NM1 - ____56____

BORING PLAN(S)

2013

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

February 5, 2013

Grant Jackson
Naismith Engineering Inc.
P.O. Box 3099
Corpus Christi, Texas 78463-3099

RE: Hydrogeologic Investigation Boring Plan
Commercial Surface Waste Management Facility
R360 Permian Basin, LLC – Avalon Surface Waste Management Facility
Facility Location: W/2 of the NE/4 and E/2 of the NW/4 of Section 36, Township 26 South, Range 31 East, NMPM, Eddy County, New Mexico

Dear Mr. Jackson:

The Oil Conservation Division (OCD) has received Naismith Engineering Inc.'s boring plan proposal, dated February 1, 2013 and submitted on the behalf of R360 Permian Basin, LLC, to investigate and characterize the uppermost aquifer and subsurface geology for a proposed commercial surface waste management transfer station facility permit (Avalon Surface Waste Management Facility) located in the W/2 of the NE/4 and E/2 of the NW/4 of Section 36, Township 26 South, Range 31 East, NMPM, Eddy County, New Mexico. OCD has completed the review and determined that the proposal is adequate to proceed with the site investigation.

OCD agrees that the proposed boring/monitoring well locations appear adequate. However, if the hydrogeologic conditions cannot be determined, additional borings or monitoring wells may be needed. It should be understood that if a monitoring well is constructed, it shall be bailed until fully developed.

The OCD appreciates your cooperation in providing a boring plan for review, in order to determine if the submitted application and the proposed site are suitable for consideration of approval. If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Brad A. Jones
Environmental Engineer

BAJ/baj

Cc: OCD District II Office, Artesia
Wayne Crawley, R360 Environmental Solutions, Inc., Houston, TX

NaismithEngineering,Inc
ARCHITECTURE ■ ENGINEERING ■ ENVIRONMENTAL ■ SURVEYING
ESTABLISHED 1949

February 1, 2013

TRANSMITTED VIA E-MAIL: brad.a.jones@state.nm.us AND FAX: (505) 476-3462

Mr. Brad A. Jones
Environmental Engineer, Environmental Bureau
New Mexico Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

SUBJECT: Revised Hydrogeologic Investigation Work Plan – R360 Permian Basin, LLC Proposed Avalon, New Mexico Transfer Facility

Dear Mr. Jones:

On behalf of R360 Permian Basin, LLC (R360), Naismith Engineering, Inc. (NEI) is submitting the attached revised Hydrogeologic Investigation Work Plan for your review and approval. The revisions are based on the comments we received from you as well as one item based on subsequent discussions with R360 related to one of your comments. To assist in your review of the revisions to the plan, we have also attached a redline/strikeout version.

R360 has elected to limit the scope of the Transfer Facility application to RCRA exempt waste only, and withdraw from this application any further consideration of RCRA non-exempt, non-hazardous waste. In addition, our review of the addition of the surface contours to the Facility concept drawing resulted in some minor changes to the elevation descriptions in the plan. We believe these changes provide more clarification on meeting the intent of the regulations.

On behalf of R360, we respectfully request your review and approval of the revised work plan. We would welcome the opportunity to discuss the work plan with you. Please contact me if you have any questions or need additional information.

Sincerely,
NAISMITH ENGINEERING, INC.

Grant A Jackson P.E.
Vice-President

Encl.

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HYDROGEOLOGIC INVESTIGATION

WORK PLAN

AVALON SURFACE WASTE MANAGEMENT FACILITY

R360 ENVIRONMENTAL SOLUTIONS

R360 PERMIAN BASIN, LLC

AVALON, EDDY COUNTY, NEW MEXICO

February 1, 2013

Revision 1

Prepared By

NEI NaismithEngineering,Inc

ARCHITECTURE ■ ENGINEERING ■ ENVIRONMENTAL ■ SURVEYING

NEI PROJECT NO. 8935

TABLE OF CONTENTS

1. GENERAL

1.1. Scope and Purpose

This hydrogeologic investigation work plan (Plan) has been prepared by Naismith Engineering, Inc., (hereafter "NEI") on behalf of R360 Permian Basin, LLC (hereafter "R360") in conjunction with the submittal to the New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division (hereafter "NMOCD") of an application to obtain authorization to operate a surface waste management facility in southeaster Eddy County, New Mexico. The Facility will be designed as a waste transfer and storage facility according to NMOCD rule 19.15.36 NMAC for management of Resource Conservation and Recovery Act (hereafter "RCRA") exempt waste. The proposed facility will be known as the Avalon Transfer Facility (hereafter "Facility").

