RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

AMENDED PROPOSAL FOR DECISION

OIL AND GAS DOCKET NO. 02-0289582

THE APPLICATION OF PYOTE RECLAMATION SYSTEMS, LLC, PURSUANT TO STATEWIDE RULE 8 FOR A PERMIT TO MAINTAIN AND OPERATE A COMMERCIAL STATIONARY TREATMENT AND DISPOSAL FACILITY, HOHN ROAD FACILITY, DEWITT COUNTY, TEXAS

HEARD BY: Paul Dubois – Technical Examiner
Terry Johnson – Hearings Examiner
Laura Miles-Valdez – Hearings Examiner

PREPARED BY: Paul Dubois – Technical Examiner
Marshall Enquist – Administrative Law Judge

HEARING DATES: September 10 – 12, 2014
December 15, 2015

APPEARANCES:	REPRESENTING:
APPLICANT	
John Soule	Pyote Reclamation Systems, LLC
Olga Kobzar	
Sammy Cooper	
Keith Wheeler	
Patrick Behling	
PROTESTANT	
Marissa Perales	Concerned About Pollution
Kristine Uhlman	
Paul Fahrenthold	
Scott Courtney	
Harold Edward von Dran, Jr.	
OTHER	
Kathy Keils	Oil & Gas Division Staff
Grant Chambless	

PROCEDURAL HISTORY

Application Filed:	April 4, 2013
Protest Received:	August 20, 2013
Request for Hearing:	May 28, 2014
Notice of Hearing:	July 1, 2014
Date of Hearing:	September 10-12, 2014
Transcript Received:	October 6, 2014
Written Closings Received:	October 29, 2014
Replies to Written Closings Received:	November 10, 2014
Proposal For Decision Issued:	February 3, 2015
Commission Action to Remand:	September 15, 2015
Pre-Hearing Conference	October 2, 2015
Date of Re-opened Hearing:	December 15, 2015
Transcript Received:	January 4, 2016
Amended Proposal For Decision Issued:	February 22, 2016

STATEMENT OF THE CASE

This is an Amended Proposal For Decision ("PFD") that replaces the PFD issued in this matter on February 3, 2015.

Pursuant to Statewide Rule 8 (16 Tex. Admin. Code § 3.8), Pyote Reclamation Systems, LLC ("Pyote"), seeks authority to maintain and operate a commercial stationary treatment and disposal facility, known as the Hohn Road Facility, in DeWitt County, Texas. Although Pyote is the entity seeking the permit, the facility, if permitted, will be operated by Petro Waste Environmental, LLC, a related entity. Future Railroad Commission of Texas ("Commission") approval must take place prior to a change of operatorship. The proposed facility will occupy 143 acres of a 204-acre tract located approximately 1/4 mile east-southeast of the town of Nordheim, Texas. The location of the facility is shown on Attachment A. The facility will accept non-hazardous Resource Conservation and Recovery Act ("RCRA") exempt oil and gas exploration and production waste under the jurisdiction of the Commission. The overall facility is identified in Commission records as Surface Treatment Facility ("STF") No. 062. The application was originally submitted on April 4, 2013. Since then, the application has been modified. As considered at the September 2014 hearing the application includes the following individual waste management units:

- One Truck Washout Pit (Control No. P011997)
- Two Settling Basins, each with eight collection pits (Control Nos. P011998A-H and P011999A-H)

- Four Landtreatment Cells (Control No. LT-0343)
- Two Disposal Cells (Control Nos. P011994 and P011996)
- One Drying Cell

Notice of the application was mailed on April 4, 2013 to the adjoining landowners. On April 10, 2013, notice of the application was published in *The Cuero Record*, a newspaper of general circulation in DeWitt County.

The application is protested by Concerned About Pollution ("CAP"), a non-profit organization whose stated purpose is "to protect public health, air quality, the environment, and the quality of life in the Nordheim region of Texas," and to represent its members in related matters. CAP has members who own land adjoining, adjacent, and near the proposed facility tract. In addition, public statements were taken on the record from a number of persons opposed to the application, including State Representative Geanie Morrison.

The Administrative Law Judge and Technical Examiner (collectively "Examiners") issued a PFD in this Docket on February 3, 2015. Based on the evidence presented at the hearing and the Findings of Fact and Conclusions of Law contained within that PFD, the Examiners concluded that the proposed facility met the requirements of Statewide Rule 8 (d)(6)(A) and that its operation will not result in the waste of oil, gas, or geothermal resources or the pollution of surface or subsurface water.

Commission Action to Remand the Matter

The February 3, 2015 PFD was presented for Commission action at a public conference on September 15, 2015. The Commission acted unanimously to remand the docket to staff for a narrow purpose:

> *We remand this item back and ask the Staff to look at the number of years rain event that we're considering to come up with what they think is appropriate under these specific circumstances in the Nordheim area.*[1]

The Examiners held a pre-hearing conference on October 2, 2015, at which time it became evident that Oil & Gas Division Staff, Pyote and CAP held differing opinions as to the Commission's intention and scope with regard to the remanded matter. In short, Oil & Gas Division Staff and Pyote understood the matter to be administrative. That is, Staff would reconsider the appropriate rainfall event, and, if necessary Pyote would revise the storm water management system appropriately and the matter would be taken up directly

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[1] September 15, 2015 Conference Transcript, pg. 71: 9-24.

by the Commission. CAP, on the other hand, understood the remand to mean that, although limited in scope to the storm water event, the remand would include a hearing on the merits of the remanded issue which would allow for the opportunity to provide testimony and cross examine witnesses.

On October 5, 2015, the Examiners ruled the matter would be treated as a remand under 16 Tex. Admin. Code §1.143 for all purposes, requiring re-opening of the record for receipt of additional evidence and the issuance of an amended PFD, with the parties having the right to file exceptions, replies and briefs. The Examiners also ruled that Oil & Gas Division Staff would, at the re-opened hearing, provide evidence of the factual basis for the storm water management analysis used to evaluate the subject application and that each party shall have the opportunity for cross-examination as well as the opportunity to present evidence in support of its view of the correct storm water management standard. The docket was re-opened on December 15, 2015.

Based on the evidence presented at the re-opened hearing and the Findings of Fact and Conclusions of Law contained within this Amended PFD, the Examiners conclude that the proposed facility meets the requirements of Statewide Rule 8(d)(6)(A) and that its operation will not result in the waste of oil, gas, or geothermal resources or the pollution of surface or subsurface water. The Examiners recommend Pyote's application be approved in accordance with the attached permit, which governs the construction, operation, management, monitoring and closure of the facility and the individual waste management units within it.

A Note on the Organization of the Amended PFD

This amended PFD revises the original PFD issued in this docket on February 3, 2015. The evidence and analysis is presented sequentially. A discussion of the evidence and testimony from the September 2014 hearing is presented first and includes the Applicant's evidence, Protestants' evidence, and the Examiners' analysis. Then, a discussion of the December 2015 hearing is presented in a different format. First, a discussion of Staff's determination of the appropriate storm design criterion is provided along with Pyote's revisions accommodating the determination. Then, the Examiners topically explore CAPs concerns with the revised design elements.

The Examiners' Findings of Fact and Conclusions of Law are amended appropriately, based on the totality of the evidence heard in both hearings. The Examiners made no changes in response to the Exceptions or Replies to Exceptions filed by the parties in response to the original PFD. Minor typographical changes have been made.

There are four attachments to the Amended PFD: (A) Site Location Map; (B) February 11, 2016 letter from Southcross Gulf Coast Transmission, Ltd.; (C) Site Plan; and (D) Revised Site Plan. A proposed Final Order is also attached and includes a proposed draft permit with attachments.

APPLICABLE LAW

Statewide Rule 8(d)(6)(A) [16 Tex. Admin. Code § 3.8 (d)(6)(A)] states:

Standards for permit issuance. A permit to maintain or use a pit for storage of oil field fluids or oil and gas wastes may only be issued if the commission determines that the maintenance or use of such pit will not result in the waste of oil, gas, or geothermal resources or the pollution of surface or subsurface waters. A permit to dispose of oil and gas wastes by any method, including disposal into a pit, may only be issued if the commission determines that the disposal will not result in the waste of oil, gas, or geothermal resources or the pollution of surface or subsurface water.

PUBLIC COMMENTS

At the outset of the September 2015 hearing, interested persons were given the opportunity to comment on the proposed application.

State Representative Geanie Morrison, who has represented House District 30 since 1999, spoke in protest of the proposed facility. Rep. Morrison acknowledged the industry's need for waste management services, such as those offered by the proposed Hohn Road Facility, but stated that the proximity of the facility to the town of Nordheim does not make sense and is not logical. Rep. Morrison asked the Commission to defer to the people who would be most impacted by the operation of the proposed facility and deny the application.[2]

Sixteen other persons also spoke in opposition to the proposed application, including several adjacent property owners. The persons who offered public comment in opposition to the application were: Bill Parmley, Howard Anne Bauman, Gale Tisdale, Barbara Fullbright, Debbie Hardin, Kevin Styra, Carol Garrison, Don Janssen, Jim Wright, Phillip Bauman, Kenneth Benbow, Ruth Newman, Barbara Janssen, and Mike Jannsen. Raulie Irwin and Art Dohmann, representing Goliad County Groundwater Conservation District, also gave public comments.

Southcross Gulf Coast Transmission Ltd.

On February 16, 2016, the Commission received a letter from William C. Boyer, Vice President of Operations, Southcross Gulf Coast Transmission, Ltd. ("Southcross"), dated February 11, 2016 (Attachment B). Southcross is the owner of an active 8-inch natural gas pipeline on a 30-foot easement that transects the proposed disposal tract. In the letter, Southcross claims that it is a potentially affected entity and has never "been notified of the proposed plans and permit application of the Pyote Facility." Further, Southcross asserts the potential for significant risks of adverse consequences, including: (1) Possible

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[2] Tr. pg. 20, lns. 3-7.

groundwater impacts that could be falsely attributable to its pipeline operation; (2) Surface distrubance or runoff water erosion impacts due to grading and surface contour alterations; (3) Increased risk of third party damage to its pipeline due to earth-moving equipment near or across the pipeline; and (4) Reduced access by Southcross to operate and maintain its surface easement and underground pipeline.

