

THE APPLICATION OF MONTANE INDUSTRIES, L.L.C. FOR A COMMERCIAL PERMIT FOR A BRINE MECHANICAL EVAPORATION DISPOSAL AND SALT RECYCLING FACILITY FOR THE REEVES UNIT NO. 1-408, STATIONARY TREATMENT FACILITY (STF) 026, PIT NOS. 011541A, 011541B, 011541C, 011541D & 011541E, REEVES COUNTY, TEXAS

HEARD BY: Andres J. Trevino P.E., Technical Examiner
Marshall F. Enquist, Hearings Examiner

APPEARANCES:

APPLICANT:

Marcus Johnson
Ryan Clark
Dennis Hudgens

REPRESENTING:

Montane Industries, L.L.C.

PROTESTANTS:

Sharon Gehle

Self

PROCEDURAL HISTORY

Application Filed:	December 16, 2009
Request for Hearing:	December 14, 2009
Notice of Hearing:	January 20, 2010
Date of Hearing:	February 18, 2010
Proposal For Decision Issued:	November 18, 2010

EXAMINERS' REPORT AND PROPOSAL FOR DECISION

STATEMENT OF THE CASE

Montane Industries, L.L.C. (Montane) requests authority pursuant to Texas Administrative Code Title 16, Part 1, Chapter 4, Subchapter B to operate a commercial brine mechanical evaporation disposal and salt recycling facility with five commercial processing pits at its Reeves County Pecos Facility, located approximately 4 miles west of the city of Pecos. The proposed facility will utilize four above ground storage tanks, three settling pits, two evaporation pits and a salt staging area. The facility will use two turbo mister fans to evaporate produced saltwater and collect the evaporated salt into two large evaporation pits for later resale. Three settling pits will be used to settle out any solids from

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the produced water prior to pumping the water to the turbo misters for evaporation. This method of evaporation has been used in the mining industry in Utah and Wyoming. The proposed facility is an alternative disposal method to saltwater disposal injection.

The application was protested by Sharon Gehle. Sharon Gehle is an adjacent property owner and is concerned the proposed facility will negatively impact her property through general groundwater contamination and surface spillage from the facility. The application was determined to be administratively complete by the Commission's Technical Permitting staff.

DISCUSSION OF THE EVIDENCE

Applicant's Evidence

The proposed commercial brine mechanical evaporation disposal and salt recycling facility will be located on a 9 acre tract which is leased by Montane from Bushmills Pecos LLC. Bushmills Pecos LLC owns a 496.76 acre tract of land on which the 9 acre tract is located. The proposed brine mechanical evaporation disposal and salt recycling facility will evaporate produced saltwater using mechanical turbo misters. The evaporated salt will be collected in two large evaporation pits where it will be later gathered and placed into a salt staging area. The salt will be sold as an industrial product to the oil and gas industry as a cement additive. Each evaporation pit will be approximately 350 feet long and 118 feet wide, with a maximum depth of 5 feet. The capacity of each pit is slightly over 30,000 barrels. Each pit will be artificially lined and equipped with a leak detection system. A plat of the facility layout is found in Applicant's submittal and is included as Attachment A to this Proposal for Decision.

The facility will receive produced saltwater from operators in the area. Water haulers approved by Montane will be issued a magnetic card which will allow access to the facility when it is unmanned. The trucks will off load the saltwater into four above ground storage tanks. Any oil mixed in with the salt water will be skimmed off prior to transferring the water to the settling pits. The tank storage area is approximately 108 feet long and 50 feet wide. The tank storage area will have sufficient secondary containment to contain any spilled fluids. The secondary containment will consist of bermed walls made of compacted soil 3 feet tall. The tank storage area will be lined with 60 mil High Density Poly-Ethylene (HDPE) liner.

The facility will have three settling pits which will be used to settle out any solids in the produced salt water. The settling pits are approximately 110 feet long and 71 feet wide. The settling pits will have two synthetic liners and a leak detection system. The liners are made of HDPE plastic. The primary liner will be 60 mil thick and the secondary liner will be 30 mil thick. In between the 60 mil primary liner and the 30 mil secondary liner a 200 mil thick Geonet synthetic drainage material that will separate the two liners. The material is

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permeable and will allow any liquids that may leak from the primary liner to flow through it and collect in a perforated pipe located in the low spot of each pit. A slope will be built into each pit so that any leaked liquids will be collected and detected by the leak detection system. The leak detection system will be monitored at a daily basis. When in operation, the turbo misters nozzles will require clear, sediment free saltwater to prevent the clogging of the nozzles.

