ADDENDUM 4-C
SLOPE STABILITY AND SEISMIC DEFORMATION REPORT

REVISED Slope Stability and Seismic Deformation Report

Prepared for:

AUC, LLC
1536 Cole Boulevard, Suite 330
Lakewood, CO 80401

Reno Creek Project
Wright, Wyoming

July 29, 2014
REVISED September 12, 2014

17590-CX

Prepared by:

INBERG-MILLER ENGINEERS
1120 East "C" Street
Casper, WY 82601

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INTRODUCTION

A static and pseudo-static slope stability analysis was performed on the proposed backup storage pond at the proposed Reno Creek In-situ uranium processing plant. An embankment settlement analysis was also performed. The stability analysis and embankment settlement analysis were performed in accordance with the U.S. Nuclear Regulatory Commission Regulatory Guide 3.11.

PROJECT INFORMATION

We understand that a backup storage pond, having approximate dimensions of 100 feet by 200 feet, is anticipated to consist of a HDPE geomembrane liner placed above a drainage geonet for leak detection. The depth of the pond is 8 feet while the operating level will be 6 feet. The pond will be constructed on a sloping site, with the majority of the pond within excavation and the down slope embankment being approximately 7 feet of fill.

The slope stability analysis was performed for the final construction condition. In addition, the pond was analyzed in the full condition with high groundwater and pseudo-static state to check the embankment stability under wet conditions as well.

CRITICAL SECTION

The critical section for the proposed pond construction was determined to be that of H-H, shown on plan sheet C-3.4 of the TREC, Inc plans dated October 2, 2012 located in Appendix A. Cross-section H-H was determined critical based on the length of the slope and height of the embankment in comparison with the other cross section. The analysis included the proposed embankment soil however, the geosynthetic layers were not included in the stability analyses. Typically, geosynthetics add strength to the soil therefore removing them from the model is considered conservative.

MATERIAL PROPERTIES

Material classifications for the site soils were determined from the subsurface exploration and geotechnical engineering report dated July 9, 2012. Strength parameters were correlated to the material classifications to determine input values for the slope stability analyses. In addition, consolidation information for the site soils was determined from the above mentioned report.

Table 1. Properties for all soil and MSW modeled within the cross-sections.

Material	***Model Color***	***Friction angle*** (ϕ)	***Cohesion*** (lb/ft^2)	***Density*** (lb/ft^3)(wet)
Native Sandy Clay	Brown	20	300	125
Compacted Sandy Clay	Tan	20	400	135
Very Stiff Clay	Olive	10	1,000	135

PEAK HORIZONTAL GROUND ACCELERATION

The site was determined to be within a seismic impact zone according to the United States Geological Survey (USGS) Seismic Hazard Mapping Project Map, 2012 edition. The Peak Horizontal Ground Acceleration (PHGA) was determined from the web based USGS Seismic Hazard Analysis Tools-Hazard Curve Application version 1.0.1. The Hazard Curve Application can be located at this web address http://geohazards.usgs.gov/hazardtool/application.php. Latitude and longitude for the center of the site were input into the web based application and the PHGA value was determined to be 0.1447 for a 2% probability of exceedance in 50 years. A screen print of the analysis is included in Appendix A.

STABILITY EVALUATION OF CRITICAL CROSS-SECTIONS

The global stability of the proposed pond was modeled using Slope/W in the Geostudio 2012 suite of software. A slope stability analysis was run on the critical cross-section of the proposed embankment using Morgenstern-Price methodology. The Morgenstern-Price methodology meets the requirements within the U.S. Nuclear Regulatory Commission Regulatory Guide 3.11 for equilibrium and will produce factors of safety with less than five percent error. The observed minimum factors of safety for static and pseudo-static were 3.19 and 1.84, respectively.

REFERENCES

Inberg-Miller Engineers "Subsurface Exploration and Geotechnical Engineering Report – Reno Creek Project Campbell County, Wyoming", July 9, 2012

Nuclear Regulatory Commission "Regulatory Guide 3.11 – Design, Construction, and Inspection of Embankment Retention Systems at Uranium Recovery Facilities" January 2008.

CLOSURE

This report has been prepared for the exclusive use of our client, AUC LLC, for a slope stability and settlement evaluation of the proposed Reno Creek in-situ uranium recovery facility. Any future written documents that address comments or questions regarding this report, constitute the "entire report". Inberg-Miller Engineers' conclusions, opinions, and recommendations are based on the entire report.