Mr. Boyer stated, "While (Southcross) is not, at this time, objecting to the issuance of the proposed permit, this letter will serve notice of its concerns and of its desire to be informed of the ongoing status of the permit application process." Further, Southcross is requesting its concerns be adequately addressed by Pyote before construction commences. Southcross also requests additional time to review Pyote's plans before the Commission takes action on the permit application.

The Examiners consider Southcross' letter to be public comment because it was received after the matter was remanded by the Commission for the very limited purpose of considering the appropriate storm water design criterion. Further, Southcross' letter expressly states that it is not objecting to the issuance of the proposed permit at this time, and Southcross has not requested party status in this matter.[3] Considering Southcross' concerns at this juncture would be outside of the Examiners' charge for the re-opened hearing. As a courtesy, Southcross has been added to the docket service list.

DISCUSSION OF EVIDENCE – SEPTEMBER 2014 HEARING

APPLICANT'S EVIDENCE

Pyote proposes to build and operate a facility for the treatment and disposal of non-hazardous oil and gas waste under the jurisdiction of the Commission. The site is about one-quarter mile east-southeast of Nordheim, DeWitt County, Texas. The facility will be located on 143 acres of a 204 acre tract owned by Paisano DeWitt, LLC. Access to the facility will be via Hohn Road–a DeWitt County road–about 1,500 feet southeast of State Highway 72. State Highway 72 serves a significant amount of oilfield related traffic. Nordheim is on the southeastern edge of the Eagle Ford play. Pyote believes this location to be ideal to serve the waste treatment and disposal needs generated by exploration and production activity in the area. Attachment C depicts the boundaries, current topography, and proposed development plan for the site, as well as soil boring and monitoring well locations.

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[3] Southcross did not request party status, and its letter was not filed within the required time period specified in 16 Tex. Admin. Code §1.64(a), which states, "any person... who desires to be designated as a party in any contested case before the commission may file a petition for leave to intervene no later than five days prior to the hearing date."

Mr. George Wommack, the sole member of Pyote Reclamation Systems, LLC, testified that the proposed site location is ideal to meet the waste disposal needs of the oil and gas industry in and around DeWitt County. Mr. Wommack stated that the nearest comparable active waste management facility is operated by Inland in Altair, about 75 miles to the east. Pyote has six waste disposal facilities currently pending permits, including the Eckhardt Road facility which is also in DeWitt County.[4]

Site Characterization

The proposed facility is located in a rural area about 1/4 mile east-southeast of Nordheim, Texas. The site fronts on Hohn Road, about 1,500 feet southeast of its intersection with State Highway 72. The site lies within the southeast Texas Gulf Coastal Plain and consists of low, gently rolling hills. Current land use and ground coverage is pasture and agricultural land with some brush and trees. The site is a 204 acre tract of land, with general dimensions of about 2,900 feet by 2,900 feet. Southcross' 30-foot pipeline easement transects the property from northeast to southwest.

A gentle ridge bisects the tract from northwest to southeast. The highest point is at an elevation of 423 feet. The land slopes downward to the north, toward Hohn Road, and the lowest elevation on the site is about 380 feet at the northeast corner. The lowest elevation on the southern property line is about 390 feet. Aerial photographs indicate that approximately half of the site has been terraced, likely as an erosion mitigation measure.

Based on current topography, surface water does not flow onto the site, with the minor exceptions of at the southwest corner and possibly along the southeast property line. Surface drainage to the north flows into an intermittent tributary of Smith Creek, and drainage to the south enters the intermittent streambed of Manahuilla Creek. There is one body of surface water on the site, a stock pond located on the southwestern corner along the Manahuilla Creek drainage course. This pond and any water potentially conveyed through the intermittent creek bed will be located outside of the proposed site perimeter berm.

The adjacent and surrounding lands exhibit similar topography and agricultural usage; much of the adjacent land is used to produce hay. There are several houses near the site along Hohn Road, and one house immediately adjacent to the southeast property line.

The average annual precipitation is 35 inches and the average annual evaporation is 53 inches. A 25-year, 24-hour storm event in DeWitt County is estimated to produce 8.6 inches of rainfall.

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[4] Mr. John Soule, counsel for Pyote, stated in the September 15, 2015 public conference that Pyote would no longer be pursuing a permit for the Eckhardt Road site.

Two geotechnical studies were performed to characterize the subsurface characteristics of the site. The first was conducted by Daniel B. Stephens & Associates, Inc. ("DBS"), in preparation of the original application. The second was conducted by Pastor, Behling & Wheeler ("PBW") after the original application was submitted and initially denied by Commission staff. PBW staff testified in support of the application as expert witnesses, including Keith Wheeler, P.G., hydrogeologist, and Patrick Behling, P.E., engineer.

Nine soil borings were drilled on the site to a depth of 100 feet. Surficial soils from 0 to 24 inch depth intervals were evaluated to determine their compatibility for landtreatment. These test indicate an average (1) pH of 7.8; (2) electrical conductivity of 0.6 deciSeimens per meter; and (3) sodium absorption ratio of 0.9 milliequivalents per liter. Pyote and its consultants conclude the surficial soil characteristics are conducive to landtreatment. The landtreatment areas have at least 20 inches of tillable soil.

Surficial soils are underlain by four generalized strata, from top to bottom: a low plasticity silty clay (CL); high plasticity clay (CH, or "fat"); silty clay with silt (CL); and sand (SM or SP)[5]. There are variations within these intervals. The high plasticity clay interval ranges in thickness from 25 feet to 56 feet, generally thickening from southwest to northeast, and is continuous and correlatable across the site. Unweathered marine clay–such as the high plasticity clay layer– typically have very low permeability values from 10^{-7} to 10^{-10} centimeters per second. Groundwater was encountered in seven of the nine soil borings at depths below 88 feet; the two soil borings with no observed groundwater are generally located near the site's topographic high.

There are a number of water wells in the area, including one located on the site. The on-site water well was drilled to a depth of 200 feet and is screened from 180 to 200 feet. The static water level was reported to be at a depth of 110 feet. Many of the nearby wells are 200 feet deep or less. Two City of Nordheim water wells are located about 3,000 feet west of the site. These wells produce from the Oakville Sandstone at depths of about 600 to 1,100 feet.

Waste Management

Sammy Cooper, the Chief Operating Officer of Petro Waste Environmental, LLC, testified on behalf of Pyote with regard to proposed facility operations. Pyote's Hohn Road Facility may receive only wastes that are subject to the jurisdiction of the Commission. These include RCRA-exempt non-hazardous wastes (water-based drilling fluids and associated cuttings; oil-based drilling fluids and associated cuttings; tank bottoms from gas plants, crude oil reclamation plants, and crude oil production/separation facilities; contaminated soils from crude oil or condensate spills, pipeline and saltwater spills from

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[5] Unified Soil Classification System group identifiers are in parenthesis.

production operations; material from produced water collecting pits; and formation sands and other solids from saltwater storage tanks or vessels and saltwater pits; RCRA non-exempt wastes may be accepted upon determination that the material is characteristically non-hazardous. No hazardous waste, as defined by the U.S. Environmental Protection Agency ("U.S. EPA"), may be received for treatment or disposal.[6]

Incoming waste will be evaluated regarding composition and moisture content, and will be placed in the appropriate receiving unit. Based on this evaluation, liquid waste will be offloaded into either the settling basin or the drying cell. The drying cell will be used for temporary storage of waste until it passes a paint filter test. Solid material passing a paint filter test may be placed directly on a landtreatment cell or the active disposal cell. Solids collected from the settling basins will be delivered to the drying pad, an active landtreatment unit, or the active disposal cell based on moisture content. Pyote will not place tank bottom wastes in a landtreatment unit. At the hearing, Pyote stated that it will use 60-mil high density polyethylene ("HDPE") liners in the drying cell and disposal cells, an upgrade to the 40-mil liners that were described in its original application. The draft permit has been revised accordingly.

Truck Wash and Settling Basins

Liquid waste will be separated into solids and liquids using the settling basin system. The truck wash will be the receiving point for liquid waste entering the settling basins, either as (1) rinsate from vessel wash, (2) direct placement of acceptable liquid waste, or (3) contact storm water collected from active waste management units. The truck wash and the settling basins are designed as an interconnected system. The truck wash will have a 600 barrel capacity and will convey washout water into the settling basins. Each settling basin will be segmented into 8 individual collecting pits by weirs. Each collecting pit will measure 62 feet long, 12 feet wide, and 4 feet deep, with a capacity not to exceed 500 barrels. Two feet of freeboard will be maintained at all times. Waste materials will passively flow through the series of pits so that solid materials settle and are recovered for treatment and disposal in the drying pad, landtreatment unit, or disposal cells. Liquid materials are re-used in the truck wash or will be transported offsite for disposal in an authorized facility. Skim oil, if present, will be recovered.

The truck wash and settling basins will be constructed of reinforced concrete to contain all waste materials placed within them. Adjacent ground surfaces will be paved with a grade and curbing sufficient to prevent the runoff from flowing into the units.

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[6] 40 Code of Federal Regulations Part 261.

Drying Cell (DTC)

The drying cell will be used to hold moist solids for drying before disposal or landtreatment. Material may be placed in the drying cell either directly from waste haulers arriving at the site, or as wet material recovered from the truck wash and settling basins. The drying cell will cover an area of approximately 8 acres. It will be constructed with a 12-inch compacted clay liner overlain by a 60-mil HDPE liner. Above the liner a 12-inch thick layer of protective soil will be maintained and replaced as necessary, to protect the HDPE liner. The top of the protective soil layer will be about one foot below the surrounding grade. The drying cell will be surrounded by a 2-foot high earthen berm. Waste will be placed above the protective soil layer. The capacity of the drying cell will be 12,907 cubic yards.