The clarified saltwater will be pumped to the turbo misters for evaporation. Montane estimates it will process (evaporate) up to 4,000 barrels of saltwater per day. The turbo misters consist of a high powered, high velocity fan ringed with high pressure nozzles which will spray and disperse the salt water under pressure. The turbo mister nozzles will "shear" the salt water into water droplets of 110 microns in size. The 110 micron sized water droplets are larger than the 30 micron sized droplet that both EPA and TCEQ considers as potentially becoming wind blown. The water droplets sprayed will evaporate prior to coming in contact with the bottom of the evaporation pits. The turbo misters will be placed at one end of each of the two large evaporation pits.

The evaporation pits will collect the salt that evaporates from the salt water pumped through the turbo misters. The evaporation pits will primarily hold only evaporated salt. The evaporation pits are approximately 350 feet long and 118 feet wide. The evaporation pits will have two synthetic liners and a leak detection system similar to the settling pits. The liners are made of HDPE plastic. The primary liner will be 60 mil thick and the secondary liner will be 30 mil thick. In between the 60 mil primary liner and the 30 mil secondary liner a 200 mil thick Geonet synthetic drainage material that will separate the two liners. The material is permeable and will allow any liquids that may leak from the primary liner to flow through it and collect in a perforated pipe located in the low spot of each pit. A slope will be built into each pit so that any leaked liquids will be collected and detected by the leak detection system. The leak detection system will be monitored on a daily basis.

The turbo mister nozzles will be aimed at a maximum 9 degree angle from the horizontal plane so that all salt evaporated from the mist will accumulate within the evaporation pit's boundary. To minimize the possibility of salt being deposited outside the evaporation pit, salt drift fencing, fifteen feet high, will be placed around each pit. The fencing will be placed on top of the berm around each pit. The berms are eight feet above the top of each five foot deep pit. The total height from the liner of the pit to the top of the salt drift fencing is 28 feet.

After sufficient salt has collected at the bottom of the pit, salt removal equipment will remove the salt from the pit to the salt holding area. The salt holding area is approximately 144 feet by 225 feet in size. The base of the salt holding area is composed of 4 inch thick asphalt. The salt staging area will have a cover to protect the salt from the elements while it awaits shipment. The salt will be staged there until it is picked up for shipment.

The direction of groundwater flow in this area is to the south-east. There are no occupied residences, schools, churches or hospitals within 3 miles of the property. The

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location of the facility does not have any wetlands or water courses and it is not within the 100 year flood plain. The average annual rainfall in the area is 11.75 inches and the average annual evaporation loss is 83 inches. A 100 year 24 hour rainfall event for this area is 5 inches of rain.

According to the Soil Survey of Reeves County, there is one soil type found at the 9 acre property. The predominant soil is Hoban. The soil consists of alluvial fan deposits of sand, gravel and mud with a high infiltration capacity. The Hoban in this area is a silty clay loam that is deep, nearly level soil on uplands. Typically, the surface layer is silty clay loam about 18 inches thick. From 18 inches to 60 inches is pink silty clay loam that is 40-50% calcium carbonate and gypsum masses. The soil is described as having moderate permeability.

Water wells have been drilled in the area near the property. The major aquifer present in Reeves County and under the proposed site is the Cenozoic Pecos Alluvium Aquifer. There are five wells drilled within 1¼ mile of the site. Four of the wells are used for irrigation and one well is for domestic use. The total depth of the wells ranged from 222 feet to 685 feet. Depth to groundwater has increased from 44 feet below ground surface in the 1940's to a depth of 217 feet below ground surface today. The driller's log of the domestic well indicates caliche and clay to approximately 127 feet, underlain by sandstone down to 140 feet, clay from 140 to 210 feet, gravel from 210 to 240 feet and clay to the bottom of the well at 245 feet.

Due to the depth of the groundwater expected to be 217 feet under the proposed site, Montane proposes the installation of groundwater monitoring wells around the perimeter of each pit only if a leak is detected by the leak detection system. Because the groundwater flow is to the southeast, the wells will be placed downstream of the leak to determine if any contamination is mobile or is contained.

Montane will develop a *Spill Prevention, Control and Countermeasure Plan*. Such plan is required by Title 40 of the Code of Federal Regulations (CFR), Part 112 of the federal regulations and outlines procedures for preventing spills, and to address remediation if a spill occurs. This plan will help insure that surface and subsurface waters will not be polluted as a result of operation of the facility.

The estimated closure cost for the entire facility, assuming the worst case condition that the tanks and pits are full of wastes and will be disposed of off-site at an approved facility, is \$784,706.47. The estimate assumes all waste storage tanks and pits contain the maximum waste allowed by the permit with significant sludge and none of the Montane's equipment will be available to close the facility and will be closed by a separate contractor. The facility's Closure Plan requires removal of all wastes from the pits. There will be no remaining wastes in place at any location of the facility after it ceases operations. Montane has executed a restrictive covenant for the property requiring, among other things, a revised plat specifying the location of fill material and to including all pit control numbers.

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Protestants' Evidence

The application was protested by Sharon Gehle, who is representing her family that owns the adjacent property to the proposed facility. She and her family are concerned the proposed facility will negatively impact their property through surface seepage and spillage and general groundwater contamination. Mrs. Gehle is concerned flooding will cause pit contents to overflow and contaminate her family's property. Mrs. Gehle is also concerned high winds will cause salt spray to leave the boundaries of the evaporation pit and contaminate the surrounding land including her family's land. She is also concerned that any fire started on the Montane property will be blown by high winds and may spread to her family's property.

Mrs. Gehle presented photographs of a flood that occurred in the area in 1962. The water collected in front of her house on Country Road 411 and west of CR 408. A topographic map she presented shows her property's elevation varies from 2,676 FSL to 2,665 FSL. The map also shows Bushmill's 496.76 acre property elevation varies from a high of 2,660 FSL to 2,647 FSL. Montane's facility will be located at an approximate elevation of 2,660 FSL. The Gehle's property is currently not being farmed as it is in a conservation program that does not allow farming. The house no longer exists (destroyed in a fire in the 1980's) and a Quonset barn is the only structure remaining. The property was last occupied in 1976.

EXAMINERS' OPINION

The examiners recommend that the application be approved because Montane Industries has demonstrated that the operation of the proposed pits under the permit restrictions will not harm groundwater resources, as required by Statewide Rule 8. Rule 8 (d) (6) states as follows:

"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."

The design of the pits is state of the art. The examiners believe that the use of secondary and primary HDPE liners, in conjunction with the leak detection system for each pit, will provide for protection of ground water resources. In the unlikely event that the primary liner is somehow compromised, the leak detection system will provide a prompt signal if any liquid accumulates in the Geonet drainage material layer above the secondary liner. If such a leak is detected, the District Office must immediately be notified and operations would have to cease until the liner is inspected and repaired.

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The settling and evaporation pits will be protected from flooding by having 8 foot earthen berms built around each pit. The berms will prevent any storm water run-on from entering each pit. The pits will also maintain 2 foot of freeboard below the topo of the lined pit. The freeboard space will contain any 100 year, 24 hour rainfall event which for this area is 5 inches of rain. The freeboard will also prevent any accidental overflow of the pits. The evaporation pits will have salt drift fencing to contain any salt that may drift outside the perimeter of the pits. The drift fencing will be placed on top of the 8 foot berms and are 15 feet tall. Computer software will shut down the misters if the winds blow excessively from the wrong direction.

In conjunction with continued monitoring of the leak detection system associated with each pit, Montane is also required to perform semi-annual soil sample analyses on each side of evaporation pit near the salt drift fencing. The sampling will establish a background salt concentration prior to using the evaporation pits. This testing will also be required for the life of the project and will provide information as to whether any salt is accumulating outside the evaporation pits.

The meteorologic conditions prevailing in the area are conducive for evaporation of salt water. The site location near Pecos, Texas in Reeves County, is dry and has an average year round humidity of 9%. The average rain fall is 11.75 inches while the annual evaporation rate is 83 inches per year. The topographic elevation of the site will prevent any run-off from the site to entering the Gehle's property. The surface elevation of the Gehle's property ranges from 2,676 FSL to 2,665 FSL. Bushmill's 496.76 acre property varies from a high of 2,660 FSL to 2,647 FSL. Montane's facility will be located at an approximate elevation of 2,660 FSL. Run off from Montane's facility would have to flow "up hill" to reach the Gehle's property.

With the design of the facility and testing and monitoring requirements of the proposed permit, the examiners believe that the proposed facility and pits can be operated without adversely affecting the surrounding surface and ground water.

FINDINGS OF FACT

1. Notice of this hearing was given to all affected persons at least ten days prior to the date of hearing. Notice of the application was published in the *Pecos Enterprise*, a newspaper of general circulation in Reeves, Ward and Loving Counties, on June 9 and June 16, 2009.
2. Montane Industries, L.L.C. requests authority pursuant to Statewide Rule 8 to operate a commercial brine mechanical evaporation disposal and salt recycling facility and five commercial processing pits at its Reeves County Pecos Facility, located approximately 4 miles west of the city of Pecos. The pits will be used to process and evaporate produced salt water into salt.

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3. The application was administratively approved by staff of the Commission's Technical Permitting Section but was set for hearing after a protest was received.
4. The proposed commercial brine mechanical evaporation disposal and salt recycling facility will be located on a 9 acre tract which is leased by Montane from Bushmills Pecos LLC. Bushmills Pecos LLC owns 496.76 acres on which the 9 acre tract is located.
5. The proposed facility will have a tank storage area with four 500 barrel tanks, three settling pits measuring 110 feet by 71 feet and two evaporation pits measuring 350 feet by 118 feet.
6. The major aquifer present in Reeves County and under the proposed site is the Cenozoic Pecos Alluvium Aquifer. Depth to groundwater under the proposed site has increased from 44 feet below ground surface in the 1940's to a depth of 217 feet below ground surface today.
7. Use of the tanks for storage of solid and liquid wastes will not endanger usable quality water resources, as the tank storage area will have sufficient secondary containment capacity and the area will be artificially lined with a 60 mil High Density Poly-Ethylene (HDPE) liner.
8. The tank storage area will have a three foot berm around it to collect storm water, to collect any releases from the tanks and to prevent any run-on of storm water.
9. Use of the settling and evaporation pits for storage of solid and liquid wastes will not endanger usable quality water resources, as each pit will be artificially lined and equipped with a leak detection system.
 - a. Each settling and evaporation pit will be lined with a 60 mil High Density Poly-Ethylene (HDPE) liner, which will serve as the primary liner.
 - b. Below the 60 mil HDPE primary liner, a 200 mil thick layer of Geonet synthetic drainage material will be installed, which will be above a 30 mil HDPE secondary liner. The drainage material will allow any fluids that may have leaked from the primary liner to flow to the leak detection system.
 - c. A layer of compacted salt approximately one foot thick will be placed on top of the primary liner in the evaporation pits, which will allow the use of salt handling equipment without compromising the liners.

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- d. Between the 30 mil and 60 mil liners, a perforated pipe will be placed along the bottom of slope built into each pit. Should any leak occur through the upper liner, any accumulated liquids would flow through the drainage material and into the perforated pipe. This will provide a leak detection system because any liquids collected in the pipe will flow by gravity to one several monitor wells connected to the pipe.
 - e. Daily monitoring of the leak detection system associated with each pit over the life of the entire project will provide immediate recognition of a leak in the primary liner of any pit, providing additional protection of the groundwater.
10. The settling and evaporation pits will be protected from flooding as each pit will be surrounded by eight foot berms around the perimeter of each pit. The berms will prevent the run-on of storm water into the pits.
 11. A turbo mister fan will be placed on the south western end of each evaporation pit. The nozzle will be angled 9 degrees to prevent salt from drifting outside the perimeter of the evaporation pit.
 12. Salt drift fencing 15 feet high will be placed on top of the 8 foot berm to prevent salt from leaving the perimeter of the each evaporation pit.
 13. Computer software will monitor existing wind conditions when the turbo misters are in use and will shut down the misters if prevailing winds will cause salt to leave the pit boundaries.
 14. Semi-annual soil sample analyses on each side of evaporation pit near the salt drift fencing will be required during the life of the evaporation pits. The sampling will establish a background salt concentration prior to using the evaporation pits. to whether any salt is accumulating outside the evaporation pits.
 15. The evaporation facility will be located near Pecos, Texas. The average rainfall in the area is 11.75 inches and the average evaporation loss is 83 inches. The average humidity is 9%. A 100 year 24 hour rainfall event for this area is 5 inches of rain.
 16. The location of the facility does not have any wetlands or water courses and it is not within the 100 year flood plain.
 17. Prior to receiving waste, Montane is required to submit an executed restrictive covenant for the property, requiring it to specify the location of the fill material and to include all pit control numbers of the restrictive covenant.

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19. The estimated closure cost for the entire facility, assuming the tanks and pits are full of wastes and will be disposed of off-site at an approved facility, is \$784,706.47. The facility's Closure Plan requires removal of all wastes from the pits. There will be no remaining wastes in place at any location of the facility after it ceases operations.
20. The term of the permit for the brine mechanical evaporation disposal and salt recycling facility and five commercial processing pits is 5 years.

CONCLUSIONS OF LAW

1. Proper notice was issued as required by all applicable codes and regulatory statutes.
2. All things have occurred and been accomplished to give the Commission jurisdiction to decide this matter.
3. Montane Industries, L.L.C.'s application to process oil and gas waste in five pits at the Reeves County Pecos Facility complies with Statewide Rule 8 and will not cause pollution of useable quality water or result in waste of oil, gas or geothermal resources.
4. With proper safeguards, as provided by terms and conditions in the attached final order which are incorporated herein by reference, both ground and surface fresh water will be adequately protected from pollution.

EXAMINERS' RECOMMENDATION

Based on the above findings and conclusions, the examiners recommend that the application be approved as set out in the attached Final Order.

Respectfully submitted,

Andres J. Trevino
Technical Examiner

Marshall F. Enquist
Hearings Examiner

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Attachment A
Oil and Gas Docket No. 08-0264011