

AP - 111

**EVAPORATION
POND**



Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
Phone (505) 476-6000 Fax (505) 476-6030
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James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 22, 2019

John Moore
Environmental Superintendent
Western Refining Southwest Inc., Gallup Refinery
92 Giant Crossing Road
Gallup, New Mexico 87301

**RE: APPROVAL
RESPONSE TO APPROVAL WITH MODIFICATIONS
EVAPORATION POND BERM TESTING
WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY
EPA ID # NMD000333211
HWB-WRG-19-004**

Dear Mr. Moore:

The New Mexico Environment Department (NMED) is in receipt of the Marathon Petroleum Company LP dba Western Refining Southwest, Inc. Gallup Refinery (the Permittee) *Response to Approval with Modifications Evaporation Pond Berm Testing* (Response) dated May 9, 2019. The Permittee's responses to NMED's comments were adequately addressed and NMED hereby issues this Approval.

The Permittee must submit a report documenting the results of the evaporation pond berm testing to NMED no later than **November 22, 2019**.

This approval is based on the information presented in the document as it relates to the objectives of the work identified by NMED at the time of review. Approval of this document does not constitute agreement with all information or every statement presented in the document.

Mr. Moore
May 22, 2019
Page 2

If you have questions regarding this correspondence, please contact Kristen Van Horn of my staff at 505-476-6046.

Sincerely,



John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
K. Van Horn, NMED HWB
C. Chavez, EMNRD OCD
B. Moore, MPC
L. King, EPA

File: Reading File and WRG 2019 File
WRG-19-004



**Marathon
Petroleum Company LP**

May 9, 2019

Mr. John E. Kieling, Chief
New Mexico Environmental Department 2905
Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87505-6303

**Re: Response to Approval With Modifications
Evaporation Pond Berm Testing
Marathon Petroleum Company LP, Gallup Refinery
(dba Western Refining Southwest, Inc.)
EPA ID# NMD000333211
HWB-WRG-19-004**

Dear Mr. Kieling:

The Marathon Petroleum Company (MPC), Gallup Refinery is submitting the enclosed responses to New Mexico Environmental Department (NMED) comments dated April 12, 2019 on the referenced Work Plan for Evaporation Pond Berm Testing. Responses to each of the comments contained in the Approval with Modifications letter are provided in the attached pages.

If you have any questions or comments, please call Brian Moore at 505-726-9745.

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,
Marathon Petroleum Company LP

A handwritten signature in blue ink that reads "Robert S. Hanks".

Robert S. Hanks
Refinery General Manager

Enclosure

cc K. Van Horn NMED
C. Chavez NMOCD
L. King EPA Region VI
B. Moore Marathon Gallup Refinery

**92 Giant Crossing Road
Gallup, NM 87301**



May 9, 2019

New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313

Attn: Mr. John E. Kieling - Chief
Hazardous Waste Bureau

Re: Response to NMED Review Comments
Evaporation Pond Berm Testing (Work Plan)
Marathon Petroleum Company LP, Gallup Refinery
(dba western Refining Southwest, Inc.)
EPA ID # NMD000333211
HWB-WRG-19-004
92 Giant Crossing Road
Gallup, New Mexico
Terracon Proposal Reference No. P66195049

Dear Mr. Kieling:

At your request, Terracon Consultants, Inc. (Terracon) is submitting this letter in response to review comments provided by the New Mexico Environment Department (NMED) in a letter dated April 12, 2019 for the referenced Work Plan. Our responses to each of the review comments are outlined below:

Comment 1

Under the heading "Updated Numerical Slope Stability Analysis", page 1, the Permittee states that "[f]ield investigation activities will begin with installing 10 new piezometers that will be used to complete the updated numerical slope stability analysis." Provide the rationale for the locations selected for the permanent piezometers. The locations correspond to the previous locations of temporary piezometers at Pond 7, Pond 6 (West to East), and Pond 9A. In the report, discuss whether the piezometers are located along berms that have been repaired or upgraded. Additionally, piezometers are proposed for the Pond 7/8 west berm; NMED recommends installing additional piezometers closer to Pond 8 due to concerns of pond water leaching into groundwater at the western end of the evaporation ponds.

Response – The borings will be located at both repaired and upgraded berms. Pond 7 was repaired due to a breach. Pond 9 was upgraded with the placement of additional fill. It is our professional opinion that the proposed number and location of borings are adequate to address the concerns of NMED and perform the necessary analysis. Several borings

and piezometers (Pond 7/8 designation) are proposed along the west berm of Pond 7 near the boundary with Pond 8. We assume that the berms for Pond 7 and Pond 8 were constructed at the same time and are adjoining ponds. It is our opinion that the borings located near Pond 7 and Pond 8 should accurately represent the subsurface conditions along the west berm including Pond 7 and Pond 8. Annual groundwater monitoring reports do not indicate leaching of pond water into the groundwater. Therefore, it is our opinion that additional piezometers closer to Pond 8 would not be warranted or required. The report will discuss the location of borings/piezometers in relation to repaired or upgraded berm locations.