Landtreatment Cells (LTC)

Four landtreatment cells ranging in size from 5 to about 20 acres (approximately 58 acres, total) will be located at the facility.[7] Waste will be spread on the landtreatment area to a thickness not to exceed 3 inches and immediately tilled into the soil. Fertilizer will be added to maintain optimum nutrient levels. After tilling, the waste material integrated into the soil will bioremediate; some components may volatilize into the atmosphere. Composite sampling and laboratory analysis of material from the surface treatment, waste treatment, and compliance treatment zones will determine when additional waste may be applied to the unit, as well as when the unit's capacity for treatment has been reached. A maximum of 12 inches of waste may be placed on each landtreatment unit. Tank bottoms will not be applied to any landtreatment cell.

Disposal Cells (DC)

The two disposal cells will provide for permanent entombment of waste. Each disposal cell will be 25 feet deep, cover about 12 acres, and when full will rise about 23 feet above grade. Each of the two disposal cells will have an individual capacity of about 700,500 cubic yards of waste. The second disposal cell will not become active until the first disposal cell has reached capacity, is not receiving any more waste, and has begun closure. The liner system for each disposal cell is described below, from top to bottom:

- 12 inches of protective soil above the liner system, preventing damage to the liner system during cell operation;
- 200-mil geo-composite (mesh) layer and leachate collection system, providing a drainage layer for cell leachate;

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[7] At the December 15, 2015 hearing the size of the revised landtreatment units were determined to be between 4 and 20 acres, for a total area of about 61 acres.

- Primary 60-mil HDPE liner;
- 200-mil geo-composite (mesh) leak detection net, providing a drainage layer to monitor leakage through the primary liner;
- Secondary 60-mil high density polyethylene ("HDPE") liner; and,
- 12 inches of compacted clay soil overlying undisturbed native soils;

Each disposal cell will be capped when capacity is attained, as follows:

- 12 inches of compacted clay will be placed on top of waste;
- 60-mil HDPE liner;
- 12 inches of vegetative top soil; and
- The capped disposal cell surfaces will be revegetated.

The leachate collection and leak detection systems will be monitored regularly according to permit conditions. The action leakage rate and failure thresholds are specified in the permit. The action leakage rate will be 100 gallons per acre per day or 1,200 gallons per day. Rates in excess of these amounts will trigger cessation of disposal activities, remedial investigation, and corrective action.

Storm Water Management

The facility will be surrounded by an earthen site perimeter berm that is at least 4-ft tall and has a minimum 1:3 slope (vertical to horizontal). The berm is designed to prevent uncontrolled storm water run-off from leaving the facility, and, in the limited locations where this is a possibility, to prevent drainage onto the facility from adjacent properties.

Precipitation that falls on the facility will be managed based on whether it is considered to be contact water or non-contact water. Contact water is water that may come into contact with waste and waste constituents within the boundaries of one of the active waste management units (active disposal cell that is not capped, drying cell, active landtreatment cells, and the truck wash and settling basins). Contact water will be contained within the waste management unit containment structures (i.e., berms, concrete, liners, etc.) that are required to be construted around each of the waste management units. Contact water will be evaporated, transferred to the settling basins, or removed from the site for disposal at an authorized facility.

Non-contact water is precipitation that lands on the facility but outside of the individual waste management units. Each waste management unit will be surrounded by a containment berm to prevent non-contact water from flowing into the waste unit and becoming contact-water. Similarly, the site will be graded to divert non-contact water from flowing into the truck wash and settling basins. Thus, non-contact water will not come into contact with waste or waste constituents. Non-contact water will be conveyed by gravity drainage into one of the three storm water retention ponds on the site.

There will be three surface drainage regimes on the site, each one providing for surface drainage of non-contact water into one of three storm water retention ponds. The maximum volume of non-contact storm water to be contained will occur after all waste management activities have ceased and the waste management units have been closed; at that time there will be no contact water generated on site. A 25-year, 24-hour storm event in DeWitt County is estimated to be 8.6 inches. The Texas Department of Transportation ("TXDOT") rainfall intensity-duration-frequency equations were used to calculate the potential volume of non-contact water requiring containment. The ponds are sized to accommodate drainage from the entire facility when the waste management units are closed. A discharge permit may be required from the U.S. EPA to release non-contact water from the retention ponds. Pyote will obtain discharge permits from U.S. EPA, if required.

Federal oil pollution prevention regulations, administered under the authority of the U.S. EPA, require certain facilities to prepare and implement a Spill Prevention, Control, and Countermeasure ("SPCC") Plan to reduce or eliminate oil discharges to navigable waters of the United States. Pyote will prepare a SPCC Plan and submit it to the Commission for approval prior to receipt of any waste material at the facility.

Monitoring and Testing

Waste materials delivered to the site for treatment or disposal will be evaluated by facility staff to determine which waste management unit is appropriate for initial receipt. Evaluation will include review of generator and transportation records will be reviewed; only material from authorized waste haulers will be accepted. Evaluation will also include composite sampling and laboratory analysis. Waste will also be screened for the presence of naturally occurring radioactive material ("NORM"). NORM waste will not be accepted.

Seven (7) ground water monitoring wells will be installed at the site, equally spaced, more or less, around the perimeter of the site (Attachment C). The monitoring wells will be completed in the shallowest groundwater-bearing zone, which is anticipated to be at a depth of 80 to 100 feet below ground surface. The monitoring wells will be sampled and samples analyzed for water quality characteristics and certain constituents on a quarterly basis. Pyote will analyze groundwater samples for boron to address a concern raised by the protestants.

Closure and Post-Closure

Pyote will secure a closure bond in the amount of $3,663,384.00 and place it with the Commission prior to any waste being received at the site. This closure bond will provide the Commission with the financial resources to permanently close the facility, if necessary. Commission staff reviewed the closure cost estimate and determined it was sufficient to meet the facility's closure needs.

Upon facility closure, all waste will be removed from the truck wash, settling basins and drying cell and properly disposed, either in the on-site disposal cell or at an authorized off-site facility. The concrete structures of the truck wash and settling basins will be cleaned and crushed prior to disposal. All berms will be leveled to original grade. Storm water retention ponds and associated drainage channels will be backfilled with clean fill and restored to natural grade. Topsoil will be seeded with appropriate vegetation. Excluding the disposal cells, the entire facility will be backfilled as necessary and contoured to original grade. Confirmation soil samples will be collected and analyzed to ensure constituent concentrations are below levels specified in the permit. The site will be inspected and monitored for a period of no less than five years after closure of the facility. Post-closure monitoring will be terminated only with permission from the Commission.

PROTESTANT'S EVIDENCE

Protestant CAP asserts the facility will result in pollution to surface water and ground water. In addition, CAP believes the facility will harm the overall quality of life of the Nordheim area, generate odors, diminish property values, and negatively affect the area's aesthetics, roadways and traffic. CAP believes the geotechnical studies Pyote and its consultants performed, to characterize the subsurface characteristics of the site of the proposed facility, to be inadequate to ensure that ground water and surface water will not be polluted.

In support of CAP's position, CAP offered into evidence several proclamations and resolutions from the Nordheim City Council, Nordheim Independent School District, City of Yorktown, and Yorktown Independent School District, and the DeWitt County Commissioners Court. DeWitt County Precinct 3 Commissioner James Kaiser testified that Hohn Road is a one-lane county road with a deteriorated shoulder. Mr. Kaiser is concerned that the proposed facility would hasten the deterioration of the roadway conditions.

The proposed facility is located within the area defined by the Texas Water Development Board as the Gulf Coast Aquifer. Mr. Paul Baumann, the adjoining land owner to the southeast, stated that his water well is about 60 feet from the facility property line. He stated his water well was drilled in 1988 and encountered a shallow water bearing sand at about 30 feet, but completed the well in a deeper interval at 150 feet. Mr.

Baumann also stated that he has encountered caliche and gravel at depths of 8 to 10 inches while setting fence posts on his property. Mr. Baumann grew up in the area and visited the subject facility tract and stated surficial soils there were similar to those on his own property.

CAP's expert geologist, Ms. Kristine Uhlman, developed a conceptual site model to characterize the geological setting for the deposition of sediments that are now observed on and under the subject tract. This model included a variety of changing depositional facies including advancing and retreating sea levels, stream bed erosion and fill, and high and low energy depositional environments. Based on this conceptual model, Ms. Uhlman would expect to see interfingering of depositional media (clays, silts, sands, etc.) across the area representing the varying and changing depositional facies. The shallow subsurface geology mapped by Pyote's consultants, however, did not appear to Ms. Uhlman to represent the expected variety and interbedding of strata. CAP believes the soil boring and sampling regimen was not sufficient to adequately characterize the subsurface. Nine soil borings are not adequate to characterize the subsurface heterogeneity of a 143 acre tract in this area. Specifically, CAP identified the following shortcomings:

- Original field logs were not provided for soil borings SB-3 through SB-9, and sample recovery was not documented;

- Surface elevations of soil boring locations were not obtained to accurately prepare cross sections for analysis;

- An inadequate number of geotechnical samples were submitted for laboratory analysis to confirm field observations and characterize the presence and continuity of subsurface strata, especially for high plasticity (fat) clays; and

- Soil classification was not complete without hydrometer and permeability analysis.

CAP was critical of several aspects of the subsurface investigations performed by Pyote and their engineers DBS and PBW. In the initial investigation, DBS drilled two soil borings (SB-1 and SB-2) to depths of 100 feet. The original application materials included soil boring logs, signed and sealed by a licensed geoscientist, indicating field notes and sample recovery data. PBW later drilled an additional seven soil borings on the site. PBW did not submit original detailed logs, but instead submitted a columnar description of the strata encountered that was not signed or sealed by a geoscientist. For each soil boring, PBW submitted only one sample to a geotechnical laboratory for soil classification. In two cases, samples from different soil borings were inadvertently composited prior to analysis.

CAP disputes Pyote's interpretation of a single clay layer (classified as "CH", or "fat") being thick and continuous below the site. It asserts the soil boring logs prepared by DBS

from SB-1 and SB-2 contained significantly more useful information than the brief logs for SB-3 through SB-9, which were drilled and logged by PBW.