1.2. Facility Location

The facility is located in Section 36, Township (hereafter "T") 26 South (hereafter "S"), Range (hereafter "R") 31 East (hereafter "E"), in southeastern Eddy County, New Mexico. The Proposed Facility is situated in the West half (W½) of the northeast quarter (NE¼) and in the East half (E½) of the northwest quarter (NW¼) of the reference Section 36 and will occupy approximately 36 acres. There is no physical address established for the property, but the center of the Proposed Facility is located at approximately Latitude 32° 00' 18" North (hereafter "North"), Longitude 103° 43' 53" West (hereafter "W").

Appendix A presents a location and topographic map.

1.3. Proposed Facility Operations

R360 will operate the facility as a waste transfer facility. Off-site wastes will be brought to the facility where they will be stored, transferred and then shipped off-site to an authorized disposal facility. Wastes will be received, stored and shipped off-site in enclosed containers. The Facility will require equipment and facilities to handle, store and transport waste the waste containers and to transfer the waste materials.

Appendix B presents a conceptual development plan for the Facility.

2. PROPOSED HYDROGEOLOGIC INVESTIGATION

2.1. Objective

The primary objective of the hydrogeologic investigation is to assess the presence of groundwater beneath the Facility based on the lowest topographic elevation in the area of the transfer station waste management units. A secondary objective is to characterize the subsurface geology beneath the Facility.

2.2. Scope of Work

One (1) soil boring will be drilled to approximately 75 feet below ground surface (bgs) in the area of the transfer station waste management units. Based on a surface elevation of 3128 on the west edge of the proposed waste container storage area, this would characterize

subsurface conditions down to an elevation of 3053. The lowest surface elevation near the southwest corner of the Proposed Facility is approximately 3115. The proposed soil boring will provide characterization at least 62 feet below the lowest surface elevation at the Proposed Facility.

2.3. Methods and Procedures

Drilling will be performed using hollowstem augers and a 5-foot long continuous sampler. Drilling will switch to continuous air rotary rig using a 5-foot long wire line core barrel and overshot if auger refusal is obtained. The augers will remain in place during air core drilling to prevent borehole sloughing. No water will be introduced into the borings during the drilling process. The drill rig will be cleaned and decontaminated prior to entering the Facility. Drill cuttings will be removed from the borings around the auger flights or flushed using compressed air. The soil cores will be described for lithology according to the Unified Soil Classification System (USCS) and soil samples will be collected for laboratory analysis as discussed in section 2.4.

The following equipment will be used:

- Hollow-stem auger rig equipped with continuous sampler and/or air rotary rig equipped with 5-foot long continuous sampler or core barrel with overshot;
- High-pressure hot-water cleaner (steam cleaner);
- Support truck;
- Equipment trailer.

The New Mexico One Call (811) center will be notified to locate underground utilities. A hand augured may be used to auger to a depth of 5 feet bgs, if necessary, to confirm the presence of underground utilities.

The following generalized steps will be used for drilling;

- Mobilize drilling rig to the location;
- Conduct daily safety meeting, and rig up drilling equipment;
- Hand auger to 5' to locate utilities, if necessary;
- Hollowstem auger with continuous sampling at until competent core material is encountered;
- Hollowstem auger will serve as surface casing for air (HQ3) coring operations;
- Air will be used as cutting return and bit lubrication;
- Once coring has commenced samples will be retrieved every 5 feet with an inner barrel and overshot;
- Photograph cores and monitor to determine depths at which changes in texture, color and moisture content occur to allow accurate logging of the subsurface soil stratigraphy;
- Core will be placed in HQ core boxes as core is recovered;
- Borings not completed as monitoring wells will remain open until completion of the investigation at which time the borings will be plugged to surface with a cement and

bentonite slurry or reamed and completed as a monitoring well if groundwater is present.