Comment 2

Under the heading "Updated Numerical Slope Stability Analysis", page 2, first paragraph, the Permittee states, "[p]revious slope stability analyses conducted at the evaporation pond berms were completed using data from temporary drive point piezometers that were abandoned during ongoing berm improvement activities. The ten new piezometers shown on Figure 1 will be installed as permanent structures with bentonite seals above the screen interval to prevent surface water intrusion and interference." Provide the diameter of the piezometers.

Response – The diameter of the piezometers will be a minimum of 2 inches.

Comment 3

Under the heading "Updated Numerical Slope Stability Analysis", page 2, second paragraph, the Permittee states, "[r]epresentative soil samples will be collected during piezometer installation and submitted to Advanced Terra Testing laboratories in Lakewood, CO for geotechnical analysis including: Soil characterization; Wet and dry unit weights with moisture content; Atterberg limits; Sieve analysis; Effective stress parameters (c' and ϕ') from a consolidated-drained triaxial shear test." Describe the method proposed to collect the soil samples and whether the samples will be disturbed or undisturbed.

Response – Both disturbed and undisturbed soil samples will be collected. Undisturbed soil samples will be collected using the Dames and Moore Ring Barreled Sampler (2.42" I.D., 3" O.D.) or thin-walled Shelby Tubes (2" O.D.). Disturbed soil samples will be obtained using standard Split-spoon samplers (1-3/8 I.D., 2" O.D.). Undisturbed soil samples will be used for unit weight/dry density, unconfined compressive strength, direct shear and consolidated-Drained triaxial shear. Disturbed or undisturbed soil samples will be used for moisture content, Atterberg Limits, and sieve analysis.

Comment 4

Under the heading "Updated Numerical Slope Stability Analysis", page 2, third paragraph, the Permittee states, "[t]o determine the phreatic surface level within the berms, water levels will be recorded from the new piezometers on a monthly basis until stable (about three months). " Describe how the water levels will be measured and recorded.

Response – *The water levels will be measured using a Solinst Interface Meter Model 122. The water level meter has light and audible warning indicators when water has been encountered in the piezometers. The depth to groundwater (in feet) will be referenced in accordance with top of the surveyed piezometer casing.*

Comment 5

Ensure that the soil boring logs contain detailed enough descriptions of the soils encountered and note any discontinuities.

Response - Acknowledged

Comment 6

Under the heading "Updated Numerical Slope Stability Analysis", page 2, the Permittee states, "[a]s requested by NMED, results of the slope stability analysis investigation described in this work plan will be submitted to NMED in an Updated Slope Stability Report." The work conducted under this Work Plan must be submitted as a separate report.

Response - Acknowledged

We trust that the responses to your review comments have been adequately addressed. If you have any questions concerning this letter, or if we may be of further service, please contact us.

Sincerely,

Terracon Consultants, Inc.

Michael E. Anderson, P.E.
Principal

Copies to: Addressee (1 via email, 3 via mail)



February 8, 2019

Mr. John E. Kieling, Chief
New Mexico Environmental Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

**RE: Evaporation Pond Berm Testing
Marathon Petroleum Company LP, Gallup Refinery
(Formerly Western Refining Southwest, Inc.)
EPA ID# NMD000333211**

Dear Mr. Kieling:

Attached please find a Work Plan for Containment Berm Slope Stability Modeling for the Evaporation Ponds at the Marathon Petroleum Company (MPC) refinery in Gallup, New Mexico.

If you have any questions or comments regarding the information contained herein, please do not hesitate to contact Mr. Brian Moore at 505-726-9745.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

A handwritten signature in cursive script that reads 'Robert S. Hanks'.