CAP's representatives conducted an escorted site visit, during which it made several observations. CAP did not obtain photographic evidence of its field observations to provide at the hearing. It did, however, provide the following testimony:

- An erosional headcut was observed in the northeast corner of the site, with anecdotal statements from nearby residents of a possible spring in the area, although dry at the time of the site visit. It is not clear if the headcut erosional feature was the result of surface drainage or a spring;

- Caliche drill cuttings (spoils) were observed in the possible locations of several soil borings, which might indicate untillable soil in the areas of the proposed landtreatment cells; and

- Historically terraced soils were observed on the site, likely as a means to mitigate the erosion of surficial soils.

The site is located on the Gulf Coast Aquifer. CAP believes the site to be a recharge zone, as discontinuous lenses of sand, silt and clay would not retard the vertical migration of waste constituents into the groundwater bearing zones, which may be shallower than the 88 feet identified by Pyote. In addition, CAP is concerned about the potentially detrimental effect of salt-bearing waste on the permeability of clay liners beneath the waste management units. Salt may dramatically increase the permeability of clay liners and enable the migration of waste constituents into the shallow groundwater. Further, CAP recommends that regular monitoring well sampling analysis include analysis for boron, which is mobile in the subsurface and may be a harbinger of subsequent contaminant migration.

Paul Fahrenthold, chemical engineer, testified on behalf of CAP with regard to waste materials and their potential to generate air emissions. Waste materials placed in the waste management units may result in odors or air pollution. Of particular concern to Mr. Fahrenthold CAP are "tank bottoms" (i.e., sediment from storage tanks associated with oil storage, waste water storage, or gas plants) which may contain relatively high concentrations of volatile constituents. Volatile constituents will readily evaporate into the atmosphere and will not be contained by the waste management units.

EXAMINERS' OPINION – SEPTEMBER 2014 HEARING

Statewide Rule 8(d)(6)(A) [16 Tex. Admin. Code § 3.8 (d)(6)(A)] states that a permit to maintain or use a pit for storage or disposal of oil and gas wastes may only be issued if the Commission determines that the maintenance or use of such pit will not result in the

waste of oil, gas, or geothermal resources or the pollution of surface or subsurface waters. Upon consideration of all of the evidence admitted during three days of hearings, the Examiners conclude that Pyote has met its burden of proof and recommend that the permit be granted.

The preponderance of the evidence demonstrates that a significant high plasticity clay stratum exists below the proposed site, and that this stratum will impede the vertical migration of fluids. In addition, there are many feet of low-plasticity clay, which will also impede fluid movement through the subsurface. The top of the high plasticity clay stratum is encountered at a depth of about 11 to 24 feet. The disposal cells will be excavated to a depth of 25 feet. The high plasticity clay interval ranges in thickness from 25 feet to 56 feet, generally thickening from southwest to northeast; it is continuous and correlatable across the site.

CAP's offered site model is a starting point for characterization and is intended to be used in an iterative manner. That is, the model should be updated or revised as site-specific information becomes available; a conceptual site model is not intended to constrain the outcome of interpretation. The Examiners conclude in light of the evidence as a whole that CAP's conceptual site model anticipated the interbedded or inter-fingering character of the subsurface strata on a much smaller scale than actually exists in the subsurface. The evidence supports the Examiners' conclusion that further investigation would not result in information that would substantively alter the suitability of the site or the design, construction, and operational procedures of the facility.

The field sampling identification and confirmation with laboratory analysis was sufficient to classify subsurface samples in accordance with standards set by the American Society of Testing and Materials ("ASTM"). Cross sections prepared by PBW were based on surface elevation contours from U.S. Geologic Survey topographic data, a method of sufficient accuracy for the stated purpose of the work.

The proposed facility is located in an area designated as the Gulf Coast Aquifer. The parties disagree as to whether or not the site is located within a recharge zone. The Protestant contends the site is in a recharge zone, but its evidence of a recharge zone is limited to its conceptual site model. The demonstrated presence of the high plasticity clay stratum provides a primary indication that the site is not located within a recharge zone. This stratum, coupled with the engineered liner systems, storm water control measures, and groundwater monitoring well network, will all work in concert to segregate and contain waste and waste constituents from causing the pollution of fresh surface water or ground water.

The proposed waste management units meet the requirements of Statewide Rule 8 and the Commission's current guidance document for such facilities, the Surface Waste Management Manual. The disposal cells will include natural and engineered liners, a leachate collection system and a leak detection system. All of the waste management

units will include natural and/or artificial liners. All of the waste management units will be contained by berms and/or grading to isolate contact storm water from non-contact storm water. Contact storm water will be managed on site or disposed of at an appropriate facility. Non-contact storm water will be retained in three surface impoundments to control discharge and runoff.

Pyote has demonstrated that the proposed landtreatment units are underlain by at least 20 inches of tillable soil. There is some evidence of granular material–notably Mr. Baumann's statement about caliche and gravel at fencepost locations–in the shallow subsurface. Pyote's own soil borings indicate calcareous nodules in the subsurface. But Pyote's engineering testimony and evidence indicates that the subsurface is tillable to a depth of 20 inches, and the soil in this zone exhibits characteristics compatible with landtreatment of oil and gas waste.

The Applicant has proposed changes to several conditions of the proposed draft permit to address concerns raised by the Protestant. Pyote has asked the Commission to require the monitoring well groundwater samples be analyzed for boron, because the Protestants have indicated boron to be a key harbinger constituent for monitoring. Pyote has requested the permit prohibit the placement of tank bottom waste into any landtreatment cell to reduce the potential for volatilization of organic constituents into the atmosphere. Pyote has also opted to install 60-mil HDPE liners (in place of 40-mil HPDE liners) in the drying cell and the disposal cells. The proposed permit includes each of these changes.

The Protestants observed a headcut, an erosional feature, in the northeast corner of the site near one of the proposed storm water retention ponds. The cause of the headcut was not explained, but several possible explanations were discussed. The location is at the bottom of a slope and adjacent to both Hohn Road and an unimproved road that leads to Mr. Baumann's property. An under-sized culvert was located to drain that area. One possible cause of the headcut is an intermittent spring, and another is erosion by surface drainage when water backs up in that corner. The Examiners note that a wetlands study conducted as part of the application did not identify any wetlands or wetland vegetation on the site. While a spring is a possibility, the evidence suggests that the likely cause has to do with surface runoff and drainage issues caused by the hillside, road junction, and undersized culvert. The storm water retention ponds will be subject to regular inspection and corrective actions taken in the event of erosion.

The Protestants are concerned about odors and air pollution from the facility. Odors and air pollution are not within the jurisdiction of the Commission; such emissions may be subject to regulation from the Texas Commission on Environmental Quality ("TCEQ"). Pyote has stated it will obtain any necessary air permits from TCEQ. The proposed permit requires Pyote to obtain these permits, if determined to be necessary by TCEQ rules, prior to the receipt of waste at the facility.

The facility may require a permit from the U.S. EPA for the discharge of non-contact storm water into the surface drainage courses adjacent to the facility. The proposed permit requires Pyote to obtain such a permit, if necessary, prior to discharge.

The facility will be accessed from State Highway 72 by Hohn Road, a narrow county road. The Protestants have expressed concerns about the increased quantity of traffic and roadway safety through Nordheim and on Hohn Road, as well as the degradation of these roadways. Traffic and roadway safety matters are not within the jurisdiction of the Commission.

Finally, opponents of the permit are concerned that the proposed Pyote Hohn Road Facility will have a disproportionately large impact on the nearby small community of Nordheim, adversely impacting their community and their lives. Similarly, Protestants argue that the oil and gas industry's need for waste management services does not include a location at the proposed site. Statewide Rule 8 does not provide discretion to the Examiners, or require the Examiners to find, that a proposed facility is in the public interest prior to a permit being issued. The Examiners conclude that Pyote has met its burden of proof that the proposed facility will prevent the waste of hydrocarbons and has been designed and will be constructed and operated in a manner that will not cause the pollution of fresh surface and subsurface water.

DECEMBER 2015 RE-OPENED HEARING

On December 15, 2015, the record was reopened for the limited purpose of considering the appropriate storm water event to be used as a design criterion for the facility, and affording the parties the opportunity for cross-examination as well as the opportunity to present evidence in support of its view of the correct storm water management standard.

Staff's Determination of Appropriate Design Criterion

Commission practice is to design storm water management plans and systems based on the expected precipitation from a 25-year/24-hour storm event, as such an event is established by the National Oceanic and Atmospheric Administration. In the Nordheim area, such a storm event would result in about 8.6 inches of rain. Following the remand of this matter, Commission staff determined that, in this particular case, the 50-year, 24-hour storm (about 10.08 inches) is the appropriate event for engineering design consideration. Grant Chambless, Manager of Environmental Permitting for the Commission's Oil & Gas Division, testified:

> *(T)here are characteristics that are specific to this location that were taken into account. So some additional safety factors or safety measures were implemented to adjust for the large volume generated in the 50-year/24-*

hour rain event. And those conditions, primarily, are the site lithology, the site topography, and the proximity to surface water.[8]

Applicant's Revisions with Regard to Storm Water Management

Mr. Chambless communicated this determination by telephone to Pyote's engineering consultant, who, in turn, revised the storm water management plan to accommodate the 50-year/24-hour event. Generally, these revisions included deepening the storm water retention ponds on the site to accommodate the expected volume of runoff plus two feet of freeboard, and accompanying changes to the configuration and size of some of the waste management units. Mr. Chambless stated that Pyote's calculations demonstrate the redesigned ponds would also accommodate a 100-year/24-hour storm event (11.28 inches), although in such an event two feet of freeboard could not be maintained in the storm water retention ponds. In addition, Mr. Chambless and his staff requested several additional modifications be made to facility storm water management features, including the following:

- Remove the effluent discharge culverts from the storm water ponds, such that there would not be an automatic means of release from the ponds. Thus, in the event of a catastrophic failure in which all internal waste management unit berms failed during a 50-year/24-hour event and contact water was directed to the storm water retention ponds, contact water would not be incidentally released to the environment;

- Add bump curbs and pavement grates to redirect and collect non-contact storm water at entry points and exits; and

- Modify the trenches inside of the perimeter berms to facilitate non-contact storm water flow into the retention ponds, including the addition of rip-rap for erosion control.