- Mobilize to additional sites or complete demobilization;

Note: Drilling will be suspended for 12 hours to allow groundwater to accumulate in the borehole whenever dampness or groundwater is observed in the core samples. Borings not completed as monitoring wells will remain open until the investigation is complete at which time the borings will be plugged to surface with cement and bentonite grout. If groundwater is observed the borings will be completed as monitoring wells according to procedures in section 2.5.

2.4. Soil Samples and Analysis

The continuous cores obtained during the drilling will be described according to the Unified Soil Classification System (USCS). Soil samples from each major soil types will be collected for geotechnical laboratory analysis for the following engineering properties:

- Total porosity as determined from Moisture Content (ASTMD2216 - 10; ASTM D6836 – 68(2006)); Dry Bulk Density (ASTM D6836); and Calculated Porosity (ASTM D6836 – 68(2006))
- Permeability/Saturated Hydraulic Conductivity as determined by:
  - Standard Test Method for Measurement of Hydraulic Conductivity of Porous Material Using a Rigid-Wall, Compaction-Mold Permeameter (ASTM D5856 - 95(2007))
  - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter. (ASTM D5084 – 10)
- Compaction Ratios, as determined by Proctor Compaction Test. (ASTM698 – 07e1)
- Swelling Characteristics:, as determined by Atterberg Limits. (ASTM D4318 - 10)

The core samples will be examined for texture, color, and moisture content to allow accurate logging of the lithology and hydrogeologic characteristics within each borehole. The soil cores will be wrapped with aluminum foil and plastic in wax covered boxes for future reference.

2.5. Monitoring Wells

Monitoring wells will be installed if groundwater is observed in the boring(s). The drilling contractor will follow ASTM D5092 Standard Practice for Design and Installation of Groundwater Monitoring Wells when installing unconfined and confined monitoring wells.

Each groundwater monitoring well will be installed according to the following procedures:

- Measure static groundwater level in boring using an electronic water level meter;
- Ream boring to a minimum diameter of 5 inches and advanced boring approximately 7 feet below the static groundwater level unless a lower confining layer is encountered at which point drilling will terminate;

- Install monitoring well using 2-inch diameter flush thread schedule 40 PVC casing and screen;
- A 10-foot section of 0.010 inch factory slotted screen will be installed in the borehole with the bottom of the screen positioned near the bottom of the boring;
- Graded silica sand will be placed around the screen to approximately 2 feet above the screen;
- A layer of bentonite chips approximately 3 feet thick will be placed above the sand and hydrated with potable water;
- The annulus above the bentonite chips will be filled with a slurry of cement and bentonite grout to about 1 foot below ground surface;
- The remaining 1 foot of annulus will be filled with aggregate cement;
- A pad measuring approximately 3 x 3 feet will be constructed above ground around the 2 inch PVC casing stickup extending between 2 and 3 feet above ground surface;
- The pad will be filled with cement and sloped for drainage;
- A locking steel sleeve will be placed over the 2 inch PVC casing stickup and will extend into cement about 1 foot;
- The well will be secured with a lock.

Appendix C presents a typical unconfined monitoring well construction diagram.