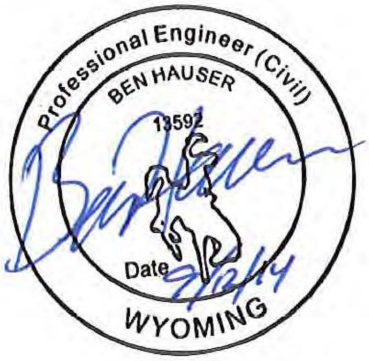
INBERG-MILLER ENGINEERS

Ben Hauser, P.E., G.I.T.
Geotechnical Engineer

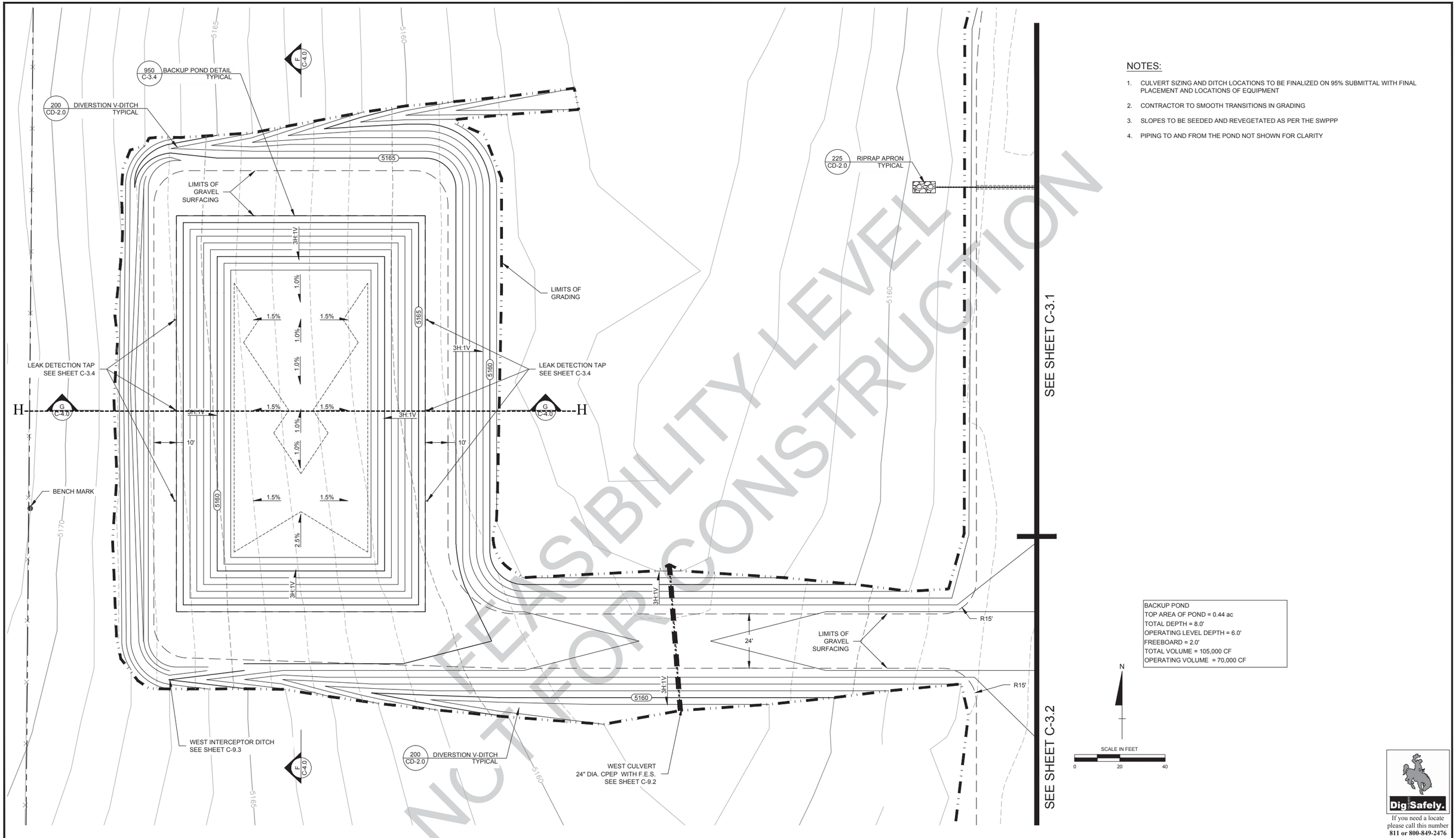
REVIEWED BY:

Steven F. Moldt, P.E.
President

BH:SFM\\IME01\projects\17590-CX AUC LLC Reno Creek Stability\Stability\17590-CX Slope Stability REVISED Report.docx