Staff Exhibit No. 2 was a revised draft permit prepared by Commission Staff, incorporating changes that reflect adoption of the 50-year/24-hour storm event as a design criterion. The Exhibit contains a revised site plan (Attachment D), and other figures, including cross-sections illustrating details of various design and grading features. Mr. Chambless could not identify the date upon which he communicated the revised design criterion to Pyote. The revised site design diagrams were received from Pyote on September 28, 2015.

By letter to Mr. Chambless dated September 17, 2015, Protestant CAP requested to be included in all oral and written communication between Commission

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[8] Tr. 28:7 through 28:1 (December 15, 2015).

staff and Pyote as revisions to the storm water management plan are developed. However, CAP was not included in communications between Staff and Pyote, and CAP was not informed of Staff's determination and Pyote's application revisions until the October 2, 2015 prehearing conference.

The evidence in the record from the December 15, 2015 re-opened hearing indicates Commission Staff, Pyote and CAP agree the 50-year/24-hour storm event is the appropriate design criterion. The Examiners conclude that the 50-year/24-hour storm event is the appropriate design criterion.

Protestant's Concerns with the Revised Application

CAP does not dispute Staff's determination that a 50-year/24-hour storm event is the appropriate design criterion for the proposed Hohn Road Facility. CAP did, however, raise a number of concerns with the adequacy of the revised design to accommodate the increased risk of harm from a 50-year/24-hour event and remain protective of fresh ground and surface water resources. The increased rainfall rate will result in increased runoff, increased erosion potential, increased storm water storage capacity needs, and increased infiltration potential of contact storm water. The insufficiency of the revised design, CAP argues, will increase the risk of harm to fresh surface and ground water resources. Contested elements of the site design will be taken in turn.

Storm Water Runoff Volume Estimates

CAP asserts that Pyote's calculations underestimate the volume of runoff generated by a 50-year/24-hour storm event, and therefore the storm water retention ponds are too small. CAP asserts the curve numbers forming the basis of the calculation were inappropriately selected by Pyote. A smaller curve number indicates more infiltration and less runoff; a larger curve number represents less infiltration and more runoff. Ms. Uhlman, CAP's expert geologist, stated that Pyote's use of a curve number for gravel to model the active landtreatment cells allows for about 33 percent of the storm water load to infiltrate into the ground, resulting in less runoff to the storm water ponds.[9]

Runoff estimates were based on the methodology specified in the U.S. Department of Agriculture's ("USDA's") Publication No. TR-55, "Urban Hydrology for Small Watersheds", which includes guidance for selecting curve numbers. In its estimates, Pyote used a curve number of 69 for grass and vegetated areas in fair condition, and a curve number of 85 for gravel roadways and active waste units.

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[9] Tr. pgs. 145-148 (December 15, 2015).

First, the Examiners conclude Pyote's selection of curve of numbers to be reasonable and appropriate for the site and consistent with the selection guidance provided in the USDA manual. That is, "gravel" is identified in the manual as an impervious pavement type, consistent with the present context. In this sense, "gravel" should not be construed to be a permeable and porous surficial soil type or lithology.

Second, the Examiners note that the curve numbers used in Pyote's September 2015 revised storm water calculations were slightly different from those submitted in the August 2014 version. In addition, the revised plan reflects changed drainage areas into each of the three ponds. As indicated in the table below, however, these changes tended to be towards higher curve numbers (increasing from 71.3 to 80.7), which result in increased design storm water runoff volumes. The Examiners conclude the revised calculations adequately account for runoff potential.

	August 2014 Storm Water Plan[10]		December 2015 Revised Storm Water Plan[11]	
Pond Name	Drainage Area	Area Weighted Curve Number	Drainage Area	Area Weighted Curve Number
North	56.1 acres	72.4	44.0 acres	79.9
South	33.4 acres	70.6	45.2 acres	84.0
East	53.7 acres	70.5	44.1 acres	78.2
	143.2 acres (total)	71.3 (area wt. avg.)	133.3 acres (total)	80.7 (area wt. avg.)

The revised storm water plan indicates a reduced drained acreage (133.3 acres, down from 143.2 acres). This appears to be the result of spatial reconfiguring of the waste management units and drainage features. The proposed draft permit requires the storm water retention ponds to have adequate capacity to store runoff from a 50-year/24-hour storm event in the event all internal waste management containment structures fail (provision X.E.). As designed, the ponds are capable of storing runoff from a 100-year/24-hour storm event, although in such a situation 2 feet of freeboard will not be maintained.

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[10] Pyote Exh. No. 7.

[11] Staff Exh. No. 2.

Drainage into Storm Water Retention Ponds

CAP expressed concern that storm water may pool within the perimeter dike system and not drain to the storm water retention ponds. Specifically, Mr. von Dran, CAP's engineering witness, identified the area near LTC-1A as susceptible to this concern.[12]

The Examiners do not read the revised site plan (Attachment D) in the same way. The site plan does illustrate drainage of non-contact storm water from the LTC-1A area along the perimeter dike and into Storm Water Retention Pond North. The path is somewhat tortuous, but the site plan grading indicates drainage into the pond. There may be some confusion between contact and non-contact storm water in this regard. Contact storm water will be contained by the unit berm within LTC-1A itself, and Pyote will be required to dispose of the contact water in an authorized manner according to the proposed draft permit (provision X.C.).

Storm Water Retention Ponds as Failsafe Containment for Contact Water

Commission Staff requested Pyote to remove drainage culverts from the storm water ponds. Thus, in the event of a catastrophic failure of all waste unit containment systems, all contact storm water would drain to and be held within the storm water ponds. The ponds would no longer automatically discharge stored water to the off-site surface drainage pathways via culverts. CAP contends this change should cause the storm water ponds to be regarded as waste management units. That is, the storm water retention ponds should now be regarded as containment units for contact water and designed accordingly.[13]

The Examiners believe this is not the case. First, the potential for catastrophic failure of all internal waste unit containment structures was also a possible, albeit remote, consideration in the original design. No waste management practices have changed. Under the original design, the non-contact storm water ponds were each drained by a culvert. Now, without the culverts (they were removed at Staff's request) the ponds cannot drain at all. This feature increases the protection of surface water by further reducing the likelihood of a release of contact storm water.

The Examiners note that the proposed draft permit (provision X.F.) requires Pyote to notify the Commission in writing in the event contact storm water enters the retention ponds. Further, the proposed draft permit requires contact storm water to be disposed of in an authorized manner (provisions X.C. and X.F.). Discharge of non-contact storm water may require a permit from the U.S. EPA (provision X.H.).

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12 Tr. pgs. 131-132.

13 Tr. pg. 82.

Deepening of Storm Water Retention Ponds and Infiltration

The storm water retention pond configuration was revised to accommodate larger volumes of runoff from the 50-year/24-hour storm event than what would be expected from a 25-year/24-hour event. Notably, the ponds were deepened about 2 feet. CAP contends deepening the ponds increases the risk of contaminant infiltration into the subsurface by increasing the hydraulic head on the unlined pond floors (by 2 feet if the ponds are full). Of special concern to CAP is the pipeline easement that crosses the site, as the pipeline right-of-way runs close to all three and directly between two of the storm water retention ponds. Further, CAP asserts, that if the storm water retention ponds receive contact water–which would likely include salts from oilfield waste, and therefore be corrosive–the pipeline integrity could be affected.

The Examiners acknowledge that a standing column of water in the storm water ponds may infiltrate into shallow porous strata, but the Examiners do not find the potential to harm fresh ground or surface water exists. Although there are some shallow porous materials underlying the site, no shallow groundwater was encountered at the site above the thick and continuous clay layer that dominates the geologic/hydrologic regime. Further, and for reasons discussed above, the storm water ponds are not designed and will not be used for the management of waste materials or contact storm water. The hypothetical and catastrophic scenario considered for design purposes was precautionary, and, if it were to happen, Pyote would be required to notify Commission Staff in the event contact water enters the storm water ponds (provision X.F.).

Engineering Considerations

CAP raised several concerns regarding the engineering design and construction materials of specific aspects of the revised site plan (Attachment D), especially considering the increased design stress from a 50-year/24-hour storm event. In particular, Mr. Von Dran identified the following concerns:

- There is no evidence in the record to suggest that on-site soils possess the necessary engineering characteristics to ensure their suitability for use as construction materials in unit containment and perimeter berms[14];
- The revised site plan indicates the perimeter berm will be located atop a 20-foot earthen embankment adjacent to LTC-1a and Hohn Road and an unnamed ephemeral stream (see Attachment D), and such an embankment would be highly susceptible to erosion[15]; and

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[14] Tr. 111: 17-22 (December 15, 2015).

[15] Tr. 113: 9-15 (December 15, 2015).

- During a recent site visit, CAP photographed an erosional scar adjacent to Hohn Road in the vicinity of the proposed Storm Water Retention Pond North (CAP Re-opened Exhibit No. 5), suggesting on-site materials may not be capable of adequately resisting erosion.

The Commission has established rules, standards, policies and guidance to ensure that waste management activities do not harm fresh ground or surface water. The Commission's rules, standards, policies and guidance work in conjunction with the performance standards and expectations that are invoked by the State's certification of professional engineers and geologists. Indeed, the Commission's Surface Waste Management Manual states:

> *Engineering and geologic work products must be prepared under seal of a registered engineer or geologist, respectively, as required by the Occupations Code Chapters 1001 and1002.*[16]

The Examiners understand that not every engineering detail is considered by Staff during the review of a particular permit application. The Commission does not have the resources to undertake such an evaluation of minutely small details, and applicants are not expected to present ready-to-build design documents for permitting purposes. However, the Commission reserves the right to request more detailed plans and specifications as warranted by individual circumstance, and the issuance of a permit burdens the operator with the legal responsibility to ensure that permit compliance is achieved.