The following procedures will used for installing monitoring wells in a confined aquifer:

- Should confined groundwater be encountered the borehole will be advanced approximately 12 feet below the base of the upper confining layer, as dictated by field conditions;
- The well will be constructed with flush thread 2-inch diameter schedule 40 PVC casing and screen;
- A 10-foot section of 0.010 inch factory slotted screen will be installed in the borehole with the top of the screen approximately 2 feet below the base of the upper confining layer , as dictated by field conditions;
- Graded silica sand will be placed around the well screen through a tremmie pipe to approximately 1 feet above the screen;
- A layer of time-release bentonite chips will be placed above the sand and across the confining layer;
- The annulus above the bentonite chips will be filled through a tremmie pipe with a slurry of cement and bentonite grout to about 1 foot below ground surface;
- The annulus above the cement and bentonite grout will be filled with aggregate cement to ground surface;
- A pad measuring approximately 3 x 3 feet will be constructed above ground around the 2 inch PVC casing stickup between approximately 2 and 3 feet in height;
- The pad will be filled with cement and sloped for drainage;
- A locking steel sleeve will be placed over the 2 inch PVC casing stickup and will extend into the aggregate cement approximately 1 foot below ground surface;

- The well will be secured with a lock.

Appendix C presents a typical confined monitoring well construction diagram.

The following procedures will occur after installing the monitoring wells:

- The monitoring wells will be surveyed by a New Mexico licensed surveyor for top of casing and ground elevation;
- The wells will be gauged for depth to static groundwater and total well depth prior to developing with an electric submersible or mechanical pump or hand bailed to remove fine grained material disturbed during the drilling process.

2.6. Groundwater Samples

Groundwater samples of the shallowest fresh water aquifer beneath the proposed Facility will be collected from the monitoring wells after the wells are developed to remove sediment disturbed during drilling and well installation. The wells will be developed by pumping with electric or mechanical pumps until groundwater is visibly free of suspended solids. Groundwater samples will be collected approximately 24 hours following development using low flow sampling methods. The samples will be collected in laboratory containers, preserved and shipped under chain of custody to DHL Analytical, Inc. (DHL), an independent commercial laboratory, accredited by the National Environmental Laboratory Accreditation Program (NELAP), located in Round Rock, Texas. DHL will analyze the samples for major cations and anions benzene, toluene, ethyl benzene and xylenes (BTEX), RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) and total dissolved solids (TDS).

2.7. Schedule

Drilling activities for the (1) borehole will occur approximately two days depending on weather and subsurface conditions. The duration of the laboratory sampling analysis and report preparation will be approximately 2 to 4 weeks depending on the laboratory schedule. The total project duration is expected to be up to 4 weeks after the initiation of drilling activities.

3. DESCRIPTION OF RESPONSIBLITIES

3.1. Coordinating Geologist

Personnel from Larson Associates, Inc. (LAI) will coordinate the completion of the boring and the associated testing and reporting.

3.2. Drilling Contractor

Precision Sampling will be responsible for drilling the borings, collecting core samples and installing monitoring wells according to procedures identified above. The drilling contractor will be responsible for equipment decontamination.

3.3. Laboratory

ETTL has been identified as the laboratory capable of performing the geotechnical analysis according to OCD rule (19.15.36 NMAC). DHL Analytical, Inc., a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory, located in Round Rock, Texas, will analyze the groundwater samples for major cations and anions, BTEX, RCRA metals, and TDS. LAI personnel will be responsible for the interpretation of testing results and report preparation.

4. NOTIFICATION

Personnel from Larson Associates, Inc. (LAI) will be responsible for staking the borehole locations and providing notification to the New Mexico One Call System (811) for utility clearance. LAI will also be responsible for scheduling the drilling and laboratory contractors. LAI will provide notification to the OCD in Santa Fe and Artesia at least ten (10) calendar days prior to commencing drilling activities. The following individuals shall be notified prior to commencement of drilling activities:

- Mr. Wayne Crawley – R360 Permian Basin, LLC
- Mr. Brad Jones – NMOCD - Santa Fe
- Mr. Randy Dade – NMOCD District 2

5. SAFETY CONSIDERATIONS

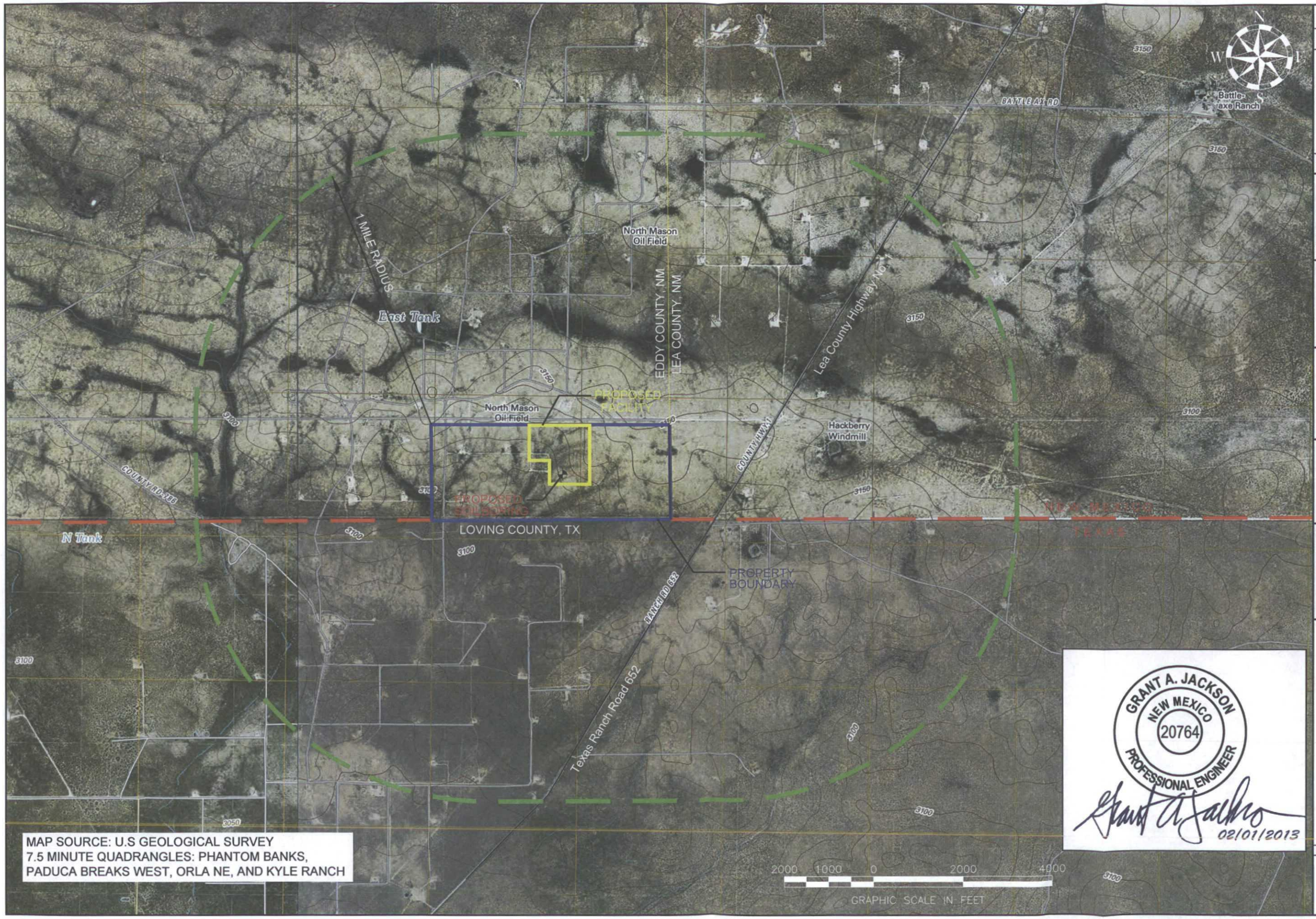
Possible safety hazards that may be associated with the subsurface investigation involve heavy lifting, inclement and hazardous weather and terrain. Caution will be exercised to mitigate the risks posed by each of these hazards should they arise. Required personal protective equipment (PPE), at a minimum, will include work gloves, latex sampling gloves, hardhats, long-sleeved shirts, safety glasses, hearing protection, and steel-toed boots. The work will be conducted in accordance with R360 safety practices. All contractors will be responsible for adhering to these practices.