APPENDIX A



BACKUP POND
TOP AREA OF POND = 0.44 ac
TOTAL DEPTH = 8.0'
OPERATING LEVEL DEPTH = 6.0'
FREEBOARD = 2.0'
TOTAL VOLUME = 105,000 CF
OPERATING VOLUME = 70,000 CF

NOTES:

1. CULVERT SIZING AND DITCH LOCATIONS TO BE FINALIZED ON 95% SUBMITTAL WITH FINAL PLACEMENT AND LOCATIONS OF EQUIPMENT
2. CONTRACTOR TO SMOOTH TRANSITIONS IN GRADING
3. SLOPES TO BE SEEDED AND REVEGETATED AS PER THE SWPPP
4. PIPING TO AND FROM THE POND NOT SHOWN FOR CLARITY

Dig Safely.
If you need a locate please call this number
811 or 800-849-2476

DRAWING REVISIONS TYPES: 1 PRE-BID 1 POST-BID 1 POST IFC

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Engineering & Environmental Management
www.treccorp.com

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BUTTE OFFICE
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Butte, MT 59701
Tel: (406) 491-0912

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PROJECT NO.:	CADD:	CHECKED BY:	APPROVED BY:	PLOT DATE:
2012-250	TBK	RRU	SLH	10/2/2012 3:31 PM

GRADING: BACKUP POND
RENO CREEK PROJECT
PREPARED FOR
AUC LLC
CAMPBELL COUNTY, WYOMING

SHEET
C-3.3

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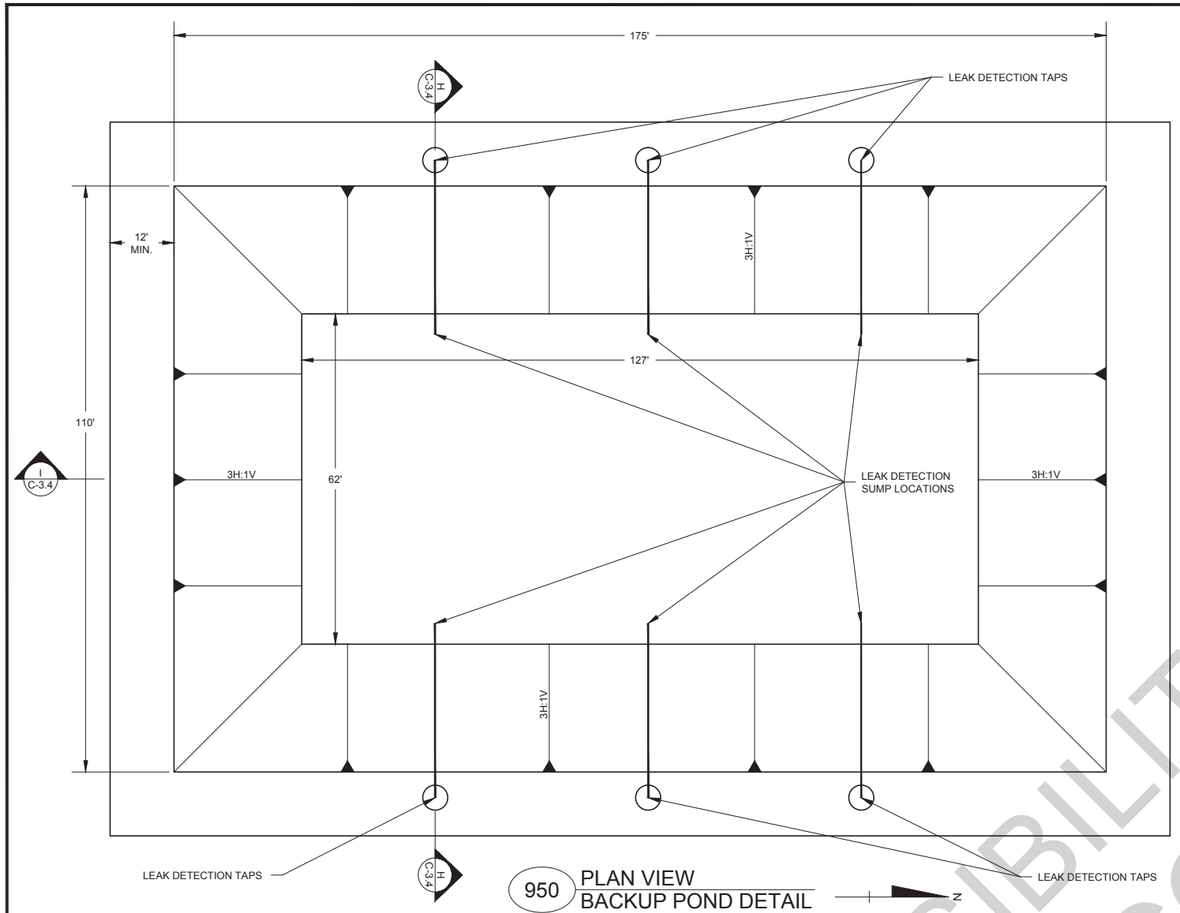
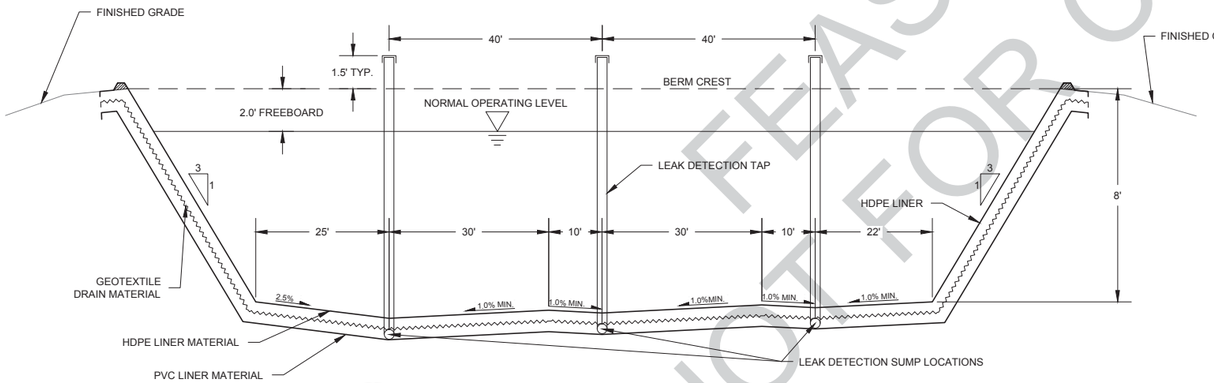