The Examiners note that unit containment and perimeter berms required by the proposed draft permit are engineered structures designed and built to responsibly contain waste, contact water, or storm water, as appropriate. As engineered structures, the berms will be designed and maintained in a manner to prevent erosion. CAP's expert is correct that the available on-site soils have not been demonstrated to be suitable material for berm construction. Pyote's responsibility is to construct berms that meet the requirements of the permit as well as relevant guidance and professional practice, whether that requires making use of on-site soil or importing suitable material. The Examiners note the Commission's design standard for an earthen berm, according to the Surface Waste Management Manual, is for material that is capable of achieving a permeability of 1×10^{-7} centimeter per second or less when compacted. Further, the Manual states that during construction, successive lifts should not exceed nine inches in thickness, and the surface between lifts should be scarified to achieve a good seal. Pyote may attempt to use on-site soil, as is or amended, or it may import new material for use in engineered structures

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[16] *See* http://www.rrc.state.tx.us/oil-gas/publications-and-notices/manuals/surface-waste-management-manual/

provided the material meets appropriate compaction and permeability standards. The Examiners note that erosion of containment structures and systems would demonstrate noncompliance with permit requirements.

Closure/Post-Closure Cost Estimate and Financial Security

The Examiners conclude the closure/post-closure cost estimate ($3,089,585) provided in the proposed draft permit (I.B., Staff Exhibit No. 2) is not correct. This value appears to be a carry-over from an earlier closure cost estimate from a time prior to the September 2014 hearing (Pyote Exh. No. 34). At the September 2014 hearing that closure cost estimate was increased–expressly to cover the additional cost of backfilling three storm water ponds–to $3,556,702 (Pyote Exh. No. 35), and again to $3,663,384 to cover the higher cost of 60-mil liner (Pyote Exh. No. 41). The closure/post-closure cost estimates included $366,338 as a 10 percent precautionary contingency.

However, the revisions Pyote now offers to address the 50-year/24-hour storm event alter certain site characteristics, including the size of the storm water retention ponds and some of the waste management units. The net effect of these changes on Pyote's financial assurance obligation for closure/post-closure costs have not been assessed by Pyote or Commission Staff–no evidence in this regard was offered at the December 15, 2015 hearing. The Examiners have not attempted to calculate a revised closure/post-closure cost estimate, although a rudimentary estimate the 10 percent contingency contained within the closure/post-closure cost estimate appears sufficient to substantially cover any variance. The total volume of the storm water ponds increased from about 127,000 cubic yards (cy) to 163,000 cy, or about 28 percent, which roughly corresponds to an increased cost for storm water pond closure of about $120,000 (Pyote Exh. No. 41, Staff Exh. No. 2). The total area of the active landtreatment cells increased from about 57.4 acres to 60.8 acres, or about 6 percent, roughly corresponding to an increase cost for landtreatment unit closure of about $10,000 (Pyote Exh. Nos. 13 and 41, Staff Exh. No. 2). The total disposal area decreased slightly (0.7 acres), and the configuration of other waste management units were unchanged. Broadly speaking, and without a more detailed review, the Examiners conclude the $3,663,384 estimate for closure/post-closure costs to be sufficient.

SUMMARY

The Examiners conclude the evidence in the record assembled at hearings in September 2014 and December 2015 demonstrate that construction and operation of the proposed Hohn Road Facility will not result in the waste of oil, gas, or geothermal resources or the pollution of surface or subsurface water. Further, the appropriate storm water design criterion for this facility is the 50-year/24-hour storm event.

FINDINGS OF FACT

1. Notice of the application was mailed on April 4, 2013 to the offsetting landowners. On April 10, 2013, notice of the application was published in *The Cuero Record*, a newspaper of general circulation in DeWitt County.

2. Pyote Reclamation Systems LLC ("Pyote") seeks authority to maintain and operate a facility for the treatment and disposal of non-hazardous oil and gas waste under the jurisdiction of the Railroad Commission of Texas ("Commission").

   a. Pyote has current and active Form P-5.

   b. The proposed facility will occupy 143 acres of a 204 acre tract about one-quarter mile east-southeast of Nordheim, DeWitt County, Texas (Attachment A).

3. The application is protested by Concerned About Pollution an organization representing members who own land adjoining, adjacent, and near the proposed facility tract.

4. The proposed facility is located on a topographic high, and surface water will not run-on to the facility areas from adjacent properties.

   a. The southwest corner of the site contains a stock pond and an intermittent drainage course.

   b. The stock pond and intermittent drainage course are outside of the facility area to be enclosed by the perimeter berm.

5. The 50-year, 24-hour storm event in DeWitt County is 10.08 inches of rainfall. The average annual precipitation is 35 inches, and the annual evaporation is 53 inches.

   a. The 25-year, 24-hour storm event in DeWitt County is 8.6 inches of rainfall.

   b. The 50-year/24-hour rain event is the appropriate storm water design criterion based on the site lithology, the site topography, and the proximity to surface water.

6. Nine soil borings were drilled on the site to a depth of 100 feet.

   a. The landtreatment areas have 20 inches of tillable soil.

b. Laboratory analysis of soil samples from the top 24 inches indicate the surficial soils are suitable for landtreatment of oil and gas wastes.

c. Four generalized strata were identified in the subsurface, from top to bottom: a low plasticity (CL) silty clay; high plasticity clay (CH, or "fat"); silty clay with silt (CL); and sand (SM or SP). There is some variability within these intervals.

d. Groundwater was encountered in seven soil borings at depths below 88 feet, in the sand interval.

e. The high plasticity clay interval ranges in thickness from 25 feet to 56 feet, generally thickening from southwest to northeast. The top of the high plasticity clay was encountered from 10 to 25 feet below ground surface. This stratum is continuous and correlatable across the site, impervious to and it will impede the movement of contaminants in the subsurface into the deeper fresh groundwater zones.

7. The subsurface yields a fresh groundwater resource at depths below the high plasticity clay and shallower than 200 feet in a well on the site and through wells on nearby properties. No groundwater was identified on the site within or above the high plasticity clay stratum.

a. Two City of Nordheim water wells are located about 3,000 feet west of the site. These wells produce from the Oakville Sandstone at depths of 600 to 1,100 feet.

8. The facility will include a truck wash, two settling basins, a drying cell, four landtreatment cells, and two disposal cells (Attachment D).

a. Waste received at the facility will be tested for total organic halides ("TOX"). All incoming waste other than water and oil base mud and cuttings will be screened for naturally occurring radioactive material ("NORM"). Waste not meeting the permit requirements will not be accepted at the facility.

b. The facility will not accept hazardous waste, NORM waste, or any waste not under the jurisdiction of the Commission.

9. Liquid waste will be separated into solids and liquids using the truck wash and settling basin system.

a. The truck wash will be the receiving point for liquid waste entering the settling basins, either as (1) rinsate from vessel wash, (2) direct placement of

acceptable liquid waste, or (3) contact storm water collected from active waste management units.

b. The truck wash will have a 600 barrel capacity and will convey washout water into the settling basins.

c. Each settling basin will be segmented into 8 individual collecting pits by weirs. Each collecting pit will measure 62 feet long, 12 feet wide, and 4 feet deep, with a capacity not to exceed 500 barrels. Waste materials will passively flow through the series of pits so that solid materials settle and are recovered for treatment and disposal in the drying pad, landtreatment unit, or disposal cells. Liquid materials are re-used in the truck wash or will be transported offsite for disposal in an authorized facility. Skim oil, if present, will be recovered.

d. The truck wash and settling basins will be constructed of reinforced concrete to contain all waste materials placed within them. Adjacent ground surfaces will be paved with a grade and curbing sufficient to prevent the runoff from flowing into the units; two feet of freeboard will be maintained.

10. The drying cell will be used to hold moist solids for drying before disposal or landtreatment. The drying cell will cover an area of approximately 8 acres. It will be constructed with a 12-inch compacted clay liner overlain by a 60-mil HDPE liner. Above the liner a 12-inch thick layer of protective soil will be maintained and replaced as necessary. The capacity of the drying cell will be 12,907 cubic yards.

11. Waste placed in the landtreatment or disposal cells must pass a paint filter test, and thus contain no free liquids.

12. Four landtreatment cells ranging in size from 4 to about 20 acres (approximately 61 acres, total) will be located at the facility. Waste will be spread on the landtreatment area to a thickness not to exceed 3 inches and immediately tilled into the soil. Composite sampling and laboratory analysis of material from the surface treatment, waste treatment, and compliance treatment zones will determine when additional waste may be applied to the unit, as well as when the unit's capacity for treatment has been reached. A maximum of 12 inches of waste may be placed on each landtreatment unit. Tank bottoms will not be applied to any landtreatment cell.

13. The two disposal cells will be 25 feet deep, approximately 12 acres is size, and have a combined above ground and below ground capacity of about 700,500 cubic yards. One disposal cell will be active at a time. The cells will be constructed with two 60-mil HDPE liners, a leachate collection system, and a leak detection layer.

14. Storm water will be managed as contact and non-contact storm water.

a. The entire facility area will be encompased by a 4-foot high earthen perimeter berm.

b. All active waste management units will be enclosed by a 2-foot high earthen berm or concrete containment feature.

c. Contact storm water will be contained within the waste management units until it can be evaporated, moved to the settling basins, or removed from the site for disposal at an authorized facility.

d. Non-contact storm water will be contained within on-site drainage courses and channeled to three storm water retention ponds.

   i. The storm water retention ponds are designed with sufficient capacity to hold the predicted runoff from a 50-year/24-hour storm event and maintain 2 feet of freeboard.

   ii. The storm water retention ponds are designed with sufficient capacity to hold the predicted runoff from a 100-year/24-hour storm event, without 2 feet of freeboard.

e. Pyote will obtain a permit from the U.S. EPA, if necessary, for discharge of non-contact storm water.

f. A Spill Prevention Control and Countermeasures Plan will be prepared and submitted to the Commission for approval before the facility begins to receive waste.

15. Before waste can be accepted at the facility, the Pyote must:

a. File financial security in the amount of $3,663,384.00, which will cover the cost of closure.

b. Record and file with Technical Permitting a restrictive covenant, executed by the landowner of the site where the facility will be located, stating that any soil necessary for closure can be used by Pyote or the Commission to close the facility.

c. Install the seven monitoring wells required by the permit.

d. Prepare and submit for approval a Spill Prevention Control and Countermeasures Plan.

e. Pass an inspection by the Commission's District Office.

f. Obtain any necessary air emission permits from the TCEQ.

g. Obtain any necessary storm water discharge permits from the U.S. EPA.