6. REPORTING

LAI personnel will compile the data from the hydrogeologic investigation for inclusion with the permit application after receiving the final and accurate results from soil and groundwater testing laboratories. The data submitted with the application will include the sampling results, a description of soil types beneath the proposed facility, a lithologic description of the soil and rock members from the ground surface down to the top of the shallowest fresh water aquifer or total boring depth and geologic cross-sections. If groundwater is encountered and each borehole is completed as a monitoring well, the wells will be surveyed by a State of New Mexico Licensed Professional Land Surveyor for top casing and ground elevation which will be used to prepare a groundwater potentiometric map. The report and supportive documentation will be submitted to the OCD as an attachment to Form C-137 (Application for Surface Waste Management Facility).

APPENDIX A

Location and Topographic Map



MAP SOURCE: U.S GEOLOGICAL SURVEY
7.5 MINUTE QUADRANGLES: PHANTOM BANKS, PADUCA BREAKS WEST, ORLA NE, AND KYLE RANCH

GRANT A. JACKSON
NEW MEXICO
20764
PROFESSIONAL ENGINEER
02/01/2013

REV	DESCRIPTION	APPR.	DATE

Drawn By : ML
Checked By : GAJ
Approved By : GAJ
Project No. : 8935
Scale : AS SHOWN
Date : 2/1/2013
Revision No. :

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(361)-814-9900

Naismith Engineering, Inc. P-338

USGS TOPOGRAPHIC MAP

R360 AVALON TRANSFER FACILITY
R360 PERMIAN BASIN, LLC
EDDY COUNTY, NEW MEXICO

Dwg. File:

Attachment 8
8-2
Sheet 2 Of 2

Appendix B

Conceptual Development Plan

NEW
API 30-015-39649

API 30-015-05872
P&A

NEW
API 30-015-39235

P&A
API 30-015-05874

N
W E
S

Cattleguard
INGRESS
450'
State Line Road
900'
Cattleguard
EGRESS
Two Way Access to
Lea County Highway 1
and Texas Ranch Road 652

3135
3130
3125
3120
3115
3110
3105
3140
3145
3150

BH-4
800'
Site Area is
Approximatly
36 Acres.
Fuel
Depot
One Way
Traffic Flow
100' BUFFER
ZONE
×3154.

Avalon SWD Well #1D
API 30-015-40733

One Way
Traffic Flow
Empty Container
Storage Area
One Way
Traffic Flow
1341'

P&A
API 30-015-05898

BH-3
450'
Recovered Liquid
Storage Tank
Entrance and
Exit Ramp
BH-6
Texaco Eddy
State "AG"
Tank Battery
Stormwater
Control Berm
SB13
Waste Container
Storage Area
900'
Proposed Access
Control Fence

Note: This Plan does not represent a property boundary survey distance from property lines are based on the proposed concept plan and are subject to change based on surveyed conditions on the ground.

200 100 0 200 400
GRAPHIC SCALE IN FEET

LEGEND

- Facility Boundary
- Lot / Section Lines
- Oil and Gas Well
- P — Pipelines
- BH-3 Previous soil boring
- x — Access Control Fence
- SB13 Proposed Boring Location
- Drainage Swell
- 3145 — Countour Intervals 1'

Proposed SoilBoring SB13
Proposed Serface Elevation 3128
Proposed Total depth Elevation 3053
Lowest elevation at Facility 3115

GRANT A. JACKSON
NEW MEXICO
20764
PROFESSIONAL ENGINEER
02/01/2013

REV	DESCRIPTION	APPR	DATE

Drawn By: ML.jbs
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Naismith Engineering,Inc
F-385