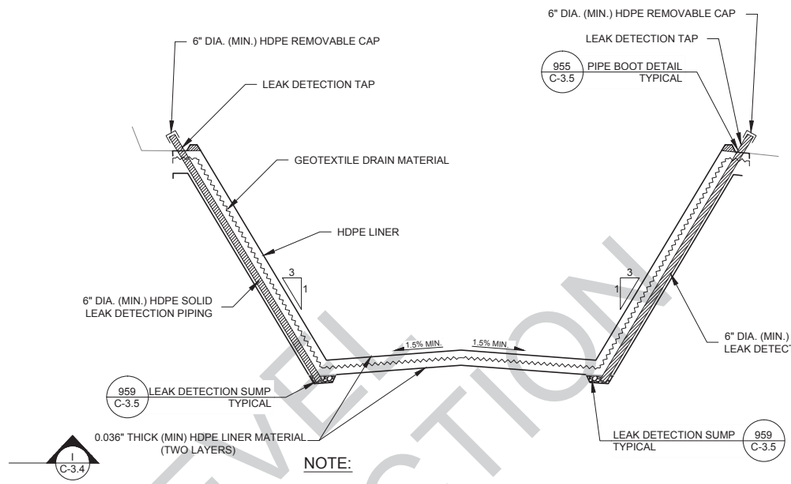
950 PLAN VIEW
BACKUP POND DETAIL
NTS



II CROSS SECTION: BACKUP POND NORTH/SOUTH
BACKUP POND DETAIL
NTS

NOTE:

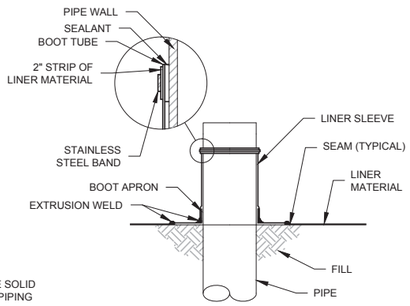
1. LINER SUB-BASE PREPARATION OF NATIVE SOILS TO BE COMPACTED TO 95% (MIN.) OF STANDARD PROCTOR



NOTE:

1. LINER MATERIALS SHOWN AS SEPARATED FOR VISUAL CLARITY. PVC LINER, GEOTEXTILE, AND HDPE LINER ABUTTED AGAINST EACH OTHER. PRIMARY AND SECONDARY LINERS WILL BE A MINIMUM OF 0.036" THICK