Robert S. Hanks
Refinery General Manager
Marathon Petroleum Company – Gallup Refinery

Cc: C. Chavez (OCD)

92 Giant Crossing Road
Jamestown, NM 87347



1101 West Mineral Avenue
Suite 102
Littleton, CO 80120
303.332.5757

November 5, 2018

John Moore, P.E.
Environmental Superintendent
Gallup Refinery
Marathon Petroleum Company
92 Giant Crossing Road
Gallup, NM 87301

Re: Work Plan Submittal - Updated Slope Stability Modeling Evaporation Ponds
Gallup Refinery
HWB-WRG-15-006
EPA ID# NMD000333211
Gallup, New Mexico

Dear John:

Axis Group Inc. (Axis) prepared this work plan to describe the upcoming slope stability investigation efforts planned for the evaporation ponds located at the Gallup Refining facility in Gallup, New Mexico (Facility). The slope stability investigation work described in this work plan responds to the August 22, 2017 New Mexico Environmental Department Hazardous Waste Bureau (NMED) letter Re: *Approval with Modifications Revised Letter Report Evaporation Pond Dike Breach and Summary Report Evaporation Pond Repairs*. Upon approval by Marathon, Axis intends to proceed with the work described herein upon submittal of this work plan to NMED.

Updated Numerical Slope Stability Analysis

Field investigation activities described in this work plan will be used to complete an updated numerical slope stability analysis using data that represents the most current conditions within the evaporation pond berms.

Figure 1 is a plan view showing the current configuration of the evaporation ponds and surrounding berms. Field investigation activities will begin with installing 10 new piezometers that will be used to complete the updated numerical slope stability analysis. As shown on **Figure 1**, these piezometers will be installed at the selected cross-sections within the outer slopes of the following evaporation pond earth berms:

- Pond 7/8 west berm
- Pond 6 west berm
- Pond 9 north berm



Previous slope stability analyses conducted at the evaporation pond berms were completed using data from temporary drive point piezometers that were abandoned during ongoing berm improvement activities. The 10 new piezometers shown on **Figure 1** will be installed as permanent structures with bentonite seals above the screen interval to prevent surface water intrusion and interference.

Representative soil samples will be collected during piezometer installation and submitted to Advanced Terra Testing laboratories in Lakewood, CO for geotechnical analysis including:

- Soil characterization
- Wet and dry unit weights with moisture content
- Atterberg limits
- Sieve analysis
- Effective stress parameters (c' and ϕ') from a consolidated-drained triaxial shear test.

The completed piezometers will be surveyed in the field for location and top of casing measurements. To determine the phreatic surface level within the berms, water levels will be recorded from the new piezometers on a monthly basis until stable (about three months).

The following information will be incorporated into the updated slope stability analysis:

- Morgenstern Price limit-equilibrium analysis via GeoStudio 2012
- Updated berm topography survey data at slope stability cross-section locations
- Updated phreatic surface based on data from new piezometers
- Updated geotechnical soil data collected during installation of new piezometers
- Effective stress soil strength parameters cohesion (c') and angle of internal friction, ϕ' (ϕ')

As requested by NMED, results of the slope stability analysis investigation described in this work plan will be submitted to NMED in an Updated Slope Stability Report. This report will include but not be limited to the following:

- Description of slope stability work
- Description of updated geotechnical parameters from soil sampling
- Figures, boring logs and cross sections showing:
 - New piezometer locations
 - Soil sampling locations/depths
 - Piezometer depths and screened intervals
 - Water level gauging results and phreatic surface
- Discussion of phreatic surface and its potential effect on slope stability
- Graphical output from the slope stability program
- Tabulated factor of safety for each critical cross-section

Seismic Analysis and Liquefaction Potential

Axis reviewed the NMED recommendation to conduct a seismic analysis as part of the updated numerical slope stability modeling of the Gallup evaporation ponds (Comment 4, NMED letter dated August 22, 2017). Per the United States Geological Survey (USGS), the probability and risk level of an earthquake in the Gallup area is very low. Since the probability for an earthquake is low and the risk level is low, the potential for liquefaction is also very low. Accordingly, Axis does not intend to conduct a seismic analysis of the evaporation pond berms. A discussion and USGS data describing the lack of need for a seismic and liquefaction analysis will be provided in the updated slope stability report.

Schedule – Updated Slope Stability Investigation

Figure 2 is a schedule showing the estimated duration times to complete the slope stability work described in this work plan. As stated previously, the work will be initiated upon submittal of this work plan to NMED. Assuming the field investigation work is initiated by mid-November 2018, the Updated Slope Stability Report will be completed by May 30, 2019 as shown in **Figure 2**.

Note that this schedule indicates an extension-of-time request to the NMED will be needed in order to complete the anticipated field and technical work. Per the most recent email from NMED (Kristen Van Horn email dated October 4, 2018, Evaporation Ponds section), this work plan should be sufficient to request an extension of time to complete the work (Figure 2, schedule).

Closing Remarks:

Axis Group Inc. appreciates the opportunity to continue working with Marathon Petroleum Company (MPC) on this important project. Please call me at 303-332-5757 with questions.

Regards,



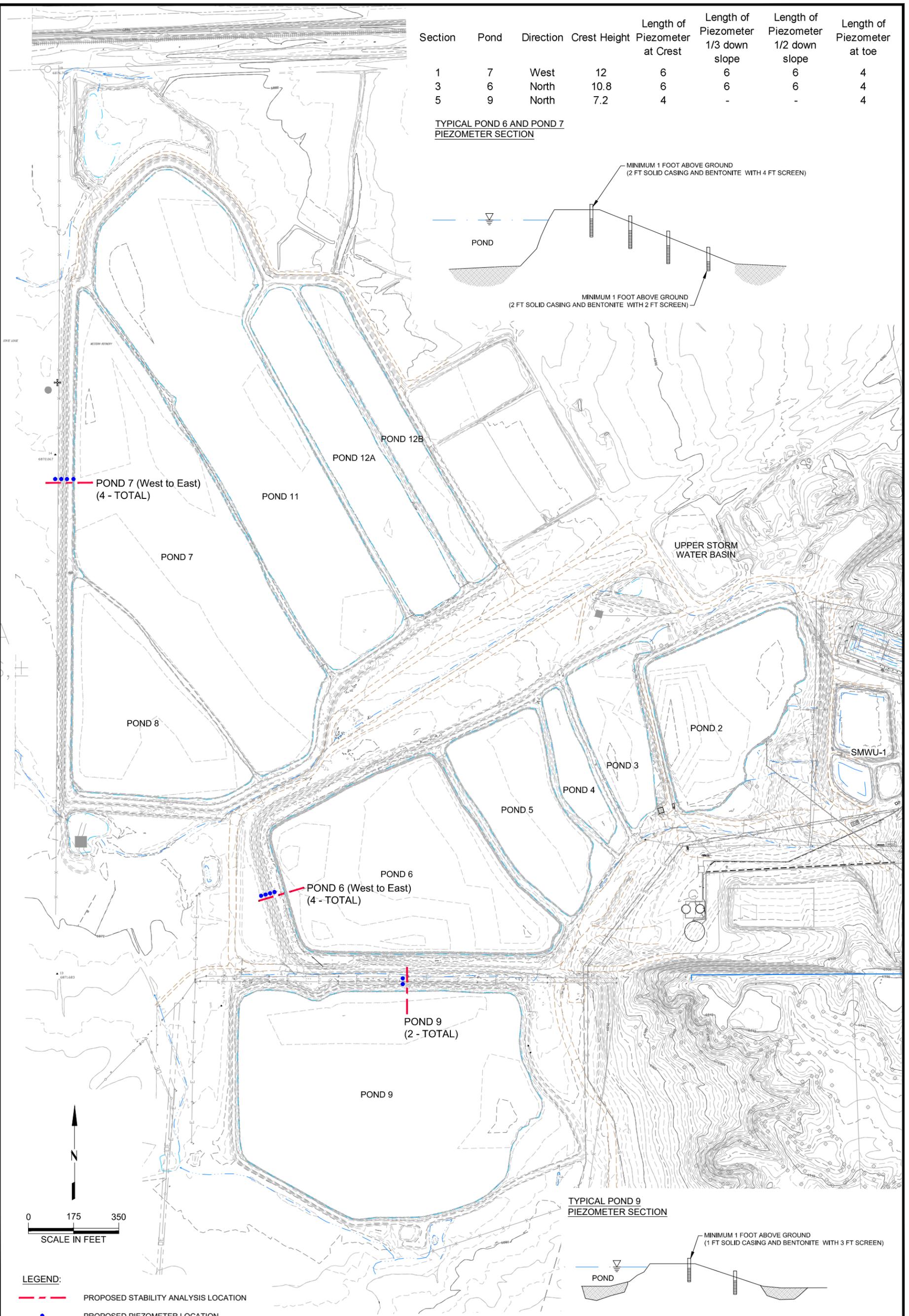
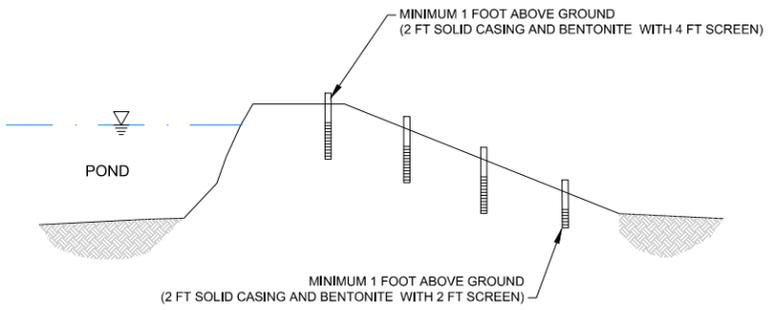
John W. Billiard, P.E.
Technical Services Director