FACILITY SITE PLAN

R360 AVALON TRANSFER FACILITY
R360 PERMIIAN BASIN, LLC
EDDY COUNTY, NEW MEXICO

Dwg. File: 8935-Facility Map-2k.dwg

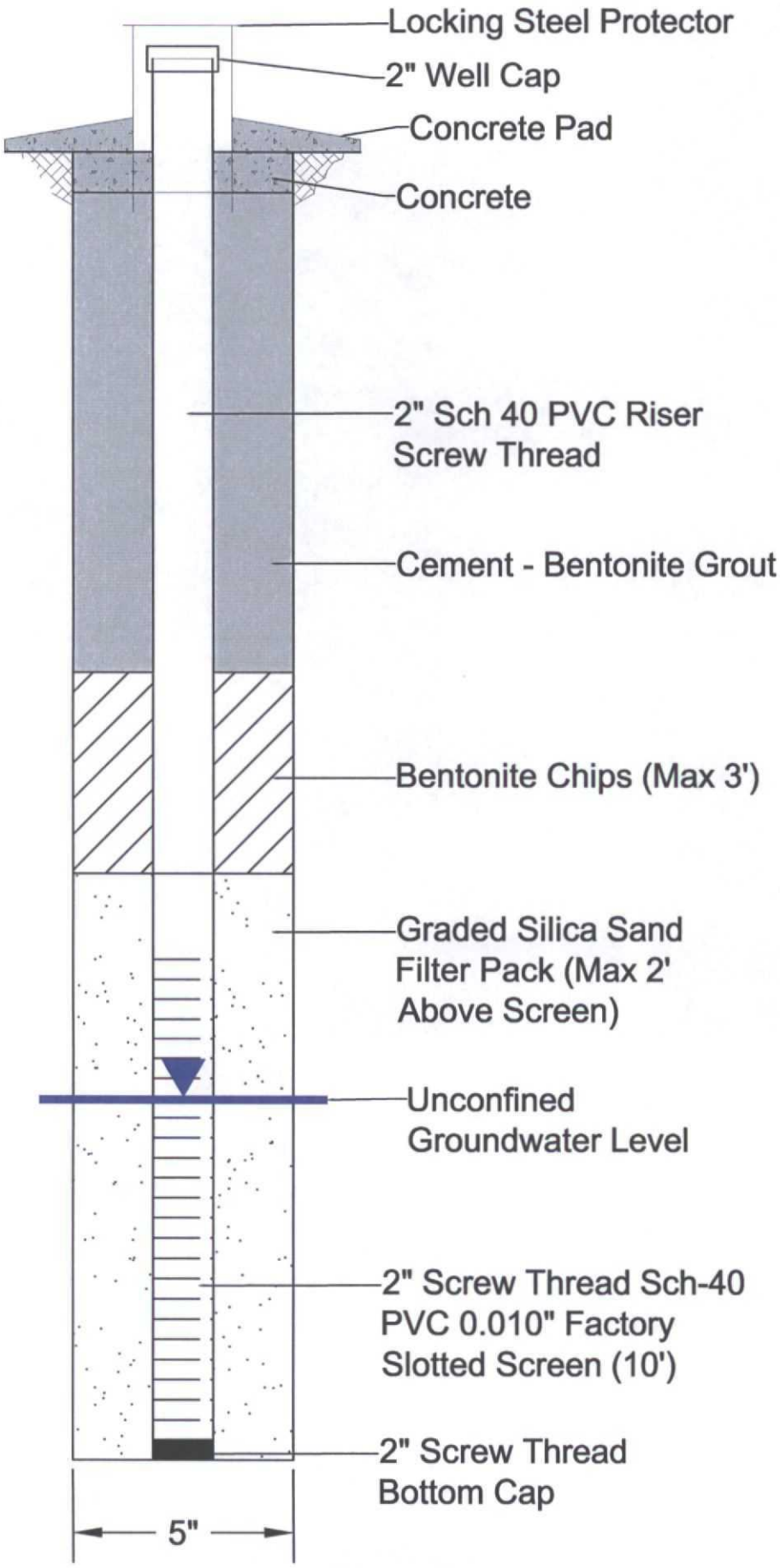
Attachment 10
10-2

Sheet 2 Of 2

Appendix C

Typical Monitoring Well Construction

Typical Unconfined Well Schematic



Typical Confined Monitoring Well Diagram