Value
B-16	**0.0**	**Silty SAND (SM)**	**21**

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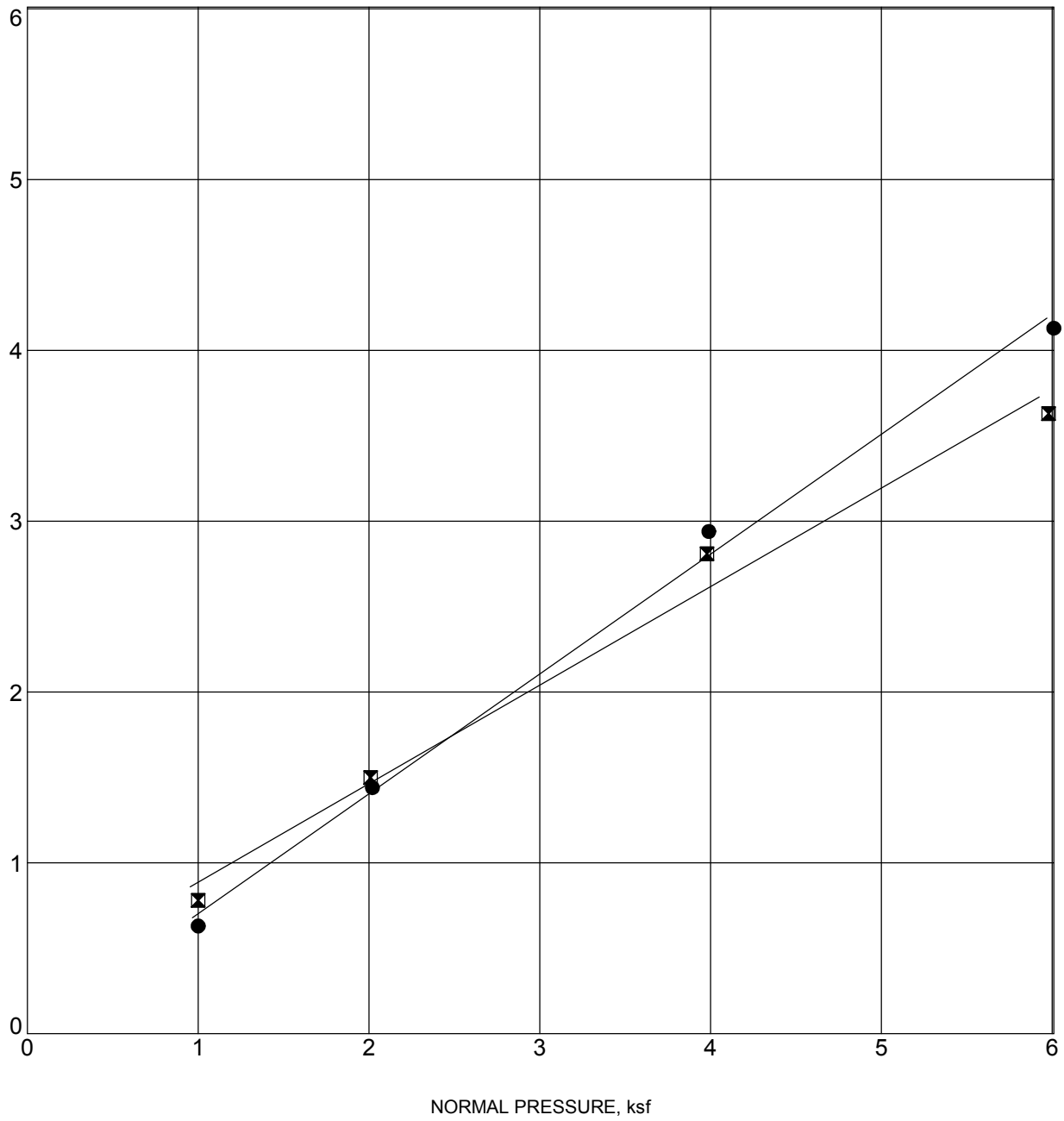
The Vintage at King's Canyon

RESISTANCE VALUE TEST

Job Number: 8947.000 Date: May 2016

PLATE

B-4.2



Specimen Identification			Classification	γ_d	MC%	c	ϕ
●	**B-01**	**0.0**	**Clayey SAND (SC)**	**110**	**15**	**0.00**	**35.0**
⊠	**B-16**	**0.0**	**Silty SAND (SM)**	**121**	**11**	**0.31**	**30.0**

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The Vintage at King's Canyon

DIRECT SHEAR TEST

Job Number: 8947.000 Date: May 2016

PLATE

B-5

LUMOS_DIRECT_SHEAR 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/25/16

SilverState Analytical Laboratories

Sierra Environmental Monitoring | EnviroTech

Laboratory Report

Report ID: 147874

Lumos and Associates-C.C.
Attn: Mitch Burns
800 E. College Parkway
Carson City, NV 89706

Date: 5/3/2016
Client: LUM-517
Taken by: B. Sexton
PO #: 8947.000/MB

Analysis Report

Laboratory Accreditation Number: NV-00015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201604-1235	Comb. B-1,2,3 & 5	4/21/2016	9:00 AM	4/28/2016

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Chloride - Ion Chromatography	SW-846 9056A	18	mg/Kg	10	Faulstich	4/29/2016	
pH - Saturated Paste	SW-846 9045D	7.84	pH Units		Bergstrom	4/29/2016	
pH - Temperature	SW-846 9045D	21.0	°C		Bergstrom	4/29/2016	
Resistivity AASHTO	AASHTO T288	3316	ohm cm		Bergstrom	5/2/2016	
Sodium ASTM	ASTM D2791	<0.01	%	0.01	Bergstrom	4/29/2016	
Sulfate SM4500	SM 4500 SO4 E	<0.01	%	0.01	Bergstrom	4/29/2016	
Total Sodium Sulfate	Calculation	<0.01	%	0.01	Bergstrom	4/29/2016	

Laboratory Accreditation Number: NV-00015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201604-1236	B-9 from 0-5	4/20/2016	9:00 AM	4/28/2016

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Chloride - Ion Chromatography	SW-846 9056A	<10	mg/Kg	10	Faulstich	4/30/2016	
pH - Saturated Paste	SW-846 9045D	6.34	pH Units		Bergstrom	4/29/2016	
pH - Temperature	SW-846 9045D	21.0	°C		Bergstrom	4/29/2016	
Resistivity AASHTO	AASHTO T288	2178	ohm cm		Bergstrom	5/2/2016	
Sodium ASTM	ASTM D2791	<0.01	%	0.01	Bergstrom	4/29/2016	
Sulfate SM4500	SM 4500 SO4 E	<0.01	%	0.01	Bergstrom	4/29/2016	
Total Sodium Sulfate	Calculation	<0.01	%	0.01	Bergstrom	4/29/2016	

SOLUBLE SULFATE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/12/16

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The Vintage at King's Canyon

SOLUBLE SULFATE

Job Number: 8947.000 Date: May 2016

PLATE

B-6.1

SilverState Analytical Laboratories

Sierra Environmental Monitoring | EnviroTech

Laboratory Report

Report ID: 147874

Lumos and Associates-C.C.
Attn: Mitch Burns
800 E. College Parkway
Carson City, NV 89706

Date: 5/3/2016
Client: LUM-517
Taken by: B. Sexton
PO #: 8947.000/MB

Analysis Report

Laboratory Accreditation Number: NV-00015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201604-1237	B-20 from 5-6.5'	4/19/2016	9:00 AM	4/28/2016

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Chloride - Ion Chromatography	SW-846 9056A	<10	mg/Kg	10	Faulstich	4/30/2016	
pH - Saturated Paste	SW-846 9045D	7.05	pH Units		Bergstrom	4/29/2016	
pH - Temperature	SW-846 9045D	21.1	°C		Bergstrom	4/29/2016	
Resistivity AASHTO	AASHTO T288	6398	ohm cm		Bergstrom	5/2/2016	
Sodium ASTM	ASTM D2791	<0.01	%	0.01	Bergstrom	4/29/2016	
Sulfate SM4500	SM 4500 SO4 E	<0.01	%	0.01	Bergstrom	4/29/2016	
Total Sodium Sulfate	Calculation	<0.01	%	0.01	Bergstrom	4/29/2016	

Data Flag Legend:

SOLUBLE SULFATE 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/12/16

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The Vintage at King's Canyon

SOLUBLE SULFATE

Job Number: 8947.000 Date: May 2016

PLATE

B-6.2

APPENDIX C

Job # 8947.000
Client: Divinni NV, LLC
Description: Pavement Calculations
By: B. Sexton

R-Value for Native Silty Sand = 21
R-Value for Gravel (Type II, Class B) = 70

T.I. = 5
G_f = 2.50
GE = 0.0032(TI)(100-R)
t_{layer} = GE/G_f

GE_{AC}= 0.0032(5)(100-70) = 0.48'
t_{AC}= .48/(2.50)*(12") = 2.3" => **use 3" asphalt**
$t_{AC(actual)}$= (3)(2.50)/12" = .63'

GE_{AB}= 0.0032(5)(100-21) = 1.26'
t_{AB}= (1.26 - 0.63)(12")/1.1 = 6.9" => **use 8" aggregate base**

Therefore, use 3" of Asphalt Concrete (AC) underlain by a minimum of 8" of Type 2 Class B Aggregate Base and underlain by a minimum of 12 inches of properly prepared subgrade soils.

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The Vintage at King's Canyon

PAVEMENT DESIGN

Job Number: 8947.000 Date: May 2016

PLATE

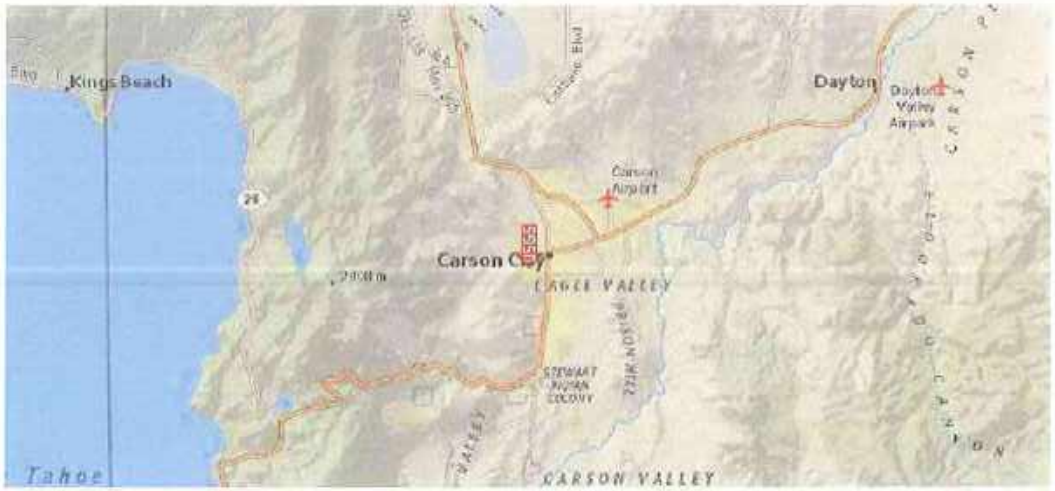
C-1

APPENDIX D

USGS Design Maps Summary Report

User-Specified Input

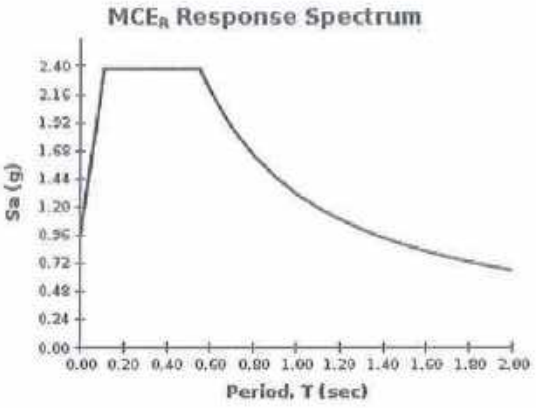
Report Title	The Vintage at King's Canyon Tue May 10, 2016 20:33:13 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	39.1723°N, 119.7777°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

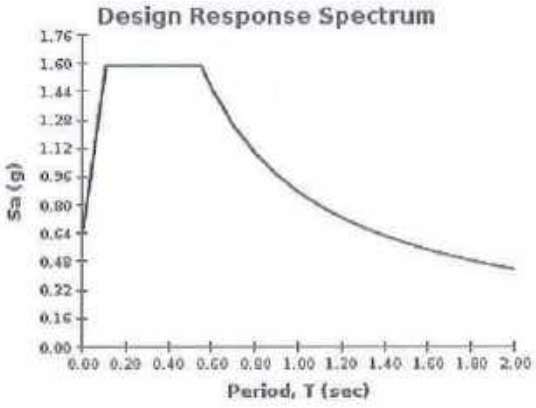


USGS-Provided Output

S_S =	2.377 g	S_{MS} =	2.377 g	S_{DS} =	1.585 g
S_1 =	0.875 g	S_{M1} =	1.312 g	S_{D1} =	0.875 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





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The Vintage at King's Canyon

DESIGN RESPONSE SPECTRUM

Job Number: 8947.000 Date: May 2016

PLATE

D-1

DESIGN RESPONSE SPECTRUM 8947.000 KINGS CANYON.GPJ US_LAB.GDT 5/12/16

APPENDIX E

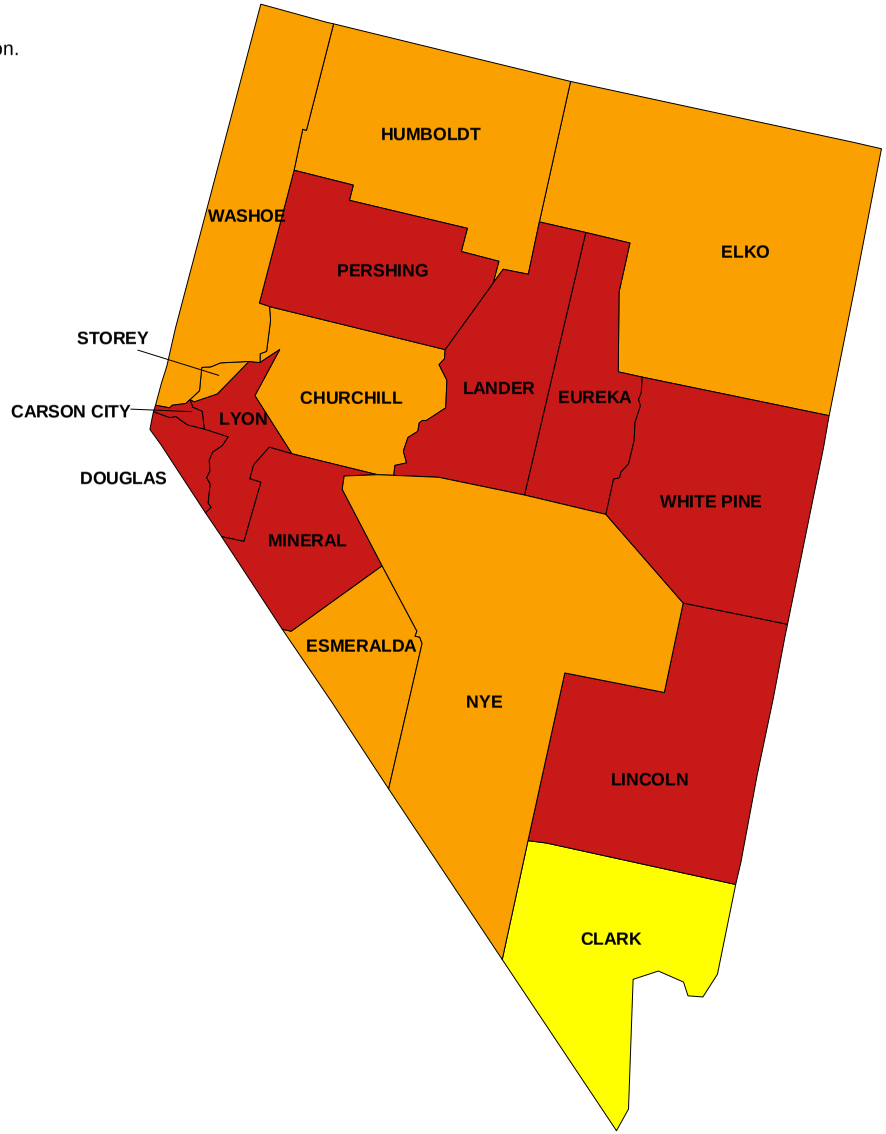
NEVADA - EPA Map of Radon Zones

http://www.epa.gov/radon/zonemap.html

The purpose of this map is to assist National, State and local organizations to target their resources and to implement radon-resistant building codes.

This map is not intended to determine if a home in a given zone should be tested for radon. Homes with elevated levels of radon have been found in all three zones.

All homes should be tested, regardless of zone designation.



IMPORTANT: Consult the publication entitled "Preliminary Geologic Radon Potential Assessment of Nevada" (USGS Open-file Report 93-292-I) before using this map. See http://energy.cr.usgs.gov/radon/grpinfo.html This document contains information on radon potential variations within counties. EPA also recommends that this map be supplemented with any available local data in order to further understand and predict the radon potential of a specific area.

Zone 1 Zone 2 Zone 3

Aquatic Resources Delineation Report

Vintage at Kings Canyon – Andersen Ranch

June 15, 2022

Prepared For:

Lumos & Associates, Inc.
c/o Tim Russell
308 N. Curry Street, Suite 200
Carson City, Nevada 89703

Prepared By:

Resource Concepts, Inc.
340 N. Minnesota Street
Carson City, Nevada 89703

Aquatic Resources Delineation Report

Vintage at Kings Canyon – Andersen Ranch

June 15, 2022

(RCI # 22-140.1)

Prepared For:

Lumos & Associates, Inc.
c/o Tim Russell
308 N. Curry Street, Suite 200
Carson City, Nevada 89703

Prepared By:

Resource Concepts, Inc.
340 North Minnesota Street
Carson City, Nevada 89703-4152
(775) 883-1600 Office
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www.rci-nv.com

EXECUTIVE SUMMARY

The delineation for this property was prepared at the request of Lumos & Associates, Inc. on the behalf of Andersen Family Associates, owners of an approximately 43.5-acre parcel located along the west side of North Ormsby Boulevard, Carson City, Nevada. The delineation was conducted in accordance with the 1987 *Corps of Engineers Wetland Delineation Manual* (TR-Y-87-1) as amended by the *Arid West Regional Supplement* (2008), and the *A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States* (2008).

The delineation identified four aquatic resources. The on-site waters consist of one perennial channel and three excavated irrigation ditches. The ditches are intended to supply water to several small pastures in the western portion of Carson City. Water from the irrigation ditches and from Ash Canyon Creek, cross the pasture, exiting via culverts and eventually discharging into the Carson River.

A summary of the aquatic resources is included below:

Aquatic Resource Name	Aquatic Resource Classification		Size (acres)	Size (linear feet)
	Cowardin	Location (Lat/Long NAD 83)		
AR-1: Ash Canyon Creek / Excavated (NRPW)	R4SBCx	39.16866/-119.78633	0.17	1,510
AR-2: Excavated Irrigation Ditch (NRPW)	R4SBCx	39.17147/-119.78644	0.18	1,560
AR-3: Excavated Roadside Ditch (NRPW)	R4SBCx	39.16422/-119.78531	0.03	1,350
AR-4a & 4b: Excavated Irrigation Ditch (NRPW)	R4SBCx	39.17078/-119.78451	0.07	870
Total	--	--	**0.45**	**5,290**

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GRAPH

LIST OF TABLES

ATTACHMENTS

File Doc: 2022-06-17 rpt AqResDelin-Andersen Ranch 22-140.1 Lumos Assoc-els-jm-ca L6-23.docx

ACRONYMS AND ABBREVIATIONS

Wetland Indicator Status Acronyms:

OBL (Obligate Wetland). Occur almost always in wetlands.

FACW (Facultative Wetland). Usually occur in wetlands.

FAC (Facultative). Likely to occur in wetlands or uplands.

FACU (Facultative Upland). Usually occur in uplands.

UPL (Obligate Upland). Occur almost always in uplands.

N/I (No Indicator). Indicator status unavailable.

Water Types Acronyms:

TNW. Traditional Navigable Water, including territorial seas

TNWW. Wetlands adjacent to TNWs

RPW. Relatively Permanent Waters (RPWs) that flow year round

RPWWD. Wetlands directly abutting RPWs

RPWWN. Wetlands adjacent to but not directly abutting RPWs

NRPW. Non-RPWs are tributaries that do not have continuous flow at least seasonally

NRPWW. Wetlands adjacent to non-RPWs

ISOLATE. Isolated (interstate or intrastate) waters

UPLAND. Uplands

TNWRPW. Tributary consisting of both RPWs and non-RPWs

1.0 INTRODUCTION

1.1 Project Description and Purpose

In February 2022, Resource Concepts, Inc. (RCI) was contracted by Mr. Tim Russell, Engineering Director of Lumos & Associates, Inc., to complete a delineation of aquatic resources within approximately 43.5-acres of private property located adjacent to North Ormsby Boulevard in Carson City, Carson City County, Nevada (APN: 009-012-21).

The purpose of this report is to identify, describe, and delineate the boundaries of on-site aquatic resources. This report facilitates efforts to:

- Avoid or minimize impacts to aquatic resources during the project design process,
- Document aquatic resource boundaries for review by the US Army Corps of Engineers (USACE), which will be required for state and federal permitting purposes as needed, and
- Provide early identification of known US Fish and Wildlife Service (USFWS) federally listed species with potential to occur within the Survey Area.

The delineation was conducted in accordance with the *1987 Corps of Engineers Wetland Delineation Manual, Arid West Regional Supplement* (2010), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (2008). The USACE's regulatory guidance on *Wetland Determinations and Delineation Procedures for Irrigated Lands* was used to determine the presence and extent of potential wetlands on the site's irrigated pastures and persistence in the absence of irrigation.

1.2 Contact Information

Preparers of this Delineation Report

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Project Contact

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c/o Tim Russell
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2.0 PROJECT LOCATION

The Survey Area is located in Section 13 of Township 15N/Range 20E within the Carson City U.S. Geological Survey 7.5-minute topographic quad (lat. 39.168141°, long. -119.784467° WGS 84) in Carson City, Nevada. The property is currently being evaluated to determine the presence of regulated aquatic resources and development potential of the site.

To drive to the site from the USACE Reno Field Office, take I-580 south to Hwy 395. Continue south on Hwy 395 for approximately 30 miles, then take the US-395 BUS/North Carson Street exit. Continue straight on North Carson Street for 2.5 miles, then turn right on West Washington Street and continue straight for one mile to reach the Survey Area. The Survey Area is located at the end of West Washington Street and to the west of North Ormsby Boulevard.

For a site visit please contact JoAnne Michael at RCI.

3.0 METHODS

3.1 Methods Used to Delineate and Survey Aquatic Resources

The site was delineated by a wetland scientist on March 30, 2022, and May 17, 2022. This survey was performed by RCI in accordance with the criteria contained in the Technical Report Y-87-1, *Corps of Engineers Wetland Delineation Manua*l, January 1987 (1987 Manual) and as amended by *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0, September 2008).

Prior to the field review, aerial photographs, US Geological Survey (USGS) topographic maps, and National Wetland Inventory (NWI)maps were reviewed. A baseline transect was established along the south parcel line and five transects were established perpendicular to the flow of water. Data points were taken at locations determined by review of the USGS topographic maps, NWI maps, aerial photography (Attachment B), and field observations of hydrophytic vegetation as being potential wetland or other jurisdictional waters. At each sample point, data on vegetation, soils, and hydrology were collected. Wetland data forms are provided in Attachment E and OHWM data forms are provided in Attachment F.

4.0 EXISTING CONDITIONS

4.1 Landscape Setting

The 43.5-acre Survey Area is located along the west side of North Ormsby Boulevard, approximately one mile west of North Carson Street. The Survey Area consists of irrigated pasture, bisected by Ash Canyon Creek, and surrounded by single family housing developments.

Topography

The Survey Area is located predominantly on remnant floodplain that has been leveled and modified as pasture. Site elevation ranges from approximately 4,780 feet to 4,760 feet, sloping gradually from the western boundary, downward toward the eastern boundary of the Survey Area at a two percent grade.

Hydrology

The Survey Area is located within the Carson River Watershed, with surface waters on-site flowing primarily west to east, eventually draining to the Carson River. Most of Nevada's streamflow comes from snowfall that accumulates in the winter months. As of May 1, 2022, snowpack in the Carson River Basin was below normal at 44 percent of median, compared to 38 percent last year (USDA NRCS Nevada Water Supply Outlook Report May 1, 2022). This Region of Nevada is experiencing severe drought conditions according to the U.S. Drought Monitor (May 3, 2022).

Rainfall

On average, the site receives 10 to 12 inches of annual precipitation (NRCS Soil Survey, 2022). The USACE Antecedent Precipitation Database was run for the September 14, 2021, survey date. Based on review of the charted data in the graph below, precipitation was below the normal 30-year range during the 30 days prior to the survey. The Palmer Drought Severity Index (PDSI) shows the site to be in moderate drought.

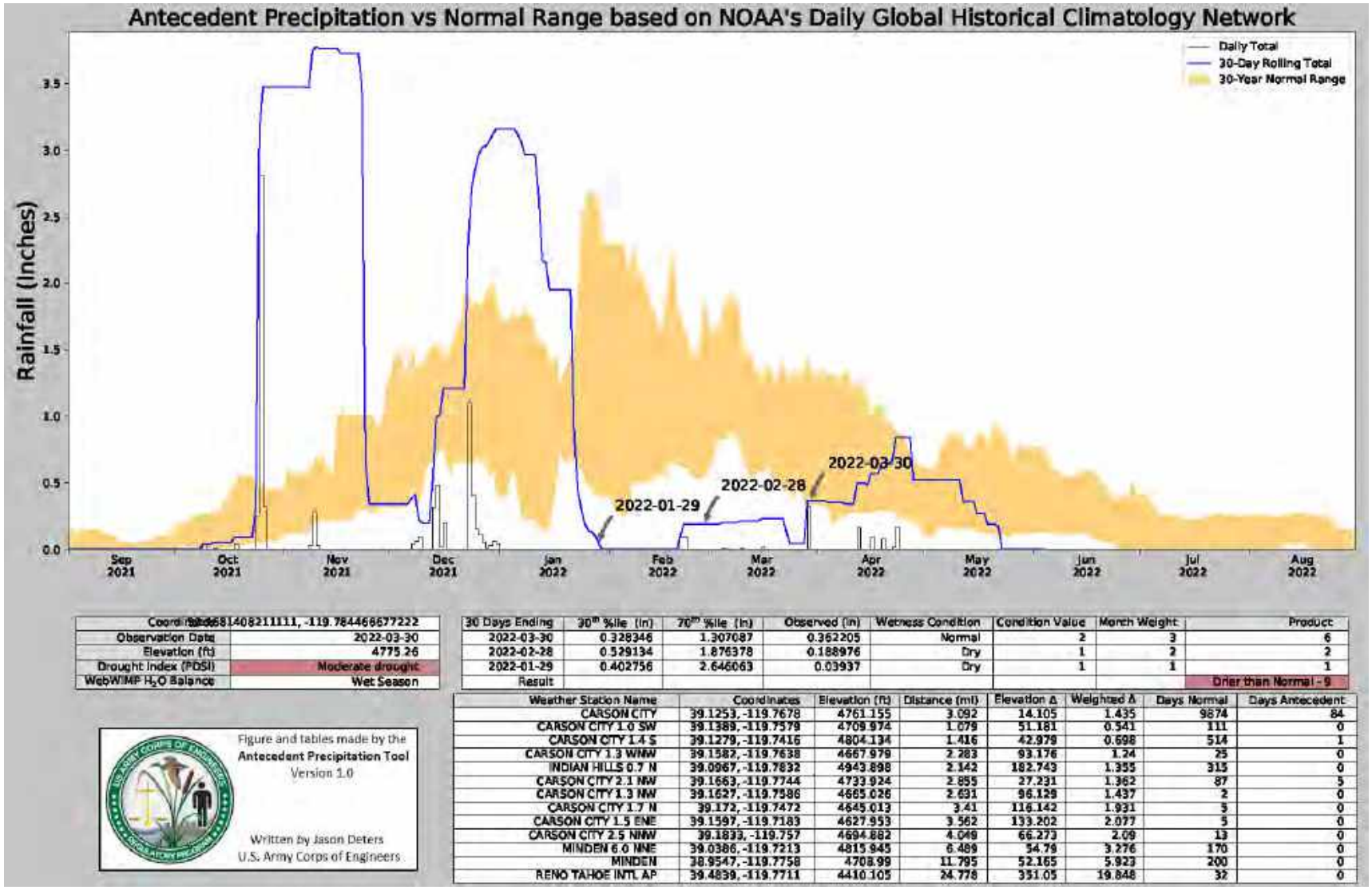
Surface Water

The primary source of on-site surface water is from Ash Canyon Creek and various excavated irrigation ditches distributing water from the creek, which flow from west to east across the Survey Area. Water in Ash Canyon Creek is conveyed via a series of roadside ditches and pipes through the urban area of Carson City, ultimately joining the Carson River approximately four miles east from the western boundary of the Survey Area.

Based on review of the Carson City USGS 7.5-minute quadrangle topographical digital map (Figure 1 in Attachment B), only Ash Canyon Creek (AR-1) appears as a mapped "blue line" within the Survey Area.

As shown in Figure 4 (Attachment B), the entire Survey Area is mapped outside of the 100-year floodplain.

Graph 1. Antecedent Precipitation vs Normal Range Precipitation Graph



Coord [redacted]408211111, -119.784466677222	
Observation Date	2022-03-30
Elevation (ft)	4775.26
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-03-30	0.328346	1.307087	0.362205	Normal	2	3	6
2022-02-28	0.529134	1.876378	0.188976	Dry	1	2	2
2022-01-29	0.402756	2.646063	0.03937	Dry	1	1	1
Result							Drier than Normal - 9

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
CARSON CITY	39.1253,-119.7678	4761.155	3.092	14.105	1.435	9874	84
CARSON CITY 1.0 SW	39.1389,-119.7579	4709.974	1.079	51.181	0.541	111	0
CARSON CITY 1.4 S	39.1279,-119.7416	4804.134	1.416	42.979	0.698	514	1
CARSON CITY 1.3 WNW	39.1582,-119.7638	4667.979	2.283	93.176	1.24	25	0
INDIAN HILLS 0.7 N	39.0967,-119.7832	4943.898	2.142	182.743	1.355	315	0
CARSON CITY 2.1 NW	39.1663,-119.7744	4733.924	2.855	27.231	1.362	87	5
CARSON CITY 1.3 NW	39.1627,-119.7586	4665.026	2.631	96.129	1.437	2	0
CARSON CITY 1.7 N	39.172,-119.7472	4645.013	3.41	116.142	1.931	5	0
CARSON CITY 1.5 ENE	39.1597,-119.7183	4627.953	3.562	133.202	2.077	5	0
CARSON CITY 2.5 NNW	39.1833,-119.757	4694.882	4.049	66.273	2.09	13	0
MINDEN 6.0 NNE	39.0386,-119.7213	4815.945	6.489	54.79	3.276	170	0
MINDEN	38.9547,-119.7758	4708.99	11.795	52.165	5.923	200	0
RENO TAHOE INTL AP	39.4839,-119.7711	4410.105	24.778	351.05	19.848	32	0

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Geology

Carson City is located within Eagle Valley and is bounded on the west by the Carson Range and on the east by the Pine Nut Mountains. Deposits surrounding the Survey Area are primarily younger pediment and alluvial from the Quaternary period, originating from less than 1 to 2 million years ago (Nevada Bureau of Mines and Geology, 2019).

Soils

According to the National Resource Conservation Service (NRCS) soil survey maps (Figure 2 in Attachment B), the soils in the Survey Area consist of the following:

- (36) Jubilee coarse sandy loam, 0 to 2 percent slopes (90%)
- (4) Bishop loam, saline (10%)

Additional soil characteristics are provided in the following paragraphs and a soils map is provided in Attachment B.

(36) Jubilee coarse sandy loam, 0 to 2 percent slopes

The majority of the site soils are classified as Jubilee coarse sandy loam, 0 to 2 percent slopes, which are found at elevations ranging from 4,500 to 4,600 feet. Mean annual precipitation typically ranges between 10 to 12 inches. These soils are formed on stream terraces and are comprised of alluvium derived from mixed materials. A typical profile of Jubilee coarse sandy loam, 0 to 2 percent slopes soils consists of:

H1 0 to 20 inches: coarse sandy loam
H2 20 to 60 inches: stratified coarse sand to sandy loam

These soils are classified as being poorly drained, **hydric** soils. The frequency of flooding is rare and frequency of ponding is none. Depth to the water table is between 10 to 12 inches below the surface. Depth to a restrictive feature is typically greater than 80 inches. Available water capacity in the soil profile is low (about 5.6 inches) (NRCS Web Soil Survey, accessed March 29, 2022).

The Ecological Site Description commonly associated with this soil type is WET MEADOW 10-14 P.Z. (R026XY003NV).

(4) Bishop loam, saline

Bishop loam, saline soils are found between 4,500 to 4,700 feet elevation. Mean annual precipitation typically ranges between 8 to 12 inches. These soils are formed on stream terraces and consist of alluvium from mixed material. A typical soil profile consists of:

H1 0 to 28 inches: loam
H2 28 to 60 inches: stratified sandy loam to clay loam

These soils are classified as poorly drained, **non-hydric** soils. The frequency of flooding is rare, and frequency of ponding is none. Depth to the water table is typically between 18 to 24 inches below the surface. Depth to a restrictive feature is typically greater than 80 inches. Available water capacity in the soil profile is high (about 9.8 inches) (NRCS Web Soil Survey, accessed March 29, 2022).

The Ecological Site Description commonly associated with this soil type is WET MEADOW 10-14 P.Z. (R026XY003NV).

Community Types and Existing Vegetation

The Survey Area is composed of irrigated pasture that generally falls within two categories, upland irrigated and depressional zones that capture overland water. The upland irrigated pasture is dominated by herbaceous and grass species including Kentucky blue grass (*Poa pratensis*, FAC), Douglas' sedge (*Carex douglasii*, FAC), Cheatgrass (*Bromus tectorum*, UPL), White clover (*Trifolium repens*, FACU), and Common yarrow (*Achillea millefolium*, FACU). Herbaceous and grass species within the depressional zones within the irrigated pasture include Baltic Rush (*Juncus balticus*, FACW), Tall scouring-rush (*Equisetum hyemale*, FACW), Fox-tail barley (*Hordeum jubatum*, FAC), and Sedge sp. (*Carex* sp., OBL-FAC). In some of the irrigation ditches herbaceous species include broad-leaf cattail (*Typha latifolia*, OBL), narrow-leaf willow (*Salix exigua*, FACW), and Hooker's evening-primrose (*Oenothera elata*, FACW).

The NWI maps the Survey Area as palustrine emergent, persistent, temporarily flooded wetland (reference Figure 3 in Attachment B). The irrigation ditches are represented as riverine, intermittent, streambed, seasonally flooded, excavated wetland areas. No other wetlands or aquatic resources were mapped by the NWI.

5.0 AQUATIC RESOURCES

Four aquatic resources were identified within the Survey Area and are depicted on the Aquatic Resources Delineation Map provided in Attachment A. The four aquatic resources consist mainly of irrigation ditches. Because of their common characteristics, they are discussed together below. A summary of the delineated resources is shown in Table 1 and described below.

Aquatic Resources (AR-1): Ash Canyon Creek, Non-Relatively Permanent Water

Ash Canyon Creek is an intermittent stream receiving flow from the Ash Canyon watershed in the East Carson Range of the Sierra Nevada mountains to the west of the Survey Area. Water from the creek is contained within an excavated ditch through the Survey Area and used to irrigate the western and northern portions of the pasture within the Survey Area. Water within Ash Canyon Creek flows from west to east through the center of the Survey Area and is diverted into an excavated ditch (AR-2) along the western property line. A portion of the flow is also diverted through a buried pipe to the south to sprinklers located along the western property line. AR-1 channel continues off-site at the eastern boundary via a culvert under North Ormsby Boulevard. Water from AR-1 is conveyed east within a roadside ditch along Williams Road and into the Carson City stormwater system, eventually discharging into the Carson River, a Traditional Navigable Water (TNW), located approximately four miles east of the Survey Area.

The on-site length of AR-1 is 1,510 linear feet (0.17 acres), with an average width of five feet at OHWM-1. The OHWM was identified in the field by a lack of terrestrial vegetation and a change in substrate. There was approximately four inches of standing water within the ditch at the time of the delineation. AR-1 is described in OHWM-1 data form located in Attachment F and identified in photos 4 and 5 shown in Attachment C.

Aquatic Resource – (AR-2): Excavated Irrigation Ditch, Non-Relatively Permanent Water

AR-2 is an excavated irrigation ditch receiving water from AR-1 (Ash Canyon Creek). Water in AR-2 flows from south to north along the western property line, terminating in the northwest corner of the Survey Area. Water within AR-2 terminates within the pasture and there is no surface water connection to a TNW.

The on-site length of AR-2 is 1,560 linear feet (0.18 acres). The channel width at the OHWM is five feet. The OHWM was identified in the field by lack of terrestrial vegetation and a scour line. AR-2 is described in OHWM-2 data form located in Attachment F and shown in photos 6 and 7 in Attachment C.

Aquatic Resource – (AR-3): Excavated Roadside Ditch, Non-Relatively Permanent Water

AR-3 is an excavated roadside ditch running along the north side of Kings Canyon Road, capturing stormwater runoff and some sheet flow from the irrigated pasture in and around the Survey Area. Water is conveyed off-site at the southeast corner of the Survey Area via a culvert and transported through storm drains through a residential area of Carson City.

The on-site length of AR-3 is 1,350 feet (0.03 acres), with an average width of one foot at the OHWM. The OHWM was identified in the field by a lack of vegetation, change in substrate, and a scour line. AR-3 is described in OHWM-3 and OHWM-4 located in Attachment F and shown in photos 8 through 10 in Attachment C.

Aquatic Resource – (AR-4a/4b): Excavated Irrigation Ditch, Non-Relatively Permanent Water

AR-4a and 4b are portions of an old irrigation ditch that is no longer being used to convey irrigation water but collects sheet flow from the western side of the pasture during irrigation. The channel banks are gently sloped and intermittently present, and the channel often is more characteristic of a swale. AR-4 has a section in the middle of its length where the channel is discontinuous and becomes part of the larger pasture, thus AR-4 has two segments. AR-4a/4b is not connected to AR-1 (Ash Canyon Creek); there is no surface water connection to a TNW.

The on-site length of AR-4a is 500 linear feet (0.04 acres), and AR-4b is 370 linear feet (0.03 acres). The average width for AR-4a/4b is 3.5 feet, taken at the OHWM. The OHWM was identified in the field by a lack of terrestrial vegetation, observed change in substrate, and a subtle scour line on either bank. AR-4a/4b is described in OHWM-5 data form located in Attachment F and shown in photos 11, 12, and 14 in Attachment C.

Table 1. Summary of Aquatic Resources within the Survey Area

Aquatic Resource Name	Aquatic Resource Classification (Cowardin)	Size (acres)	Size (Linear feet)	OHWM Data Form	Photo #	OHWM Indicators	Comments
AR-1: Ash Canyon Creek /excavated	R4SBCx	0.17	1,510	OHWM-1	4 & 5	• Lack of vegetation • Scour line	Intermittent stream (Ash Canyon Creek). Receives water primarily from seasonal snow melt in the East Carson Range to the west of the Survey Area. The creek/ditch runs through the Survey Area and exits via culvert under N. Ormsby Blvd. to later join a small stream that ultimately continues into the Carson River.
AR-2: Excavated Irrigation Ditch	R4SBCx	0.18	1,560	OHWM-2	6 & 7	• Lack of vegetation • Change in substrate	Excavated irrigation ditch that receives flow from Ash Canyon Creek (AR-1). Water flows from south to north within AR-2, then is used to irrigate a pasture area north of AR-1. AR-2 does not continue past the northwest corner of the Survey Area. No surface water connects to a TNW.
AR-3: Excavated Roadside Ditch	R4SBCx	0.03	1,350	OHWM-3 & OHWM-4	8 - 10	• Lack of vegetation • Scour line • Change in substrate	Excavated roadside ditch runs alongside of Kings Canyon Road (NF-039) and receives water from irrigated pasture sheet flow and storm water from the road. Waters are then conveyed via culvert off-site and into storm drains.
AR-4a/4b: Excavated Irrigation Ditch	R4SBCx	0.07	870	OHWM-5	11, 12 & 14	• Lack of vegetation • Scour line • Change in substrate	Older irrigation ditch that no longer conveys water for irrigating pasture. Now ditch collects sheet flow from west side of pasture when being irrigated. AR-4 is terminal; no surface water connects to a TNW.
Total	--	**0.45**	**5,290**			--	--

6.0 FEDERALLY PROTECTED SPECIES

The USFWS Information for Planning and Consultation website (accessed on June 7, 2022) identified three federally protected species with potential to occur near the Survey Area:

- Sierra Nevada Yellow-legged Frog (*Rana sierrae*), Endangered
- Carson Wandering Skipper (*Pseudocapaeodes eunus obscurus)*, Endangered
- Monarch Butterfly (*Danaus plexippus),* Candidate

There is no designated critical habitat located within the Survey Area.

Sierra Nevada Yellow-legged Frog (*Rana sierrae*), Endangered

Sierra Nevada yellow-legged frogs (SNYLF) are typically found in lakes, ponds, marshes, meadows, and streams at high elevations, typically ranging from 4,500 to 12,000 feet that are either perennial or intermittent at an elevation above 4,500 feet. There are no high elevation lakes, ponds, marshes, meadows, and streams within the Survey Area. The nearest known population occurred on Mt. Rose in Washoe County, but is now extinct (amphibianweb.org accessed, 2020). There is ***no suitable habitat*** for the SNYLF to occur on-site.

Carson Wandering Skipper (*Pseudocapaeodes eunus obscurus*), Endangered

The Carson wandering skipper inhabits grasslands on alkaline substrates and is commonly found in salt-bush-greasewood communities. Known nectar sources for the adults include *Thelypodium crispum* (thelypody), *Sisymbrium altissimum* (tumble mustard), *Pyrrocoma racemosus* (racemose golden-weed), *Cirsium arvense* (Canada thistle), *Cirsium vulgare* (bull thistle), *Lotus tenuis* (slender birds-foot trefoil, *Cleomella parviflora* (slender cleomella), *Cleomella plocasperma* (small-flowered cleomella), and *Heliotropium curassavicum* (heliotrope). Suitable habitat for the Carson wandering skipper appears to have the following characteristics: located east of Sierra Nevada; elevation less than 5,000 feet; presence of salt grass; near nectar sources; near open areas near springs or other water bodies; and possibly near geothermal activity. There is one known population of Carson wandering skipper in Douglas County (USFWS 2021). There is ***no suitable habitat*** for the Carson wandering skipper to occur on-site.

Monarch Butterfly (*Danaus plexippus*), Candidate

Monarch butterflies inhabit open fields and meadows with milkweed. There were no milkweed species observed within the Survey Area, and milkweed species are not likely to occur within the surrounding pastures. There is ***no suitable habitat*** for Monarch butterflies to occur on-site.

7.0 REFERENCES

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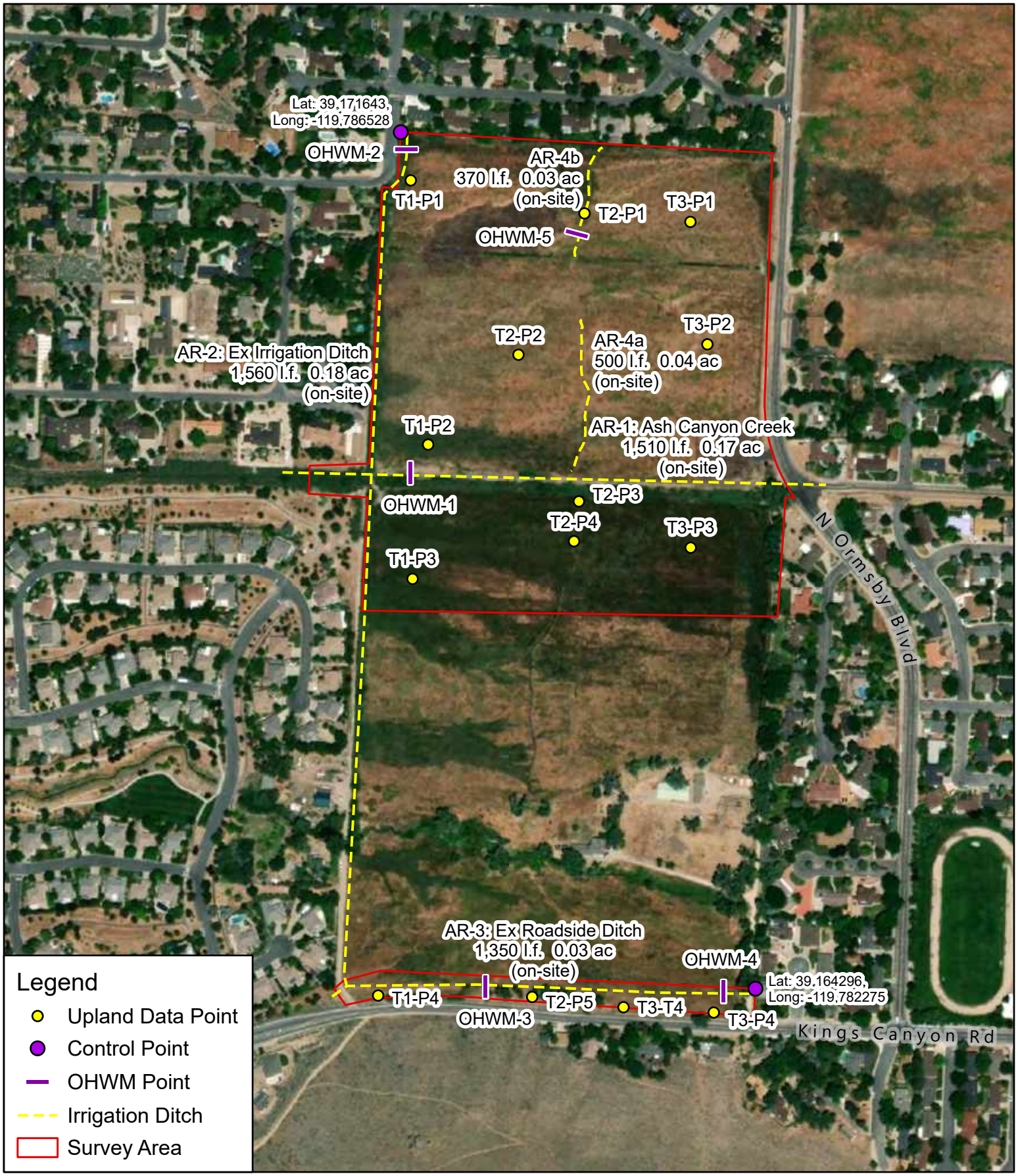
Attachments

Attachment A

Aquatic Resource Delineation Map



Project: Vintage at Kings Canyon
County: Carson City, Nevada
Surveyors: JoAnne Michael, Erin Smith
Date: Mar 30 & Apr 4, 2022
Data Source: ESRI Imagery Services
Vivid Maxar 7/19/2019

Andersen Ranch
Aquatic Resource Delineation

0 200 400 Feet
1 In = 400 Ft

N

6/10/2022

RCI 653 Resource Concepts Inc

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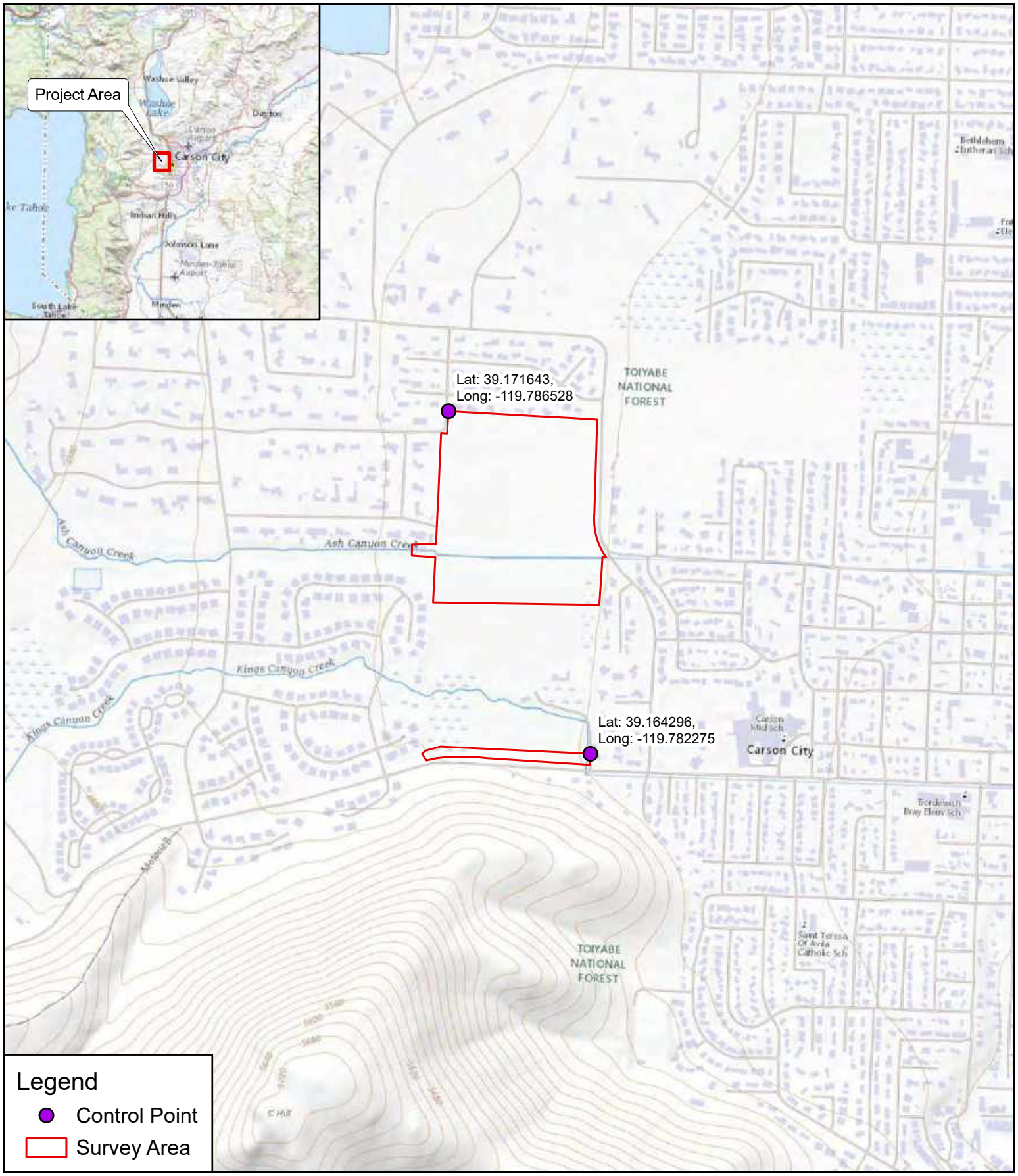
Attachment B

Supporting Maps



Project: Vintage at Kings Canyon
County: Carson City, Nevada
Surveyors: JoAnne Michael, Erin Smith
Date: Mar 30 & Apr 4, 2022
Data Source: USGS The National Map, 2021

Figure 1
Andersen Ranch
Location Map

0 500 1,000 Feet
1 In = 1,000 Ft

N

6/10/2022

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Project: Vintage at Kings Canyon
County: Carson City, Nevada
Surveyors: JoAnne Michael, Erin Smith
Date: Mar 30 & Apr 4, 2022
Data Source: Web Soil Survey, 2022

Figure 2
Andersen Ranch
Web Soil Survey

0 200 400 Feet
1 In = 400 Ft

N

6/10/2022

656

Resource Concepts Inc

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Project: Vintage at Kings Canyon
County: Carson City, Nevada
Surveyors: JoAnne Michael, Erin Smith
Date: Mar 30 & Apr 4, 2022
Data Source: National Wetland Inventory, 2020

Figure 3
Andersen Ranch
National Wetland Inventory

0 200 400 Feet
1 In = 400 Ft

N

6/10/2022

RC 657 Resource Concepts Inc

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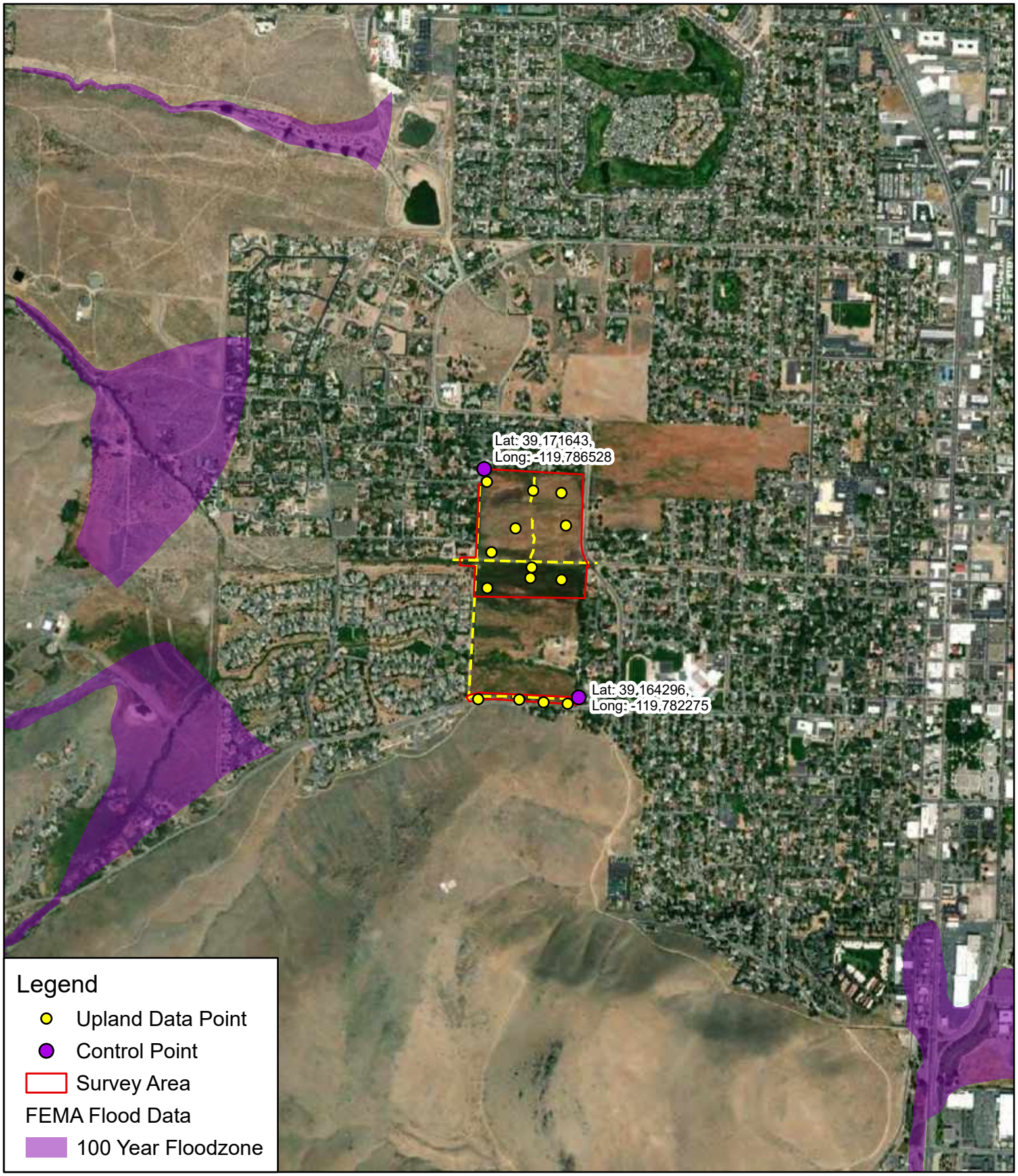

Project: Vintage at Kings Canyon
County: Carson City, Nevada
Surveyors: JoAnne Michael, Erin Smith
Date: Mar 30 & Apr 4, 2022
Data Source: FEMA Flood Map, 2021

Figure 4
Andersen Ranch
FEMA Floodplain

0 750 1,500 Feet
1 In = 1,500 Ft

N

6/10/2022

RCI 658 Resource Concepts Inc

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/HJHQG
3KRWR 3RLQW
8SODQG 'DWD 3RLQW
&RQWURO 3RLQW
2+:0 3RLQW
,UULJDWLRQ 'LWFK
6XUYH\ $UHD
5RDGVLGH 'LWFK
$VK &DQ\RQ &UHHN
1 2UPVE\ %OYG
.LQJV &DQ\RQ 5G

Attachment C

On-Site Photographs

Attachment C – Photo Plates

Photo 1. Overview of northern portion of Survey Area, view looking towards the east.

Photo 2. Overview of central portion of Survey Area, view looking toward the west.

Attachment C – Photo Plates

Photo 3. Overview of south end of Survey Area, view looking west under overhead powerlines on the north side of Kings Canyon Road.

Photo 4. Overview of Ash Canyon Creek (AR-1). View looking east on north bank.

Attachment C – Photo Plates

Photo 5. OHWM-1: picture showing approximately 2-4 inches of water in Ash Canyon Creek (AR-1). Exposed/partially excavated left bank with disconnected irrigation line. View looking southeast.

Photo 6. AR-2: Irrigation ditch running along the western boundary of Survey Area, flows south to north then terminates at northwest corner. Water from AR-2 flood irrigates pasture visible in picture. View looking south.

Attachment C – Photo Plates

Photo 7. OHWM-2: AR-2 irrigation ditch at western boundary of Survey Area. Thick willow obscuring view of channel. Average channel width approximately 5 feet. View looking southwest.

Photo 8. OHWM-3: AR-3 excavated roadside ditch capturing storm water from road. When present, water flow from west to east into storm drain at southeast corner of Survey Area. View looking east.

Attachment C – Photo Plates

Photo 9. OHWM-4: AR-3 excavated roadside ditch at eastern end when some overland flow from irrigated pasture may intermittently be entering ditch. View looking west.

Photo 10. AR-3 at southeast corner of Survey Area where waters, when present, exit off-site into storm drain. View looking northeast.

Attachment C – Photo Plates

Photo 11. AR-4b: Older excavated irrigation ditch no longer conveying water, only capturing sheet flow from northwestern half of pasture when irrigated. View looking south.

Photo 12. AR-4a: Southern end of AR-4 excavated irrigation ditch. Old irrigation ditch capturing sheet flow across pasture. Small weir visible in picture no longer operating. View looking south.

Attachment C – Photo Plates

Photo 13. T1-P1: Data point taken at western boundary of Survey Area adjacent to willow stand surrounding AR-2 irrigation ditch. Vegetation was dominated by an unknown sedge species (*Carex* sp., OBL-FAC) and Narrow-leaf willow (*Salix exigua*, FACW). View looking south.

Photo 14. OHWM- 5: T2-P1 collected just north of OHWM-5 in swale area. Vegetation dominated by an unknown sedge species (Carex sp., OBL-FAC). View looking north.

Attachment C – Photo Plates

Photo 15. T3-P1: Data point taken in northeast upland portion of Survey Area. Vegetation was dominated by Cheatgrass (*Bromus tectorum*, UPL), Western tansymustard (*Descurainia pinnata*, UPL), and Common stork's-bill (*Erodium circutarium*, UPL). View looking west.

Photo 16. T1-P2: Data point taken at low point in western boundary of Survey Area adjacent to AR-1. Photo collected later (5/17/2022), showing more growth. Vegetation dominated by Kentucky bluegrass (*Poa pratensis*, FAC), Graceful cinquefoil (*Potentilla gracilis*, FAC), and Douglas' sedge (*Carex douglasii*, FAC). No hydric soils of wetland hydrology in the absence of irrigation.

Attachment C – Photo Plates

Photo 17. T2-P2: Data point taken in irrigated pasture (typical) north of AR-1 and west of AR-4a. Vegetation was dominated by White Clover (*Trifolium repens*, FACU), Baltic rush (*Juncus balticus*, FACW), and an unknown sedge (*Carex* sp., OBL-FAC). No hydric soils of wetland hydrology in the absence of irrigation.

Photo 18. T3-P2: Data point taken in east end of irrigated pasture north of Ash Canyon Creek (AR-2). Vegetation was dominated by an unknown sedge (*Carex* sp., OBL-FAC), Douglas' sedge (*Carex douglasii*, FAC), and Common stork's-bill (*Erodium circutarium*, UPL).

Attachment C – Photo Plates

Photo 19. T2-P3: Data point taken in low spot adjacent to Ash Canyon Creek (AR-1). Vegetation dominated by Kentucky bluegrass (*Poa pratensis*, FAC), Douglas' sedge (*Carex douglasii*, FAC), and Baltic rush (*Juncus balticus*, FACW). No hydric soils of wetland hydrology in the absence of irrigation.

Photo 20. T3-P3: Data point taken in low spot within irrigated pasture. Vegetation dominated by Douglas' sedge (*Carex douglasii*, FAC) and Baltic rush (*Juncus balticus*, FACW). No hydric soils of wetland hydrology in the absence of irrigation.

Attachment C – Photo Plates

Photo 21. T1-P4: Data point taken in upland irrigated pasture. Vegetation is dominated by Big sagebrush (*Artemesia tridentata*, UPL), Cheatgrass (*Bromus tectorum*, UPL), and Fiddleneck (*Amsinckia tessellata*, UPL). View looking west.

Photo 22. T2-P4: Data point taken within low point of pasture, likely a remnant of an irrigation ditch. Vegetation dominated by Kentucky blue grass (*Poa pratensis*, FAC), Douglas' sedge (*Carex douglasii*, FAC), and an unknown sedge species (*Carex* sp., OBL-FAC).

Attachment C – Photo Plates

Photo 23. T3-P4: Data point taken on a slight rise in southern part of pasture. Vegetation is dominated by Kentucky Bluegrass (*Poa pratensis*, FAC) and Douglas' sedge (*Carex douglasii*, FAC).

Photo 24. T2-P5: Data point collected in upland at southern end of Survey Area. Vegetation is dominated by Freemont Cottenwood (*Populus fremontii*, UPL), Big Sagebrush (*Artemesia tridentata*, UPL), Kentucky blue grass (*Poa pratensis*, FAC), and Common Stork's-bill (*Erodium circutarium*, UPL).

Attachment D

Plant List

Attachment D
Wetland Delineation Plant List

Scientific Name	Common Name	Wetland Indicator
Grasses/Grass-likes		
Bromus tectorum	Cheatgrass	UPL
Carex douglasii	Douglas' sedge	FAC
Carex sp.	Sedge sp.	OBL-FAC
Equisetum hyemale	Tall scouring-rush	FACW
Hordeum jubatum	Fox-tail barley	FAC
Juncus balticus	Baltic Rush	FACW
Phleum pratense	Common Timothy	FACU
Poa pratensis	Kentucky blue grass	FAC
Vulpia sp.	Six-weeks grass	FACU
Forbs		
Achillea millefolium	Common Yarrow	FACU
Amsinckia tessellata	Fiddleneck	UPL
Descurainia pinnata	Western Tansymustard	UPL
Erodium circutarium	Common Stork's-bill	UPL
Iris missouriensis	Rocky Mountain Iris	FACW
Plantago altissima	Common name unknown	UPL
Potentilla gracilis	Graceful Cinquefoil	FAC
Rumex crispus	Curly Dock	FAC
Sisymbrium altissimum	Tall-Hedge Mustard	FACU
Taraxacum officinale	Common Dandelion	FACU
Trifolium pretense	Red clover	FACU
Trifolium repens	White Clover	FACU
Urtica dioica	Stinging Nettle	FAC
Trees and Shrubs		
Artemisia tridentata	Big sagebrush	UPL
Ericameria nauseosus	Grey rabbitbrush	UPL
Ericameria viridis	Green rabbitbrush	UPL
Pinus jeffreyi	Jeffrey Pines	UPL
Populus fremontii	Fremont Cottonwood	UPL
Rosa woodsii	Woods' rose	FACU
Salix exigua	Narrow-leaf Willow	FACW

Attachment E

Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T1P1

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point located in irrigated pasture at edge of willow stand along irrigation ditch (AR-2), west property boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. Salix exigua	30	Yes	FACW
2. Rosa woodsii	5	No	FACU
3.			
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Carex sp. 2	90	Yes	OBL-FA(
2. Juncus balticus	5	No	FACW
3. Carex douglasii	3	No	FAC
4. Bromus tectorum	2	No	UPL
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

Bromus tectorum on small rise between Carex and ditch (AR-2); shrubs lining ditch.

SOIL

Sampling Point: T1P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/3	100					sandy loar	dense fine roots
6-18	7.5YR 3/3	100					sandy loar	no roots
18-24	7.5 YR 3/2	98	5 YR 4/6	2			san loam	no roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): none

Water Table Present? Yes ____ No ✔ Depth (inches): > 24

Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): > 24

Wetland Hydrology Present? Yes _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T1P2

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T 15 N, R 20 E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point located at a low point in the corner of the pasture, adjacent to the North side of AR-1. Data taken prior to start of irrigation

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Poa pratensis	50	Yes	FAC
2. Carex douglasii	50	Yes	FAC
3. Potentilla gracilis	<1	No	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

Data point was taken in a patch of sedge; rise between data point and AR-1 are dominated by Bromus tectorum and Brassica sp.

SOIL

Sampling Point: T1P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2	100					loamy san	
10-24	10YR 4/2	95	7.5 YR 3/4	5	C	M	loamy san	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 24

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 24

Wetland Hydrology Present? Yes _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T1P3

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Carex douglasii	30	Yes	FAC
2. Juncus balticus	10	No	FACW
3. Achillea millefolium	3	No	FACU
4. Taraxacum officinale	2	No	UPL
5. Poa pratensis	25	Yes	FAC
6. Carex Sp.2	30	Yes	OBL-FA(
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: T1P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	100					sandy loar	high organic matter

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 18

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 18

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/ 17 22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T1P4

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Upland irrigated pasture (typical).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Artemesia tridentata	30	Yes	UPL
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Bromus tectorum	75	Yes	UPL
2. Amsinckia tessellata	20	Yes	UPL
3. Equisetum hyminale	5	No	FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	125	x 5 =	625
Column Totals:	130 (A)		635 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks:

SOIL

Sampling Point: T1P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/3	100					loam	medium roots
8-18	10YR 3/3	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 18

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 18

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T2P1

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Riverine - R4SBCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point taken in excavated irrigation ditch; bottom of the ditch is approximately 6 inches below the elevation of the adjacent agricultural field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Carex sp.2	60	Yes	OBL-FA(
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

Vegetation within the ditch is Carex sp. 2; the adjacent pasture is dominated by Juncus balticus, Trifolium repens, Potentilla gracilis, and Carex douglasii.

SOIL

Sampling Point: T2P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					loamy san	medium roots
6-24	10YR 3/2	100					loamy san	no roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 24

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 24

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T2P2

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point taken in irrigated pasture (typical).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Carex sp.2 (collected)	50	Yes	OBL-FA(
2. Juncus balticus	25	Yes	FACW
3. Trifoleium repens	20	Yes	FACU
4. Pontilla gracilis	5	No	FAC
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: T2P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2						sandy loar	fine roots
4-20	10YR 3/2						sandy loar	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 20

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 20

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T2P3

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ____ No ✔	

Remarks:

Data point taken within a low spot adjacent to AR-1 (Ash Creek). Data collected prior to start of irrigation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Poa Pratensis	30	Yes	FAC
2. Juncus balticus	30	Yes	FACW
3. Carex douglasii	40	Yes	FAC
4. Rumex Sp.	<1		
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: T2P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					sand	
4-10	10YR 4/2	95	7.5YR 3/4	5	C	M	sandy loar	
10-21	10YR 3/3	100					loamy san	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✔ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 21

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 21

Wetland Hydrology Present? Yes _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T2P4

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point taken in depression, likely a remnant of an irrigation ditch.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Poa Pratensis	20	Yes	FAC
2. Juncus balticus	5	No	FACW
3. Carex douglasii	35	Yes	FAC
4. Potentilla gracilis	5	No	FAC
5. Carex Sp.2	35	Yes	OBL-FAC
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

Swale/depression is dominated by sedge, surrounding area includes Juncus and Poa pratensis.

SOIL

Sampling Point: T2P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					sandy loar	
3-22	10YR 2/2	100					sandy loar	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 22

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 22

Wetland Hydrology Present? Yes _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T2P5

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point taken between the road and the edge of the pasture.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	50	Yes	UPL
2.			
3.			
4.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. Artemesia tridentata	20	Yes	UPL
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Poa Pratensis	20	Yes	FAC
2. Achillea millefolium	5	No	FACU
3. Erodium circutarium	20	Yes	UPL
4. Vulpia sp.	15	Yes	FACU
5. Descurainia pinnata	10	No	UPL
6.			
7.			
8.			
	70	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	70	x 4 =	280
UPL species	30	x 5 =	150
Column Totals:	120 (A)		490 (B)

Prevalence Index = B/A = 4.1

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks:

Two Jeffrey pines are located 100 feet East of the data point.

SOIL

Sampling Point: T2P5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100					loam	with 10% gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 20

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 20

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T3P1

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point is located in irrigated pasture.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Bromus tectorum	30	Yes	UPL
2. Juncus balticus	10	No	FACW
3. Carex douglasii	10	No	FAC
4. Erodium circutarium	25	Yes	UPL
5. Trifolium pratense	5	No	FACU
6. Descurainia pinnata	20	Yes	UPL
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species	75	x 5 =	375
Column Totals:	100 (A)		445 (B)

Prevalence Index = B/A = 4.45

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks:

SOIL

Sampling Point: T3P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	98	5YR 4/6	2			loamy san	faint mottles, dense fine roots
6-24	7.5YR 3/2	98	5YR 4/6	2			loamy san	no roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 24

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 24

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T3P2

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point is located in irrigated pasture.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Bromus tectorum	5	No	UPL
2. Juncus balticus	10	No	FACW
3. Carex douglasii	25	Yes	FAC
4. Erodium circutarium	30	Yes	UPL
5. Trifolium pretense	5	No	FACU
6. Carex sp.2	25	Yes	OBL-FA(
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: T3P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/2	100					loamy san	fine-medium roots
8-21	7.5YR 3/2	100					loamy san	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 21

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 21

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T3P3

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Bishop loam, saline NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point is located in irrigated pasture (typical).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Carex sp.2	20	Yes	OBL-FA(
2. Juncus balticus	60	Yes	FACW
3. Potentilla gracilis	20	Yes	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: T3P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100					loamy san	fine roots
5-12	10YR 3/2	100					loamy san	no roots
12-20	10YR 2/2	100					loamy san	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 20

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 20

Wetland Hydrology Present? Yes _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Vintage at Kings Canyon City/County: Carson City Sampling Date: 3/20, 5/17/22

Applicant/Owner: Lumos & Associates / Andersen Ranch State: NV Sampling Point: T3P4

Investigator(s): JoAnne Michael, Erin Smith Section, Township, Range: SEC 13, T15N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 0-2

Subregion (LRR): D Lat: Long: Datum:

Soil Map Unit Name: Jubilee coarse sandy loam, 0 to 2 percent slope NWI classification: Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point was taken within irrigated pasture on the Southern edge of the field on a rise that slopes North, between AR-3 and pasture.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Poa pratensis	50	Yes	FAC
2. Carex douglasii	30	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: T3P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-19	10YR 3/3	100					loam	with gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 19

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 19

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Attachment F

OHWM Data Forms

Project: Vintage at Kings Canyon **Date:** May 17, 2021

Location: Carson City, Nevada **Investigator(s):** JoAnne Michael, Erin Smith

Project Description:

The purpose of the delineation is to identify on-site wetlands for furuter planning purposes.

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

On-site aquatic resources consist of excavated irrigation ditches charged by flow diverted from the Ash Canyon Creek. Water enters the site from the west in an excavated section of Ash Canyon Creek and spread out over the site via lateral excavated ditches flowing north and and south. The water continues off-site to the east and enters the Carson City stormwater system, eventually discharging into the Carson River.

Off-site Information

Remotely sensed image(s) acquired? ☒ **Yes** ☐ **No** [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

Aerial photo used to map data points and OHWMs

Hydrologic/hydraulic information acquired? ☐ **Yes** ☒ **No** [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:

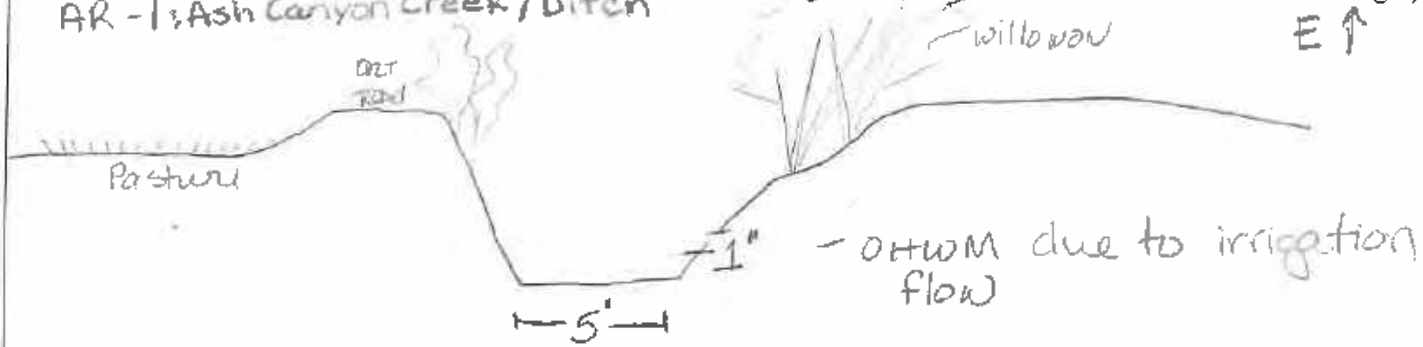
National Wetland Inventory Map
NRCS Web soil survey maps
FEMA floodplain map

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Datasheet # OHWM-1 **OHWM Delineation Datasheet** Page 2 of 10

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

AR-1; Ash Canyon Creek / ditch



Break in Slope at OHWM: ☑ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	20	50	20	2	0	
Below OHWM	25	60	10	5	0	

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	75	20	35
Below OHWM	0	0	0	100

Notes/Description:

Woods' rose on North bank, stinging nettle

Willows on South bank

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

water level in Ash Creek/ditch flowing at 2"; ~6' lower in elevation than adjacent pasture

OHWM – ID in Field by:

- scour
- impressed line

Datasheet # OHWM-2 **OHWM Delineation Datasheet** Page 3 of 6

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

AR-2: Excavated Irrigation Ditch

Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☑ ~~Gentle~~ (< 30°) | ☐ None
Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	35	43	20	2	0	
Below OHWM	25	55	15	5	0	

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	Ø	80	50	50
Below OHWM	Ø	Ø	Ø	100

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

OHWM identified by:
- lack of vegetation, change in sub strate

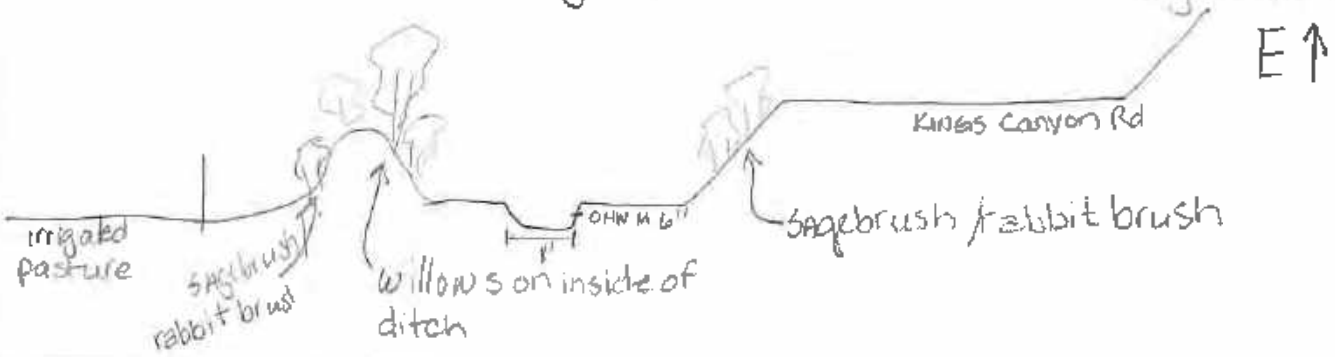
water approx 2-4" standing water

-Channel terminates in NW CORNER; NO SURFACE Water Connections to A TNW

Datasheet # OHWM-3 | **OHWM Delineation Datasheet** | Page 4 of 10

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

AR-3 – Road side ditch, adjacent to North side of Kings Canyon Rd



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☑ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	15	75	8	2	0	
Below OHWM	0	50	50	0	0	

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	80	20	0
Below OHWM	0	0	10	90

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

OHWM identified in field –

- scour
- lack of veg
- change in substrate

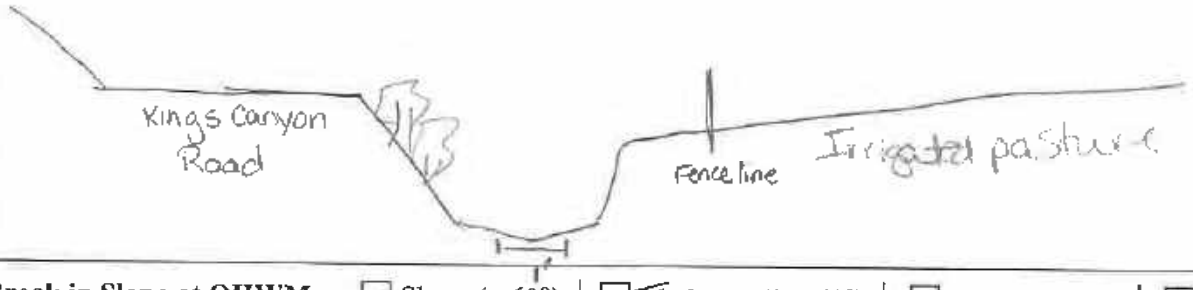
Road side ditch

Datasheet # OHWM-4 **OHWM Delineation Datasheet** Page 5 of 10

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

AR-3: Ex. Roadside Ditch; adjacent to northside of Kings Canyon Rd

NW



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☒ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description: Steep/Sharp slope from Road to ditch

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	10	50	30	10	0	
Below OHWM	30	50	20	Ø	Ø	

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	10	50	40	Ø
Below OHWM	Ø	0	0	100

Notes/Description: Cluster of cottonwood along fence line

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

OHWM identified by:

- lack of veg
- scour

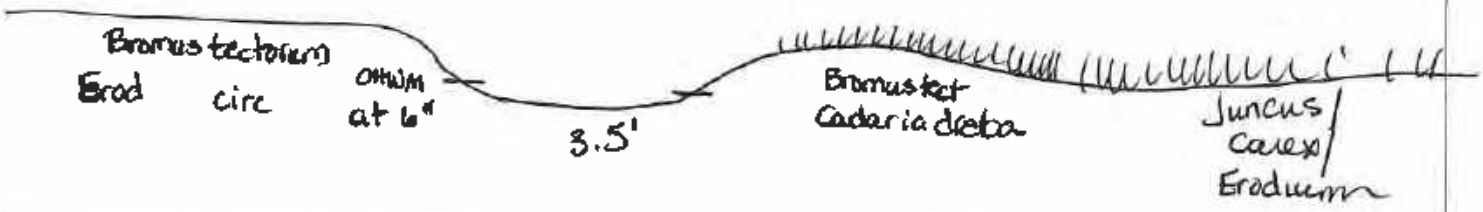
Channel intermittent/difuse. Flow terminates ON-site; No surface water connection to A TNW.

Datasheet # OHWM-5 **OHWM Delineation Datasheet** Page 6 of 6

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

AR-4 - irrigation Ditch conveys water from off-site ditch to pasture, ends in pasture

NT



Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	50	50	10	0	0	0
Below OHWM	100	0	0	0	0	0

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	0	100	0
Below OHWM	0	0	5	95

Notes/Description:

occasional sedge and rumex below OHWM

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

OHWM identified by
- scour line on bank
- lack of veg
- change in substrate

Attachment G

Signed Statement from Property Owner Allowing Access

Authorization to Access Site

I, _____, owner of subject survey area, authorize the Corps representatives to inspect the Vintage at Kings Canyon – Andersen Ranch Aquatic Resource Delineation Survey Area located along the west side of North Ormsby Blvd., Carson City, Nevada, and collect samples during normal business hours. The survey area is approximately 43.5 acres total.

The Survey Area is location in portions of Carson City County APN: 009-012-21

Signature _____ Title_____

Date _____

Attachment H

Aquatic Resource Excel Sheet

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
AR-1	NEVADA	R5	RIVERINE	Linear	1510	FOOT	NRPW	39.16866	-119.78633	Ash Canyon Creek/Ditch
AR-2	NEVADA	R4	RIVERINE	Linear	1560	FOOT	NRPW	39.17147	-119.78644	Irrigation Ditch
AR-3	NEVADA	R4	RIVERINE	Linear	1350	FOOT	NRPW	39.16422	-119.78531	Roadside Ditch
AR-4a/4b	NEVADA	R4	RIVERINE	Linear	870	FOOT	NRPW	39.17078	-119.78451	Irrigation Ditch

Attachment I

Digital Information