16. Upon facility closure, all waste will be removed from the truck wash, settling basins and drying cell and properly disposed, either in the on-site disposal cell or at an authorized off-site facility.

a. The concrete structures of the truck wash and settling basins will be cleaned and crushed prior to disposal.

b. All berms will be leveled to original grade.

c. Storm water retention ponds and associated drainage channels will be backfilled with clean fill and restored to natural grade.

d. Topsoil will be seeded with appropriate vegetation.

e. Excluding the disposal cells, the entire facility will be backfilled as necessary and contoured to original grade.

f. The disposal cells will be closed by capping with a 60-mil HDPE liner, recompacted soil, topsoil and vegetative cover.

g. Confirmation soil samples will be collected and analyzed to ensure constituent concentrations are below levels specified in the permit.

h. The site will be inspected and monitored for a period of no less than five years after closure of the facility.

i. Post-closure monitoring will be terminated only with permission from the Commission.

17. No waste of oil, gas or geothermal resources will result from the proposed disposal operations.

18. The proposed waste management and disposal operations will not result in the pollution of fresh surface or subsurface water.

CONCLUSIONS OF LAW

1. Resolution of the subject application is a matter committed to the jurisdiction of the Railroad Commission of Texas. Tex. Nat. Res. Code § 81.051

2. All notice requirements have been satisfied. 16 Tex. Admin. Code § 1.45

3. The maintenance and use of pits for the storage or disposal of oil and gas wastes will not result in the waste of oil, gas, or geothermal resources or the pollution of surface or subsurface waters. 16 Tex. Admin. Code § 3.8 (d)(6)(A).

4. Statewide Rule 8 (16 Tex. Admin. Code § 3.8) does not require Pyote to demonstrate, and the Examiners are not required to find, that the proposed facility is in the public interest or that there is an ongoing need for such a facility.

RECOMMENDATION

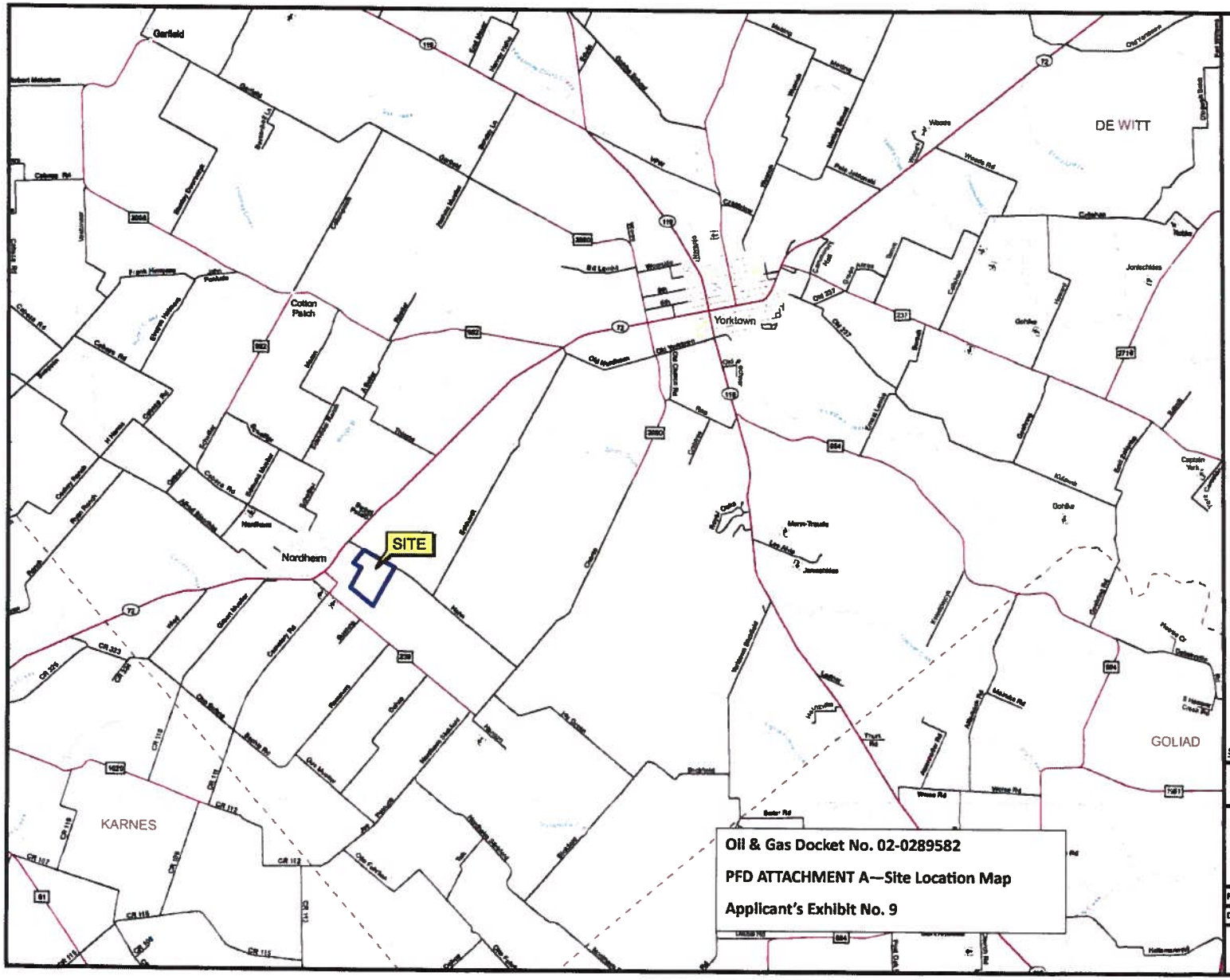
Based on the above findings of fact and conclusions of law, the Examiners recommend GRANTING the application of Pyote Reclamation Systems, LLC, pursuant to Statewide Rule 8 for a permit to maintain and operate the Hohn Road Facility, a commercial stationary treatment and disposal facility, in Dewitt County, Texas.

Respectfully submitted,

Paul Dubois
Technical Examiner

Marshall Enquist
Administrative Law Judge

Pyote Reclamation Syst Ex. No. 9
O&G Dkt No. 02-0289582
Sept. 10-11, 2014



EXPLANATION

Subject Property Boundary

TEXAS
MAP LOCATION

N

Approx. Scale in Miles
0 0.75 1.5

Source: County Grid Map 468, TXDOT, 2010.

PYOTE RECLAMATION SYSTEMS, LLC
HOHN ROAD FACILITY

SITE LOCATION MAP

PROJECT: 1925	BY: AJD	REVISIONS
DATE: SEPT., 2014	CHECKED: KAW	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

SOUTHCROSS ENERGY

1717 Main Street, Suite 5200
Dallas, TX 75201

PH: 214.979.3700
FAX: 214.979.3719

February 11, 2016

Railroad Commission of Texas
Hearings Division – Docket Services Section
1701 North Congress Avenue
P.O. Box 12967
Austin, Texas 78711-2967

RE: Oil & Gas Docket No. 02-0289582 - Pyote Reclamation Systems LLC

Dear Sir or Madam:

It has recently come to the attention of Southcross Gulf Coast Transmission Ltd. ("Southcross") that the Railroad Commission of Texas (the "RRCT") is considering a permit application from Pyote Reclamation Systems LLC ("Pyote") to construct and operate an oilfield waste disposal and treatment facility in DeWitt County near the City of Nordheim, Texas (the "Pyote Facility"). Southcross understands that the Pyote Facility will be surrounding and directly bordering an active Southcross natural gas pipeline easement. Southcross' easement is occupied by an active 8" pipeline transporting unprocessed natural gas. Within this pipeline, minor quantities of condensed hydrocarbon liquids could exist.

Despite being a potentially affected entity, Southcross has never been notified of the proposed plans and permit application for the Pyote Facility. Instead, as mentioned earlier, Southcross had to learn about the permit application for the Pyote Facility from third party sources. Based on its limited knowledge of the Pyote Facility's plan of construction and operation, it is possible that the Pyote Facility could have significant risks or adverse consequences toward Southcross' pipeline operation and easement. Southcross considers those risks to include:

a. Possible groundwater impacts that could be falsely attributable to its pipeline operation.
b. Surface disturbance or runoff water erosion impacts due to grading and surface contour alterations of the adjacent Pyote Facility site.
c. Increased risk of third party damage to its pipeline due to the presence of earth moving equipment in the immediate vicinity and/or across its pipeline easement.
d. Reduced access by Southcross to operate and maintain its surface easement and underground 8" pipeline.

Southcross recognizes the industry's need for waste management services. While it is not, at this time, objecting to the issuance of the proposed permit, this letter will serve notice of its concerns and of its desire to be informed of the ongoing status of the permit application process. Should the RRCT decide that it intends to issue the permit, Southcross is requesting that its concerns be adequately addressed by Pyote in terms of controls and procedures before construction commences.

Oil & Gas Docket No. 02-0289582

PFD ATTACHMENT B

Letter from Southcross Gulf Coast Transmission Ltd.

Additionally, before any action is taken on the permit application, Southcross requests additional time to review fully the details of Pyote's plan in order to assure itself that risks are being minimized.

Very truly yours,

SOUTHCROSS GULF COAST TRANSMISSION LTD.
By: Southcross Energy GP LLC,
its general partner

By: William C Boyer

William C. Boyer
Vice President – Operations

cc:

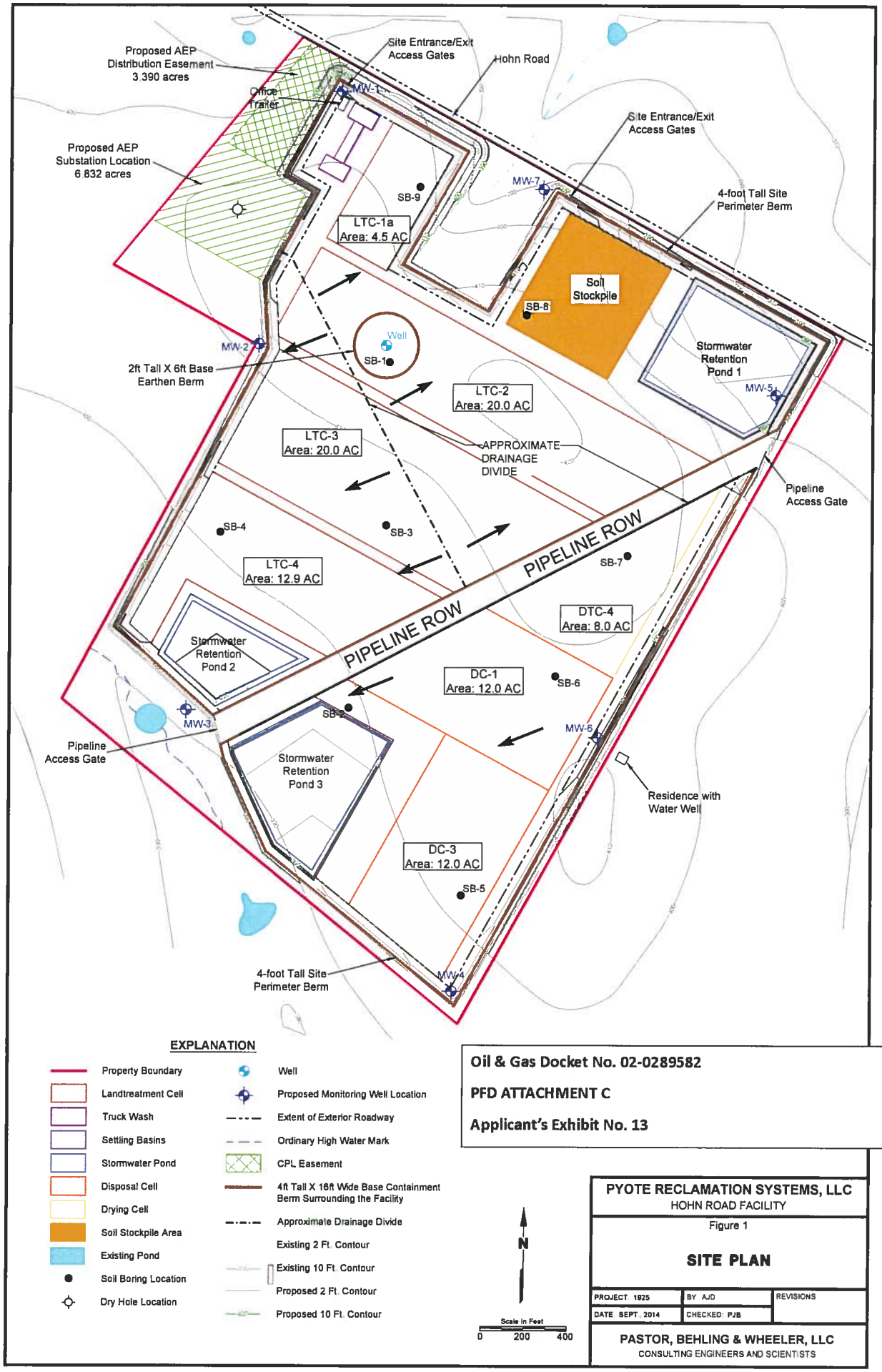
Mr. John Soule
Representing Pyote Reclamation Systems, LLC
Scott, Douglass & McConnico LLP
600 Congress Avenue Suite 1500
Austin, Texas 78701-3234

Ms. Marisa Perales
Representing Concerned About Pollution
Frederick, Perales, Allmon & Rockwell, PC
707 Rio Grande, Suite 200
Austin, Texas 78701

Ms. Lori Wrotenberry – RRCT Austin
1701 North Congress Avenue
P.O. Box 12967
Austin, Texas 78711-2967

Mr. Santos Gonzales – RRCT Austin
1701 North Congress Avenue
P.O. Box 12967
Austin, Texas 78711-2967

Mr. Grant Chambless – RRCT Austin
1701 North Congress Avenue
P.O. Box 12967
Austin, Texas 78711-2967



EXPLANATION

- Property Boundary
- Landtreatment Cell
- Truck Wash
- Settling Basins
- Stormwater Pond
- Disposal Cell
- Drying Cell
- Soil Stockpile Area
- Existing Pond
- Soil Boring Location
- Dry Hole Location
- Well
- Proposed Monitoring Well Location
- Extent of Exterior Roadway
- Ordinary High Water Mark
- CPL Easement
- 4ft Tall X 16ft Wide Base Containment Berm Surrounding the Facility
- Approximate Drainage Divide
- Existing 2 Ft. Contour
- Existing 10 Ft. Contour
- Proposed 2 Ft. Contour
- Proposed 10 Ft. Contour

N

Scale in Feet
0 200 400

Oil & Gas Docket No. 02-0289582

PFD ATTACHMENT C

Applicant's Exhibit No. 13

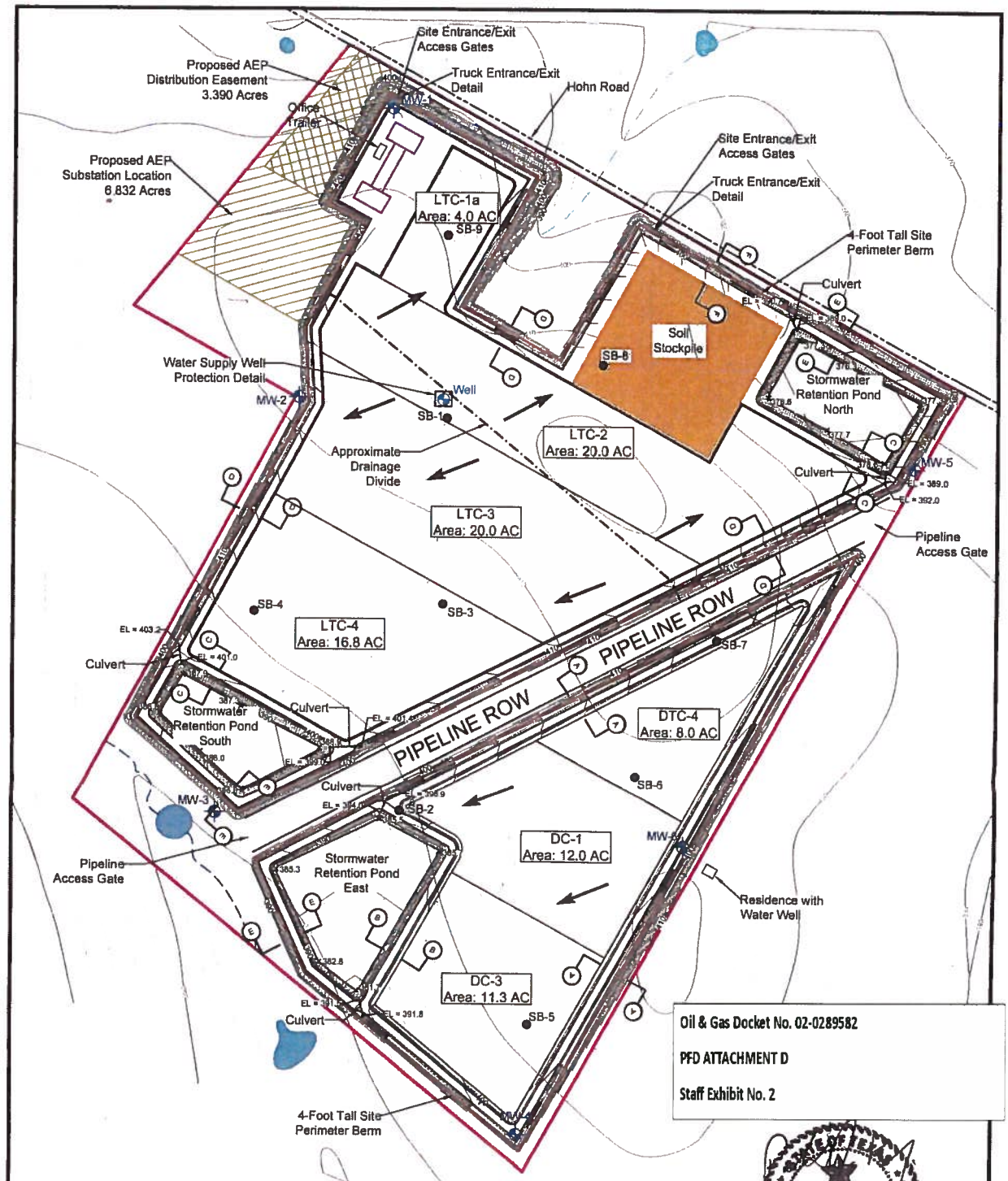
PYOTE RECLAMATION SYSTEMS, LLC
HOHN ROAD FACILITY

Figure 1

SITE PLAN

PROJECT: 1825	BY: AJD	REVISIONS
DATE: SEPT. 2014	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



Oil & Gas Docket No. 02-0289582

PFD ATTACHMENT D

Staff Exhibit No. 2

PATRICK J. BEHLING 79872 LICENSED PROFESSIONAL ENGINEER

09/28/15

EXPLANATION

- Property Boundary
- Soil Stockpile Area
- Existing Pond
- Soil Boring Location
- Well
- Proposed Monitoring Well Location
- CPL Easement
- 4ft Tall Site Perimeter Berm
- Approximate Drainage Divide
- Existing 2 Ft. Contour
- Existing 10 Ft. Contour
- Proposed 2 Ft. Contour
- Proposed 10 Ft. Contour

N

Scale in Feet
0 200 400

RECEIVED
RRC OF TEXAS
SEP 28 2015
AUSTIN, TX

PYOTE RECLAMATION SYSTEMS, LLC
HOHN ROAD FACILITY

Figure 1

SITE PLAN

PROJECT: 1925	BY: MKB	REVISIONS
DATE: SEP., 2015	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS