

Operable Unit 1

Operable Unit 2

Operable Unit 3

Legend

- Operable Units
- Land Use**
- Business/Industrial
- Commercial
- Public and Semi-Public
- Residential
- Master-Planned Community (Under Development)*

* As of August 2022, approximately 50% of the Master-Planned Community has been redeveloped. Land use will be primarily residential, but the plans also include schools, commercial properties, and open space.

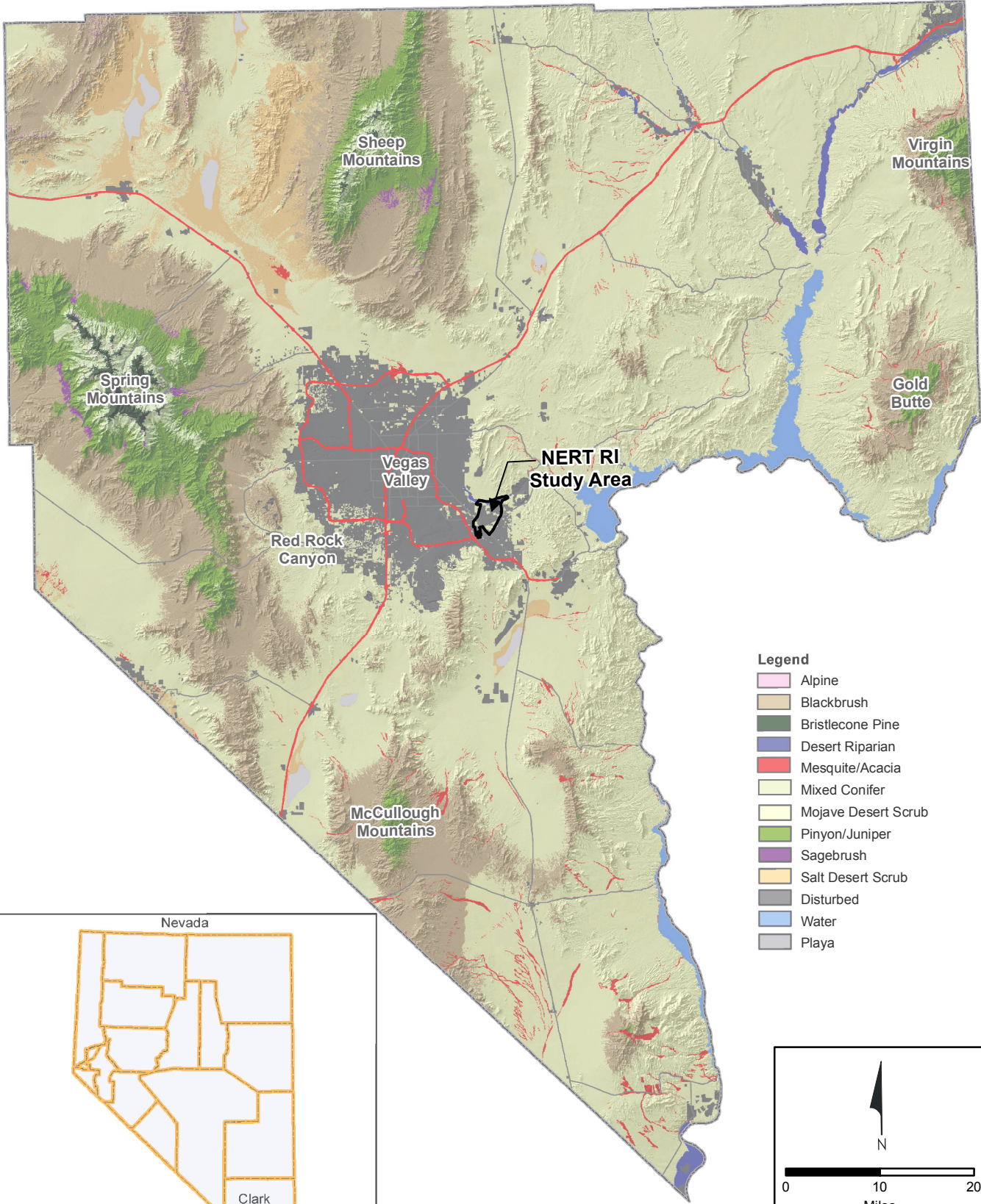
Imagery source: Maxar, August 2022

Path: H:\LePelomane\NERT\RI_OU-1_OU-2 RI Report\GIS\revision1\revision1.aprx



Site Vicinity Land Use Map
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure
5-1

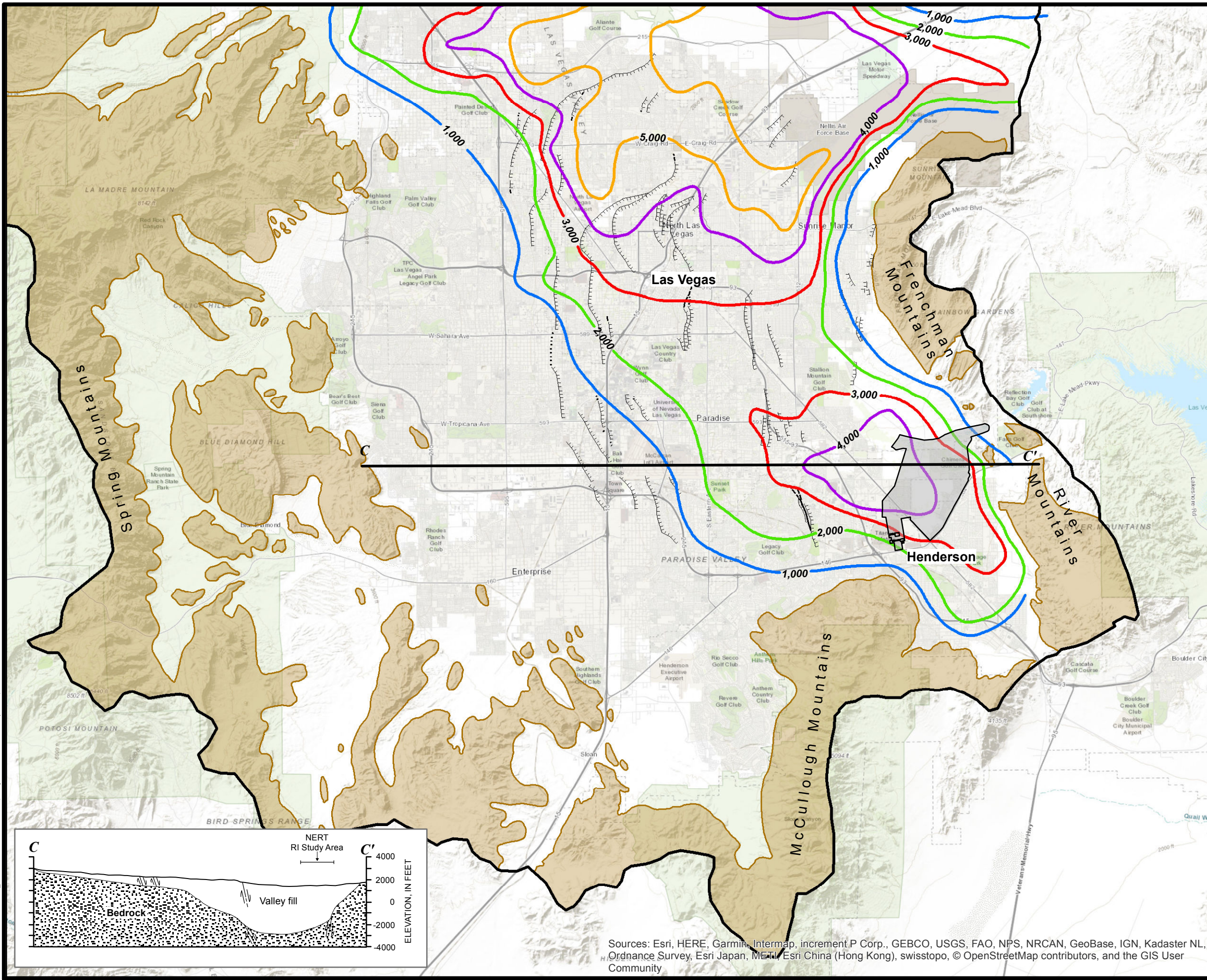


Note: Map obtained from Clark County, Nevada Department of Air Quality and Environmental Management.



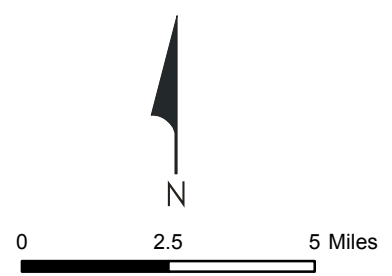
Clark County Ecosystem Distribution Map
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure 5-2



- LEGEND:**
- Las Vegas Valley Hydrologic Basin
 - NERT RI Study Area
 - 1,000 Line of Equal Thickness of Valley-Fill Deposits (feet)
 - Fault scarp. Hachures on down thrown side. May not mark exact trace owing to erosion of scarp.

Note:
Adapted from Plume, R.W., 1989.
U.S. Geological Survey Water-Supply
Paper 2320-A.

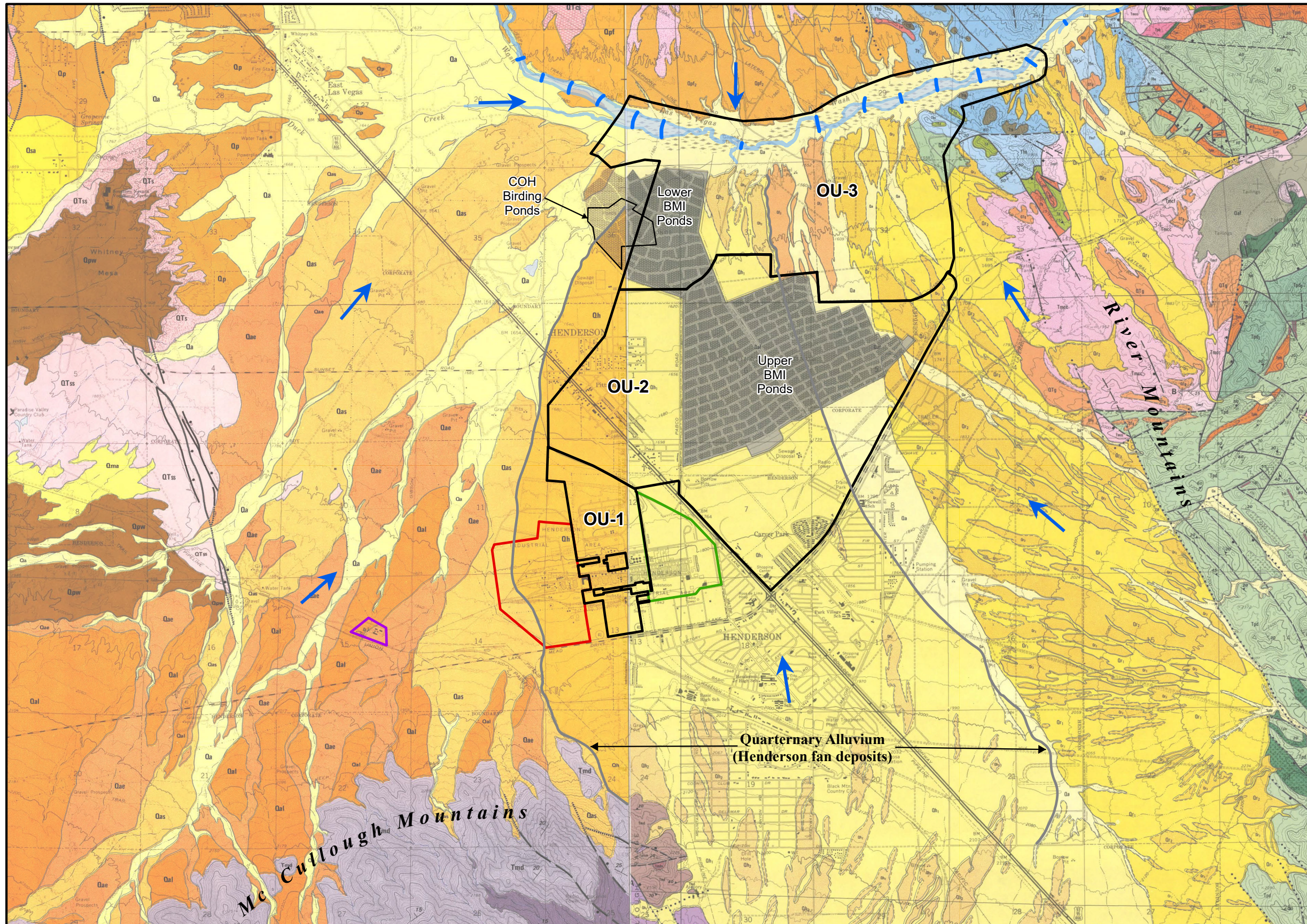


Las Vegas Valley Basin Fill Thickness
Nevada Environmental Response Trust Site
Henderson, Nevada

Date: 5/4/2020	Contract Number: 169001 6064	Figure 5-3
Drafter: RS	Approved:	Revised:

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Path: H:\LePetra\NERT\RI_Evaluation\GIS\Chemical_Maps\Fig_4-8_Thickness_of_valley_fill_Map.mxd



LEGEND:

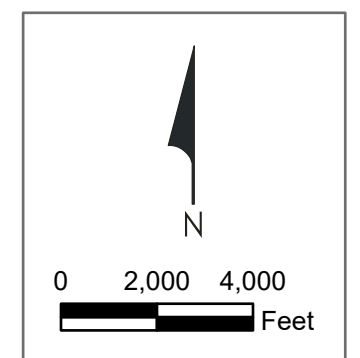
- Operable Units
- Former AMPAC
- OSSM
- TIMET
- Weirs
- Las Vegas Wash
- Direction of Groundwater Flow

See figure 5-4b for geology legend

Note:
COH: City of Henderson

Basemap sources:
Bell J.W. and Smith E.I. Geologic map of the Henderson Quadrangle, Nevada Nevada Bureau of Mines and Geology, Map 67 1980

Bingler. E. C. Las Vegas SE Folio Geologic Map. Nevada Bureau of Mines and Geology, Environmental Series. 1977.



Surficial Geology

Nevada Environmental Response Trust Site
Henderson, Nevada

Drafter: JC

Date: 2023-01-09

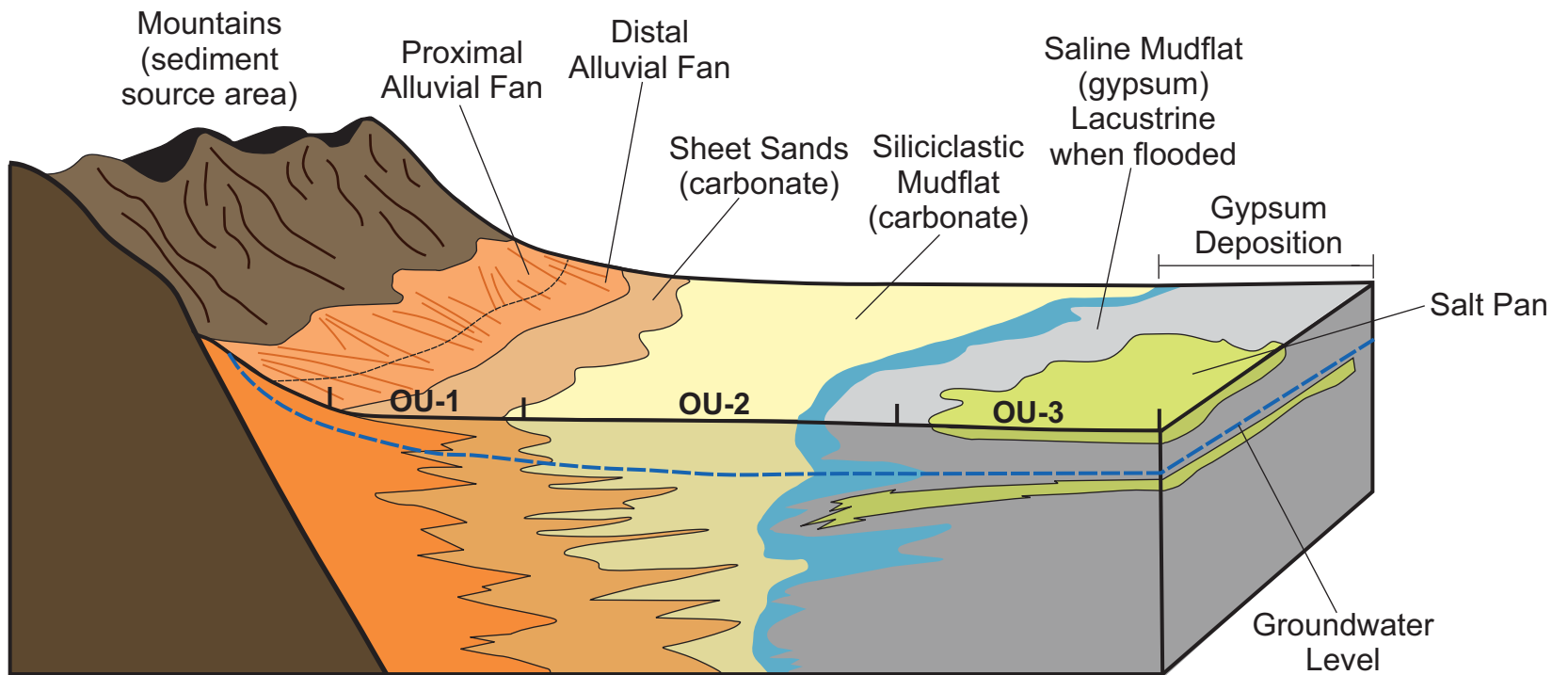
Contract Number: 1690025040

Approved by:

Revised:

Figure

5-4a



Modified after Faulds et al., 2016.

Generalized Model for Closed-Basin Sedimentation

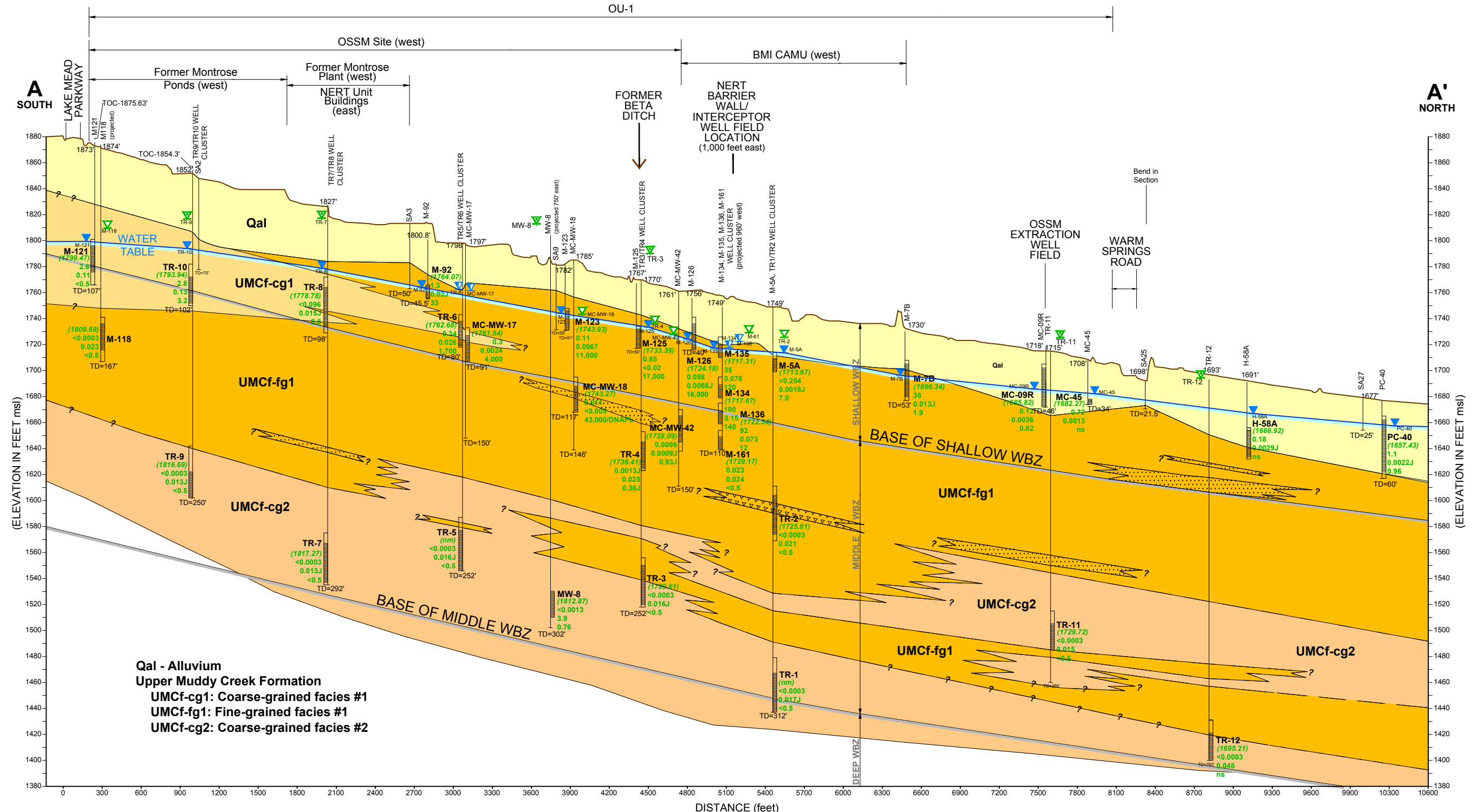
Note: Locations of the NERT RI Study Area Operable Units
OU-1, OU-2, and OU-3 are approximate.



Conceptual Geologic Model for the Muddy Creek Formation
OU-1/OU-2 RI Report
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure

5-5



Qal - Alluvium
 Upper Muddy Creek Formation
 UMCf-cg1: Coarse-grained facies #1
 UMCf-fg1: Fine-grained facies #1
 UMCf-cg2: Coarse-grained facies #2

See Figure 5-6b
 for Location Map
 and Explanation



Subsurface Cross-Section A-A' Illustrating Site Hydrostratigraphic Units
 Nevada Environmental Response Trust Site
 Henderson, Nevada

Figure
5-6a

Drafter: RS

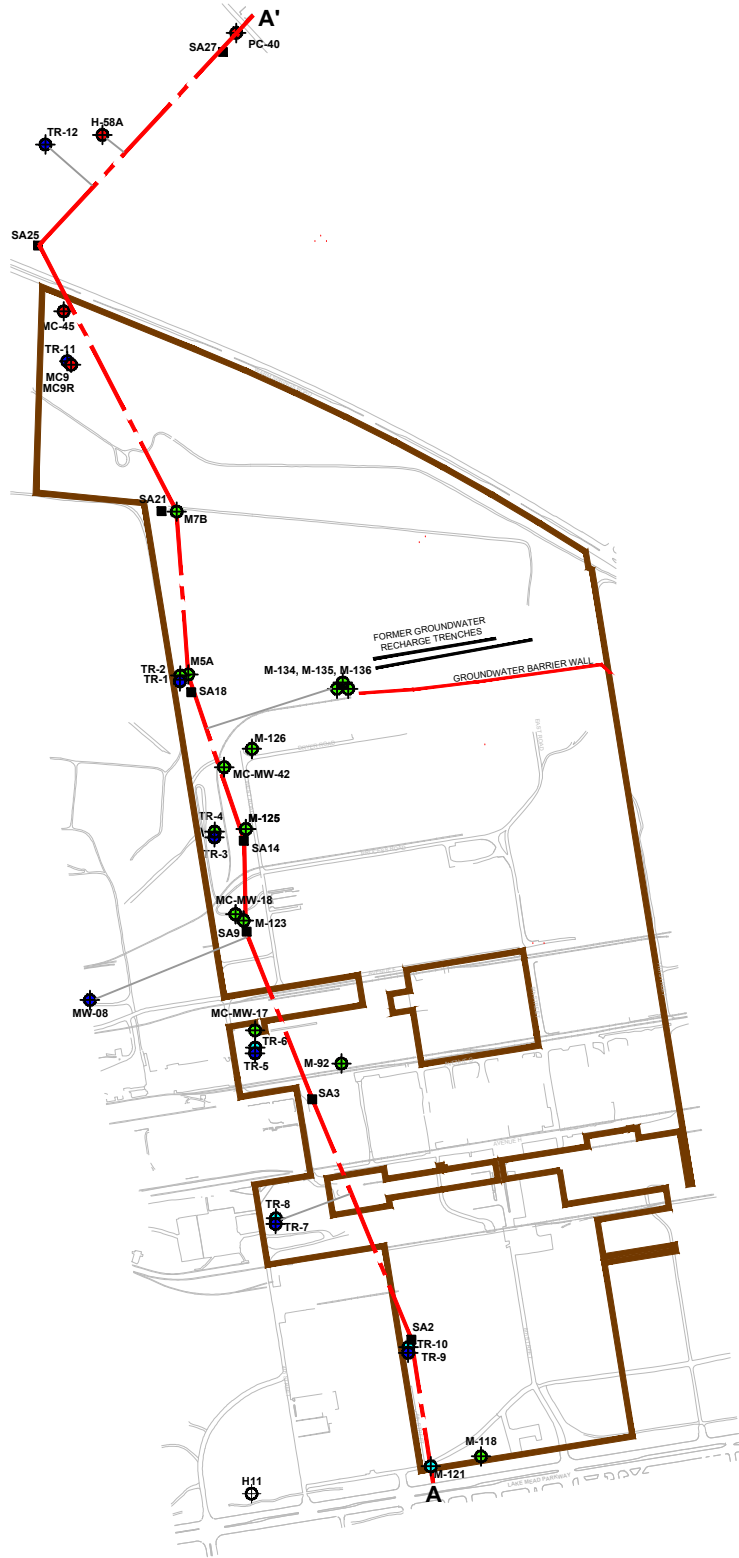
Date: 5/4/2020

Contract Number: 169001 6064

Approved by:

Revised:

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GROUNDWATER ELEVATIONS

(feet, mean sea level datum)

Shallow Water-Bearing Zone (0-90 ft)

- Water Table Zone Well
- Deeper Shallow WBZ Well

Middle Water-Bearing Zone (90-300 ft)

- Upper Muddy Creek Formation, First Fine-Grained Unit (UMCf-fg1)
- Upper Muddy Creek Formation, Second Coarse-Grained Unit (UMCf-cg2)

A-A' LINE OF GEOLOGIC SECTION

- OU-1 BOUNDARY
- MONITORING WELL WITH SCREEN IN THE ALLUVIAL AQUIFER (Qal)
- MONITORING WELL WITH SCREEN IN THE MUDDY CREEK FINE GRAINED FACIES (UMCf-fg1)
- MONITORING WELL WITH SCREEN IN THE MUDDY CREEK COARSE GRAINED FACIES 1 (UMCf-cg1)
- MONITORING WELL WITH SCREEN IN THE MUDDY CREEK COARSE GRAINED FACIES 2 (UMCf-cg2)

LEGEND

- QUATERNARY ALLUVIUM
- MUDDY CREEK FORMATION FINE-GRAINED FACIES #1
- SILTY SAND AND SANDY BED WITHIN THE MUDDY CREEK FORMATION FINE-GRAINED FACIES #1
- VOLCANIC ASH DEPOSIT WITHIN THE MUDDY CREEK FORMATION FINE-GRAINED FACIES #1
- MUDDY CREEK FORMATION COARSE-GRAINED FACIES #1
- MUDDY CREEK FORMATION COARSE-GRAINED FACIES #2
- EXISTING BORING/WELL IDENTIFICATION
- GROUND SURFACE ELEVATION (ft, msl)
- FILTER PACK
- SCREEN INTERVAL
- WELL (SCREEN) IDENTIFICATION
- TOTAL DEPTH OF BORING/WELL

EXPLANATION:

- GROUNDWATER ELEVATION (April/May 2012)
- PERCHLORATE CONCENTRATION (May 2012) in milligrams/liter (mg/L).
- TOTAL CHROMIUM CONCENTRATION (May 2012) in milligrams/liter (mg/L).
- CHLOROFORM (January 2015) in micrograms/liter (µg/L).

NOTES:

- "<" NOT REPORTED AT THE PRACTICAL QUANTITATION LIMIT SHOWN
- (nm) NO WATER LEVEL
- ND NOT DETECTED
- NS NOT SAMPLED
- WBZ WATER-BEARING ZONE

1. Chloroform data for wells MC-MW-17, MC-MW-18, MC-MW-42, and MW-8 are from May 2013.

REFERENCES:

- APPENDIX A - ANNUAL REMEDIAL PERFORMANCE REPORT FOR CHROMIUM AND PERCHLORATE, JULY 2011 THROUGH JUNE 2012 [NEVADA ENVIRONMENTAL RESPONSE TRUST, HENDERSON, NEVADA] (AUGUST 2012)
- BMI COMPLEX DATABASE
- ADAPTED FROM FIGURE 4-1, PHASE A SOURCE AREA INVESTIGATION, TRONOX FACILITY, HENDERSON, NEVADA (ENSR/AECOM 2008)
- HYDROSTRATIGRAPHIC NOMENCLATURE FOLLOWS UNIFIED HYDROGEOLOGIC NOMENCLATURE PROPOSED BY NDEP IN JANUARY 6, 2009 LETTER

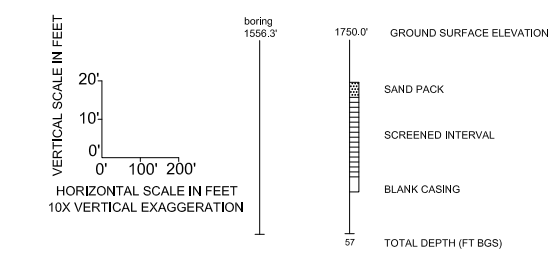
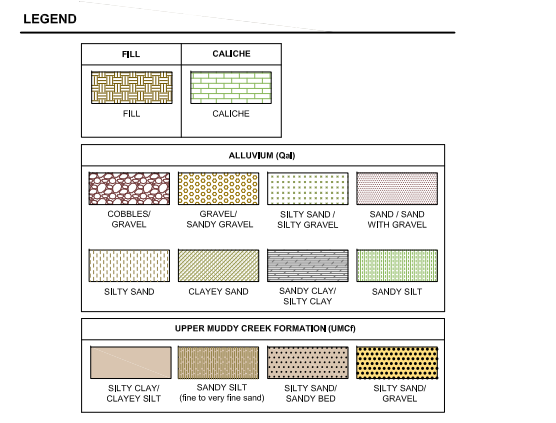
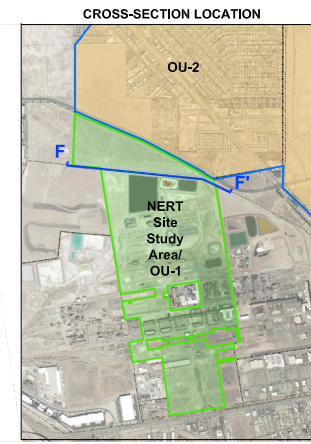
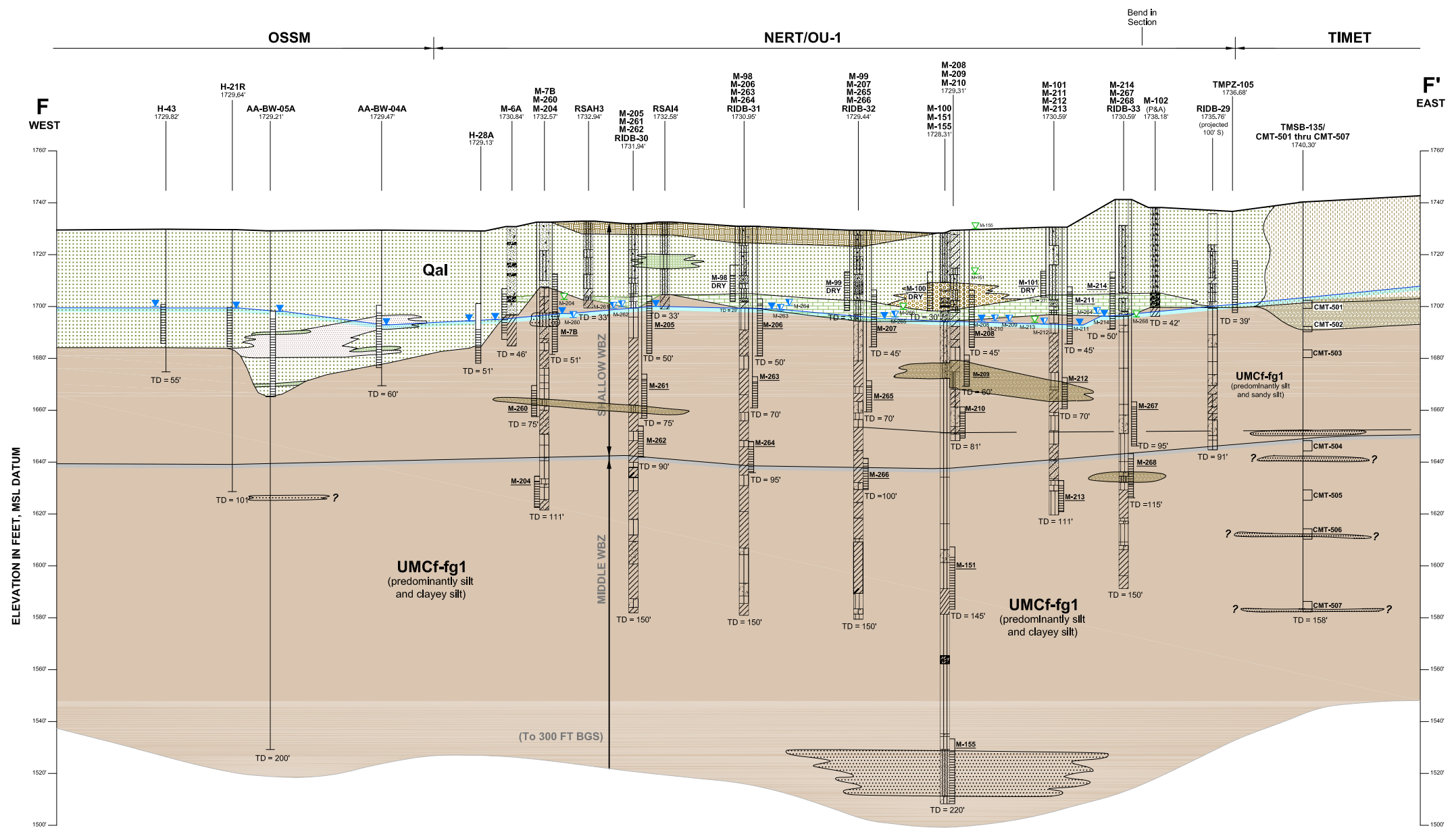


Subsurface Cross-Section A-A' - Location Map and Explanation
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure
5-6b

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C:\DRAWINGS\1690006943\169001 1200_xsec_F-F-ver2.dwg Layout: 11x17 User: rmo Jun 24, 2021 - 4:25pm



GROUNDWATER ELEVATIONS
(feet, mean sea level datum)

Shallow Water-Bearing Zone (0-90 ft)	Middle Water-Bearing Zone (90-300 ft)
<ul style="list-style-type: none"> Water Table Zone Well Deeper Shallow WBZ Well 	<ul style="list-style-type: none"> Upper Muddy Creek Formation Deep Water-Bearing Zone (>300 ft) Upper Muddy Creek Formation

NOTES:

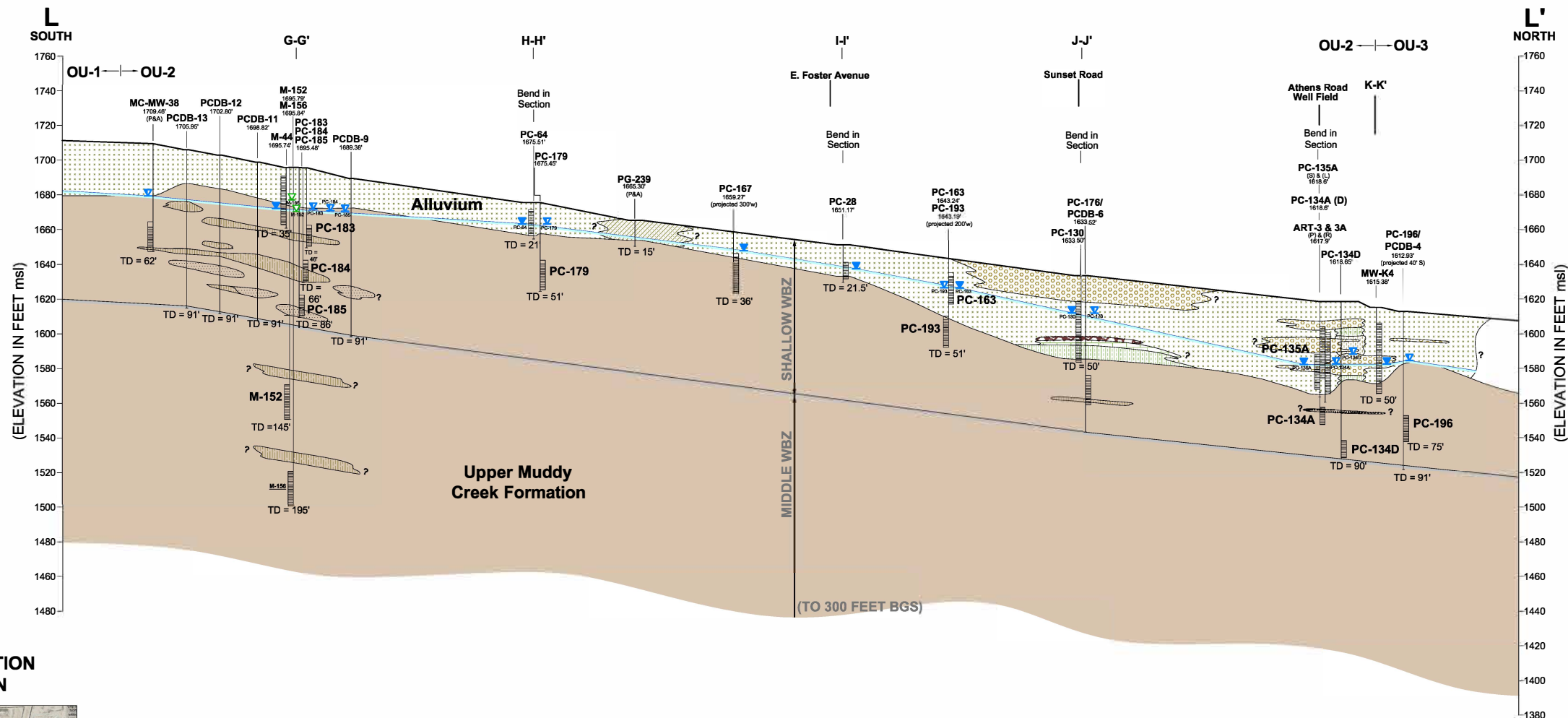
- Stratigraphic interpretation is based in part on available boring logs from previous investigations conducted by others. Lithologic contacts are shown unbroken for clarity, but this does not imply certainty. Interpreted contact shown may be affected by projected borings. Actual subsurface conditions along the cross-section alignment may vary. RI boring logs are presented in Appendix A-2.
- Groundwater levels measured October 2017 - May 2018.



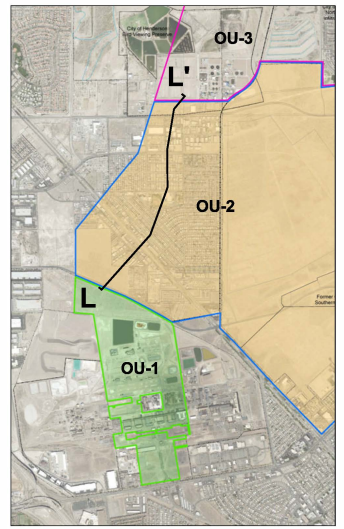
Subsurface Cross-Section F - F'
Nevada Environmental Response Trust Site
Henderson, Nevada

Drafter: RS Date: 5/4/2020 Contract Number: 169001 6064 Approved by: Revised:

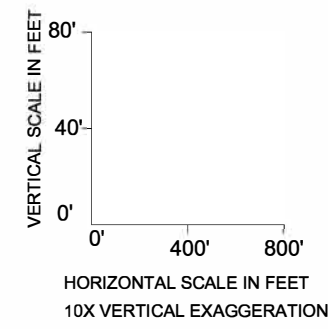
Figure
5-8



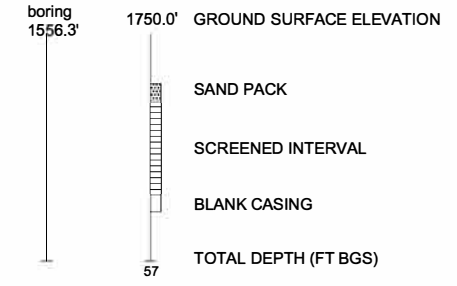
CROSS-SECTION LOCATION



FILL	CALICHE
ALLUVIUM (Gal)	
COBBLES/ GRAVEL	GRAVEL/ SANDY GRAVEL
SILTY SAND	SILTY SAND / SILTY GRAVEL
CLAYEY SAND	SAND / SAND WITH GRAVEL
SANDY CLAY/ SILTY CLAY	SANDY SILT
UPPER MUDDY CREEK FORMATION (UMCF)	
SILTY CLAY/ CLAYEY SILT	SANDY SILT (very fine to fine sand)
SILTY SAND/ SANDY BED	SILTY SAND/ GRAVEL



LEGEND



NOTES:

- Stratigraphic interpretation is based in part on available boring logs from previous investigations conducted by others. Lithologic contacts are shown unbroken for clarity, but this does not imply certainty. Interpreted contact shown may be affected by projected borings. Actual subsurface conditions along the cross-section alignment may vary. RI boring logs are presented in Appendix A2.
- Groundwater elevations measured October 2017 - May 2018.

GROUNDWATER ELEVATIONS
(feet, mean sea level datum)

- Shallow Water-Bearing Zone (0-90 ft)**
- Water Table Zone Well
 - Deeper Shallow WBZ Well
- Middle Water-Bearing Zone (90-300 ft)**
- Upper Muddy Creek Formation, First Fine-Grained Unit (UMCF-fg1)

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Subsurface Cross-Section L-L'
Nevada Environmental Response Trust Site
Henderson, Nevada

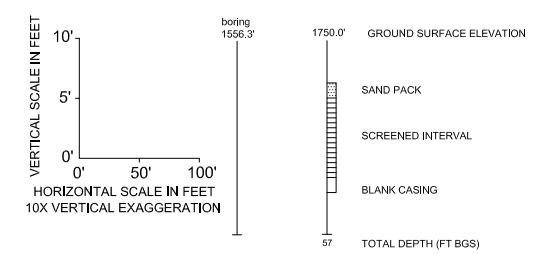
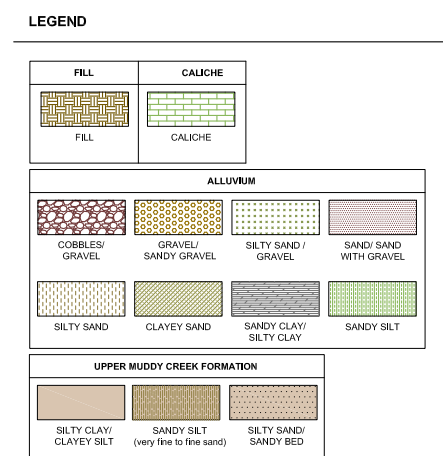
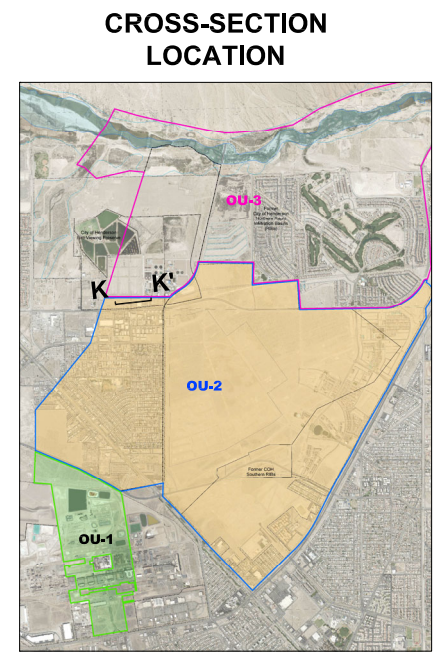
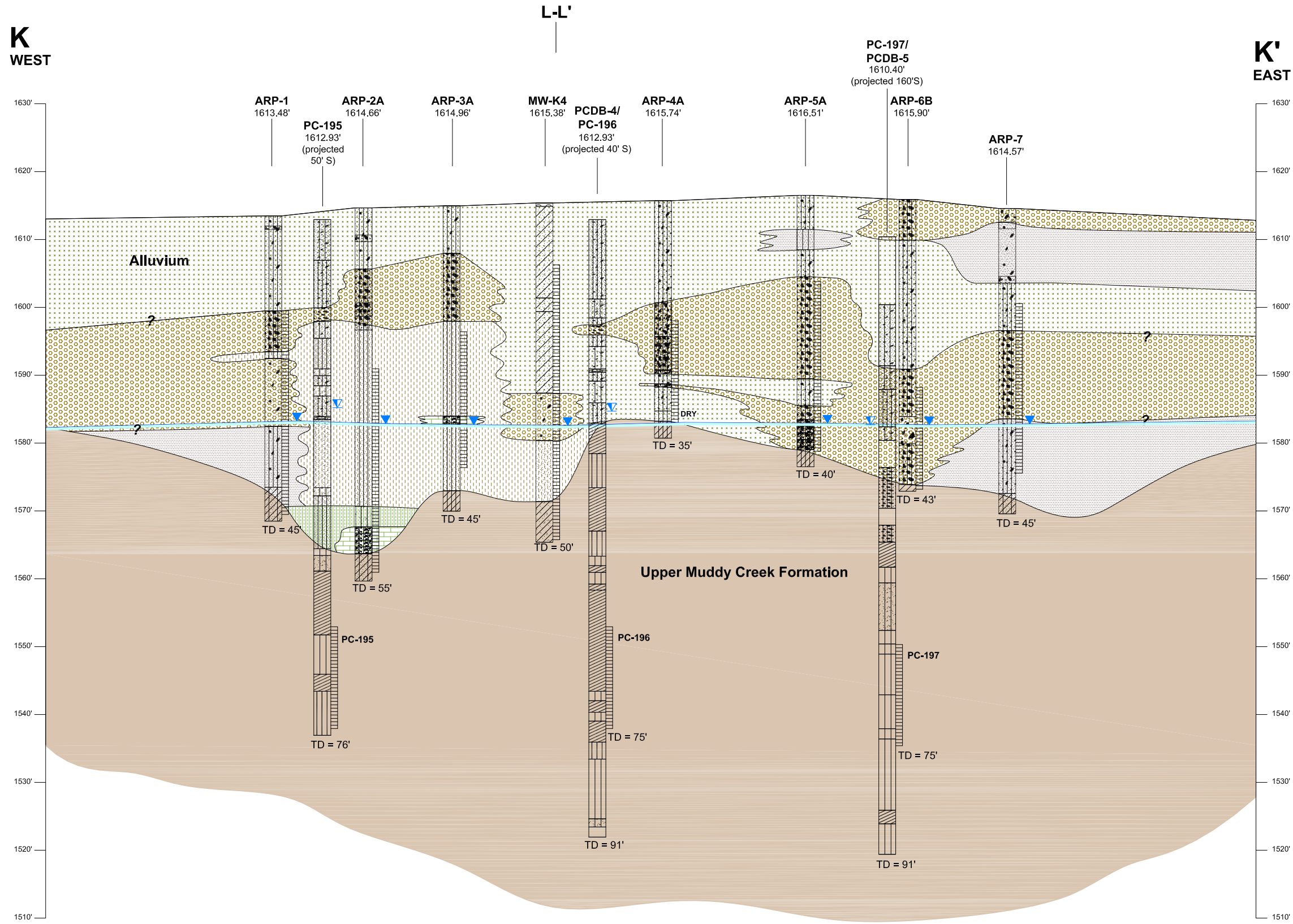
Drafter: RS

Date: 5/4/2020

Contract Number: 169001 6064

Approved by:

Revised:



GROUNDWATER ELEVATIONS
(feet, mean sea level datum)

Shallow Water-Bearing Zone (0-90 ft)

Water Table Zone Well Deeper Shallow WBZ Well

NOTES:

- Stratigraphic interpretation is based in part on available boring logs from previous investigations conducted by others. Lithologic contacts are shown unbroken for clarity, but this does not imply certainty. Interpreted contact shown may be affected by projected borings. Actual subsurface conditions along the cross-section alignment may vary. RI boring logs are presented in Appendix A-2.
- Groundwater levels measured October 2017 - May 2018.

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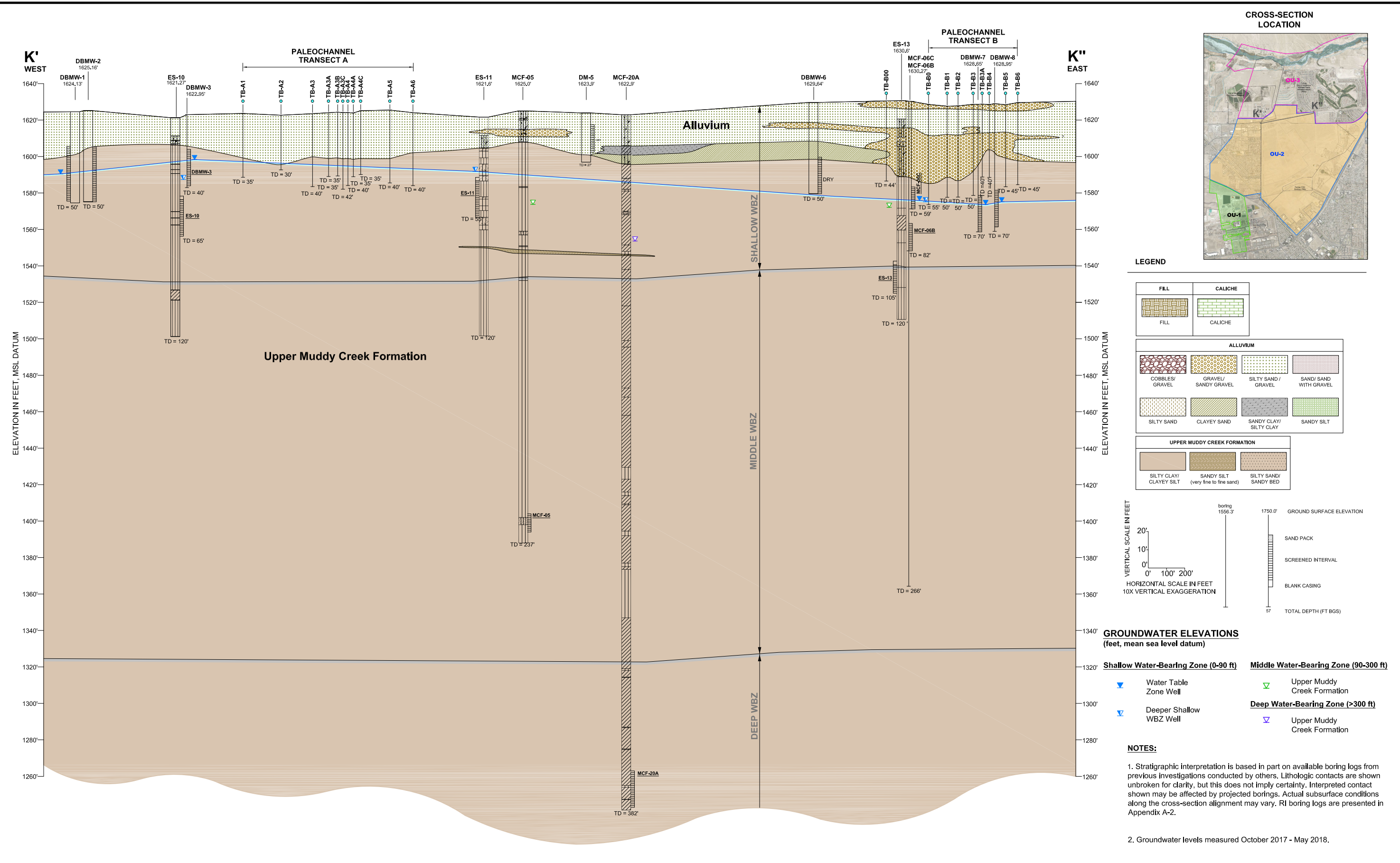


Subsurface Cross-Section K - K'
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure
5-10a

Drafter: RS Date: 5/4/2020 Contract Number: 169001 6064 Approved by: Revised:

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Subsurface Cross-Section K' - K''
 Nevada Environmental Response Trust Site
 Henderson, Nevada