HH CROSS SECTION: BACKUP POND EAST/WEST
BACKUP POND DETAIL
NTS



955 PIPE BOOT DETAIL
BACKUP POND DETAIL
NTS

NOTE:

1. ANCHOR TRENCH IS TO BE CONSTRUCTED PER MANUFACTURES RECOMMENDATIONS.
2. LINER MATERIALS SHOWN AS SEPARATED FOR VISUAL CLARITY. PVC LINER, GEOTEXTILE, AND HDPE LINER ABUTTED AGAINST EACH OTHER.
3. REMOVE ALL DELETERIOUS AND LINER DAMAGE CAUSING DEBRIS PRIOR TO INSTALLING PVC LINER.

957 LINER ANCHOR DETAIL
BACKUP POND DETAIL
NTS

959 LEAK DETECTION SUMP
BACKUP POND DETAIL
NTS

NOTES:

1. ALL LINER PRODUCTS ARE TO BE INSTALLED PER MANUFACTURES RECOMMENDATIONS
2. LEAK DETECTION TAP: 6" MIN. DIA. HDPE PIPE
3. LEAK DETECTION TAPS USED AS WATER RETRIEVAL POINTS

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PROJECT NO.:	CADD:	CHECKED BY:	APPROVED BY:	PLOT DATE:	SHEET
2012-250	TBK	RRU	SLH	10/2/2012 3:31 PM	C-3.4

GRADING: BACKUP POND DETAILS
RENO CREEK PROJECT
PREPARED FOR
AUC LLC
CAMPBELL COUNTY, WYOMING

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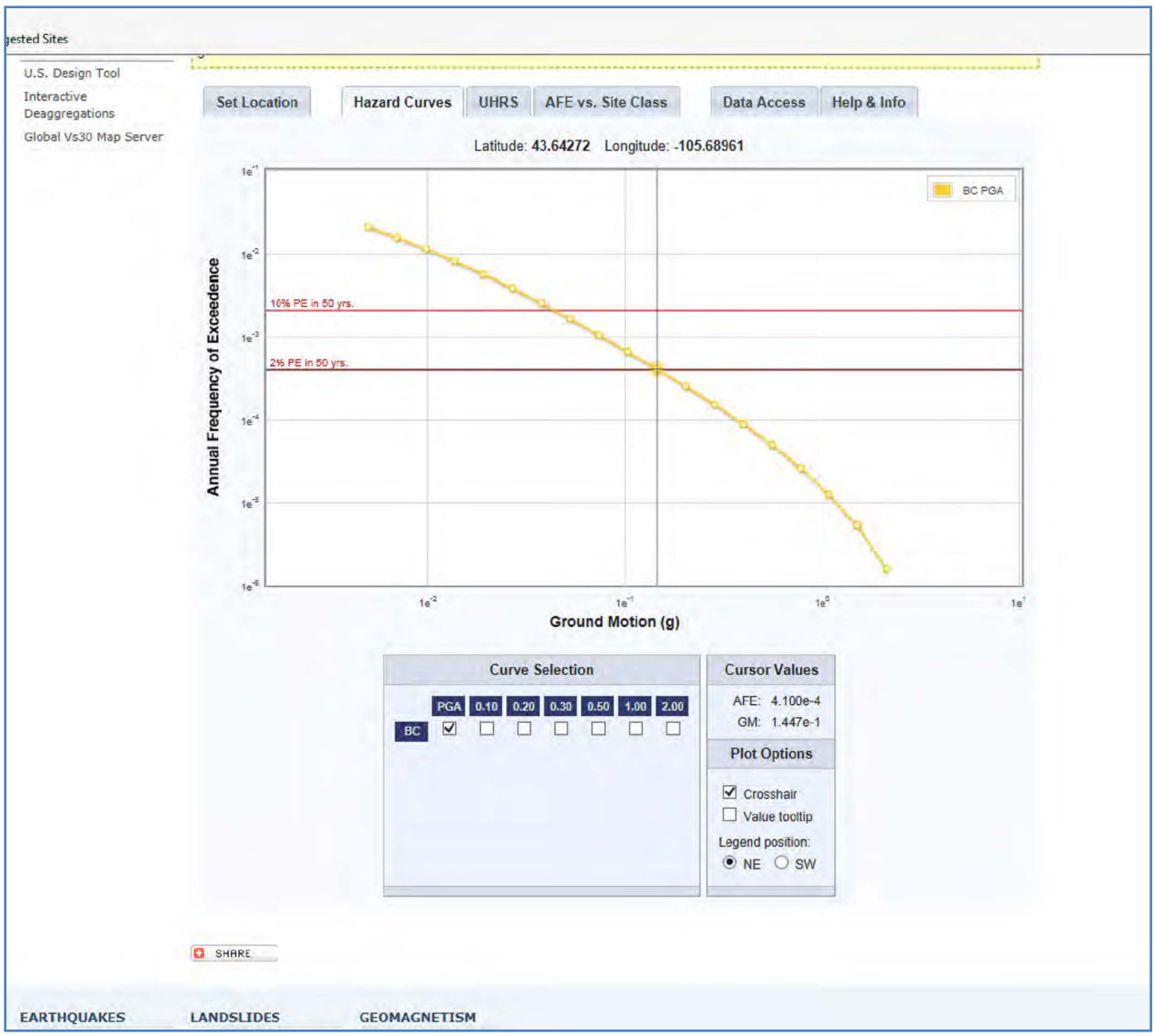
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U.S. Design Tool
Interactive Deaggregations
Global Vs30 Map Server
Set Location
Hazard Curves
UHRS
AFE vs. Site Class
Data Access
Help & Info
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BC PGA
10% PE in 50 yrs.
2% PE in 50 yrs.
Annual Frequency of Exceedence
Ground Motion (g)
Curve Selection
PGA
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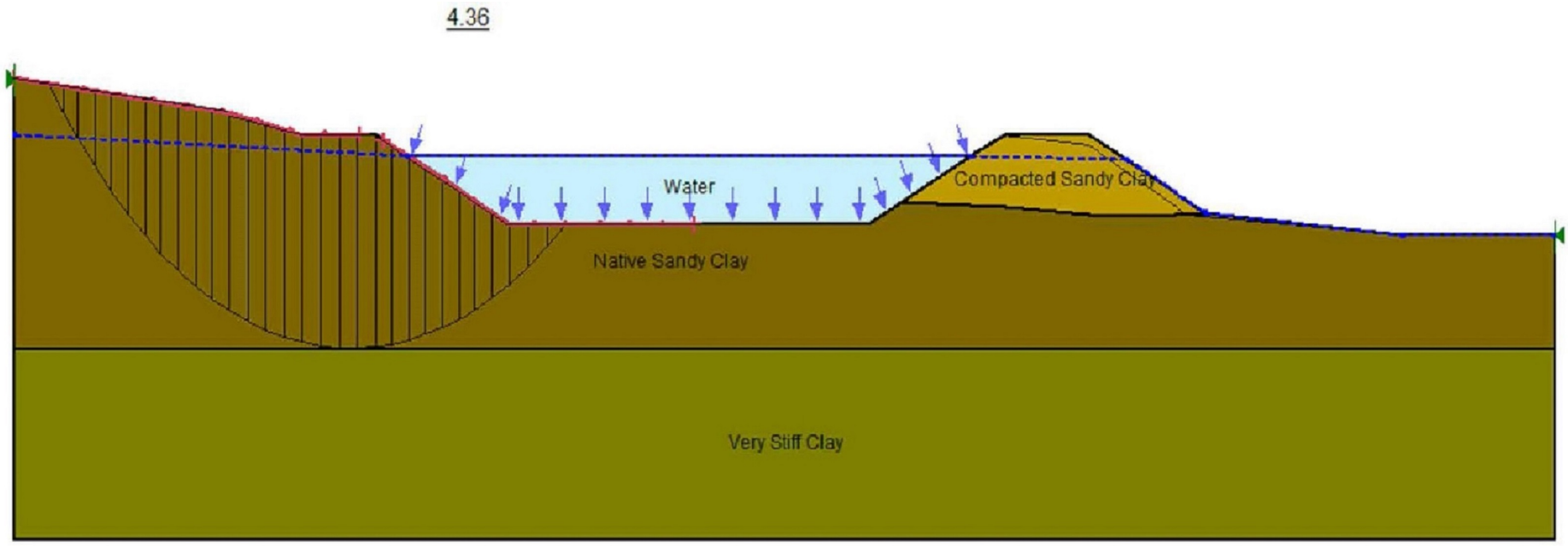
0.20
0.30
0.50
1.00
2.00
BC
Cursor Values
AFE: 4.100e-4
GM: 1.447e-1
Plot Options
Crosshair
Value tooltip
Legend position:
NE
SW
SHARE
EARTHQUAKES
LANDSLIDES
GEOMAGNETISM

Appendix B

Static analysis for cross-section H-H using the Morgenstern-Price methodology (Entry and Exit) (July 29, 2014) (Not to scale)



Material properties

Compacted Sandy Clay	Tan	Soil model = Mohr-Coulomb, γ = 135 pcf,	C = 400 psf,	ϕ = 20°.
Native Sandy Clay	Brown	Soil model = Mohr-Coulomb, γ = 125 pcf,	C = 300 psf,	ϕ = 20°.
Very Stiff Clay	Olive	Soil model = Mohr-Coulomb, γ = 135 pcf,	C = 1,000 psf,	ϕ = 10°.

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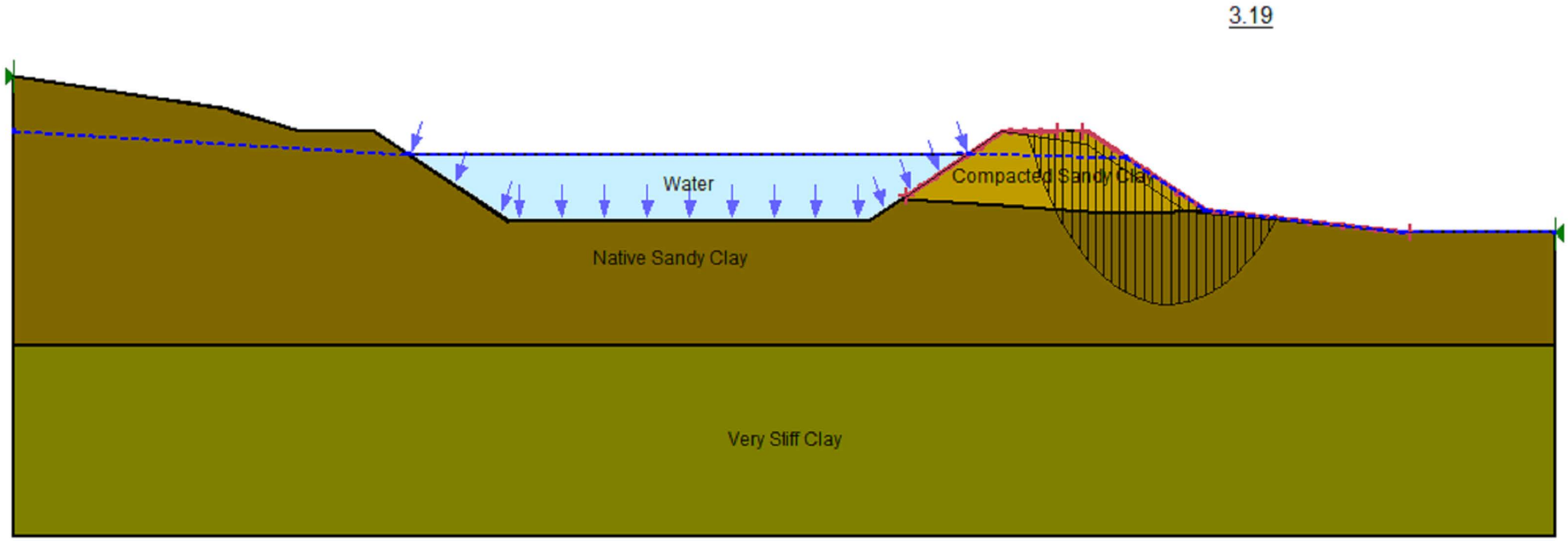

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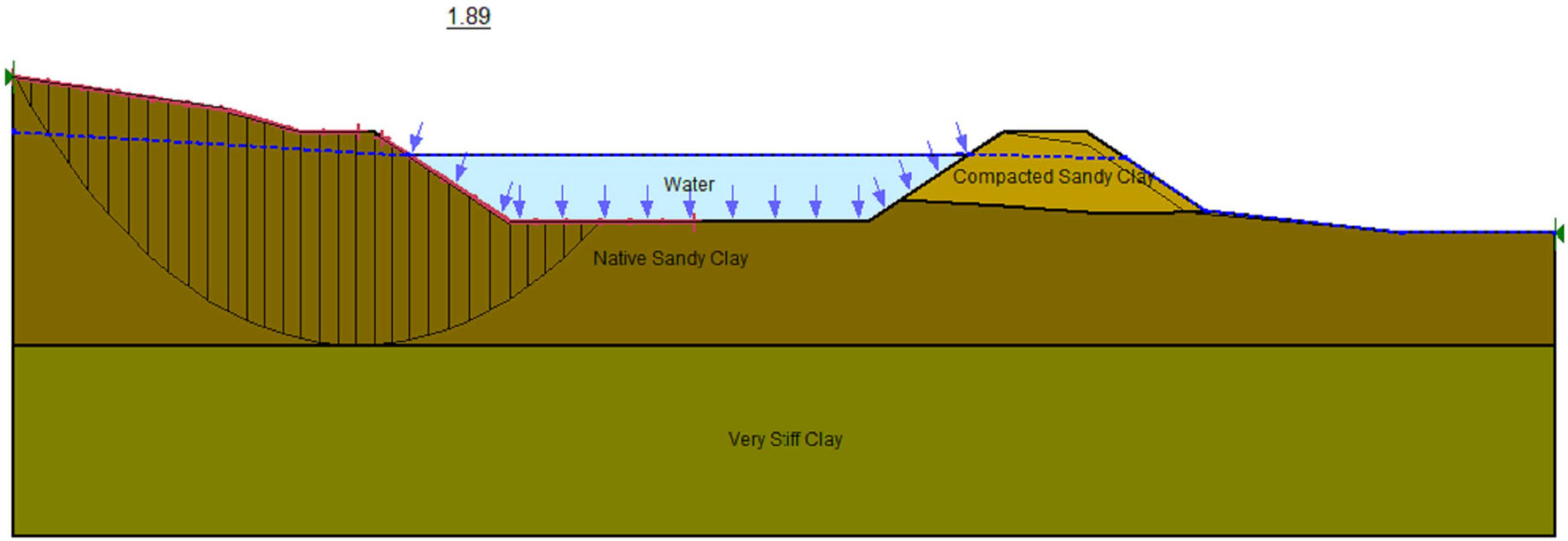
Psuedo-static analysis (PHGA = 0.1447) for cross-section H-H using the Morgenstern-Price methodology (Entry and Exit) (July 29, 2014) (Not to scale)



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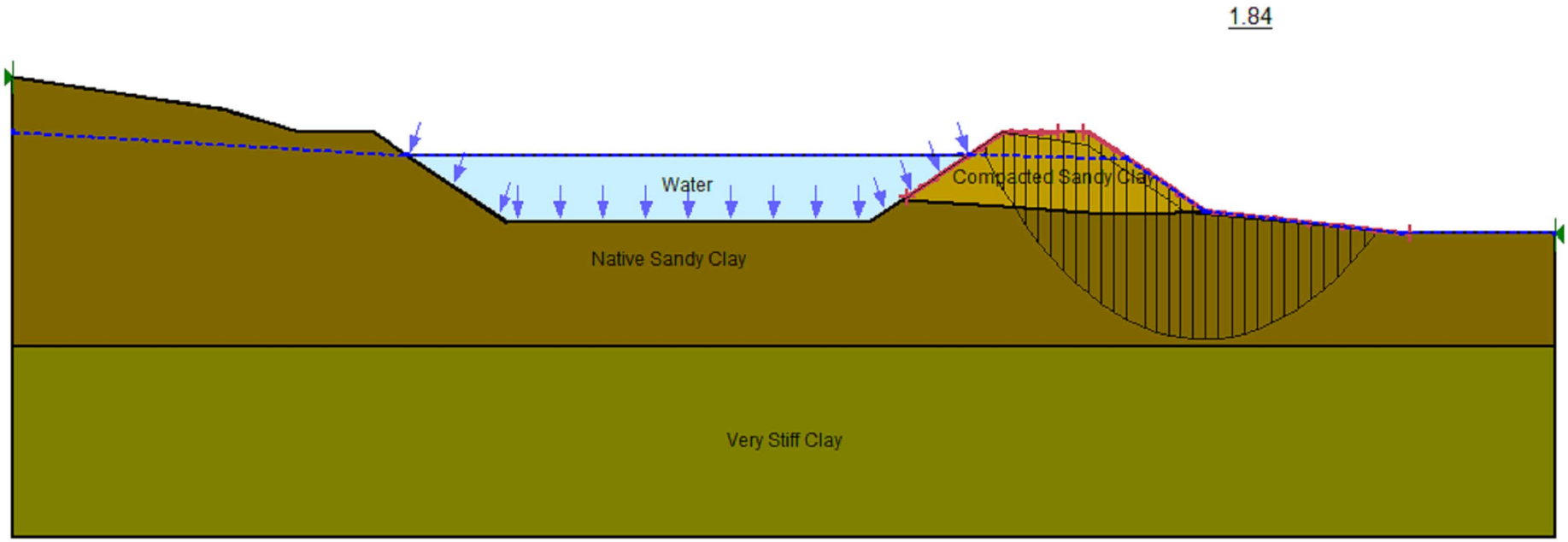

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