FIGURES

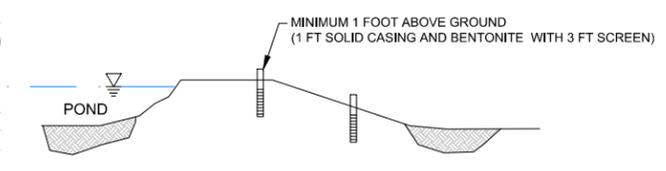
1. PLAN VIEW OF THE EVAPORATION PONDS WITH PROPOSED PIEZOMETER LOCATIONS AND NUMERICAL SLOPE STABILITY SECTION LOCATIONS
2. ANTICIPATED FIELD WORK AND REPORT SCHEDULE

Section	Pond	Direction	Crest Height	Length of Piezometer at Crest	Length of Piezometer 1/3 down slope	Length of Piezometer 1/2 down slope	Length of Piezometer at toe
1	7	West	12	6	6	6	4
3	6	North	10.8	6	6	6	4
5	9	North	7.2	4	-	-	4

TYPICAL POND 6 AND POND 7 PIEZOMETER SECTION



TYPICAL POND 9 PIEZOMETER SECTION



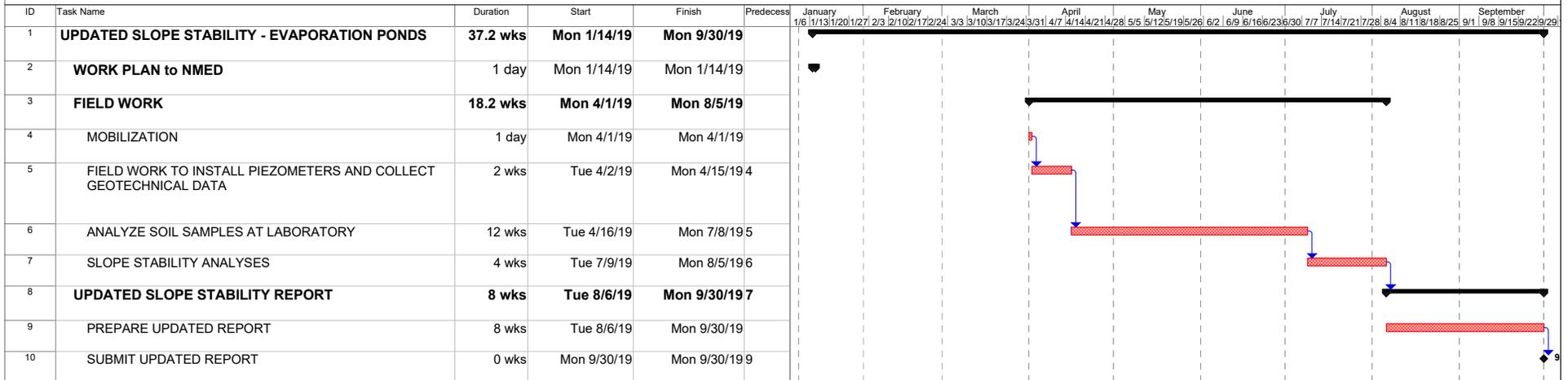
LEGEND:
 - - - - - PROPOSED STABILITY ANALYSIS LOCATION
 • PROPOSED PIEZOMETER LOCATION

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 1101 WEST MINERAL AVENUE SUITE 102 LITTLETON, COLORADO. 80120 (303) 332-5757	MARATHON- GALLUP REFINERY, NEW MEXICO	DRAWING NO.:
	PROPOSED PIEZOMETER LOCATIONS AND NUMERICAL SLOPE STABILITY SECTION LOCATIONS	1
PROJ. NO.: 15-010-04 DATE: 10/30/2018 DRAWN BY: JAY CHECKED BY: JWV		

C:\Users\Elundborg\Desktop\Stability\FIGURE 6a-6b - X-Sections and Piezometer Locs.dwg Elundborg Plotted: Oct 30, 2018 - 1:38pm

Proposed Schedule for Field Work Related to NMED Comments and Prepare Revised Report



Project: 17-112 Field work based on NMED Comments
Date: Wed 1/9/19

Task [Blue hatched box] Summary [Black arrow] Construction Task [Red hatched box]

1. START DATE ASSUMED AS APRIL 1, 2019. START DATE DEPENDS ON CLIENT AND AGENCY APPROVALS

Figure 2
Anticipated Field Work and Report Schedule