Drafter: RS

Date: 5/4/2020

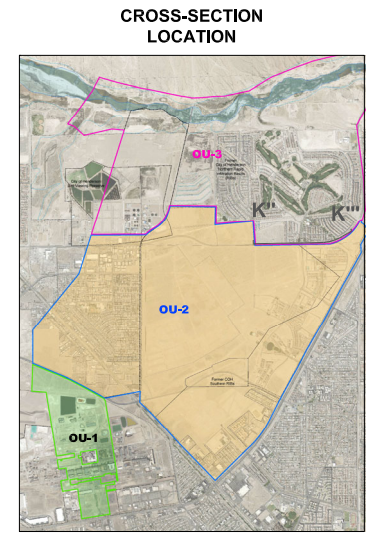
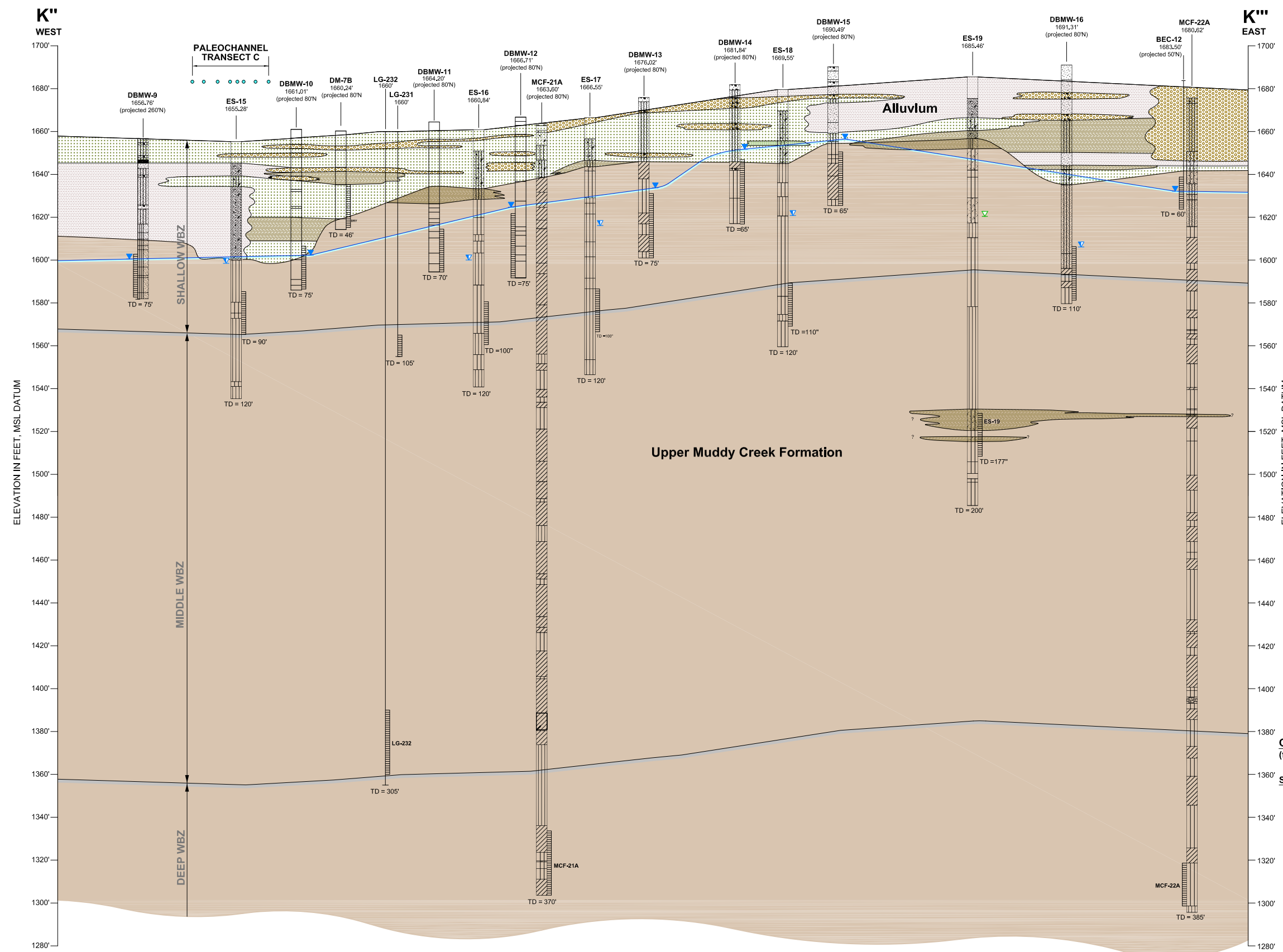
Contract Number: 169001 6064

Approved by:

Revised:

Figure
5-10b

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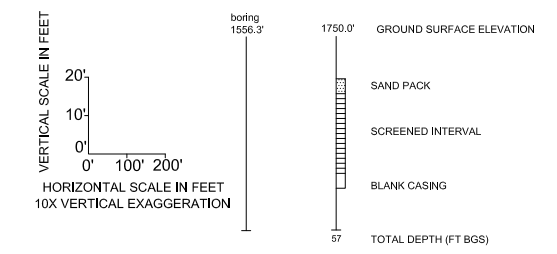


LEGEND

FILL	CALICHE
FILL	CALICHE

ALLUVIUM			
COBBLES/ GRAVEL	GRAVEL/ SANDY GRAVEL	SILTY SAND / GRAVEL	SAND/ SAND WITH GRAVEL
SILTY SAND	CLAYEY SAND	SANDY CLAY	SANDY SILT

UPPER MUDDY CREEK FORMATION		
SILTY CLAY/ CLAYEY SILT	SANDY SILT (very fine to fine sand)	SILTY SAND/ SANDY BED



GROUNDWATER ELEVATIONS
(feet, mean sea level datum)

Shallow Water-Bearing Zone (0-90 ft)	Middle Water-Bearing Zone (90-300 ft)
Water Table Zone Well	Upper Muddy Creek Formation
	Deep Water-Bearing Zone (>300 ft)
Deeper Shallow WBZ Well	
	Upper Muddy Creek Formation

NOTES:

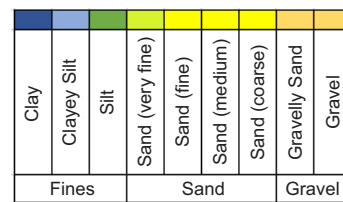
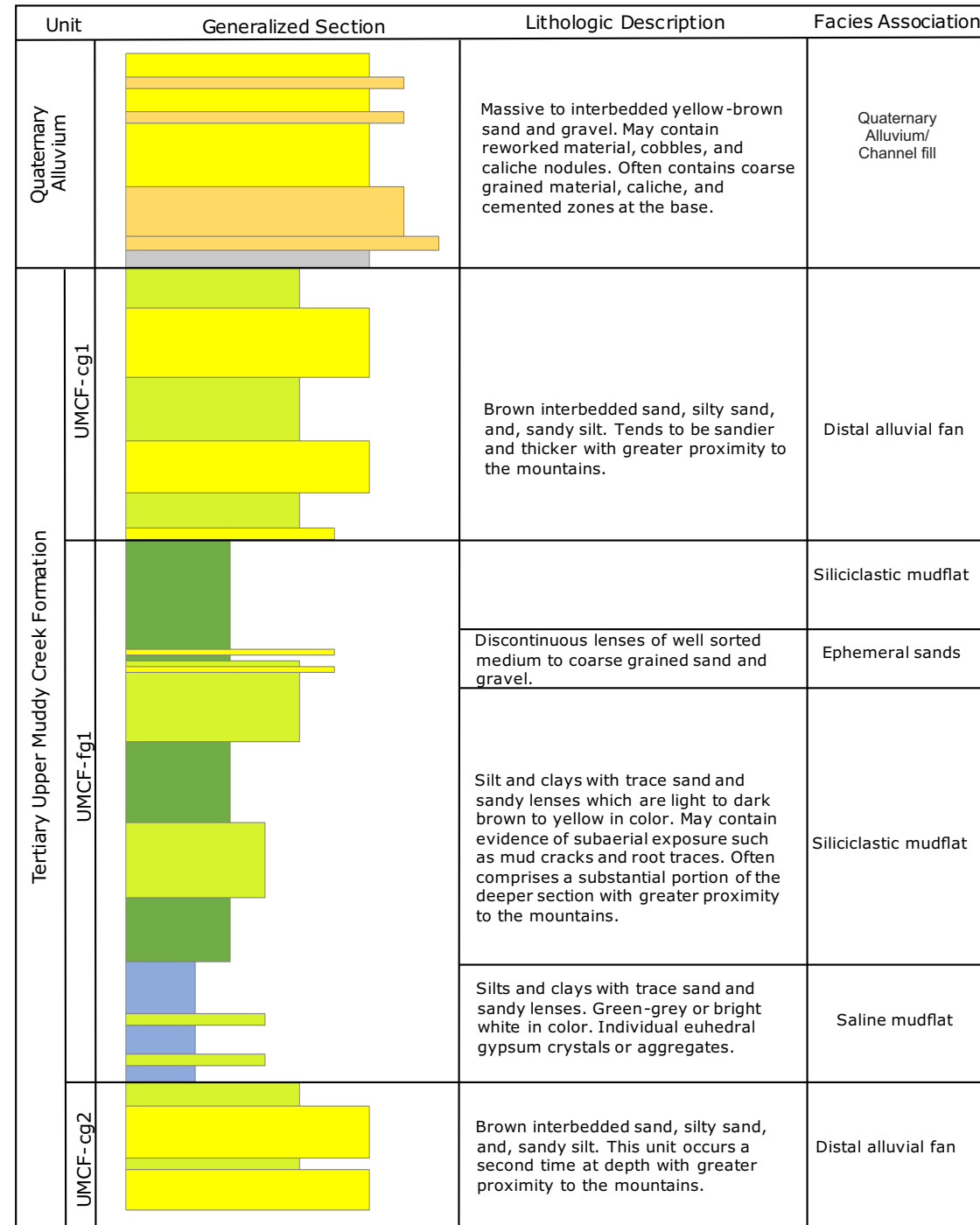
- Stratigraphic interpretation is based in part on available boring logs from previous investigations conducted by others. Lithologic contacts are shown unbroken for clarity, but this does not imply certainty. Interpreted contact shown may be affected by projected borings. Actual subsurface conditions along the cross-section alignment may vary. RI boring logs are presented in Appendix A-2.
- Groundwater levels measured October 2017 - May 2018.



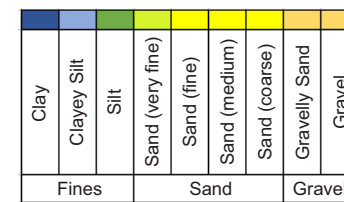
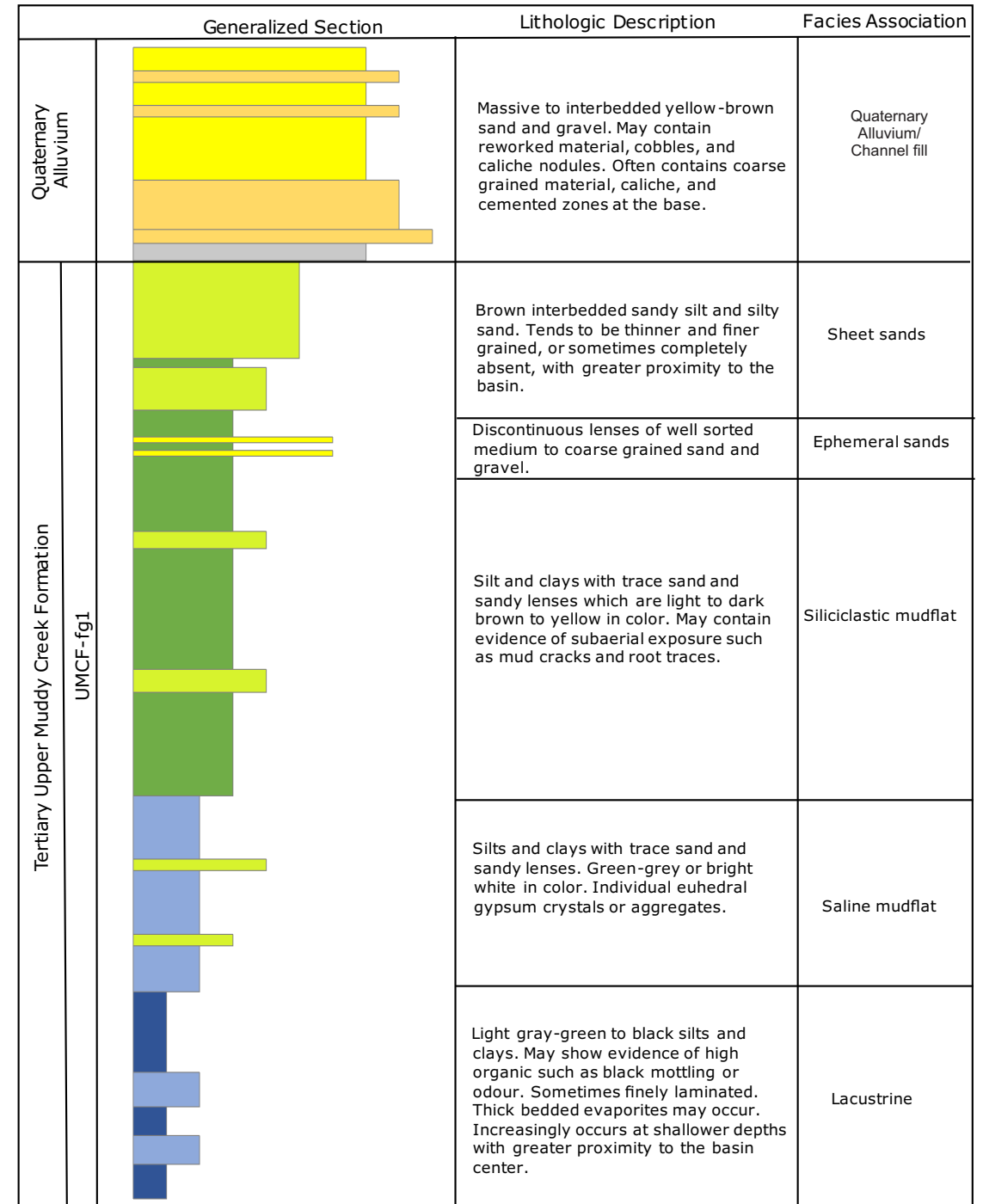
Subsurface Cross-Section K'' - K'''
Nevada Environmental Response Trust Site
Henderson, Nevada

Drafter: RS Date: 5/4/2020 Contract Number: 169001 6064 Approved by: Revised:

Figure
5-10c



**Typical Grain Size Log Profile 1:
Valley Margin (southern OU-1)**

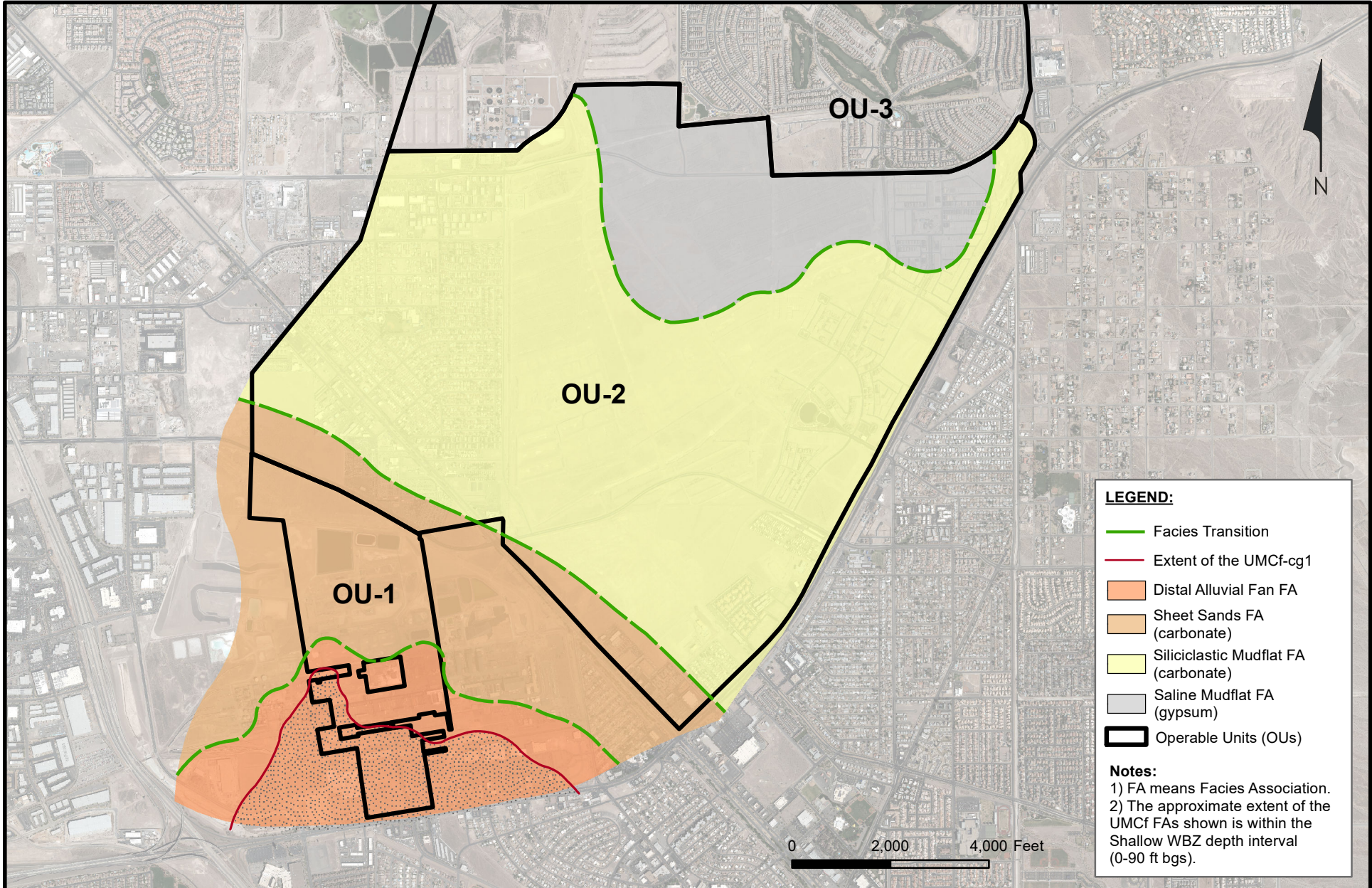


**Typical Grain Size Log Profile 2:
Valley Interior (OU-2)**



Generalized Lithology with Associated Depositional Facies
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure
5-11a



LEGEND:

- Facies Transition
- Extent of the UMCf-cg1
- Distal Alluvial Fan FA
- Sheet Sands FA (carbonate)
- Siliciclastic Mudflat FA (carbonate)
- Saline Mudflat FA (gypsum)
- Operable Units (OUs)

Notes:

- 1) FA means Facies Association.
- 2) The approximate extent of the UMCf FAs shown is within the Shallow WBZ depth interval (0-90 ft bgs).



Depositional Environment Facies Model for the UMCf in Operable Units 1 and 2
 Nevada Environmental Response Trust Site
 Henderson, Nevada

Figure
5-11b

Drafter: RS

Date: 1/30/23

Contract Number: 169002 9369

Approved:

Revised: