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ENVIRONMENTAL SITE ASSESSMENT

New Mexico Salt Water Disposal Company, Inc. Station #11 Unit Letter D, Section 21 Township 10 South Range 34 East Lea County, New Mexico

Prepared For: New Mexico Salt Water Disposal Company, Inc. PO Box 1518 Roswell, New Mexico 88202-1518

Prepared by: CMB ENVIRONMENTAL & GEOLOGICAL SERVICES INC. Box 2304, Roswell New Mexico 88202-2304 EMAIL: cmbenviro@dfn.com (505) 622-2012

Clayton M. Barnhill, P.G. Certified Scientist # 246 - New Mexico State Environment Department Petroleum Storage Tank Bureau State of Texas Professional Geologist # 6121

> Clayton M. Barnhill, Project Manager PROJECT NO. 2003/NMSWDCO/10/01 April 1, 2004





Environmental & Geological Services, Inc.

Clayton M. Barnhill CMB Environmental & Geological P.O. Box 2304 Roswell, NM 88202-2304 Tel (505) 622-2012 Fax (505) 622-2012 E-mail: cmbenviro@dfn.com

New Mexico Salt Water Disposal Company, Inc. Attn: Mr. John Maxey PO Box 1518 Roswell, New Mexico 88202-1518 (505) 625-0266 read@lookingglass.net

Re: Environmental Site Assessment New Mexico Salt Water Disposal Company, Inc. Station # 11 Tank Battery Unit Letter D, Section 21, Township 10 South, Range 34 East Lea County, New Mexico

Dear Mr. Maxey:

Our report presenting the findings of the Environmental Site Assessment of the above referenced property is presented herein. This report includes discussions concerning our assessment methods, the scope of work performed, and a description of soil and groundwater conditions, including regulated materials or conditions that may exist on site. CMB Environmental & Geological Services, Inc. recommends that no further action be taken on the property. If necessary, fate and transport modeling of chloride concentrations present in existing soil conditions, using SEVIEW 6.2 fate & transport modeling software, will confirm that present conditions that exist on site, and characterized in this report, are of no future threat to groundwater, human health, or habitat.

If you have any questions during your review of this report please contact us at your convenience.

Sincerel

Clayton M. Barnhill, PG CMB Environmental & Geological Services, Inc.

4 copies : NMSWDCO

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Environmental & Geological Services, Inc.

EXECUTIVE SUMMARY

As authorized by New Mexico Salt Water Disposal Company, Inc. (CLIENT), CMB Environmental and Geological Services, Inc., has completed a Environmental Site Assessment (ESA) of a site, known as the New Mexico Salt Water Disposal Company Station 11, located in unit D of Section 21 T.10S. R.34 E., Lea County, New Mexico.

This practical and reasonable ESA was performed in conformance with the scope and limitations of American Society of Testing and Materials (ASTM) Practice E 1527-97 and the ESA scope of services generally required and appropriate therein.

The following environmental conditions were observed during the course of this investigation:

- 1.) All soil borings were set up over the surface area where the reported produced water spill occurred from a leak or leaks from on-site produced water storage tanks or tank battery flow lines.
- 2.) Soil borings were mechanically drilled with a hollow stem auger rotary rig equipped with a continuous 2' foot split spoon sampling barrel. Samples were collected by a professional geologist and analyzed by a certified environmental analysis laboratory. Soil testing was performed by a professional soils testing laboratory. The mechanical drilling was performed by professional environmental drilling company.
- 3.) A 1000 PPM Total Petroleum Hydrocarbon (TPH) concentration threshold, established by the New Mexico Oil Conservation Division, was used. Groundwater is estimated to be less than 100' feet below ground surface at the site. No significant TPH or BTEX contamination was found on site.
- 4.) At a depth of 29' 36' feet below ground surface at the site; a fat non-porous and non permeable clay unit underlies the surface unconsolidated sand and clayey sands. Measured effective porosity of this clay unit is 5.5%, measured Hydraulic Conductivity = 1.5E-08 cm/sec, measured intrinsic permeability = 1.5E-13 cm2.
- 5.) There is some chloride contamination on-site, most borings showed a minor amount of chloride soil concentrations in soil samples to a depth of 9' feet below ground surface. There are no areas of visible stressed vegetation. At depths greater than 9' feet below ground surface chloride concentrations in soil samples were greater with the highest



concentrations collected on the top of the clay unit. This chloride contamination is of no threat to the groundwater as it would be difficult for the chloride concentrations to migrate through the clay zone found at 29' feet below ground surface. A perched water zone, resting on top of this clay barrier / aquitard, was encountered in soil boring 4A. The perched water was sampled and did not contain any hydrocarbons or metals but contained a strong concentration of chloride. The existence of this perched water indicates that the clay zone is impermeable and the soil sample of the clay immediately below the chloride rich perched water did not reflect a significant chloride concentration increase as a result of the perched water penetrating and enriching the soil chloride concentration of the clay zone.

It would not be prudent environmental practice to penetrate this clay zone / aquitard with a soil boring or monitor well, opening up the possibility to contaminate the water bearing Ogallala sand formations below by adding a potential conduit through this aquitard.

- 6.) The New Oil Conservation Division does not have a soil standard for chloride contamination. However, the drinking water standard of 250-mg/l chloride is often mistakenly used as a soil standard.
- 7.) The possibility of off-site migration of the defined soil chloride concentrations is remote. Chloride fate and transport modeling using SEVIEW 6.2 modeling software could facilitate a risk based corrective action analysis of the site. This analysis could be performed on this site to assess the *"true risk"* of this release or previous releases affecting human health and habitat. By assessing the true nature of the risk to human health from this release or previous releases, a determination can be made as to what level of corrective action should be obtained, <u>if any.</u>



1.0 INTRODUCTION:

1.1 Purpose:

The New Mexico Salt Water Disposal Company Station # 11, is located in unit letter D of Section 21, Township 10 South, Range 34 East, Lea County, New Mexico.(See Figure 1) New Mexico Salt Water Disposal Company, Inc., of Roswell, New Mexico, is the operator of the salt water disposal facility.

On July 12, 1999, a routine / periodic field inspection was conducted by the New Mexico State Land Office concerning alleged surface damages on State of New Mexico grazing lease GS-0928 leased by the Johnson family with Diamond & Half Ranch. New Mexico Salt Water Disposal Company operates an extensive saltwater disposal system across a large portion of the ranch. Several alleged saltwater leaks have occurred over the past few years. The areas of this inspection were addressed in a report labeled LA-SA145 by the New Mexico State Land Office.

On July 27, 1999 New Mexico Salt Water Disposal Company. Inc. received a certified letter from Mr. Ray Powell, the Commissioner of Public Lands for the State of New Mexico, which reiterated: "it has come to our attention that certain unacceptable damages to the surface exist on the above described oil and gas lease. (Salt Water Gathering and Injection Disposal System, Sections 18, 21, and 28, Township 10 South, Range 34 East, Lea County, New Mexico) The State Land Use Specialist has indicated there are areas of salt water pipeline repairs that have not been properly backfilled and compacted. Also, the earthen spill containment berms surrounding the salt water disposal well and associated tanks should be reworked and higher walls should be constructed in order to capture any leaks that may occur. All non-functional or non-operational equipment and surface trash and debris needs to be removed from the lease, and areas of surface damage from salt water and oil spills needs to be reclaimed and or remediated. These items of concern could potentially cause harm to the livestock grazing in the area and may also hamper the re-vegetation of native grasses that exist in the area."

On September 29, 1999 a field inspection of the areas addressed in report LA-SA145, was conducted by Mr. Leon Anderson, Land Use Specialist of the New Mexico State Land Office, Mr. John Maxey and Mr. Clarence Massey of New Mexico Salt Water Disposal Company, and Mr. Justin Johnson, the ranch owner. Each site was visited and discussed. This field inspection was documented and confirmed in a follow up letter to report LA-SA145, dated October 1, 1999, to Scott Dawson, of the New Mexico State Coil, Gas, and Minerals Division and Jim Norwick, of the New Mexico State Land Office, <u>"documenting the seven areas of concern found on New Mexico State grazing lease GS-0928. A consensus was reached where all parties were agreeable to the following recommendations:</u>

1.) All berms around Salt Water Disposal Wells (SWD) and Tanks would be repaired as needed.

2.) All non-functional pipe and fittings, fasline, PVC, and steel pipe, etc., would be removed and stored within fenced storage areas and not on the surface.

3.) The remaining $\frac{1}{2}$ mile of PVC line, located in section 19, of T10S R 34 E, would be replaced with SDR Poly Fasline. The new line will be buried 1" inch to 3" inches of cover if possible.

4.) All exposed PVC lines would be covered.

5.) All areas between Section 21 SWD well and Pump Station #8 and Pump Station #11 would be covered where repairs were made and left uncovered.

6.) A Monitor well may be needed and placed just east of the SWD Pump Station #11 berm area in Section 21, T.10S. R34E.

7.) The material inside the berm at SWD Pump Station #11 may need to be looked at. This is due to the amount of material that has overflowed the storage tanks.

On April 17, 2003 a volume of 20 barrels of produced water was released from the storage tanks at NMSWDCO Station #11 and was contained inside the bermed area surrounding the tank battery. This release was immediately reported to the New Mexico State Department of Energy, Minerals, and Natural Resources Oil Conservation Division District 1 Office, located in Hobbs, New Mexico. New Mexico Salt Water Disposal Company, Inc filed, with the NMOCD, a form C-141 release notification. After the discharge, New Mexico Salt Water Disposal Company, Inc. immediately ordered and installed three new 1000 barrel fiberglass tanks to replace the older steel tanks at NMSWDCO Station # 11. The berm surrounding the tanks was also upgraded at this time.

Between July 1999 and October of 2003, New Mexico Salt Water Disposal Company complied with all the above recommendations with the exception of installing a monitor well at NMSWDCO Station #11.

On June 2, 2003, New Mexico Salt Water Disposal Company, Inc. received a letter from Mr. Joseph R. Lopez, of the New Mexico State Land Office that stated: "This office has been notified by our field operating division that you are operating a salt water disposal operation with the NW ¼ of the NW ¼ of section 21, Township 10 South, Range 34 East. Be advised that this operation is in trespass. In order to bring this operation into compliance we will require you to obtain a business lease for the site and a salt water disposal easement. Penalties dating back to the initial time of trespass will also be respectively.

including back rental. Also reported is the fact that numerous problems exist with the facility that must be corrected. Apparently this has been an ongoing issue since 1999. Our field staff has determined that the following requirements be met in order to correct the problems:

1.) A new storage tank and pumping facility be built with an impermeable liner beneath the tank area and berm, with the berm of sufficient size to contain 1.5 times the capacity of the tank or tanks.

2.) A ground water assessment be conducted to determine the contamination.

3.) If ground water contamination exists, treat and restore to Water Quality Control Commission Standards.

4.) That the surface be remediated by removing contaminated soils and replacing with clean soils.

5.) A monitoring well be installed.

To initiate the site modifications and remediation, contact our Environmental Specialist, Cody Morrow." (For correspondence see appendix 1.)

CMB Environmental & Geological Services, Inc. conducted a subsurface investigation of the soil affected by this release adjacent to the tank battery at NMSWDCO Station # 11. The ESA was conducted for New Mexico Salt Water Disposal Company, Inc., of Roswell, New Mexico, the operator of the property. The investigation was conducted to determine the lateral and vertical extent of the alleged contamination caused by this April 17, 2003 release of water from the tank battery / produced water storage facility.

1.2 Limitations and Exceptions of Assessment:

"Recognized environmental conditions" as defined in this ESA report document, mean the presence or likely presence of any hazardous substances or petroleum products on the site under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into the ground, ground water, or surface water of the site. This term is not intended to include *de minimus* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

The findings and conclusions of this ESA are based upon:

1) Research and evaluation of readily available documents and databases.

- 2) Interviews with persons knowledgeable about the Site:
- 3) Site reconnaissance, soil boring investigations, soil sample description and analysis by an environmental professional, and sample analysis by a qualified environmental analysis laboratory.

CMB Environmental and Geological Services, Inc., makes no warranty, expressed or implied, as to the accuracy or completeness of the information provided by the various governmental regulatory agencies and other referenced information sources used during this ESA. This ESA is for the sole use of the Client and may not provide adequate information for other purposes or parties. The information contained in this report including all figures and attachments, may not be used any other party without the expressed consent of New Mexico Salt Water Disposal Company, Inc.(NMSWDCO)

CMB Environmental & Geological Services, Inc. (CMB) has prepared this report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. CMB also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

1.3 Summary of Field Activities:

A workplan addressing the environmental concerns of the site was created by CMB Environmental & Geological Services Inc. and submitted to New Mexico Salt Water Disposal Company, Inc. The workplan was subsequently approved by the New Mexico State Land Office (NMSLO) on August 18, 2003 in a letter to New Mexico Salt Water Disposal Company (NMSWDCO) written by Cody C. Morrow, Environmental Specialist with NMSLO. The proposed work submitted in the work plan was as follows:

1.) Soil borings will be drilled near the four corners of the bermed area surrounding the salt-water storage tanks located on site. Borings will be drilled using a hollow stem auger drilling rig and sampled in 5-foot intervals using a split-spoon sampling device. Soil samples collected at these five-foot intervals will be field tested for chloride contamination using a hand-held Chemetrics titration cell for titrimetric analysis of chloride. Once the field analysis indicates that the soil concentration of the boring is 250-mg/l chloride or less, then the advancement of the boring will be terminated. A confirmation soil sample from this depth will be collected and sent to Hall Environmental Analysis Laboratory, located in Albuquerque, NM. Hall Analysis Lab will analyze this confirmation soil sample for chloride using EPA Method 9056/300. Abandonment of all soil



borings will be accomplished by backfilling with bentonite pellets from total depth to ground surface. All drilling and sampling equipment will be decontaminated between sampling events and the drilling of the next soil boring.

- 2.) If all the drilled soil borings contain sampled soil that is below 250 mg/l chloride at total depth, then continuing the soil borings to groundwater will not be necessary.
- Groundwater in the area of the site is estimated to be 37' feet below the 3.) ground surface. This estimated depth to groundwater was derived by CMB after a review of available groundwater data located in the New Mexico State Engineers District IV Office, located in Roswell, NM. If any of the soil borings are advanced to a depth of 30' feet below ground surface, due to chloride contamination of greater than 250 mg/l, then that boring with the highest chloride concentration, will be advanced in five foot intervals to the estimated depth of groundwater. If groundwater is encountered at the estimated depth of 37', the soil boring will be drilled ten more feet into the aquifer and a monitor well will be installed. The monitor well will be installed using New Mexico Environment Department specifications and guidelines for monitor well installation. A sample of the capillary fringe, estimated to be at 35 'feet below ground surface, of this boring will be taken and analyzed by Hall Analytical Lab for chloride. The monitor well will be developed, purged of a minimum of three well volumes, and then a water sample will be taken. Hall Analysis Lab will also analyze this water sample for chloride contamination using EPA Method 9056/300
- 4.) In the event that the 37' foot depth to groundwater is an incorrect estimate, then the boring with the highest chloride concentration above 250 mg/l at 30' feet below ground surface will be advanced and sampled in five-foot intervals until a chloride concentration of 250 mg/l is obtained.
- 5.) CMB Environmental & Geological Services, Inc, after a review of the data collected as a result of the proposed assessment work, will submit a written report to NM Salt Water Disposal Co. detailing the results of the assessment.

On October 14, 2003 Atkins Engineering Associates, Inc. a professional environmental drilling contractor located in Roswell, New Mexico was mobilized to the site to commence drilling activities. Four soil borings were drilled ranging in depths from 11' feet below ground surface to 16' feet below ground surface. Two foot split spoon samples were taken from surface to 16' feet below ground surface in soil borings SB-2 and SB-4. Soil borings 1 and 3 were drilled to 11'



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feet below ground surface. Soil samples collected from these two-foot split spoon intervals were field tested for chloride contamination using a hand-held Chemetrics titration cell for titrimetric analysis of chloride. The field analyzes by CMB Environmental & Geological Services Inc. *incorrectly* indicated that the soil concentration of the borings was 250-mg/l chloride or less, and the advancement of the borings was terminated. Confirmation soil samples from the borings were collected and sent to Hall Environmental Analysis Laboratory, located in Albuquerque, NM. Hall Analysis Lab analyzed the soil samples for chloride, Total Petroleum Hydrocarbons (TPH), and BTEX analysis. Hall Environmental Analysis Lab confirmed that there were no significant TPH or BTEX concentrations in the soil samples but some soil samples contained chloride concentrations >250mg/l. As a result, CMB Environmental & Geological Services Inc. determined that additional drilling would be necessary to define the vertical and horizontal extent of alleged chloride contamination.



Location of Soil Boring SB-1 NMSWDCO, October 14, 2003, east side of the new tank battery and reworked berm area surrounding the tank battery. Drilling Rig is Mobile Drill B-58 Owned by Atkins Engineering Associates, Roswell, New Mexico. Total Depth 11' feet below ground surface.





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Location of Soil Boring SB-2 NMSWDCO, October 14, 2003, southeast side of tank battery. Total Depth 16' feet below ground surface.





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Location of Soil Boring SB-4 NMSWDCO, October 14, 2003, northwest side of tank battery. Total Depth 16' feet below ground surface. Photograph shows new produced water storage tanks and berm area at the facility.

On November 19 & 20th, 2003 Atkins Engineering Associates, Inc. was remobilized to the site to commence drilling activities. Four soil borings, 1A,2A,3A,&4A were drilled ranging in depths from 31' feet below ground surface to 36' feet below ground surface. Two foot split spoon samples were taken from surface to total depth in all soil borings. Confirmation soil samples from the borings were collected and sent to Hall Environmental Analysis Laboratory. located in Albuquerque, NM, for chloride, Total Petroleum Hydrocarbons (TPH). and BTEX analysis. Hall Environmental Analysis Lab confirmed that there were no TPH or BTEX concentrations but soil samples contained chloride concentrations. A clay zone was encountered from 29' -36' feet below ground surface in all soil borings. A perched aquifer was found in soil boring 4A perched on top of the clay zone at 31' feet below ground surface. The capillary fringe at 24' -26' feet below ground surface and perched water were sampled for any type of hydrocarbon, chloride, and metals. The clay zone was cored and sampled for porosity, hydraulic conductivity, and permeability soils testing. As a result, CMB Environmental & Geological Services Inc. determined that additional drilling to the water table would be dangerous as penetrating this



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aquitard / clay zone holding this perched water, may open up a conduit for contamination to the groundwater via the soil boring if the clay zone were penetrated. (Soil boring logs, analytical data, and soil concentration contour maps are found in appendix 4.)



Drilling of SB-1A, northeast corner outside bermed area on 11/19/03.



NMSWDCO Station 11, Section. 10, T.10S. R.34 E., Lea County, NM ESA, April 2004

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Drilling of SB-2A, southeast corner outside bermed area on 11/19/03.





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Drilling of SB-3A, southwest corner outside bermed area on 11/20/03. Soil borings 3 and 3A are drilled in the same location within 2' feet of each other.



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Drilling of SB-4A, northwest corner outside bermed area on 11/20/03. Soil borings 4 and 4A are drilled in the same location within 6' feet of each other.

2.0 SITE DESCRIPTION:

2.1 Site Location and Legal Description:

The New Mexico Salt Water Disposal Company, Inc. Station # 11 is located in unit letter D of Section 21 of Township 10 South, Range 34 East, NMPM, Lea County, New Mexico.

2.2 Physical Setting of Site and Surface Characteristics:

To arrive at New Mexico Salt Water Disposal Company, Inc. station # 11, from Caprock, New Mexico go east on NM 380 3.15 miles to county road (black top) turn north, go 10 miles and turn east on county road (black top), go 11 miles and turn south on caliche road, go 4.3 miles to a tee in the road, turn west, go 1 mile, turn south, follow road ³/₄ mile to NMSWDCO Station # 11.



Soils:

According to the U.S. Conservation Service Soil Survey of Lea County, New Mexico, soils in the area of the New Mexico Salt Water Disposal Company Station # 11 are of the Brownfield Series.

"The Brownfield series consists of well-drained soils that have a thick surface layer of fine sand and sandy clay loam subsoil. They are formed in winddeposited sands on uplands in the northern part of Lea County. Slopes are 0-3 percent. The vegetation consists of tall and arid grasses and shrubs. The average annual precipitation is 12 to 15 inches, the average annual air temperature ranges from 58 degrees to 60 degrees Fahrenheit, and the frost free season is 195 to 205 days. Elevations range from 3600 to 4400 feet. Typically, the surface layer is a light brown fine sand about 22 inches thick. The subsoil is red sandy clay loam to a depth of 63" inches. Brownfield soils are sued mostly as range, but also as wildlife habitat and recreational areas."

In the immediate area of NMSWDCO station # 11, the Brownfield-Springer association occurs.

"This mapping unit is about 60 percent Brownfield fine sand, 30 percent Springer loamy fine sand, and 10 percent inclusions of Tivoli, Gomez, Patricia, and Amarillo Soils. The landscape is one of billowy and undulating, low sand dunes intermingled with early level sandy areas. The Springer soil has moderately rapid permeability. Runoff is very slow. Water intake is rapid, and available water holding capacity is 6" to 8" inches. Roots penetrate to a depth of 60" inches and more. Soil blowing is a severe hazard."

(See Figure 3: Soil Map.)

Topography:

The general topography in the area of the NMSWDCO Station # 11 and surrounding area of Section 21, T.10.S. R. 34 E., Lea County, New Mexico is relatively flat to undulating, due to the nature of the sand dune development, with contours gently sloping to the east. Elevations range from 4220' feet ASL to 4200' feet ASL in section 21. Surface elevation of NMSWDCO Station # 11 is estimated to be 4217' feet ASL. (See Figure 1 & 2: Topographic Maps / Satellite Image)

2.3 NMSWDCO Station # 11 Site Geology / Hydrology:

Geology of the Site: In October and November of 2003, 8 soil borings were drilled by CMB using a contracted hollow stem auger drilling rig. From those



borings, a typical type section of the soils and rock formations located on site was constructed and is as follows:

From ground surface to 19' feet below ground surface: Tan brown to red fine-grained to medium grained, well-sorted sands. Minor caliche nodules were encountered. No Hydrocarbon odor and staining was encountered on any samples from these depths.

From 19' feet below ground surface to 29' feet below ground surface: Tan brown, clayey, medium grained to fine grained, well sorted, sand. No Hydrocarbon odor and staining was encountered in any samples from these depths.

From 29' to 36' feet below ground surface: Brown, fat, tight, clay of varying thickness exists in soil borings SB-1A through SB-4A. Soil Borings 1, 2, 3, &4 were not drilled deep enough to encounter this clay zone. All samples taken in the fat clay zone had non-detectable hydrocarbon TPH levels, Non-Detectable BTEX Levels, and reduced Chloride concentrations. A 2' foot core sample of the fat clay was sent to Daniel B. Stephens and Associates Lab, located in Albuquerque, New Mexico for initial moisture content, dry bulk density, calculated porosity, saturated hydraulic conductivity, effective porosity, and Total organic carbon content. (See Appendix 5)

Soil boring logs and soil boring field notes are provided in Appendix 2

Hydrology of the Site:

A search of the groundwater records of the New Mexico State Engineers District IV Office located in Roswell, NM revealed that measured first static groundwater in T.10S.R34E., Lea County, NM is between 32' feet to 50' feet below ground surface. These static water levels were measured at varous periods of time in the "Lucky Windmill" (Carl Johnson Ranch stock tank), Section 20 (43310) Townhsip 10 South Range 34 East, NMPM. Measured Chloride was between 348 and 615 PPM, Conductivity was between 1670 and 2464 SC. The total depth of this well is reported as 65' feet. The recorded of the casing is 6 5/8" inches.The screened interval of the well is unknown. The "Lucky Windmill" is ³/₄ mile to 1 mile southwest of the NMSWDCO Station # 11 Tank Battery, and up gradient.

Humble Oil and Refining Company drilled, in July of 1962, a boring in the SE1/4 of the SW ¼ of SE ¼ of section 36 T.10S. R.34 E . to a total depth of 290 feet below ground surface. Clay was encountered for 18' feet to 105' feet below ground surface. No significant water was encountered, and this well was plugged and abandoned.



Humble Oil and Refining Company also drilled, in July of 1962, two borings in the SE1/4 of the SW ¼ of SE ¼ of section 36 T.10S. R.34 E . to a total depth of 80' and 85' feet below ground surface. A water sand was logged at 55' feet to 70' feet below ground surface in both wells. Clay was encountered from 80' feet to 85' feet below ground surface, the total depths logged in both wells. This described water bearing sand is a possibly part of Ogallala Formation Materials that are sitting on top of Triassic Red Beds. Regional dip of the water bearing Ogallala Formation is to the east. (See Appendix: 3)

2.4 Known Environmental Conditions:

The soil borings were drilled at the four corners of the bermed area surrounding the produced water storage tanks. These borings were set up over the area where the alleged produced water spill or spills had occurred on the ground surface as run-off from the storage tank pad and from the bermed area surrounding the produced water storage tanks.

CMB contracted a professional environmental drilling contractor to perform this work. The drilling method selected was Hollow Stem Auger with a continuous 2' foot split spoon sampling device. The drilling program was designed to have a minimum impact on the surface conditions of the site while obtaining a maximum amount of information from the soil borings.

The first set of four borings was drilled on October 14, 2003. (Soil Borings 1,2,3, &4) The total depth of the first four borings ranged from 11' feet to 16' feet below ground surface. Initial field tests of the soil boring soil samples by CMB indicated low levels of chloride concentrations in the borings. As a result of the inaccurate low chloride concentrations determined by the field tests of the soil boring soil samples, CMB terminated the borings at a shallow depth below ground surface. Hall Environmental Analysis Laboratory's confirmation samples of these same soil samples from the initial field sampling split indicated higher chloride concentrations in the soils.

CMB determined that additional drilling was necessary to characterize the vertical and horizontal extent of the chloride soil concentrations, and if these concentrations may have impacted the groundwater. Four more soil borings were drilled at or near the four corners of the bermed area, and near the previously drilled soil borings 1,2,3,&4, to total depths ranging from 31' feet to 36' feet below ground surface. The soil borings were drilled on November 19 & 20th, 2003. (Soil Borings 1A, 2A, 3A, & 4A)

There were no significant Total Petroleum Hydrocarbon (TPH) or BTEX detected in any of the soil samples from the borings on site.



Data from all of the soil borings is described in the field notes, soil boring logs, contour maps of the Chloride concentrations, and laboratory analysis. (See Appendices: 4, 5, & 6)

With the first groundwater aquifer located less than 100' feet below ground surface in the area, the New Mexico State Oil Conservation Guidelines for soil contamination dictate that a level of 1000 PPM TPH concentration must be obtained in soil samples before for site closure of a leak, spill, or confirmed release from a tank battery. <u>There is not a soil concentration standard for</u> chloride concentrations of soil in the State of New Mexico. A State Of New Mexico Water Quality Control Commission water quality standard of 250 mg/l or 250 PPM Chloride is sometimes mistakenly used as a soil chloride concentration standard in the State of New Mexico Oil Conservation Commission.

From data obtained in the soil borings, soil contamination greater than or equal to the 1000 PPM level TPH did not occur on site. TPH concentrations in PPM from the soil boring samples are tabled below:

<u>Soil Boring</u>	<u>Depth: 0'-2'</u>	<u>4'-6'</u>	<u>9'-11'</u>	<u>14'-16'</u>	<u>19'-21'</u>	<u>24'-26'</u>	<u>29'-31'</u>	<u>34'-36'</u>
SB - 1			ND					
SB - 1A	32		280	55	ND	ND	ND	ND
SB - 2	170	ND	ND	ND				
SB - 2A	ND		ND	ND				
SB - 3			ND					
SB - 3A	ND	ND	ND					
SB - 4	ND	ND	ND	ND				
SB - 4A	ND	ND	ND				ND(H2O)	

From data obtained in the soil borings, BTEX soil contamination did not occur on site in any significant concentrations. BTEX concentrations in PPM from the soil boring samples are tabled below:

<u>Soil Boring</u>	<u>Depth: 0'-2'</u>	<u>4'-6'</u>	<u>9'-11'</u>	<u>14'-16'</u>	<u>19'-21'</u>	<u>24'-26'</u>	<u>29'-31'</u>	<u>34'-36'</u>
				-	2			
SB - 1			ND					
SB - 1A	ND		0.3	ND	ND	ND	ND	ND
SB - 2	ND	ND	ND	ND				
SB - 2A	ND		ND	ND				
SB - 3			ND					
SB - 3A	0.03	ND	ND				ND	
SB - 4	ND	ND	ND	ND				
SB - 4A	ND	ND	ND				ND(H2O)	



<u>Depth: 0'-2'</u> <u>4'-6'</u>	<u>4'-6'</u>	<u> </u>	<u>9'-11'</u>	<u>14'-16'</u>	<u>19'-21'</u>	<u>24'-26'</u>	<u>29'-31'</u>	<u>34'-36'</u>	
			1800						
- 1A	120		380	1900	1800	3700	5000	2000	
SB - 2	330	580	500	1100					
SB - 2A	350		1400	900	870	690	1700	1000	
SB - 3			3600						
SB - 3A	170	3700	510	570	880	3200	5900	1900	
SB - 4	1600	88	2200	3400					
SB - 4A	160	800	2100	3400	4500	8300	3900		
						cont	inve		-> Got w/delinea
								(Reml Sheeley)

Chloride concentrations in PPM from the soil boring samples are as tabled below: (Red Values indicate greater than 250 PPM Chloride Concentration)

The area around the produced water storage tanks and surrounding berm at New Mexico Salt Water Disposal Company Station # 11 is an area of *"historic storage of produced water and occasional spills throughout the many years of its use"*.

The soils surrounding tank battery and bermed area, accessible for "plant roots" to a depth of 60" inches below ground surface, did not indicate that the release of April 17, 2003 had any significant impact on the surface soils as the concentrations of chloride generally were in acceptable plant tolerance levels. The small amount of rainfall in the past several years would not have the ability to drive any surface chloride contamination to any significant depth below ground surface as most rainfall would evaporate or transpire due to the dry surface conditions present. No salt crystallization, wicking, or leaching of salt was evident on the ground surface surrounding the tank battery and bermed area at NMSWDCO Station # 11. The release of April 17, 2003 was contained by the existing bermed area surrounding the tank battery.

All Soil Borings did have significant concentrations of chloride below the ground surface after a depth of 9'feet. This should be expected, as the practices, protocols, and standard operating procedures of produced water disposal plants have drastically changed since the 1960's and 1970's when New Mexico Salt Water Disposal Company first started using the facility.

As the produced water spilled onto the ground surface from various unreported historic spills from the tank battery and spread out, it quickly saturated the very porous sand close to the tank battery and caliche soils of the bermed area surrounding the tank battery. The produced water also pooled in low areas behind the tank battery as it spread out. The soil saturation tended to migrate



vertically rather than horizontally due to the nature of the porosity and low horizontal permeability of the clayey sands in the area. For this reason some soil borings have high concentrations of chloride in close proximity to soil borings that have no significant chloride concentrations. The variable chloride Concentrations in SB-4 and SB-4A (within 6' feet horizontal distance from each other) at depths of 0' feet – 2' feet and 4' feet to 6' feet below ground surface can be attributed to this phenomenon.

Through time and additional produced water releases, the chloride concentrations in the sands and clayey sands beneath the site were driven downward until they hit a fat clay zone at 29'feet to 31' feet below ground surface at the site. This fat clay zone was encountered in soil borings 1A, 2A, 3A, & 4A.

In soil boring 3A, a core sample of this clay from 34' feet to 36' feet below ground surface was sent to Daniel B Stephens Soils Testing Laboratory in Albuquerque, New Mexico for analysis. This clay sample was analyzed by the lab for Initial Moisture Content, Dry Bulk Density, Calculated porosity, Saturated Hydraulic Conductivity, Effective Porosity, and total organic carbon content. The results of this analysis can be seen in appendix 6.

The most important test components of this analysis of the clay sampled in SB-3A @ 34'-36'are as follows:

Ksat (cm/sec) = 1.5E-08 (Hydraulic Conductivity rate at which groundwater, at saturation, will flow through the sampled clay) this rate is extremely slow.

Intrinsic Permeability: = 1.5E-13 (the sampled clay is extremely impermeable)

Effective Porosity: 5.5% (the sampled clay is not very porous)

The soil test analyses of the sampled clay in soil boring 3A show that the clay zone, underlying the site and encountered in soil borings 1A, 2A, 3A, and 4A, is a tight, non porous, impermeable clay barrier. The soil analysis test results also show that it is unlikely that this clay barrier will allow any release of produced water to penetrate and migrate to ground water. (See appendix 6.)

High chloride concentrations encountered in the soil samples in soil borings 1A-4A are a result of numerous years of previous produced water releases from the facility and not a result of any recent releases. Thirty years of annul rainfall events have probably not driven the concentrations of chloride downward. The concentrations of chloride seen in the soil borings are from previous *"historic"* releases that occurred long before the documented release on 04/17/03.



The most consistently high chloride concentrations are seen in all borings at a depth of 29'-31' feet below ground surface which is at the top of the clay barrier underlying the site. The samples from SB-1A, SB-2A, and SB-3A, at a depth of 34'-36' feet below ground surface, continued to have high concentrations of chloride but were on the average 43% lower in chloride concentration than the samples from the 29'-31' foot intervals. It can be argued that if the clay zone was so impermeable, why did the chloride concentrations continue after the 29'-31' depth? It is the opinion of CMB that the hollow stem auger drilling method carried or dragged the chloride concentrations seen in the soil borings at the 29'-31' foot intervals down the soil boring holes to total depth. This dragging of chloride concentrations by the drilling auger influenced the chloride concentrations seen at the 34'-36 feet interval in each soil boring.

In SB-4A a perched water zone, possibly caused by a previous *"historic"* release of produced water, was encountered at the top of the clay zone from 29'-31' feet below ground surface. This perched water was only encountered in soil boring SB-4A. This perched water was sampled and tested for Volatile Organic Compounds, Chloride, Poly Aromatic Hydrocarbons, Mercury, Total recoverable metals, and total dissolved solids. The results can be found in appendix 5 and a summary of the analytical results is as follows:

Soil Boring 4-A	Depth: 29'-'31':
Aqueous Sample:	PPM:
Aqueous cample.	<u> </u>
BTEX	Non-Detect
TPH	Non-Detect
PAH's	Non-Detect
VOC's	Non-Detect
Arsenic	Non-Detect
Barium	0.45PPM
Cadmium	Non-Detect
Chromium	Non-Detect
Lead	Non-Detect
Selenium	Non-Detect
Silver	Non-Detect
Mercury	Non-Detect
TDS	70000 mg/l
Chloride	45000 PPM

There is an elevated chloride concentration in the soil sample from soil boring 4-A at a depth of 24'-26' feet below ground surface. This is the area of the capillary fringe of the perched water zone encountered in soil boring 4-A. If the clay barrier was permeable, then the perched water would not have occurred and the source of the perched water would not have occurred and the source of the perched water would not have occurred and the source of the perched water would not have occurred and the source of the perched water would not have occurred and the source of the perched water would not have occurred and the source of the perched water would not have occurred and the perched water would not have occurred and the source of the perched water would not have occurred and the perched water water water would not have occurred water water

Environmental & Geological Services, Inc.

in soil boring 4-A, and a capillary fringe would not have existed at a depth of 24'-26' feet with higher concentrations of chloride. Also the high chloride concentrations analyzed in the perched water would have made the soil concentration of chloride in the soil sample at 29'-31' feet in soil boring 4-A much higher if the soil was permeable. The soil chloride sample @ 29'-31' in SB-4A would be closer to the chloride concentration of the perched water. The concentration in the soil @ 29'-31' in soil boring 4A is only 8.6% of the chloride concentration of the perched water.

Contour maps and 3-D surface maps of the clay zone and chloride concentrations, based on the unsurveyed depth to the clay or chloride in each boring, can be seen in appendix 4. The reason the perched water occurs in soil boring 4-A and none of the other borings, is that the clay surface is an indurated surface with a small dip or bowl occurring near soil boring 4-A allowing for perched water to be built up in soil boring 4-A. This pattern can be seen in the chloride concentration maps as well.

A field decision, <u>not to penetrate</u> this impermeable tight clay barrier any further than 36' feet below ground surface and install a monitor well east of the facility was made by CMB. It would not be prudent or professional environmental practice to continue to drill to ground water, after a perched water zone is encountered, and allow any perched water, with possible high chloride concentrations or other possible contaminants, to penetrate a boring annulus and allow any soil boring to become a conduit for potential contamination of the groundwater.

To reiterate, in the past (prior to 1980) the environmental regulations for produced water and operations of salt water disposal facilities were much different than present regulations and practices. Accepted practices and operating procedures have also changed for the operators of such facilities.

Chloride contamination is not an issue at this site as chloride contamination in all samples is not a threat to groundwater as the clay zone encountered in the borings will prevent vertical migration of any chloride contamination. The concentrations of chloride near the surface to a depth of 9' feet below surface will not interfere with plant or root development as the chloride concentrations are within acceptable tolerance levels for plants growing in the area. There are not large areas of stressed vegetation on the site or nearby off-site. All soil borings showed a significant reduction in chloride concentrations after the clay zone beneath the site was encountered.

To reiterate: <u>The New Oil Conservation Division does not have a soil standard for</u> <u>chloride contamination</u>. However, the drinking water standard of 250-mg/l chloride is often mistakenly used as a soil standard.



3.0 FINDINGS AND CONCLUSIONS:

CMB Environmental and Geological Services Inc.'s investigation revealed some evidence of environmental concern at the New Mexico Salt Water Disposal Company Station #11 Facility. The following conditions were observed during the course of the investigation:

The tanks and flow lines that produced the documented produced water spill at the site on April 17, 2003 have been replaced. The berm surrounding the produced water tank battery at NMSWDCO Station # 11 has also been upgraded.

A soil borings were drilled at the four corners of the bermed area surrounding the produced water storage tanks at the facility and near the ground surface area where the reported produced water spill occurred over the top of the berm and onto the site caliche pad. The reported spill occurred from a leak in on-site produced water storage tanks or flow lines.

Soil borings were mechanically drilled with a hollow stem auger equipped with a 2' foot split spoon sampling device. Samples were collected by a professional geologist and analyzed by a certified environmental analysis laboratory. Soil materials' testing was performed by a professional soil testing laboratory. The mechanical drilling was performed by professional environmental drilling company.

The approved workplan was to assess the soil chloride contamination and possible impacted groundwater by drilling four soil borings at the site near the four corners of the bermed area surrounding the facility produced water storage tanks. The borings were to be advanced until a soil sample chloride concentration of 250 mg/l (PPM) or groundwater was reached. A monitor well was to be installed if groundwater was encountered. A clay zone was encountered in each of the borings SB1-A-4A at a depth of 29'-36' feet below ground surface. The borings were terminated at this depth and a prudent environmental decision not to advance the borings to groundwater was made. This sampled clay material was tested at the Daniel B. Stephens soil testing laboratory located in Albuquergue, NM and showed that the clay was of low porosity and impermeable. A perched water zone was encountered in soil boring 4-A. The perched water was sampled and analyzed for hydrocarbons (semi-volatile and volatile), metals, total dissolved solids, and chloride by Hall Environmental Analysis Laboratory located in Albuquergue, NM. The water sample contained high chloride concentrations and high total dissolved solids but contained no hydrocarbons or metals.



A 1000 PPM Total Petroleum Hydrocarbon (TPH) concentration threshold, established by the New Mexico Oil Conservation Division, was used, as Groundwater is less than100' feet below ground surface at or near the site.

A water bearing sand zone in the Ogallala Formation, exists underlying the site at a depth of 50'-70' feet below ground surface. The Ogallala Formation has a regional dip to the east and general Ogallala Formation groundwater flow direction is to the east. There are no down gradient ranch stock wells, lakes, or water areas, within a mile of the site.

Soil contamination of greater then 1000 PPM TPH was not observed in any of the soil or water samples collected from the soil boring area. There was no BTEX contamination in any of the soil boring samples.

At the depth of 29' - 31' feet below ground surface at the site; a fat clay unit underlies the surface unconsolidated sand. In the soil borings chloride concentrations of samples at the top of this clay and subsequent samples after penetrating this clay zone dramatically reduced in analytical chloride concentrations. The continued chloride concentrations below the top of the clay zone are not indicative of migration of perched chloride rich produced water but of contamination of the borehole by the hollow stem auger drilling method.

There is some chloride contamination, but most borings showed low chloride soil concentrations to depth of 9' feet below ground surface. Annual rainfall in the area over the last ten years has had a minimal impact on observed chloride concentrations in the near surface soils or soils below 9' feet below ground surface. Rainfall events in the area would have little impact on chloride concentrations of the soils migrating vertically to groundwater. The chloride concentrations seen in the soil boring soils can be attributed to *"Historic spills that happened prior to modern environmental regulations and procedures."* Surface areas around the site were not affected by leaching or wicking of the chloride concentrations by rainfall events from depths of 9' feet below ground surface to the top soil or affecting the depth of plant roots. There are not large areas of stressed vegetation on site.

The possibility of off-site migration of the defined soil chloride concentrations is remote. Chloride fate and transport modeling using SEVIEW 6.2 modeling software could facilitate a risk based corrective action analysis of the site. This analysis could be performed on this site to assess the *"true risk"* of this release or previous releases affecting human health and habitat. By assessing the true nature of the risk to human health from this release or previous releases, a determination can be made as to what level of corrective action should be obtained, if any.



Environmental & Geological Services, Inc.

4.0 PROFESSIONAL QUALIFICATIONS AND SIGNATURE PAGE

CMB Environmental and Geological Services Inc., is multi-disciplined geological and environmental consulting firm with many years of experience. Clayton M. Barnhill, principal, is a registered Professional Geologist, and a New Mexico Environmental Department Certified Scientist with the Petroleum Storage Tank Bureau, certified scientist # 246.

Clayton M. Barnhill, principal, was the environmental professional who conducted this ESA. Clayton M. Barnhill, principal of CMB Environmental & Geological Services Inc., represents that as assessor, to the best of his knowledge, the statements and facts in this ESA are true and correct and, to the best of the principal's knowledge, no material facts have been suppressed or misstated.

CMB ENVIRONMENTAL AND GEOLOGICAL SERVICES, INC.

Clayton M. Barnhill, P.G.



REFERENCES:

Cox, Dillon N., Mickelson, Brice C., Roath, Archie J., Turner, Millard T., Wilson, Carl D. 1974; <u>Soil Survey of Lea County New Mexico</u>, United States Department of Agriculture, Soil Conservation Service





FIGURE : IA







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1 Sec. Sec. 5.54 M ALC: NO. A STATE

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State of New Mexico **Commissioner of Public Lands**

Ray Powell, M.S., D.V.M. 310 Old Santa Fe Trail, P. O. Box 1148 Santa Fe, New Mexico 87504-1148 Phone (505)-827-5760, Fax (505)-827-5766

July 27, 1999

CERTIFIED MAIL RETURN RECEIPT REQUESTED

New Mexico Salt Water Disposal Company Post Office Box 1518 Roswell, New Mexico 88202

Re:

COMMERCIAL RESOURCES

(505)-827-5724

SURFACE RESOURCES

MINERAL RESOURCES

(505)-827-5744

ROYALTY

(505)-827-5772

(505)-827-5795

Salt Water Gathering and Injection Disposal System Sections 18, 21, and 28, Township 10 South, Range 34 East Lea County, New Mexico

Gentlemen:

It has come to our attention that certain unacceptable damages to the surface exist on the above described oil and gas lease. The State Land Use Specialist has indicated there are areas of salt water pipeline repairs that have not been properly backfilled and compacted. Also, the earthen spill containment berms surrounding the salt water disposal wells and the associated tanks should be re-worked and higher walls should be constructed in order to capture any leaks that may occur. All non-functional or non-operational equipment and surface trash and debris needs to be removed from the lease, and areas of surface damage from salt water and oil spills needs to be reclaimed and/or remediated. We are also requesting your company to place identification signs on your wells showing: 1.) well number; 2.) legal description of the well; and, 3.) an emergency telephone number.

These items of concern could potentially cause harm to the livestock grazing in the area and may also hamper the revegetation of native grasses that exist in the area.

This problem is in violation of prudent operator standards and the attached State Land Office Rules 1.068 and 1.069. These rules outline minimum requirements for surface operations and reclamation on State leases.

As operator of the lease, you have incurred certain obligations which include operating in a prudent manner. In addition, it requires protection of the surface estate, including livestock, soil, vegetation, and surface improvements.

You are requested to inspect the lease and to enforce corrective action within sixty days from the date of this letter. Please coordinate your plans and an inspection date with our Land Use Specialist Leon Anderson, whose phone number is (505) 392-8736. If you have any questions, please feel free to contact me.

Sincerely. RAY POWELL, M.S., D.V.M. **COMMISSIONER OF PUBLIC LANDS**

For By: Jami Bailey, Director Oil, Gas, and Minerals Division (505) 827-5745 392-8736

Respond by Mon Sep 275 1) Called from andersons J. C. 9/24 they can't have out and availed call since 9/27 (min) 2) Spoke of min today 9/27 (I called) set up coled, 9/29

DC:

Leon Anderson, Land Use Specialist, State Land Office Jim Norwick, Assistant Director - Field Operations, State Land Office Nick Mace, Assistant Director - Commercial Resources Division, State Land Office Justin Johnson, State Grazing Lessee Attachments

PUBLIC AFTAIRS (505)-827-5765

ADMINISTRATIVE MOMT. (505)-827-5700

> LEGAL. (505)-827-5715

> PLANNING (505)-827-5752

Environental Dept Server Dir. Surg Operations

"WE WORK FOR EDUCATION"

AN IZZ



State of New Mexico Commissioner of Public Lands Ray Powell, M.S., D.V.M.

310 Old Santa Fe Trail, P. O. Box 1148 Santa Fe, New Mexico 87504-1148 Phone (505)-827-5760, Fax (505)-827-5766

October 1, 1999

MMERCIAL RESOURCES

(305)-827-5724

SURFACE RESOURCES

(505)-827-5795

MINERAL RESOURCES

(505)-827-5744

ROYALTY

(505)-827-5772

RECEIVED OCT 0 6 1999

PUBLIC AFFAIRS (505)-827-5765

ADMINISTRATIVE MOMT. (505)-827-3700

> LEOAL (505)-827-5713

PLANNING (505)-827-5752

LA-SA145 FOLLOW-UP

TO: Scott Dawson, Oil Gas & Minerals Division

THRU: Jim Norwick, Assistant Director-Field Operations

FROM: Leon Anderson, Land Use Specialist

Leon Condusor

RE: Oil Field Surface Damages New Mexico Salt Water Disposal Co.

SYNOPSIS

On September 29, 1999 Justin Johnson with Diamond & Half, John Maxey and Clarence Massey with New Mexico alt Water Disposal Company, and I field inspected the areas addressed in LA-SA145 dated July 12, 1999. The area inspected is part of state grazing lease GS-0928.

New Mexico Salt Water Company operates an extensive saltwater disposal system across a large portion of the ranch. Several saltwater leaks have occurred over the past few years. Several spots have been uncovered and the line replaced with a fasline but the sites have not been back-filled.

Each site was visited and discussed with a consensus being made that New Mexico Salt Water Disposal Company representative would take this consensus back to his supervisors and this is the recommendation I would send to my supervisors in Santa Fe with the understanding that each party may not get what they recommend. Justin Johnson was agreeable to the following:

"WE WORK FOR EDUCATION"

1. All berms around SWD Wells and Tanks would be repaired as needed.

2. All no-functional pipe and fittings, fasline, PVC and Steel Pipe, etc would be removed and stored within their fenced storage areas and not on the surface.

3. The remaining 1/2 mile of PVC line would be replaced with a SDR Poly Fas-Line. Section 19, T10S, R34E Justin Johnson called an September 34 and informed me he wants the potential new line buried with 1 m 3" of cover if possible:

4. All exposed PVC lines would be covered.

5. All areas between Section 21 SWD Well and #8 Pump Station and pump station #11 would be covered where repairs were made and left uncovered.

6. Monitor well may be needed and placed just east of the SWD Pump Station #11 berm area in Section 21, T10S, R34E.

7. The material inside the berm at SWD Pump Station #11 may need to be looked at. This is due to the amount of material that has overflowed the storage tanks.

LEGAL DESCRIPTION

T10S, R33 & 34E	NMPM
SECTION 28, 21, 18, 19:	LEA COUNTY

LOCATION

Subject Ranch is located approximately 17 miles northwest of Tatum, New Mexico. Access can be gained via Price Ranch Road on the west side of NM-18.

HIGHEST AND BEST USE

Current highest and best use of subject land is the production of oil and gas. This is intermixed with the grazing of livestock. No other trends exist at this time.

ESTIMATE OF VALUE

N/A

REMARKS

Please review the seven (7) matters of the consensus and advise accordingly.

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LA-SA145 FOLLOW-UP



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OIL AND SALT WATER SPILL WITHIN PUMP STATION #11 BERM SECTION 21, T10S, R34 OIL HAS BEEN COVERED AT THIS TIME



A MONITOR WELL IS NEEDED ON THE EAST SIDE OF BERM AREA

(4)



(5)

ONE OF SEVERAL LEAK REPAIR AREAS IN SECTION 20, T10S, R34E WILL BE COVERED WITH POTENTIAL OF POLY LINE EXTENSION TO #8 PUMP STATION



JULY SPILL AT CONTINENTAL #1 SWD SECTION 18, T10S, R34E SE4NW4

BERM WILL BE REPAIRED ON A REGULAR BASIS

12.20

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LA-SA145 FOLLOW-UP



(6)



MOST OF THIS NON-FUNCTIONAL EQUIPMENT HAS ALREADY BEEN REMOVED. THE ADDITONAL EQIPMENT WILL BE REMOVED IN THE NEAR FUTURE LEASE IS JUST NORTHEAST OF CONTINENTAL SWD WELL SECTION 18, T10S, R34E SE4NW4 June 2, 2003

NM Salt Water Disposal Co. Attn: John C. Maxey P. O. Box 1518 Roswell, New Mexico 88202

Re: Trespass on State Trust Land

Dear Mr. Maxey:

3

This Office has been notified by Our Field Operations Division that you are operating a srude oil recovery and Salt Water Disposal Operation within the NW4NW4, Section 21, Township 10 South, Range 34 East.

Be advised that this operation is in trespass. In order to bring this operation into compliance we will require you to obtain a Business lease for the site and a Salt Water Disposal Easement. Penalties dating back to the initial time of trespass will also be assessed including back rental.

Also reported is the fact that numerous problems exist with the facility that must be corrected. Apparently this has been an ongoing issue since 1999. Our Field staff has determined that the following requirements be met in order to correct the problems:

1. A new storage tank and pumping facility be build with an impermeable liner beneath the tank area and berm, with the berm of sufficient size to contain 1.5 times the capacity of the tank or tanks.

(2) A ground water assessment be conducted to determine contamination.

3. If ground water contamination exists, treat and restore to Water Quality Control Commission Standards.
(4) That the surface be remediated by removing contaminated soils and replacing with clean soil.
(5) A monitoring well be installed.

Enclosed are the application forms for the above mentioned lease and easement. Please complete as soon as possible and

submit along with a registered survey of the site and applicable fees.

If you have any questions regarding the application process, please call me at 505-827-4003.

To initiate the site modifications and remediation, contact our Environmental Specialist, Cody Morrow at 505-827-5737.

Joseph R. Lopez,

CMonnow. Enviro - Specialist 2 anderson.

Commercial Resources

Enclosures

CMB Environmental & Geological Services, Inc. PO Box 2304 Roswell, New Mexico 88202-2304 Phone & Fax: (505) 622-2012 email: cmbenviro@dfn.com

NM Salt Water Disposal Company Attn: Mr. John C, Maxey, PE PO Box 1518 Roswell, New Mexico 88202-1518 (505) 622-3770 Ext. 224 Email: read@lookinglass.net

July 14, 2003

Re: Environmental Site Assessment Salt Water Disposal Operation NW1/4 NW1/4, Section 21, Township 10 South, Range 34 East Lea County, New Mexico

Dear Mr. Maxey:

CMB Environmental & Geological Services, Inc., has been hired by NM Salt Water Disposal Company to conduct an environmental site assessment of the above referenced property. After review of available data of the site, CMB proposes the following work to be performed:

- 1.) Soil borings will be drilled at the four corners of the bermed area surrounding the salt-water storage tanks located on site. Borings will be drilled using a hollow stem auger drilling rig and sampled in 5-foot intervals using a split-spoon sampling device. Soil samples collected at these five-foot intervals will be field tested for Chloride contamination using a hand-held Chemetrics titration cell for titrimetric analysis of chloride. Once the field analysis indicates that the soil concentration of the boring is 250-mg/l chloride, then the advancement of the boring will be terminated. A confirmation soil sample from this depth will be collected and sent to Hall Environmental Analysis Laboratory, located in Albuquerque, NM. This soil sample will be analyzed by Hall Lab for Chloride using EPA Method 9056/300. Abandonment of all soil borings will be accomplished by backfilling with bentonite pellets from total depth to ground surface. All drilling and sampling equipment will be de-contaminated between sampling events and the drilling of the next soil boring.
- 2.) If all the drilled soil borings contain sampled soil that is below 250 mg/l chloride at total depth, then continuing the soil borings to groundwater will not be necessary.
- 3.) Groundwater in the area of the site is estimated to be 37' feet below the ground surface. If any of the soil borings are advanced to a depth of 30' feet below ground surface, due to chloride contamination of greater than 250 mg/l, then that boring, or the soil boring with the highest concentration of Chloride at total depth, will be advanced to groundwater. The soil boring will be drilled ten more feet into the aquifer and a monitor well will be installed. The monitor well will be installed using New Mexico Environment Department specifications and guidelines for

CMB Environmental & Geological Services, Inc. PO Box 2304 Roswell, New Mexico 88202-2304 Phone & Fax: (505) 622-2012 email: cmbenviro@dfn.com

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monitor well installation. A sample of the capillary fringe, estimated to be at 35 'feet below ground surface, of this boring will be taken and analyzed by Hall Lab for Chloride. The monitor well will be developed, purged of a minimum of three well volumes, and then a water sample will be taken. This water sample will also be analyzed by Hall Lab for Chloride contamination using EPA Method 9056/300

If you have any questions or comments, please do not hesitate to call.

Sinceré 211 Tayton M. Barnhill, PG

NEW MEXICO SALT WATER DISPOSAL COMPANY, INC. 400 N. PENN, SUITE 1000 P. O. BOX 1518 ROSWELL, NEW MEXICO 88201 PHONE 505 625-0266

July 31, 2003

State of New Mexico Commissioner of Public Lands P. O. Box 1148 Santa Fe, New Mexico 87504-1148

Attention: Mr. Joseph R. Lopez Mr. Cody Morrow

RE: New Mexico Salt Water Disposal Company Station 11 NW/4 NW/4, Section 21 T10S-R34E Lea County, New Mexico

Gentlemen:

This letter is in response to a letter dated June 2, 2003 from Mr. Joseph R. Lopez concerning items to be addressed at the subject site. Attached is a letter from CMB Environmental and Geological Services, Inc., that outlines a proposal to address the items contained in Mr. Lopez's letter. In a previous telecon to Mr. Morrow, 1 reported that NMSWDC reacted quickly to the discharge and immediately ordered and then installed three new 1,000 barrel fiberglass tanks to replace the older steel tanks. Not only did this increase our storage capacity at the site by a factor of six, it also provides for storage facilities that will not corrode or otherwise deteriorate from chemical action. The berm is in the process of being upgraded. If you have any questions concerning the CMB proposal, please advise.

It is my understanding that Mr. Bob Watson of our office has been working on the application for a business lease for this site and if you have not received this application, you should be receiving it shortly.

Sincerely,

NEW MEXICO SALT WATER DISPOSAL COMPANY, INC.

John C. Maxe Agent

JCM/sr/microsftwrd/jcmltrs/NMSWDCOStation11 Enclosure

RECEIVED AUG 1 8 2003



State of New Mexico Commissioner of Public Lands

COMMISSIONER'S OFFICE Phone (505) 827-5760

Fax (505) 827-5766 www.nmstatelands.org

ATRICK H. LYONS COMMISSIONER

310 OLD SANTA FE TRAIL P.O. BOX 1148 SANTA FE, NEW MEXICO 87504-1148

August 18, 2003

New Mexico Salt Water Disposal Company Inc. John C. Maxey, Jr. PO Box 1518 Roswell, New Mexico 88201

RE: New Mexico Salt Water Disposal Company Station 11 NW/4 NW/4 Section 21 T10S-R34E Lea County, New Mexico

Dear Mr. Maxey,

I have reviewed the plan submitted through New Mexico Saltwater Disposal Company by CMB Environmental. The New Mexico State Land Office (NMSLO) appreciates the fact that you are working in cooperation with us to address the environmental concerns regarding this site.

I think the plan is very complete from a subsurface and groundwater protection and evaluation standpoint. I am assuming that after the sampling and data evaluation process is complete that a final reclamation plan will be prepared and submitted to the NMSLO. Within the final reclamation plan I encourage you to address not only subsurface and groundwater issues, but also recognize the surface damages present due to the facility in Section 21.

Once again thank you for addressing the problem in a timely manner. If you have any question please feel free to contact me at (505) 827-1245

Sincerely. Cody C. Morrow

Environmental Specialist

ct I 1 -- 5 N. French Dr., Hobbs, NM 88240 District II N. Grand Avenue, Artesia, NM 88240 W. Grand Avenue, Artesia, NM 88210 Cettill Nio Brazos Road, Aztec, NM 87410 District IV 1220 S. Francis Dr. Sorte St. Mit 62555

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S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources



Form C-141 Revised March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

4			Rel	ease Notific	atior	1 and Co	orrective A	ction				
#						OPERA	FOR		Initia	al Report 🕱 Final Repor		
me of Company						Contact						
Address	ico Sali	Water D	isposa	11 Company,1	nc.	Telephone 1	John C.	. Maxey,	Jr.			
0. Bo	ox 1518	Roswell	, NM 8	8202		r crophone i	505/622	2-3770				
ility Nat	me					Facility Typ	be					
<u>Station</u>	11						Pumping	g Station	<u>n</u>			
face Ow	/ner E New M e	exico		Mineral O Sta	wner te of	E New Me	xico	Le	ease N	lo. Unleased		
				LOCA	TION	N OF RE	LEASE					
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							OIL CON	SERVAT	ION	DIVISION		
inature:	X	14-	ナ									
						Approved by						
Pailted Nam	e: Joh	n 🖌 Max	ey, Jr	•		District Supe	rvisor:	<u>_</u>				
tle:	Age	nt				Approval Da	te:	Expir	ration	Date:		
	-6-03		Phone	505/622-37	70	Conditions o	f Approval:			Attached		
ch Addi	itional She	ets If Necess	ary	Ext 224								
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CMB Environmental & Geological Services, Inc. PO Box 2304 1208 Highland Road Roswell, NM 88202-2304

FIELD BOREHOLE LOG

T.D. 11'

BOREHOLE NO.: SB-1 TOTAL DEPTH: 11'

PROJECT INFORMATION DRILLING INFORMATION PROJECT: **DRILLING CO.: Atkins Engineering** NM SW Disposal Co. E LOCATION: DRILLER: **Mort Bates** Sec. 21 T10S R34E JOB NO .: NMSWDCO2003-01 **RIG TYPE: Mobile Drill B-58** GGED BY: CM Barnhill, PG METHOD OF DRILLING: Hollow Stem Auger ROJECT MANAGER: John Maxey, Jr. SAMPLING METHODS: Split Spoon **ITES DRILLED:** 10/14/03 HAMMER WT./DROP 140 lb., 30" inch Water level during drilling NOTES: v Page # 1 of # 1 Ŧ Water level in completed well SOIL Blows CL BORING WELL DEPTH USCS SAMP. # SOIL DESCRIPTION SYMBOLS ppm DESCRIPTION / ft. COMPLETION NA Drill Cuttings SW: Tan Brown Sand, No 0'-2' 50/24" / backfill from Hydrocarbon Odor or SW surface to 8' Staining', Medium BGS grained, well sorted sand. 4'-6' 50/24" NA clayey @ 8', 9'-11': Non-Detect TPH , Non Detect SW BTEX, CL=1800 PPM Bentonite @ TD

Sec. 1 CMB Environmental & Geological Services, Inc.

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PO Box 2304 1208 Highland Road Roswell, NM 88202-2304

FIELD BOREHOLE LOG

BOREHOLE NO .: SB-2 TOTAL DEPTH: 16'

1	PROJEC	T INFOR	RMATION		DRILLING INFORMATION				
ROJECT: NM SW Disposal Co.				DRI	DRILLING CO.: Atkins Engineering				
FE LO	OCATION:	Sec	. 21 T10S R34E	DRI	LER:		Mort Bat	es	
OB NO	D.:	NN	ISWDCO2003-01	RIG	TYPE:		Mobile D	rill B-58	
GGE	ED BY:	CM	l Barnhill, PG	MET	HOD O	F DRILI	LING: Hollow St	tem Auger	
ROJE	CT MANAGE	R: Joh	n Maxey, Jr.	SAN	IPLING	METHO	DS: Split Spoo	0 n	
TES	DRILLED:	10/1	14/03	HAN	IMER W	/T./DRC)P 140 lb., 30)" inch	
JOTES:					 Water level during drilling Water level in completed well 				
JEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	CL ppm	BORING COMPLETION	WELL DESCRIPTION	
		SW	SW: Tan Brown Sand, No Hydrocarbon Odor or Staining', Medium	0'-2'	50/24"	330 PPM		Drill Cuttings / backfill from surface to 9'	
		SW	grained, well sorted sand, clayey @ 8', 0'-2': Cl=330 PPM, TPH=170 PPM,	4'-6'	50/24"	580 PPM		BGS	
0-			BTEX= Non-Detect, From 2'-16': Non-Detect TPH, Non Detect BTEX, CL=1100 PPM @ 14'-16'	9'-11'	50/24"	500 PPM		Bentonite @ TD- 9' BGS	
5-		SW	BGS	14'-16'	50/24"	1100 PPM		T.D. 16'	

	CMB Environmental & Geological Services, Inc.
	PO Box 2304
	1208 Highland Road
•	Roswell, NM 88202-2304

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FIELD BOREHOLE LOG

BOREHOLE NO.: SB-3 TOTAL DEPTH: 11'

PROJECT		RMATION			DRILLI	NG INFORMA	TION		
ROJECT: NM SW Disposal Co.				DRILLING CO.: Atkins Engineering					
TE LOCATION:	Sec	. 21 T10S R34E	DRII	LER:		Mort Bat	es		
JOB NO.:	NN	ISWDCO2003-01	RIG	TYPE:		Mobile D	Mobile Drill B-58		
GGED BY:	СМ	l Barnhill, PG	MET	HOD O	F DRILI	LING: Hollow St	tem Auger		
ROJECT MANAGE	R: Joh	n Maxey, Jr.	SAN	IPLING	METHO	DS: Split Spo	Dn		
TES DRILLED:	10/]	14/03	HAN	IMER W	T./DRC	OP 140 lb., 30)" inch		
ÓTES:				∞ Wa ∞ Wa	iter level o ter level i	during drilling n completed well	Page # 1 of # 1		
SOIL SYMBOLS	USCS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	CL ppm	BORING COMPLETION	WELL DESCRIPTION		
	SW SW	SW: Tan Brown Sand, No Hydrocarbon Odor or Staining', Medium grained, well sorted sand, clayey @ 8', 9'-11': Non- Detect TPH , Non Detect BTEX, CL=3600 PPM	0'-2' 4'-6' 9'-11'	50/24" 50/24" 50/18"	NA NA 3800 PPM		Drill Cuttings / backfill from surface to 8' BGS Bentonite @ TD T.D. 11'		

	·								
CM PO 120 Ros	CMB Environmental & Geological Service PO Box 2304 1208 Highland Road Roswell, NM 88202-2304				. F В Т	IELD OREHO OTAL I	BOREH DLE NO.: SB- DEPTH: 16'	OLE LOG 4	
	PROJEC		RMATION			DRILLI	NG INFORMA	TION	
PROJE	CT:	NM	I SW Disposal Co.	DRI	LLING	CO.:	Atkins E	ngineering	
ELC	DCATION:	Sec	. 21 T10S R34E	DRI	LLER:		Mort Bat	es	
JUB NC	JOB NO.: NMSWDCO2003-01			RIG	RIG TYPE: Mobile Drill B-58				
' GGE	D BY:	СМ	l Barnhill, PG	MET	METHOD OF DRILLING: Hollow Stem Auger				
. ROJE	CT MANAGE	.R: Job	n Maxey, Jr.	SAN	SAMPLING METHODS: Split Spoon				
TES	DRILLED:	10/ 2	14/03	HAN	IMER V	MER WT./DROP 140 lb., 30" inch			
OTES	:				∞ Wa ∞ Wa	ater level o ater level i	during drilling in completed well	Page # 1 of # 1	
UEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	CL ppm	BORING COMPLETION	WELL DESCRIPTION	
							······		
		SW	SW: Tan Brown Sand, No Hydrocarbon Odor or Staining', Medium grained, well sorted sand,	0'-2'	50/24"	1600 PPM		Drill Cuttings / backfill from surface to 9' BGS	

9'-11'

14'-16'

PPM

PPM

PPM

•

50/24" 2200

50/24" 3400

Bentonite @ TD-

9' BGS

T.D. 16'

clayey @ 8', 0'-2': Cl=1800 PPM, From 0'-

16': Non-Detect TPH , Non Detect BTEX, CL=3400 PPM @ 14'-16' BGS

SW

SW

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CMB Environmental	& Geological Servic	es, Inc.	F	FIELD	BOREH	DLE LOG
PO Box 2304		BOREHOLE NO.: SB-1A				
Roswell, NM 88202-23	304		ר	TOTAL E	DEPTH: 36'	
PROJECT INFO	RMATION	1		DRILLI	NG INFORMA	TION
ROJECT: NN	1 SW Disposal Co.	DRIL	LING	CO.:	Atkins En	gineering
E LOCATION: Sec	. 21 T10S R34E	DRIL	LER:		Mort Bate	es
JB NO.: NA	ASWDCO2003-02	RIG	TYPE:	:	Mobile D	rill B-58
GGED BY: CN	1 Barnhill, PG	MET	HOD	OF DRILL	.ING: Hollow St	em Auger
. ROJECT MANAGER: Jol	n Maxey, Jr.	SAM	PLING	METHC	DS: Split Spoo	
TES DRILLED: 11/	19/03	HAM	MER \	WT./DRC	OP 140 lb., 30	" inch
OTES:		 Water level during drilling Water level in completed well 				Page # 1 of # 1
DEPTH SOIL SYMBOLS USCS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	s CL ppm	BORING COMPLETION	WELL DESCRIPTION
SW SW	SW: Tan Brown Sand, No Hydrocarbon Odor or	0'-2'	24"/w	120 PPM		Drill Cuttings / backfill from
SW SW	Staining', Medium grained, well sorted sand, caliche nodules @ 9'-19', 32 PPM TPH @ 0'-2', Non Detect BTEX 280 PPM	4'-6'	24"/w	C NA		surface to 10' BGS
	TPH @ 9'-11', minor BTEX, 14'-16' 55 PPM TPH, Non Detect BTEX	9'-11'	100/6	" 380 PPM		
SW SW		14'-16'	100/1	8 1900 PPM		Bentonite @ TD to 10' BGS
	SC: Tan Brown Clayey Sand , No Hydrocarbon Odor or staining.<55 PPM TPH @ 14'-16' Non	19'-21'	50/24	" 1800 PPM		
SC SC	Detect BTEX 14'-36', and Non Detect TPH 16'-TD	24'-26'	50/24	" 3700 PPM		
-30 - 1 CH	CH: Brown Tight Fat Clay, silty 29–31', very plastic like, Non detect BTEX and TPH	29'-31'	50/24	" 5000 PPM		
		34'-36'	50/24	" 2000 PPM		T.D. 36'

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FIELD BOREHOLE LOG CMB Environmental & Geological Services, Inc. BOREHOLE NO.: SB-2A PO Box 2304 1208 Highland Road TOTAL DEPTH: 36' Roswell, NM 88202-2304 **PROJECT INFORMATION DRILLING INFORMATION PROJECT**: DRILLING CO .: **Atkins Engineering** NM SW Disposal Co. E LOCATION: DRILLER: **Mort Bates** Sec. 21 T10S R34E JUB NO .: NMSWDCO2003-02 **RIG TYPE: Mobile Drill B-58** ' GGED BY: METHOD OF DRILLING: Hollow Stem Auger CM Barnhill, PG SAMPLING METHODS: Split Spoon

SOIL DESCRIPTION SAMP. #

HAMMER WT./DROP

Blows

/ ft.

v

¥.

Water level during drilling

CL

ppm

Water level in completed well

BORING

COMPLETION

ROJECT MANAGER: John Maxey, Jr. TES DRILLED: 11/19/03

USCS

...OTES:

SOIL

-	SOIL
.EDTU	OOL
	SYMBOLS
-	

	SW	SW: Tan Brown Sand, No Hydrocarbon Odor or	0'-2'	24"/wo	350 PPM	Drill Cuttings / backfill from
	SW	Staining', Medium grained, well sorted sand, caliche nodules @ 4'-19', Non Detect TPH @ 0'-2',	4'-6'	50/12"	NA	BGS
- 0 - 0 - -		Non Detect BTEX, Non Detect TPH @ 9'-11', Non Detect BTEX, 14'-16' Non Detect TPH, Non Detect	9'-11'	50/18"	1400 PPM	
5 -	SW	BTEX	14'-16'	50/6"	900 PPM	Bentonite @ TD to 10' BGS
	sc	SC: Tan Brown Clayey Sand , No Hydrocarbon Odor or staining, Non	19'-21'	50/24"	870 PPM	
25 - 1	sc	Detect TPH @ 14'-36', Non Detect BTEX 14'-36'	24'-26'	50/24"	690 PPM	
.30 - - -	СН	CH: Brown Tight Fat Clay, silty 29–31', very plastic like, Non detect BTEX	29'-31'	50/24"	1700 PPM	
·35 -	СН	and TPH	34'-36'	50/24"	1000 PPM	T.D. 36'
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140 lb., 30" inch

Page # 1 of # 1

WELL

DESCRIPTION

CMB Environmental & Geological Services, Inc. PO Box 2304 1208 Highland Road Roswell, NM 88202-2304

FIELD BOREHOLE LOG

BOREHOLE NO.: SB-3A TOTAL DEPTH: 36'

	PROJEC	T INFO	RMATION		DRILLING INFORMATION				
PROJE	PROJECT: NM SW Disposal Co.			DRI	DRILLING CO.:			ngineering	
TE L	OCATION:	Sec	21 T10S R34E	DRI	LLER:		Mort Bat	es	
JOB N	0.:	NN	ISWDCO2003-01	RIG	TYPE:		Mobile D	rill B-58	
pgg	ED BY:	CM	l Barnhill, PG	MET	THOD O	FDRIL	LING: Hollow S	tem Auger	
. 'ROJE	ECT MANAGE	R: Joh	n Maxey, Jr.	SAN	IPLING	METHO	DDS: Split Spo	D n	
ATES	B DRILLED:	11/2	20/03	HAN	MER W	T./DRC	OP 140 lb., 30	D" inch	
. JOTES	S:				∽ Wa ≖ Wa	iter level o iter level i	during drilling n completed well	Page # 1 of # 1	
UEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	CL ppm	BORING COMPLETION	WELL DESCRIPTION	
ļ	(*************************************					(
		SW	SW: Tan Brown Sand, No Hydrocarbon Odor or Staining', Medium	0'-2'	31/24"	NA		Drill Cuttings / backfill from surface to 10' BGS	
		SW	caliche nodules @ 4'-19', Non Detect TPH @ 0'-2', Non Detect BTEX, Non	4'-6'	50/12"	3700 PPM			
			Detect TPH @ 9'-11', Non Detect BTEX, 14'-16' Non Detect TPH, Non Detect BTEX	9'-11'	50/06"	510 PPM			
15-		SW		14'-16'	50/12"	570 PPM		Bentonite @ TD to 10' BGS	
120-		SC	SC: Tan Brown Clayey Sand , No Hydrocarbon Odor or staining, Non	19'-21'	50/24"	880 PPM			
25 -		SC	Detect TPH @ 14'-36', Non Detect BTEX 14'-36'	24'-26'	50/24"	3200 PPM			
-30 -		SC		29'-31'	50/24"	5900 PPM			
-35 -		СН	CH: Brown Tight Fat Clay@ 32', silty 29'-36', very plastic like, Non detect BTEX and TPH,	34'-36'	84/24"	1900 PPM		T.D. 36'	
-40 -			Sent core sample to DBS&A Lab for Hydraulic Conductivity and porosity analysis.						

CMB Environmental & Geological Service PO Box 2304 1208 Highland Road Roswell, NM 88202-2304					F נ	FIELD BOREHOLE LOG BOREHOLE NO.: SB-4A TOTAL DEPTH: 31'		
PROJECT INFORMATION					DRILLING INFORMATION			
PROJECT: NM		I SW Disposal Co.	DRII	LING	CO.:	Atkins Engineering		
E LOCATION:		Sec	Sec. 21 T10S R34E		DRILLER:		Mort Bates	
JUB NO.:		NN	NMSWDCO2003-02		TYPE:		Mobile Drill B-58	
GGED BY: CM Barnhill, PG				MET	METHOD OF DRILLING: Hollow Stem Auger			
. ROJECT MANAGER: John Maxey, Jr.				SAM	SAMPLING METHODS: Split Spoon			
TES DRILLED: 11/20/03				HAN	HAMMER WT./DROP 140 lb., 30" inch			
					 ✓ Water level during drilling ✓ Water level in completed well 			
UEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	CL ppm	BORING COMPLETION	WELL DESCRIPTION
		SW SW SC SC	SW: Tan Brown Sand, No Hydrocarbon Odor or Staining', Medium grained, well sorted sand, caliche nodules @ 4'-19', Non Detect TPH @ 0'-2', Non Detect BTEX, Non Detect TPH @ 4'-11' & Non Detect BTEX Son Detect BTEX Sand , No Hydrocarbon Odor or staining. Water Sample from 30.82' BGS CI = 45000 PPM, 26 PPM Acetone, all other VOC's Non-Detect, PAH's = ND, Mecury = ND RCRA8=ND	0'-2' 4'-6' 9'-11' 14'-16' 19'-21' 24'-26'	50/24 50/12 52/6" 50/12 44/24 62/24	 160 PPM 8000 PPM 2100 PPM 3400 PPM 4500 PPM 5300 PPM 		Drill Cuttings / backfill from surface to 10' BGS Bentonite @ TD to 10' BGS
- 30 -		СН	CH: Brown Tight Fat Clay,	29'-31'	63/12	" 3900 PPM		T.D. 31'

34'-36'

CH: Brown Tight Fat Clay, silty 29'-31', Perched Water @ 30.82' BGS Sampled for PAH's, VOC's, RCRA 8 Metals, TDS, Chloride

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CMB Environmental & Geological Services, Inc. Boring ID: <u>SB-1</u> Project: MSA NM Salt Water Piseosa/Co Sheet: 1OF 1 Location: NW 4 NW 4 Sec 21 R. 34E Lee G. NM T. IDE. NASUD 2003 -01 Client: Job number: New Maxico Salt hater Pisasse (los Driller: MOST. BATKS. Total depth: Ozilla ATKING 814 0, D- Auger -Drilling method: 000 MOBILE Boring diameter: 58 Boring date: Logged by: Water level: Date measured: S SAMPLE SOIL DESCRIPTION COMMENTS standard depth (ft) graphic Iog 2 penetration recovery (inches) interval number Color, soil type, relative density or consistency, Monitoring well installation, geotechnical ŝ test results mineralogy, USGS classification moisture content 0 U properties, analytical tests, instrumentation Ø 0'-4': Course gr. د، ' ج . Sw: Redish Brown 0 V V V Well Sorted San - No fine 0. ż 24 5-Red 15/ Bron 6: Clayin Son S é 50 Course Gr. he l'Sorta L Sam ho 241 Cla 50 500 ic Charles 9-11 24" C/0:00 a le le c/01 2/0 P-0 8-

ples CMB Environmental & Geological Services, Inc. Boring ID: SB-Ze 10:06 Project: MSA NM Galt H.D. Digness (Co Location: NW 14, NW 14 Sec 21 TIDS R 34 E Sheet: OF Client: New Mexico Solt Wotar Organillo. Driller: Mont Bates, Attende Drilling Drilling method: H3A, MOBILE DRILL B-58 Job number: NMSWP 2003 -D/ Total depth: 161 Boring diameter: Blight HSA Boring date: Logged by: 10/14/03 CMD Water level: Date measured: SAMPLE SOIL DESCRIPTION COMMENTS standard depth (ft) graphic log number recovery (inches) penetration interval Color, soil type, relative density or consistency, Monitoring well installation, geotechnical test results mineralogy, USGS classification moisture content properties, analytical tests, instrumentation Sond: meb-Coasse gr. Woll sorted, little or no time's spt-0-2. 24/210:15 0-2 82, 29, SW ه د Coliche (white mixed with. Sund: 4'-6' = Spot rejection C4'-5' Hodar Drilling 6" 46 10:30 . V בגוצ 250 mg/e chlac.de 241 0 10:45 Brown Sand - Mixed 9.11 M2:40 With ten Calactice 14-10 SW gr. well softed sond.

Titrot.

CMB Environmental & Geological Services, Inc. Boring ID: 58-3-10:55 Project: M3A NIM 5217 Water Dispose Company Sheet: Location: NW 1/4, NW 1/4, Secure Tibs R34E Client: NM 5WD Co- Job nu 10F1 Job number: NM_<u>Sup 2003</u> - 0/ <u>NMSWOCO-</u> <u>MORTBATES, ATKINS Deillin</u> Total depth: Driller: Boring diameter: Bly HSA-Drilling method: HEA - MOBILE DRILL B-Boring date: CMB Logged by: 16/14/ Water level: NIA. Date measured: SAMPLE SOIL DESCRIPTION COMMENTS standard depth (ft) graphic log penetration number recovery (inches) interval Color, soil type, relative density or consistency, Monitoring well installation, geotechnical test results mineralogy, USGS classification moisture content properties, analytical tests, instrumentation Sond: Ard with w/ white Calichia Med gr. well Sortal Sand - Redish brown. 2/21 241 Mod gr. Well sand - w/ white Coliche 41_J 241 -Coliche V/Sont 0 White: Calification (fine) Mixed with mod. gr. well Sorted Sond. Brown- reddent 18 @11:00 9-11 brown. 4 10

00 ON

CMB Environmental & Geological Services, Inc. Boring ID: 53-40-11:30 MSA NM Salt Water Dispisal Co. NN1/4, NN1/4 Sec 21, TIOS R34E -OF / Project: Sheet: Location: NMSWP Co-Client: Job number: NM3WOLO 2003-01 MORT BATES ATKINS DRilling Total depth: Driller: HSA MOBILE DRILL B-58 Drilling method: Boring diameter: 814" H-SA Boring date: 10/14/03 Logged by: CMB Water level: Date measured: SAMPLE SOIL DESCRIPTION COMMENTS standard depth (ft) graphic log penetration recovery (inches) number Monitoring well installation, geotechnical Color, soil type, relative density or consistency, test results properties, analytical tests, instrumentation mineralogy, USGS classification moisture content 24x11:30 Red Brown Sand -Colorie C 2' يكر ا d_{2} 11:40 med gr. hell sorte I Soult -No odor or string . 1211 24th Ciliso Coliche - White to - pint 941 250 ppm? Chloerbe field testab. 12:22 Clargey Ret Sandlou-detect in 1446 24

9 0

CMB Environmental & Geological Services, Inc. Boring ID: 58-14 MSA - NMSW Dispisa / Company -1051_ Project: Sheet: NMSNDCo-Sec. 21 105 B34E. Location: NM5WD62703-02 Client: Job number: NMGWOG: Most Bates Driller: Total depth: Boring diameter: 8"4 HSA Drilling method: SA - MOBILE DRICK B-58. Logged by: Boring date: 19/02 CMB Water level: Date measured: 30'45' North Start -1 C 0850 0+58-SAMPLE SOIL DESCRIPTION COMMENTS standard depth (ft) graphic log penetration interval recovery (inches) number Color, soil type, relative density or consistency, Monitoring well installation, geotechnical test results mineralogy, USGS classification moisture content properties, analytical tests, instrumentation D 0-21 01-2': Sw: med gr. well 121 WOH Fich 01 Sampled 0'-2'e 0900 51 borted sand - little or no fines Tan brown. No odor or stari 2×403/6/Jov/None Trate Chlasse, BTEX, TPN 48, 250mg/c NO Samo 4.602 07'BES - Colichen Calich Sand. Tay bring . Sompled 9'-11' = 10:37 816 X, TOH, Chlouse 7-11 03 06 9'-11' - Calche whate tan - ward w/ Sand. 103028. che 14-16: Caliche mixed 14'-16' Suplade 11:0 100/10 14-12 04 18" 92 Lettimed gr. Same. Ton Noodon or Stain ETEX, TPH, Chloride Coliclia 19-24105 24" 50/24" 191-21": Clayey Sand Tan Browne 191 0 19-21: Sampled @ 11:20 20 TPH, BTES, Chloride Field test. 2000 ppm dite ما لغا ٨ 24.20' 06 24" 50/24 241-26': Clay on Sond, Tan Med. gr. Sond. 40 1 Sorta (241-26' - Sample 6 @ 1X: 36 TPIT, BTEY, ChImide 93107 244 50/24 29'-31': @ 29'- Fat Clay Brown - Solt, e Top Clam o bottom. 29-31: 0 11:54 30' CH - Fat Clay - Firk Test 250 3413 '08 24" 50/24" 34'-36': Fat @ lay -34'-36'- Sampled e 12:40 4. 36' TPIF4181 BTE BOLY Brown - plastic Tid 36' No odar or stains Chlourse. 110 T.O. 36' -Bentonite Seal - 36-101

CMB Environmental & Geological Services, Inc. Boring ID: 5B-ZA MSA- NMSWOCO. Project: 1041 Sheet: NW/NW Sec. 21. T105. R. 24E. Location: NM 5WD CO 2003-02 Client: NMSWOCO. Job number: MOET BATES ATKINSEN Driller: Total depth: 361 Drilling method: HSA MOBILE DRILL B-SE Boring diameter: 814 HSA 11/19/03 Boring date: Logged by: CMB Water level: Date measured: Started e 13:14 SAMPLE SOIL DESCRIPTION COMMENTS standard depth (ft) graphic tog penetration recovery (inches) number Color, soil type, relative density or consistency, Monitoring well installation, geotechnical test results mineralogy, USGS classification moisture content properties, analytical tests, instrumentation 1 0 18" 01-2': Ten Brown medge. 0'-2' 01 WOH ទុយ៉ Sampled 0'-2' @ 13:20 Well Sertet Sand - little or 2×402/6/NOAC FM Hotines-41-6 - Coliche Mixed with TPH 418. 1 BIEN BOUL Chiertos 16'02 12" 50/12 4'-6' - No Sample. Sand No staining or oban. 9'-11'- Samplebe 13:36. TPH, BTer, Chlorise 18"50/18" 9'-11' - Coliche & Sand . Mod.gt. 7-11 03 14-16 04 06" 50/06" 141-16": Coliche, Wante Tan, Mixed W/med gr. San No oder an Starman Wellsonto. "/" Sampled 14-16 e 1350-1/10 TPH, BTEY, Chlandes 2 9 W 10 N 10 N 19-2105 24" 50/24" 191-21": CIT' Clayer Son Ton, Grown, W/ Coliche. Noduks 2020 Sampled 19' · 21' C 14:05 abloride only. 20' N N 00 241-2406 24" 50/24" 241-261: Same as a Gaue Sampled 24-26 214-20 Chloride carly 226 - clay - may be slaw fortclay. 29'31'07 24" 50/24 29'-31': Strong Clayon Sond Brown - Strong 40% clay traction. Sample & 29'-31'e 14:45 Chloride only. 3436 08 24 50/24 34'-34'- Fat Clay CH -In al same solder - Strong Clay TD 36 52mpled 34'-36'e 15:15 - Chloride on ly. TO 361 Bentonite Backfill/Sal HЬ 36'-10'

CMB Environmental & Geological Services, Inc. Boring ID: 58-34 Project: MSA - NMSNDGO. 105-1 Sheet: Location: NW 14, NW14 Sec. 21 T/25 R34E NM5WP (02003-02 Client: Job number: NMSWDLe-MORT BATES ATKINS Driller: Total depth: 36 (Engineer 1 Drilling method: HSA Mattick ALU B-58 Boring diameter: 81411 HSA 11/20/03 Boring date: Logged by: Cme Water level: Date measured: Atto 0829 SAMPLE SOIL DESCRIPTION COMMENTS standard Ξ graphic log penetration number recovery (inches) interval Monitoring well installation, geotechnical Color, soil type, relative density or consistency, test results mineralogy, USGS classification moisture content properties, analytical tests, instrumentation Ó 24'31/2420-2'. 0'-1' Caliche Pal 0421 Św. Sampled 0'-2'a 0827 01 11-2: Sw: mod gr. tan bran prob. gr. Sant. wellsorted No stormy or odox 41-6: Caluba, Wate, tan. TPH, BTFK, Chlarde 53mp L 1 4-6' @ 0845 41-6 102 TOH STex, delariso mived a / med gr. wellsorted Sam 10' 9'-11' C 09:20 Tp4, ETex, Chloruse . 50/06" 11 03 059 Ś aliche - Sand mexture Ś N rd. Gr. hall control 9 28 Sampleb 14-16 @ 0915 N'-16 04 124 50/12" 14'-16's 0 Chlosise only 216 - Clickel Sand Mark-14 Ņ 19'-21': Brown - Claron Sand - med.gr. well sont of along 2000 19-21 c 0930 19/2/05/21 50/24/1 20 Chlori Leonly. 24 26'06 241 50/24 24'-26': Clayer Sand 24-26': @ 0945 Brown w/ 10% Calicha Chloride only modules. No oder or stang Bo 29'-31'- 2/0:00 24 50/24 29-31: Clayey Sand -Chloribe only. No Caliche - mod. Fat Clay e32 Gr. Well Sorter Sand 3443602 211" 84/241 34'-36' . TO 36 - Fat Sampled 34'-36' = 10:25 1× 402/6/Jan/None fro. Clay Brian - Inorganic Silfs Fox Chlor, Le. 32-1-36 TO 36' - Took Sample For DASEA Hydranki Conductivity, porosity analyssi. 4 6"Briss . C.S. 1 Tubes Bentin, te Son 136-101 N. 2. 3 BGS

CMB Environmental & Geological Services, Inc. Boring ID: 5B - 4A Project: MGA: NMSWDCO-Sheet: IOF 1 Location: NW(14 NW/4 Sec. 21 TIOS R34E Job number: <u>NM3WDC0 200</u>2-62 Client: NMSWD60-Driller: MORT BATES ATKING Engineering Total depth: 311 Boring diameter: 814" HSA. Drilling method: HSA MOBILE PRILL B-58 Boring date: 11/20/03 Logged by: CMB Water level: Date measured: @ 11:00 SAMPLE SOIL DESCRIPTION COMMENTS standard depth (ft) graphic log penetration number recovery (inches) Monitoring well installation, geotechnical Color, soil type, relative density or consistency, test results mineralogy, USGS classification moisture content properties, analytical tests, instrumentation 0' 0-21 50/24 0-2': Swi med gr. Sond. 01 24 Śω Sampled 0'-2'clip 0'-1'- story caliche pad mat. 2×402/6/Nome for Tret 418.1, Chilorde, Ster. 50/12141-6: Sw: Ton Bron Coliche 16/02 12' Sompled 41-6 e 11:11 Tpit, chlorite, BTEY Sond Mixi or staining Sampled 9'-11' 11:27 TpH, BTEX, Chloria 06 52/06 9-11: Med gr Sand/ 9-11/03 No o dor or starm. 4-16 04 12" 50/12" 14-16' Coliche Sand N Jample 14'-16'e 11:45 Monsture tan --, Sond. beginn, to Chloribe outy. te elay 10% 44/24" 19'-21': @ 17' Changer 217' Brown - mad gr. Changer Sand. Sample 1 191-21 @ 12:001 9 21 05 24" 20' Chloride only, \$ N 24/25/66 240 62/24 241-261: Cayey Sand. From No Staing or odor -Sampled 24'-26'e 12=20 29'-31' @ 27' drilling 63/ Semples 29-3/0 12:45 TPH 418.1, ETCX 8.21 tighter? Fatelage 27' 30.82 tout Fat Clay Brown. Chlarpe Morganic Silts. Perchod Water @ 30.82'865 Sampled H20 Resting in clay zone C13:30 hour. 31' Saturated 40 Sampled Bx 40mc Vow's TDS, Chloure PAH 5,8220 W/Hgc/2 Voc's 8260 1 x 300 plastic/Nome RCLA & Meta/s 1× 17ten/Ambon/G/Non Bantonite Seal 31'- 10' BGS Backfill O'la

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Sec. B.

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Sec. 1. 6.

1. Z. S. C.

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FE-1 State of New Mexico State Engineer LL SCHEDULE urce of data: Obser \square Owner \square Other $_$ te <u>FEB 2.6</u> 1936 Record by <u>EFRESQUELTER MASON</u> CATION: County <u>Lea</u> Map 96.1 . VER <u>Carl Johnson</u> ILLER <u>Corl Johnson</u> ILLER <u>Corl Johnson</u> PO SITUATION <u>Topo. Spot</u> Elev <u>42266</u> PTH <u>101</u> ft \square Rept \square Meas Use <u>570c/k</u> SING $6 = \frac{58}{8}$ in to <u>ft Log</u> no./model <u>Size of dischg</u> in. ME MOVER: Make <u>HP</u> no. <u>Tubular STEFL Towfor</u> Beit Head \square Pump Jack re <u>Ser.no</u> \square VHS	·	
State Engineer LL SCHEDULE urce of data: Obser \square Owner \square Other	·	· · ·
LL SCHEDULE urce of data: Obser \square Owner \square Other $_$ $MA50n$ te <u>FEB</u> 261926 Record by <u>KFESQUALLIA MA50n</u> CATION: County <u>Lea</u> Map <u>96.1.1</u> VER <u>Carl Johnson</u> ULER <u>Carl Johnson</u> ILLER <u>Completed</u> 19 PO SITUATION <u>Topo. Spot.</u> Elev <u>42.246</u> PTH <u>161</u> ft \square Rept \square Meas Use <u>STOC/K</u> SING <u>578</u> in to <u>ft Log</u> IP: Type <u>Make</u> no./model <u>Size of dischg</u> in. IME MOVER: Make <u>HP</u> no. <u>Tubular STEKL Johnfulk Power/Fuel</u> <u>W/M/15</u> IP DRIVE: \square Gear Head \square Beit Head \square Pump Jack :e <u>Str. no</u> \square VHS		
the FEB 261986' Record by E.Fresquar 27A.MASOM CATION: County Lea Map 96.1. VER Carl Johnson 19 VER Carl Johnson 19 ILLER Completed 19 PO SITUATION Tence.Spot Elev PTH ft Rept Meas Use PTH ft Rept Meas Use 570c/c SING 5% in to ft Log 10 P: Type Make 10 10 10 10 ME MOVER: Make HP 10 10 10 MAR Size of dischg HP 10 10 10 ME MOVER: Make HP 10 10 <t< td=""><td></td><td></td></t<>		
CATION: County <u>Lea</u> Map <u>96.1.1</u> NER <u>Carl</u> <u>Johnson</u> ILLER <u>Carl</u> <u>Johnson</u> ILLER <u>Completed</u> <u>19</u> PO SITUATION <u>Topo. Spot</u> Elev <u>42.246</u> PTH <u>Jol</u> ft Rept Meas Use <u>570C/K</u> SING <u>578</u> in to <u>ft Log</u> Make <u>Size of dischg</u> in. IME MOVER: Make <u>HP</u> .no. <u>Tubular STEKL</u> <u>Johnfelk</u> Power/ <u>Eucl</u> <u>WIAUS</u> AP DRIVE: Gear Head Belt Head Pump Jack :e <u>Ser.no</u> VHS		
NER <u>Carl Johnson</u> ILLER <u>Completed</u> 19 PO SITUATION <u>Topol Dot</u> Elev <u>42.246</u> PTH <u>Jol</u> ft Rept Meas Use <u>STOC/C</u> SING <u>58</u> in to <u>ft Log</u> (P: Type <u>Make</u> .no./model <u>Size of dischg</u> in. IME MOVER: Make <u>HP</u> .no. <u>Tubular STEEL Jourful</u> Power/Eucl. <u>WJM/J</u> IP DRIVE: Gear Head Belt Head Pump Jack :e <u>Ser.no</u> VHS		. ·
ILLER Completed 19 PO SITUATION $Topo.5pof$ Elev 42.246 PTH 101 ft Rept $Neas$ Use 570.2/4 PTH 101 ft Rept Meas Use 570.2/4 PTH 101 ft Rept Meas Use 570.2/4 SING 5% in to ft Log 6 MP: Type Make 10 10 MP: Type Make 10 10 :no./model Size of dischg in. 11 :no./model Size of dischg 10 11 :no. Tubular Strekt Toulk Power/Fuel. $U/A/13$ IP DRIVE: Gear Head Belt Head Pump Jack :e Ser.no VHS :e Ser.no VHS		
PO SITUATION Topo. 5pot. Elev 42.26 PTH 01 ft Rept Meas Use 570c/k PTH 01 ft Rept Meas Use 570c/k SING 5^{-91} Meas Use 570c/k MP: Type Make		
PTH_101 ft \Box Rept \boxtimes Meas Use <u>STDC/K</u> SING <u>578</u> in to ft Log MP: Type Make c.no./model Size of dischg in. IME MOVER: Make HP c.no. <u>Tubular STERL TokkR</u> Power/Evel <u>WIAID</u> MP DRIVE: \Box Gear Head \Box Belt Head \Box Pump Jack ie Ser.no VHS	· · ·	
SING $6^{-\frac{1}{2}}$ in to ft Log MP: Type Make c.no./model Size of dischg in. IME MOVER: Make HP c.no. <u>Tickular STEEL TokeR</u> power/ <u>Eucl.</u> <u>W/A/1)</u> MP DRIVE: Gear Head Belt Head Pump Jack ie Ser.no VHS $= \frac{1}{27.4.4}$		· · ·
MP: Type Make r.no./model Size of dischg in. IME MOVER: Make HP r.no. $\overline{I_{11}} \underbrace{J_{0k}} \underbrace{s_{7EKL}}_{OkJEK} F_{Ower/Eucl.} \underbrace{W/A/!}_{I_{11}}$ IP DRIVE: Gear Head Belt Head Pump Jack ie Ser.no VHS $\overline{z_{7}}$ H7 $\overline{z_{7}}$ / $\overline{z_{7}}$		
r.no./model Size of dischg in. IME MOVER: Make HP		
IME MOVER: Make HP $c.no. Tilbular STEEL TokkER Power/Eucl. WIAID IP DRIVE: Gear Head Belt Head Pump Jack ie Ser.no ZI HII VHS $		
AP DRIVE: Gear Head Belt Head Pump Jack		
AP DRIVE: Gear Head Belt Head Pump Jack		
$\frac{1}{327 H7} = \frac{1}{2 \sqrt{7}} \sqrt{\frac{4}{3 \sqrt{3} \sqrt{7}}} $		
327 HM mont 2/2/ 0/ about		
NER LEVEL . Correct of the second sec		
7C meas		
which is 1.35 ft above LS		
MANENT BP is _ Concrete 5/06		
Let is $\frac{2}{2}$ it above described MP and $\frac{2}{2}$ it have LS		
MARYS Shown 25 Lucion Windwald an Topa		
IIFERISI K Site [D 33253510329080]		
1 No On Photo DPN 25-05/04		
.e NoLoc. No. <u>/0.34.20. 42010</u>		

Remarks cor 15 'ac 51 2 3 3

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E. t. Dr

3.8 E - 3.

o. C. Street . W.

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1. See 2.

SKETCH:

N

DEPTH TO WATER INITIAL WATER-Below MP Below LEVEL MEASUREMENT lst 2nd \mathbf{LS} 3rd Date FED 26,19 34 36.00 37.00 32.47 Hour 1140 AM ObsKF ABA 3.53 4.53 Δ. 1.35 32:47 Not POA (>>> POA () 324" 31.12

W L meas after pump shut off _____ min. Pumping W L () Remarks _____

STATE ENGINEER

	T. R.	NW	14						
(3)	/ /0333 Sec	E. . 33	' WATER LEVE	LS IN FEET B	ELOW LAND SURFAC	E DATUM	,		
	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	NATER Level MS	DATE	WATER LEVEL MS	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	JUL 20, 1930 May 04, 1971	24.90 P 26.68 R	APR 30, 1976 FEB 25, 1981	28.20 28.07 R	FEB 26, 1986 JAN 29, 1991	25.78 28.01 F			
and the second		HIGHES LOWES	T 26.78 FEB T 28.20 APR	26, 1986 30, 1976 GN	SI site	↓ <u></u>]}:	33 <i>25 35</i>	103290801	
	→ STHE HD: 0523 LDCATION: 105 → OTHER ID: 125 ELEVATION: 4 USE: U DEPTH: GED. UNIT: 21	21103210293 .34E.20.43311 98, 226.00 60000	thin 1mi, 101 TO.	Orma le -rada	Loca so ther is. W.L	ation: ID: 09 : : Jan	10.34.20 5194 1986 5.25,1991	9. 4/3310 31.12 31.67	
	_		WATER LEVE	LS IN FEET BI	ELOW LAND SURFAC	E DATUM			
	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	:
1	SEP 01, 1970	37.01	APR 06, 1971	36.79 T	MAY 04, 1976	37.67	FEB 25, 1981	34.11 T	:
N		HIGHES LOWES	T 37.01 SEP (T 37.67 MAY ()1, 1970)4, 1976					
	SITE ID: 33250 LOCATION: 105. OTHER ID: 1280 ELEVATION: 4: USE: H DEPTH: GED. UNIT: 210	00103270701 .34E.27.14210 56 190.00 DERES	WATER I CUE	G IN EVET BI		- ратим		r.	
		UATED	WHIER LEVEL	.3 IN FEEL DO	LUW LHMD DURFHL		•		,
	DATE	LEVEL MS							
	MAY 04, 1975	54,92							
	1DATE: 12/04/95	ī	PROVIS	IIDNAL GROUND	WATER DATA LEA (COUNTY.		PAGE 39	
	SITE ID: 33250 LOCATION: 105. OTHER ID: 1259 ELEVATION: 41 USE: S	01103270301 34E.27.14222 99 88.00						,	
	GED. UNIT: 210	CRC5		,					
8			WATER LEVEL	S IN FEET BE	LOW LAND SURFACE	E DATUM			
	5 A T T	WATER	n ATE	WATER I EVEL ME	ΠΔTF	WATER (EVEL MG	DATE	WATER LEVEL MS	
	DAIE	LEVEL MS	UHIC		<i>U</i> <i>UIIL</i>				

A The a

1932	50,95	APR 06, 1971	51.64 R	FEB 12, 1991	52.30	JAN 25, 1991	50.78		
	HIGHEST LOWEST	49.85 FEB 52.78 MAY	26, 1986 04, 1976						
TE ID: 3324 IDN: 105 IDN: 105 ID: 126 EVATION: 4 JU I: L. UNIT: 21	03103292601 .34E.32.13144 00 207.00 15 DCRC5								
₹		WATER LEVI	ELS IN FEET BE	LOW LAND SURFA	CE DATUM				
DATE	WATER Level M9								
i 06, 1954	6.85								,
ID: 3324 CATION: 105 ICATION: 105 ICATION: 4 E: S ICATION: 4 BE: S ICATION: 4	06103244801 34E.36.412134 01 114.00			2					
		NATER LEVE	LS IN FEET BE	LOW LAND SURFAI	E DATUM		· .		
DATE	WATER LEVEL MS								
2 10, 1981	43.29							·	
A 12/04/9	5 	PROVI	SIONAL GROUND	WATER DATA LEA	COUNTY.		PAGE 40		
DENTION: 105. R ID: 050 VATION: 4: SE: S	52103234801 35E.06.211134 17 159.00								
	CRCS								:
2		WATER LEVE	LS IN FEET BE	LOW LAND SURFAL	CE DATUM				
DATE	WATER LEVEL MS	DATE	NATER LEVEL MS	DATE	WATER Level MS				۰
10, 1981	105.9 5	APR 22, 1986	105.10	JAN 25, 1991	104.36				
	HIGHEST LOWEST	104.36 JAN 105.95 APR	25, 1991 10, 1981						
ID: 33271 TION: 105 THER ID: 1264 HERATION: 40	26103190301 35E.12.31214 02 072.00			. •					

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FIELD ENGR. LOG

STATE ENGINEER OFFICE

WELL RECORD

D NEW MEXICO STATE BR WATER WELL #2

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INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

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`		·	·····	·	, (A) Owner of well	Humble Oil & Re	fining Company	·
					Street and Number	Box 2347	······	
					City	Hobbs	State	New Mexico
					Well was drilled und	er Permit No	and	is located in the
		}			<u>SE 14 SW 14</u>	SE 14 of Section	36 <u>Twp. 10-S</u>	Rge <u>34-E</u>
			1	1	(B) Drilling Contract	tor Abbott Bros	Licer	se No
		ļ	· ·		Street and Number	Box 637		· <u>···································</u> ····
			! 	· [City	Hobbs	State	New Mexico
			X		Drilling was commen	ced July 16		19_62_
			1		Drilling was complete	d July 16		1962
	()-	lat of 64	() acres)					

Elevation at top of casing in feet above sea level Ground Level Total depth of well 85 State whether well is shallow or artesian shallow Depth to water upon completion 55-70

Section 2 PRINCIPAL WATER-BEARING STRATA

Mo	Depth :	in Feet Thickness is			Description of Wat	escription of Water-Bearing Formation			
	From	То	Feet	= = - - - - - -					
1 1 1	55	70	15	water sand	•				
2									
3					······	· · · · · · · · · · · · · · · · · · ·			
4					······································				
. 5				:			· ·		

RECORD OF CASING Section 3 Depth Perforations Dia Pounds Threads Feet Type Shoe Bottom . ft. in. in Top From To 1

 	 the second secon	 and the second s				
7"	 -	 	86	-	Slotted	Pipe_
					(gravel)	packed)
			• .			
 	 	 	· - · · · · · · · · · · · · · · · · · ·			

Section 4 RECORD OF MUDDING AND CEMENTING

Depth	in Feet	Diameter	Tons	No. Sacks of	Methods Used
From	To	Hole in in.	Clay	Cement	
	none us	ed			
	· .				
	 				· · · · · · · · · · · · · · · · · · ·

Section 5

PLUGGING RECORD

Name of Plugging ContractorLone Star Weldi	ng_			Ī	icense No
Street and NumberBox 277	City	I	ovingto	n S	tate New Mexico
Tons of Clay used Tons of Roughage use	ed		<u>.</u>	Type of a	oughage
Plugging method used steel plate welded on to	p of	f cs	Date	Plugged	11-21-62 19
Plugging approved by:	1		Cement	Plugs wer	e placed as follows:
Hame Basin Supervisor		No.	Depth From	of Plug To	No. of Sacks Used
FOR USE OF STATE ENGINEER ONLY					
OTATE ENGINEER OFFICE					
Date Received	-83				
1903 EEB 11 VW 8- 30					
				and stranger	
File No. This. Lie Use			Lo	cation No.	10.34.36.434

		1 T		· · ·		
Depth i	n Feet To	Thickness in Feet	Color	Type of Material Encountered		
0	2	2		Soil		
2	18	16 -		Caliche		
18	55	37		Sand		
55	70	15	· •••	Water sand		
70	85	15	_	Clay		
		· · ·	· · · · · · · · · · · · · · · · · · ·			
			<u></u>			
		<u> </u> -				
			·	Elev of KTrc		
		<u> </u>	· · · ·			
		<u> </u> -		Loc. No. 10.34, 36, 434		
		<u> </u>		Hydro. Survey Field Check		
		 				
		<u> </u>	·····	Source		
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		<u>├</u>		Determine t		
		<u> </u>	<u></u>	Other		
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	}		,	· · · · ·		

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well. HUMBLE OIL & REFINING COMPANY

BY Weiner Agent

£12

HELD ENGR. KOG

STATE ENGINEER OFFICE

WELL RECORD NEW MEXICO STATE BR WATER WELL #3

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section	1
---------	---

j Street and Number	Box 2347
City Hobbs	State New Mexico
Well was drilled under Permit No	and is located in
<u>SE14SW4SE</u> 14 of Sec	ction 36 Twp. 10-S Rge. 34-F
(B) Drilling ContractorAbbott	BrosLicense No
Street and NumberBox 63	37
 CityHobbs	State New Mexico
Drilling was commenced	July 17 19_6
Drilling was completed	July 17 19 6

Elevation at top of casing in feet above sea level Ground level Total depth of well 80. State whether well is shallow or artesian Depth to water upon completion 55-70

Section	2		PRINCIPAL WATER-BEARING STRATA							
No. Depth in Feet		in Feet To	Thickness in Feet	Description of Water-Bearing Formation						
1	55	70	15	water sand						
2			· · · ·							
3										
4										
5										

RECORD OF CASING Section 3 Perforations Depth Dia Pounds Threads Feet Type Shoe From ft. in Top Bottom То in. 7" 81 55 70 Slotted pipe (gravel packed)

Section 4 RECORD OF MUDDING AND CEMENTING

20 3 11

++63+

£ 301

Depth	in Feet	Diameter	Tons	No. Sacks of	Methods Used				
From	To	Hole in in.	Clay_	Cement					
	None u	sed							
	· .								
			. · ·			· .			

Section 5	PLUG	GING R	ECO	RD				
Name of Plugging Contractor.	Lone Star Weld	ing				License No	l	
Street and Number	Box 277	_ City]	ovingto	2n	StateNew_]	Mexico_	
Tons of Clay used	Tons of Roughage	used		-	Type of	roughage		
Plugging method used steel	<u>plate welded on t</u>	<u>op of</u>	csg	Dat	e Plugged	November	21	<u>19 62</u>
Plugging approved by:	AN	1 .		Cemen	t Plugs we	re placed as i	follows:	
famero	sugar		No	Depth	of Plug	No of S	Sacing Tiese	,
	Basin Supervisor			From	То	110: 01 1		
FOR USE OF STATE I	INGINEER ONLY	20052				<u> </u>		
12 FL		200						·.
Date Received								
I VERN (TT);	ASAM .							
I I I I I I I I I I I I I I I I I I I	1							
HELLER DEFICE	a atais	م. <i>مندر</i> و		``````````````````````````````````````		10 24 7	L AZA	:
AFile No mic. Al	Use				ocation NO	1 - 1 - 2 - 2	<u>0.15</u>	·

Denth in Fast				
Depth i From	n Feet To	Thickness in Feet	Color	Type of Material Encountered
0	3	3		Soil
3	18	15 "	-	Caliche
18	55	37		Sand
55	70	15		Water sand
70	80	10	Blue	Clay
		· · ·		
			1 - 12 14	Deoth to KTrc
			· .	Elev of K
		11		Int No. 10. 34. 36. 434
				Studio Survey Field Check
		1		
	· · · · · · · · · · · · · · · · · · ·			- WTITUDE CIVEN
			· · ·	SOURCE OF ALIHUDE GIVEN
				Interpolated from lopo. Sueta
			*- <u></u>	Determined by Inst. Levening
				Other
		1		
			·····	
	······	1		
		++	· ····· ····· ····· · ······ · ······	
		+	· · ·	······································
		<u> </u>	·····	
				<u>}</u>
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The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well. HUMBLE OIL & REFINING COMPANY

Waron Agent

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Acres

STATE ENGINEER OFFICE

WELL RECORD

NEW MEXICO STATE BR WATER WELL #1

LA. LOG INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1

	, (A) Owner of well Humble Oil & Refining	Company
	Street and NumberBox 2347,	·····
w international states and s	CityHobbs	State <u>New Mexico</u>
	Well was drilled under Permit No. Unknown	and is located in the
	SE 1/4 SW 1/4 SE 1/4 of Section 36	Twp10-SRge34-E
	(B) Drilling Contractor_Abbott Bros	License No
	Street and NumberBox_637	
	City Hobbs	State <u>New Mexico</u>
	Drilling was commenced July 11	19_62
	Drilling was completed July 13	1962_
(Plat of 640 acres)		· , , , , ,

290 Elevation at top of casing in feet above sea level_____ ___Total depth of well__ Depth to water upon completion Dry Hole State whether well is shallow or artesian.

Section 2	· ·	PRINCIPAL WATER-BEARING STRATA	

No.	Depth in Feet		Thickness in	Description of Water-Bearing Formation				
	From	То	Feet	• · · · · · · · · · · · · · · · · · · ·				
1			-	Dry Hole				
2								
3								
4								
5								

RECORD OF CASING Section 3

Dia	Dia Pounds	Threads	Depth		Faat	Time Shee	Perforations		
in.	ft.	in	Top	Bottom	T. CCC	Type Shoe	From	То	
	None Use	d			:				
						<i>r</i>			
-									
			1						

Section 4	RECORD	OF MUDDING AND	CEMENTING	
Dopth in Fast Diamate	Tone	No Soales of		

Depth	III Feet	Diameter	1045	NO. Sacks OF		Methods Used	
From	To	Hole in in.	Clay	Cement			
	None Us	ed			S+21		······································
						·	
	• •			ч., .,			

Section 5

5

PLUGGING RECORD

Name of Plugging Contractor A. W. Thompson Drill	ing Co License No	
Street and Number 214 Midland Nat ! Bank BldgCity	Midland State Texas	
Tons of Clay usedTons of Roughage used	10 sxs Type of roughage Cement	
Plugging method used Cemented top of well	Date Plugged July 14	19 62
Plugging approved by:	Cement Plugs were placed as follows:	

	ta	aine	Alta	ant.
	/		Basin	Supervisor
V	FOR USE	OF STATE	ENGINE	R ONLY
Date Re	روند _مceived	ier de la	TE ENCIN	110
	30	HIH .	•	~0

Date	Received		ENCINE	ElVic
		:8 MM	EEB I I	£961

File No

Cement Plugs were placed as follows:

	No	Depth	of Plug	No. of Cooles W. J.
	110.	From	То	No. of Sacks Used
eogen A	1	25	Surface	10 sxs reg cement
				· · · · · · · · · · · · · · · · · · ·

Location No. 10. 34.36.434

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2 N 2	 ~	2			e'
Section 6					
Contraction of the local data and the local data an	 				

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LOG OF WELL

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Depth	in Feet	Thickness	0 -1	
From	То	in Feet	Color	Type of Material Encountered
0	- 3	: 3	-	Sand
3	18	. 15		Caliche
18	40	22	~~	Clay
40		35		Blue Clay
75	105		· •	Clay
105		5		Sand
110	160	50		Clay
160	170	10		Sand Water
1.70	255	85		Clay
255	260	5	<u>White</u>	Sand
260	290	30		Clay
		<u></u>		
				L S Elev
				Elev of K
-				
				Loc. No. 10. 3436 434
				Hydro. Survey Field Check
. <u></u>			-	
				SOURCE OF ALTITUDE GIVEN
				Interpolated from Topo. Sheet
				Determined by Inst. Leveling
				Other
		× 1		
····				

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well. HUMBLE OIL & REFINING COMPANY

NAMES AND STRUCTURE OF

BY---

Whenty Agent

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Red Values Indicate TPH Concentrations above 1000 PPM TPH Soil Boring SB - 2A SB - 3 SB - 3A SB - 1A SB - 4A SB - 4 SB - 2 SB - 1 Depth: 0'-2' 32 170 A A A N 4'-6' N Z ND ND • 9'-11' ND 280 S 14'-16' ND ND 55 19'-21' ND 24'-26' Z ND(H2O) 29'-31' D 34'-36' Z

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TPH Concentrations in PPM

NMSWDCO

CMB Environmental

Soil Borina	Denth: 0'-2'	4'-6'	9-11.	14'-16'	19'-21'	24'-26'	20'-31'	34'-36'
SB - 1			N					
SB - 1A	ND		0.3	ND	ND	ND	ND	ND
SB - 2	DN	ND	ND	ND				
SB - 2A	ND		ND	ND				
SB - 3			ND					
SB - 3A	0.03	ND	ND				ND	
SB - 4	QN	ND	ß	R				
SB - 4A	ND	ND	ND				ND(H2O)	-
Red Values Indicate BTE	X Concentrations	s above	1 PPM To	otal BTEX				

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BTEX (Total) Concentrations in PPM

NMSWDCO

CMB Environmental

			Ű	M Chloride	3 250 PPN	ns above	ide Concentratio	ted Values Indicate Chlor
_								
	3900	8300	4500	3400	2100	800	160	SB - 4A
				3400	2200	88	1600	SB - 4
1900	5900	3200	880	570	510	3700	170	SB - 3A
					3600			SB - 3
1000	1700	690	870	900	1400		350	SB - 2A
	_			1100	500	580	330	SB - 2
2000	5000	3700	1800	1900	380		120	SB - 1A
					1800			SB - 1
34'-36'	29'-31'	24'-26'	<u>19'-21'</u>	<u>14'-16'</u>	9'-11'	<u>4'-6'</u>	Depth: 0'-2'	Soil Boring

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Chloride Concentrations in PPM

NMSWDCO

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CMB Environmental

Contour Map of Soil Chloride Concentrations 0'-2' feet below ground surface Contour Interval 50 PPM Chloride, red values greater than 300 PPM Soil Boring Locations are labeled and indicated by blue symbol

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NMSWDCO Section 21 T.10S. R. 34 E., Lea County, NM By: C.M. Barnhill, PG



Soil Boring Locations are labeled and indicated by blue symbol Contour Interval 200 PPM Chloride, red numbers to right of soil borings are chloride concentration in PPM Contour Map of Soil Chloride Concentrations 4'-6'feet below ground surface

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Contour Interval 200 PPM Chloride, red numbers to right of soil borings are chloride concentration in PPM Soil Boring Locations are labeled and indicated by blue symbol. SB-3 and SB-3A are same location. Contour Map of Soil Chloride Concentrations 4'-6' feet below ground surface

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By: C.M. Barnhilll, PG April 2004 Section 21 T.10S. R. 34 E., Lea County, NM NMSWDCO 3-D View of Chloride Concentrations 4'-6' feet BGS

Contour Map of Soil Chloride Concentrations 9'-11' feet below ground surface Soil Boring Locations are labeled and indicated by blue symbol. SB-3 and SB-3A are same location. Contour Interval 200 PPM Chloride, red numbers to right of soil borings are chloride concentration in PPM

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NMSWDCO Chloride Concentrations 9'-11' feet BGS Section 21 T.10S. R. 34 E., Lea County, NM By: C.M. Barnhill, PG April 2004



Contour Interval 100 PPM Chloride, red numbers to right of soil borings are chloride concentration in PPM Contour Map of Soil Chloride Concentrations 14'-16' feet below ground surface Soil Boring Locations are labeled and indicated by blue symbol. SB-3 and SB-3A are same location.

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Contour Map of Soil Chloride Concentrations 14'-16' feet below ground surface Contour Interval 100 PPM Chloride, red numbers to right of soil borings are chloride concentration in PPM Soil Boring Locations are labeled and indicated by blue symbol. SB-3 and SB-3A are same location.

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Section 21 T.10S. R. 34 E., Lea County, NM By: C.M. Barnhill, PG April 2004 NMSWDCO 3-D View Chloride Concentrations 14'-16' feet BGS Soil Boring Locations are labeled and indicated by blue symbol. SB-3 and SB-3A are same location. Contour Map of Soil Chloride Concentrations 19'-21' feet below ground surface Contour Interval 200 PPM Chloride, red numbers to right of soil borings are chloride concentration in PPM



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Contour Map of Soil Chloride Concentrations 19'-21' feet below ground surface



By: C.M. Barnhilll, PG April 2004 Section 21 T.10S. R. 34 E., Lea County, NM NMSWDCO 3-D View Chloride Concentrations 19'-21' feet BGS Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location Contour Interval 500 PPM Chloride, red values to the right of soil boring are chloride values in PPM Contour Map of Soil Chloride Concentrations 24'-26' feet below ground surface

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NMSWDCO Contour Map of Chloride at 24'-26' Depth Section 21 T.10S. R. 34 E., Lea County, NM By: C.M. Barnhilll, PG April 2004 Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location Contour Interval 500 PPM Chloride, red values to the right of soil boring are chloride values in PPM Contour Map of Soil Chloride Concentrations 24'-26' feet below ground surface

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NMSWDCO 3-D Contour Map of Chloride at 24'-26' Depth Section 21 T.10S. R. 34 E., Lea County, NM By: C.M. Barnhilll, PG April 2004

Contour Map of Soil Chloride Concentrations 29'-31' feet below ground surface Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location Contour Interval 200 PPM Chloride, red values to the right of soil boring are chloride values in PPM

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April 2004 By: C.M. Barnhilll, PG Section 21 T.10S. R. 34 E., Lea County, NM NMSWDCO 3-D Contour Map of Chloride at 29'-31' Depth

concentrations on top of the clay zone at 29'-31'. Soil boring 2A has a decrease in chloride concentration. a decrease in chloride concentration, at this top of the clay, in soil boring 4-A which had the perched nature of the clay zone, with similar high concentrations of chloride at top of the clay in soil borings SB-3A & 1A.* concentration due to the effect of the capillary fringe of the perched water. Soil borings 3A and 1A had similar chloride water zone. The chloride concentration in soil boring 4-A at 24'-26' had a increase in chloride * This chloride concentration map, on top of the clay zone at 29'-31', shows These values reflect the indurated surface of the clay with a low spot at soil boring 4-A., show the impermeable



Contour Map of Soil Chloride Concentrations 29'-31' feet below ground surface Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location Contour Interval 200 PPM Chloride, red values to the right of soil boring are chloride values in PPM

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Contour Map of Soil Chloride Concentrations 34'-36' feet below ground surface Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location Contour Interval 50 PPM Chloride, red values to the right of soil boring are chloride values in PPM

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Section 21 T.10S. R. 34 E., Lea County, NM By: C.M. Barnhill, PG NMSWDCO 3-D View Contour Map of Chloride at 34'-36' Depth April 2004



Contour Interval 50 PPM Chloride, red values to the right of soil boring are chloride values in PPM Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location Contour Map of Soil Chloride Concentrations 34'-36' feet below ground surface

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Contour Interval 0.20 feet, red values to the right of soil boring are depth to clay values in soil boring. Contour Map Top of Clay @ 34'-36" feet below ground surface, ground surface is unsurveyed ASL. Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location



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Section 21 T.10S. R. 34 E., Lea County, NM April 2004 By: C.M. Barnhilll, PG NMSWDCO 3-D Surface / Contour Map Top of Clay at 34'-36' Depth



Contour Map Top of Clay @ 34'-36" feet below ground surface, ground surface is unsurveyed ASL. Soil Boring Locations are labeled and indicated by blue symbol, Soil Boring 3 and 3A are same location Contour Interval 0.20 feet, red values to the right of soil boring are depth to clay values in soil boring.

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Hall Environmental Analysis Laboratory

COVER LETTER

October 27, 2003

John C. Maxey, Jr. New Mexico Salt Water Disposal Co., Inc. P.O. Box 1518 Roswell, NM 882021518 TEL: (505) 622-3770 FAX (505) 622-8643

Order No.: 0310133

Dear John C. Maxey, Jr.:

RE: NMSWDCo Site Assessment

Hall Environmental Analysis Laboratory received 10 samples on 10/17/2003 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

and the second

Andy Freeman, Business Manager Nancy McDuffie, Laboratory Manager

4901 Hawkins NE, Suite A, Albuquerque, NM 87109 505.345-3975, Fax 505.345-4107
1.1.1

Date: 27-Oct-03

CLIENT:	New Mexico Salt W	ater Disposal Co	n., Inc.	Client Sa	mple ID: SB-1:9'	-11'
Lab Order:	0310133			Collec	tion Date: 10/14	/2003 10:00:00 AM
Project:	NMSWDCo Site As	sessment				Υ
Lab ID:	0310133-01				Matrix: SOIL	
Analyses		Result	Limit	Qual Units	DF	Date Analyzed
EPA METHOD S Chloride	9056A: ANIONS	1800	15	mg/Kg	50	Analyst: BL 10/23/2003 4:17:54 PM
EPA METHOD 4 Petroleum Hydro	418.1: TPH ocarbons, TR	ND	20	mg/Kg	ı 1	Analyst: GT 10/21/2003
EPA METHOD	B021B: VOLATILES					Analyst: NSB
Benzene		ND	0.025	mg/Kg	; 1	10/21/2003 11:06:28 PM
Toluene		ND	0.025	mg/Kg	j 1	10/21/2003 11:06:28 PM
Elhylbenzene		ND	0.025	mg/Kg	, 1	10/21/2003 11:06:28 PM
Xylenes, Total		ND	0.025	тg/Kg	1	10/21/2003 11:06:28 PM
Surr: 4-Bromo	ofluorobenzene	104	74-118	%REC	1	10/21/2003 11:06:28 PM

Qualifiers:

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

Page 1 of 10

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Date: 27-Oct-03

CLIENT:	New Mexico Salt Wa	ater Disposal Co	., Inc.	Client Sar	nple ID: S	5B-2:0'-	-2'
Lab Order:	0310133			Collec	tion Date:	10/14/	/2003 10:15:00 AM
Project:	NMSWDCo Site Ass	sessment					
Lab ID:	0310133-02				Matrix:	SOIL	
Analyses		Result	Limit	Qual Units		DF	Date Analyzed
EPA METHOD S Chloride	9056A: ANIONS	330	1.5	mg/Kg		5	Analyst: BL 10/23/2003 4:34:42 PM
EPA METHOD Petroleum Hydro	418.1: TPH ocarbons, TR	170	20.	mg/Kg		1	Analyst: GT 10/21/2003
EPA METHOD & Benzene	B021B: VOLATILES	ND	0.025	mg/Kg		1	Analyst: NSB 10/21/2003 11:37:10 PM
Toluene Elhyibenzene		DN DN	0.025 0.025	mg/Kg mg/Kg		1 1	10/21/2003 11:37:10 PM 10/21/2003 11:37:10 PM
Xylenes, Total Surr. 4-Bromo	oiluorobenzene	ND 98.0	0.025 74-118	mg/Kg %REC		1 1	10/21/2003 11:37:10 PM 10/21/2003 11:37:10 PM

Qualifiers:

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

Page 2 of 10

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2.22.2

CLIENT: Lab Order: Project:	New Mexico Salt Wat 0310133 NMSWDCo Site Asse	er Disposal Co	., Inc.	Clie	nt Sam Collect	iple ID: S ion Date:	5B-2:4'-6 10/14/2	5' 2003 10:30:00 AM
Lab ID:	0310133-03					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD 90 Chloride	56A: ANIONS	580	3.0		mg/Kg		10	Analyst: BL 10/23/2003 4:51:26 PM
EPA METHOD 41 Petroleum Hydroc	8.1: TPH arbons, TR	ND	20		mg/Kg		1	Analyst: GT 10/21/2003
EPA METHOD 80	21B: VOLATILES							Analyst: NSB
Benzene Toluene		ND ND	0.025 0.025		mg/Kg mg/Kg		1 1	10/22/2003 12:07:48 AM 10/22/2003 12:07:48 AM
Elhylbenzene Xylenes, Total			0.025 0.025		mg/Kg mg/Kg		1 1	10/22/2003 12:07:48 AM 10/22/2003 12:07:48 AM
Surr: 4-Bromofi	uorobenzene	106	74-118		%REC		1	10/22/2003 12:07:48 AM

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Qualifiers:

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- ND Not Detected at the Reporting Limit
- J Amlyte detected below quantitation limits
- B Analyte detected in the associated Method Blank

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- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Page 3 of 10

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Date: 27-Oct-03

CLIENT:	New Mexico Salt Wa	ter Disposal Co	., Inc.	Client Sar	nple ID: S	SB-2:9'-	-11'
Lab Order:	0310133			Collec	tion Date:	10/14/	/2003 10:45:00 AM
Project:	NMSWDCo Site Ass	essment	•				
Lab ID:	0310133-04				Matrix:	SOIL	
Analyses		Result	Limit	Qual Units		DF	Date Analyzed
EPA METHOD 90 Chloride	156A: ANIONS	500	3.0	mg/Kg		10	Anaiyst: BL 10/23/2003 5:08:10 PM
EPA METHOD 41 Petroleum Hydrod	18.1: TPH arbons, TR	ND	20	mg/Kg		1	Analyst: GT 10/21/2003
EPA METHOD 80	21B: VOLATILES						Analyst: NSB
Benzena		ND	0.025	mg/Kg		1	10/22/2003 12:38:27 AM
Toluene		ND	0.025	mg/Kg		· 1	10/22/2003 12:38:27 AM
Elhylbenzene		ND	0.025	mg/Kg		1	10/22/2003 12:38:27 AM
Xylenes, Total		ND	0.025	mg/Kg		t	10/22/2003 12:38:27 AM
Sun: 4-Bromofi	uorobenzene	97.3	74-118	%REC		1	10/22/2003 12:38:27 AM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Page 4 of 10

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CLIENT:	New Mexico Salt Wa	ter Disposal Co	o., Inc.	Client San	ple ID: SB-2:14	<u>'-16'</u>
Lab Order:	0310133			Collect	ion Date: 10/14/	2003 12:40:00 PM
Project:	NMSWDCo Site Ass	essment			•	
Lab ID:	0310133-05				Matrix: SOIL	
Analyses		Result	Limit	Qual Units	DF	Date Analyzed
EPA METHOD Chloride	9056A: ANIONS	1100	6.0	mg/Kg	20	Analyst: BL 10/23/2003 5:24:54 PM
EPA METHOD Petroleum Hyd	418.1: TPH rocarbons, TR	ND	20	mg/Kg	t	Analyst: GT 10/21/2003
EPA METHOD	80218: VOLATILES					Analyst: NSB
Benzene		ND	0.025	mg/Kg	1	10/22/2003 2:32:05 PM
Toluene		ND	0.025	mg/Kg	1	10/22/2003 2:32:05 PM
Elhylbenzene		ND	0.025	mg/Kg	1	10/22/2003 2:32:05 PM
Xylenes, Total		ND	0.025	mg/Kg	1	10/22/2003 2:32:05 PM
Sur: 4-Brom	ofluarobenzene	98.9	74-118	%REC	1	10/22/2003 2:32:05 PM

Qualifiers:

1947 - V

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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يد يزيد المحافظ

Date: 27-Oct-03

CLIENT:	New Mexico Salt Wi	ater Disposal Co	o., Inc.	Client Samp	le ID: SB-3:9'-	-11'
Lab Order:	0310133			Collectio	n Date: 10/14/	2003 11:00:00 AM
Project:	NMSWDCo Site As	sessment				
Lab ID:	0310133-06			· ·]	Matrix: SOIL	
Analyses		Result	Limit	Qual Units	DF	Date Analyzed
EPA METHOD	9056A: ANIONS	2000	45		50	Analyst: BL
Chiande		3600	10	mg/Kg	20	10/23/2003 5:41:38 PW
EPA METHOD	418.1: TPH					Analyst: GT
Petroleum Hydr	rocarbons, TR	ND	20	mg/Kg	1	10/21/2003
EPA METHOD	8021B: VOLATILES					Analyst: NSB
Benzene		ND	0.025	mg/Kg	1	10/22/2003 3:02:58 PM
Toluene		ND	0.025	mg/Kg	1	10/22/2003 3:02:58 PM
Ethylbenzene		ND	0.025	mg/Kg	1	10/22/2003 3:02:58 PM
Xylenes, Total		ND	0.025	mg/Kg	1	10/22/2003 3:02:58 PM
Sun: 4-Brom	ofiuorobenzene	96.3	74-118	%REC	1	10/22/2003 3:02:58 PM

Qualifiers:

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Page 6 of 10

Date: 27-Oct-03

CLIENT:	New Mexico Salt Wa	iter Disposal C	o., Inc.	Client San	ple D: S	5B-4:0'	-2'
Lab Order:	0310133			Collect	ion Date:	10/14	/2003 11:30:00 AM
Project:	NMSWDCo Site Ass	essment					
Lab ID:	0310133-07				Matrix:	SOIL	
Analyses		Result	Limit	Qual Units		DF	Date Analyzed
EPA METHOD Chloride	9056A: ANIONS	1600	15	mg/Kg		50	Analyst: BL 10/23/2003 5:58:22 PM
EPA METHOD Petroleum Hyd	418.1: TPH rocarbons, TR	ND	20	mg/Kg		1	Analyst: GT 10/21/2003
EPA METHOD	8021B: VOLATILES						Analyst: NSB
Benzene		ND	0.025	mg/Kg		1	10/22/2003 3:33:55 PM
Toluene		ND	0.025	mg/Kg		1	10/22/2003 3:33:55 PM
Elhylbenzene		ND	0.025	mg/Kg		1	10/22/2003 3:33:55 PM
Xylenes, Total		ND	0.025	mg/Kg		1	10/22/2003 3:33:55 PM
Sur: 4-Brorr	eneznedoroultor	95.6	74-118	%REC		1	10/22/2003 3:33:55 PM

Qualifiers:

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J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

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S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Page 7 of 10

ND - Not Detected at the Reporting Limit

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Date: 27-Oct-03

CLIENT:	New Mexico Salt Wa	iter Disposal Ci	o., Inc.	Clie	ent Sam	ple ID: S	SB-4:4'-	6'
Lab Order:	0310133				Collecti	ion Date:	10/14/2	2003 11:40:00 AM
Project:	NMSWDCo Site Ass	essment	•		,			
Lab ID:	0310133-08					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOL Chlorida	9056A: ANIONS	88	0.30		mg/Kg		1	Analyst BDH 10/24/2003 4:43:35 PM
EPA METHOR Petroleum Hy	D 418.1: TPH drocarbons, TR	ND	20		mg/Kg		1	Analyst GT 10/21/2003
EPA METHO	0 8021B: VOLATILES							Analyst NSB
Benzene		ND	0.025		mg/Kg		1	10/22/2003 4:04:45 PM
Toluene		ND	0.025		mg/Kg		1	10/22/2003 4:04:45 PM
Ethylbenzene		ND	0.025		mg/Kg		1	10/22/2003 4:04:45 PM
Xylenes, Tota	1	ND	0.025		mg/Kg		1	10/22/2003 4:04:45 PM
Surr. 4-Bro	malluarobenzene	96.3	74-118		%REC		1	10/22/2003 4:04:45 PM

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Qualifiers:

ND - Not Detected at the Reporting Limit

- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Page 8 of 10

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Date: 27-Oct-03

CLENT:	New Mexico Salt W	ater Disposal Co	., Іпс.	Client San	nple ID: 5	SB-4:9'-	11'
Lab Order:	0310133			Collect	tion Date:	10/14/2	2003 11:50:00 AM
Project:	NMSWDCo Site As	sessment	`		*		
Lab ID:	0310133-09				Matrix:	SOIL	
Analyses		Result	Limit	Qual Units		DF	Date Analyzed
EPA METHOD 90 Chioride	D56A: ANIONS	2200	. 15	mg/Kg		50	Analyst: BDH 10/24/2003 5:00:19 PM
EPA METHOD 47 Petroleum Hydrod	18.1: TPH carbons, TR	ND	20	mg/Kg		1	Analyst: GT 10/21/2003
EPA METHOD 80	021B: VOLATILES						Analyst: NSB
Benzene		ND	0.025	mg/Kg		1	10/22/2003 4:35:32 PM
Toluene		ND	0.025	mg/Kg		1	10/22/2003 4:35:32 PM
Ethylbenzene		ND	0.025	mg/Kg		1	10/22/2003 4:35:32 PM
Xylenes, Total		ND	0.025	mg/Kg		1	10/22/2003 4:35:32 PM
Sur: 4-Bromof	luorobenzene	97.7	74-118	%REC		1	10/22/2003 4:35:32 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 27-Oct-03

CLIENT:	New Mexico Salt Wat	er Disposal Co	., Ілс.	Client San	ple ID: SB-4:14	-16'
Lab Order:	0310133			Collect	ion Date: 10/14/2	2003 12:22:00 PM
Project:	NMSWDCo Site Asse	ssment				
Lab ID:	0310133-10				Matrix: SOIL	
Analyses		Result	Limit	Qual Units	DF	Date Analyzed
EPA METHOD 90 Chloride	56A: ANIONS	3400	15	mg/Kg	50	Analyst: BDH 10/24/2003 5:17:03 PM
EPA METHOD 4 ⁻ Petroleum Hydrod	18.1: TPH arbons, TR	ND	20	mg/Kg	1	Analyst: GT 10/21/2003
EPA METHOD 80	21B: VOLATILES					Analyst: NSB
Benzene		ND	0.025	mg/Kg	1	10/22/2003 5:06:32 PM
Toluene		ND	0.025	mg/Kg	1	10/22/2003 5:06:32 PM
Ethylbenzene		ND	0.025	mg/Kg	1	10/22/2003 5:06:32 PM
Xylenes, Total		. ND	0.025	mg/Kg	1	10/22/2003 5:06:32 PM
Surr: 4-Bromol	luorobenzene	98.4	74-118	%REC	1	10/22/2003 5:06:32 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Page 10 of 10

Hall Enviro	nmental Aı	nalysis Labora	tory						t i nya panga i ja tu huma - t turing	Date: 2	7-Oct-03	
CLIENT: Work Order: Praject:	Read & Stev 0310133 NMSWDCo	ens, Inc. Site Assessment							QC SUM	IMAR	Y REPC Method E	JRT 3lank
Sample ID MB-4	511 B	latch ID: 4511	Test Cade:	E418.1	Units: mg/Kg		Analysis	5 Date 10/2	1/2003	Prep Dê	ate 10/20/201	E E
Client ID: Analyte		Result	PQL PQL	SPK value	IUZTA SPK Ref Val	%REC	segno: LowLimit	22151 HighLimit	50 RPD Ref Val	%RPD	RPDLImit	Qual
Petroleum Hydroc	arbons, TR	QN	20									
Sample ID MB-4	506 B	latch ID: 4506	Test Code:	SW8021	Units: mg/Kg		Analysis	5 Date 10/2.	2/2003 1:09:02 AM	Prep Da	ate 10/20/201	53
Client IU: Analyte		Result	Pol.	SPK value	zi A SPK Ref Val	%REC	LawLimit	HighLimit	83 RPD Ref Val	%RPD	RPDLImit	Qual
Benzene Toluana Ethylbenzene Xylenes, Total Surr. 4-Bromofil	uarobenzane	0 N 0 N 0 N 0 N 0 N 0 N 0 N 0 N 0 N 0 N	0.025 0.025 0.025 0.025 0.025	~	Q	87.5	47	118				
Qualifiers;	ND - Nat Detecte	d at the Reporting Limit		s - Sp	ke Recovery outside :	accepted reco	wery limits		B - Analyte detected h	n the associ	inted Method B	llank
	J - Analyte detect	ted below quantitation lin	nits	R - Rf	D outside accepted re	scovery limits						-

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Hall Environment	al Analysis Labora	tory							Date: 27	7-Oct-03	
CLIENT: Read &	č Slevens, Inc.							QC SUM	IMAR	Y REPC	RT
Project: NMSV	/DCo Site Assessment								Sample	e Matrix S	pike
Sample ID 0310133-10AMS Client ID: SB-4:14'-16'	Balch ID: 4511	Test Code: Run ID:	E418.1 BUCK IR_03*	Unlts; mg/Kg 1021A		Analysis SeqNo:	Date 10/21/	2003	Prep Da	ite 10/20/20	e
Analyte	Result	Pal	SPK value	SPK Ref Val	%REC	LowLimlt	HighLimit	RPD Ref Val	%RPD	RPDLImit	Qual
Petroleum Hydrocarbons, TR	111	20	103	0	108	82	114	D			
Sample ID 0310133-10AMS	D Batch ID: 4511	Test Code:	E418.1	Units: mg/Kg		Anatysis	Date 10/21/	2003	Prep Da	ite 10/20/20	13
Client ID: SB-4:14'-16'		Run ID:	BUCK IR_03	1021A		SeqNo:	221569	_			
Analyte	Result	Par	SPK value	SPK Ref Val	%REC	LawLimit	HighLimit	RPD Ref Val	%RPD	RPDLImit	Qual
Petroleum Hydrocarbons, TR	107	20	103	0	104	82	114	111	3.67	20	
Sample ID 0310133-04aMS Client ID: SB-2:9'-11'	Batch ID: 4506	Test Code: Run ID:	SW6021 PIDFID_0310	Units: mg/Kg 21A		Analysis SøqNo:	Date 10/22/ 221791	2003 1:39:40 AM	Prep Da	fe	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPOLIMI	Qual
Benzene Toluene Ethylbenzene Xylenes, Total	1.021 1.028 1.008 3.067	0.025 0.025 0.025 0.025		0000	102 101 101	77 81 84	122 115 117 116	0000			
Sample ID 0310133-04aMS Client ID: SB-2:9'-11'	D Batch (D; 4505	Test Code: Run ID:	SW8021 PIDFID_0310	Units: mg/Kg 21A		Analysis SegNo:	Date 10/22/	2003 2:10:19 AM	Prep Da	te	
Analyle	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLIMI	Qual
Benzene Toluene	1.065 1.054	0.025 0.025		00	107 105	81	122	1.021 1.028	4.31 2.53	27 19	
Ethylbenzene Xylenes, Total	1.009 3.136	0.025 0.025	т Ю	60	101 105	84 84	117 116	1.006 3.087	0.242 2.23	10 13	
Qualifiers: ND - Noi 7. Analyr	Detected at the Reporting Limit detected below quantitation lit	aits	S - Spi	ke Recovery outside Ό ουιsid <i>e</i> accepted π	accepted reco	overy limits s	Ē	- Analyte detected i	in the associ	aled Method B	lank /

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iated Method Blank	in the assoc	B - Analyte delected		overy limits	uccepted rec	ke Recovery outside	S - Spi		ected at the Reporting Limit	ND - Not Det	Qualifiers:
						÷					
2	2	2		5	1	3	1		2		
10	5.12	1,068	117	84	101	0 0	c	0.025	1.015		Ethylbenzene
27 19	3.03 11 4	1.113	122	77 81	108 108	00	~	0.025 0.025	1.08 1.076		Benzene Toluene
RPDLImit Qual	%RPD	RPD Ref Val	HighLimit	LowLinit	%REC	SPK Ref Val	SPK value	Pal	Result		Analyte
		2	22203	SeqNo:		22A	PIDFID_0310	Run ID:		-2:14'-16'	Client ID: SB.
ate	Prep D	/2003 6:08:53 PM	s Date 10/23	Analysis		Units: mg/Kg	SW8021	Test Code:	Balch ID: 4506	0133-D5aMSD	Sample ID 031
	x	0	116	84	110	0	3	0.025	3.303		Xylenes, Total
		00	115 117	81 84	112 107		t- t-	0.025 0.025	1.121 1.068		Toluene Ethylbenzene
		0	122	11	111	0	+	0.025	E11.1		Benzene
RPDLimit Qual	NRPD	RPD Ref Val	HighLimIt	LawLlmit	%REC	SPK Ref Val	SPK value	PQL	Result		Analyle
		, Q	22203	SeqNo:		22A	PIDFID_0310	Run ID:		-2:14'-16'	Client ID: SB
ale	Prep D	U2003 5:37:49 PM	s Date 10/22	Analysis		Units: mg/Kg	SWB021	Test Code:	Batch ID: 4506	0133-05aMS	Sample ID 031
e Matrix Spike	Sampl								Co Site Assessment	DWSMN	Project:
Y REPORT	IMAR	QC SUIV							tevens, Inc.	Read & S 0310133	CLIENT: Work Order:
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Spike recovery outside accepted recovery limits
RPD outside accepted recovery limits

J - Analyte detected below quantitation limits

CL.HENT: Read & Stev Work Order: 0310133 Project: NMSWDCo Sample ID LCS-4511 · f Client ID: Analyte Analyte Petroleum Hydrocarbans, TR	vens, Inc.										
Work Order: 0310133 Project: NMSWDCo Sample ID LCS-4511 · f Client ID: Analyte Analyte Petroleum Hydrocarbons, TR								MILIS DO	IN A R	V REPC	RT
Project: NMSWDCo Sample ID LCS-4511 · E Client ID: Analyle Petroleum Hydrocarbons, TR								Topotono V			
Sample ID LCS-4511 . E Client ID: Analyte Petroleum Hydrocarbans, TR	o Site Assessment							Laboraiory C	c lonuo	opike - ge	nenc
Cllent ID: Analyte Petroleum Hydrocarbans, TR	Batch ID: 4511	Test Code:	E418.1	Units: mg/Kg		Analysis	Date 10/2	1/2003	Prep Da	le 10/20/20	
Analyte Petroleum Hydrocarbons, TR		Run ID:	BUCK IR_031	021 A		SeqNo:	2215(51			
Petroleum Hydrocarbans, TR	Result	Pal	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimlt	Qual
	108	20	103	G	105	82	114	0			
Sample ID BTEX Std 100ng 1	Batch ID: 4506	Tast Code:	SW8021	Units: mg/Kg		Analysis	Date 10/2	1/2003 8:31:44 PM	Prep Da	fe	
Client ID:		Run ID:	PIDFID_0310;	21 A		SeqNo:	22179	93			
Analyte	Result	Pal	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	043%	RPDLIMI	Qual
Banzarie	1.064	0.025	-	a	106	11	122	0			
Toluene	1.077	0.025	**	٥	108	81	115	. 0			
Ethylbenzene	0.9881	0.025	-	Q	86.9	84	117	o			
Xylenes, Total	3.108	0.025	m	0	104	84	116	0			
Sample ID BTEX Std 100ng E	Batch ID: 4506	Test Code:	SW8021	Units: mg/Kg		Analysis	Data 10/2	2/2003 2:41:19 AM	Prep Da	ta ta	
Client ID:		Run ID:	PIDFID_03107	21 A		SeqNo:	22179	34			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LawLimit	HighLimit	RPD Ref Val	%RPD	RPDLImit	Qual
Datation	1 056	0.025	-	c	108	74	557	1007	01-11-0		
DENZERIE Tolicoci	000'I	5200	- •	- -	5	2	771	1.004	0.0700	77	
Turuche Ethulhaataaa	0.070	0.025	• •		6 L 0	0	211	1 / JU-1	0760.0	2 4	
Lingualizata Videose Total	1216.0	0,005	- (*		2.10	5 0	477 	1 5 1 0 8		2 ;	
			,		-	5	2		N. 20.	2	
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		-									
Qualificrs: ND - Not Detect	ed at the Reporting Limit		S - Spi	ke Recovery outside i	accepted reco	overy limits		B - Analyte detected i	in the associa	sted Method E	dank
J - Analyte detec	sted below quantitation limi	ii	R - RP	D outside accepted re	covery limits	in					1

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d Method Blank	n the associate	3 - Analyte detected i	H	overy limits	accepted rect	Recovery outside	S - Spike		ected at the Reporting Limit	ND - Not Det	Qualifiers:
				-							
13	2.82	3.249	116	84	105	0	τ η	0.025	3.158		Xylenes, Total
19 10	0.000895 0.0704	1.117 (1.008	115 117	81 84	112 101	00	4- 4-	0.025 0.025	1.117 1.008		Toluene Ethylbenzene
27	2.99	1.061	122	17	109	0	۲	0.025	1.093		Benzene
RPDLImit Qual	%RPD F	RPD Ref Val	HighLimit	rawLimit	%REC	SPK Ref Val	SPK vatue	Par	Result		Anaiyte
			22213	SaqNo:		٤A	PIDFID_031023	Run ID:			Client ID:
	Prep Date	/2003 2:52:19 AM	Date 10/23	Analysis		Units: mg/Kg	SWB021	Test Code:	Balch (D: 4506	X Std 100ng	Sample ID BTE
		0	116	84	108	0	3	0.025	3.249		Xylenes, Total
		00	117	84	101	0 0		0.025	1.008		rowene Ethylbenzene
		0,	122	F 2	106	00	· ·	0.025	1.061		Benzene
RPDLImit Qual	%RPD F	RPD Ref Val	HighLimit	LowLimit	%REC	SPK Ref Val	SPK value	. Pal	Result		Analyte
		٥	22213	SeqNo:		٤A	PIDFID_031023	Run ID:			Client ID:
	Prep Date	/2003 6:39:38 PM	Date 10/22	Analysis		Unlis: mg/Kg	SW8021	Test Code:	Batch (D: 4506	X Std 100ng	Sample ID BTE
ike - generic	Control Sp	Laboratory C							Co Site Assessment	0310133 NMSWD	Work Order: Project:
REPORT	IMARY	OC SUM							tevens, Inc.	Read & S	CLIENT:

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	Sample	Receipt Ch	ecklist				
Client Name CMB			Date and Time	Received:		10/	17/2003
Work Order Number 0310133			Received by	AMG	ĸ		
	200_10/1-	7/03 Date					
Matrix	Carrier name	Greyhound					
Shipping container/cooler in good condition?		Yes 🗹	No 🗆	Not Present			
Custody seals intact on shipping container/coole	r?	Yes 🗌	No 🗆	Not Present		Not Shipped	
Custody seals intact on sample bottles?		Yes 🗹	No 🗔	N/A			
Chain of custody present?		Yes 🗹	Νο				
Chain of custody signed when relinquished and a	eceived?	Yes 🗹	Νο				
Chain of custody agrees with sample labels?		Yes 🗹	No 🗔				
Samples in proper container/bottle?		Yes 🗹					
Sample containers intact?		Yes 🗹	No 🗔				
Sufficient sample volume for indicated test?		Yes 🗹	No 🗆				
All samples received within holding time?		Yes 🗹	No 🗔				
Water - VOA vials have zero headspace?	No VOA vials subr	nitted 🗹	Yes 🗌	No 🗌			
Water - pH acceptable upon receipt?		Yes 🗆	No 🗔	N/A 🗹			
Container/Temp Blank temperature?		Żª	4° C ± 2 Accepta If given sufficient	bie time to cool.			
COMMENTS:							
				·			
Client contacted	Date contacted:		Pers	on contacted			
Contacted by:	Regarding						
}							
Comments:						<u></u>	
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TAL DRY	i. 345.4				(ADV-i	ma2) 0758												ט ג'
HAT BAT	505 E E				ני	8260 (VOA											 	Ś
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NKins VKins Vkins	345.3 enviro			(6M	' K' Cª'	eV) enoideO							L]		 - Ci	Ĝ
T Haven	505.3				reis Laise	BM 8 ARDR	ļ					· .					 13	
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	11 - 12 11 - 12 12 - 12 12 - 12 12 - 12	(vino enilos	60) H9T	+ 381	BTEX + M											narks:	249
			(1208	Pa'8MT	+ 381		\geq	\times	X	\searrow	X	\ge	\times	\ge	\geq	\ge	Her	~ -
	icat 222	2/20	te, vig	10/1	100	CALAL No.			ۍ ۲	Ц		9	7	8	0-	10	CH LIN	
JSACE	20,5		2			VEV.	\ge	\searrow	X	\checkmark	Х	X	X	X	X	X		
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				ample	ample	Numbe	2 X L	· ~	2	2	1	~	2	1	×.			┦
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V RECORD	it lata	Laxey Le	is 88202	2720	8643	Sample I.D. No.	1-16:1-8	5-0:0:5	19-14:20	11-16:8-5	-2: 14-16	-3:9'-11	8-4:0:4-8	3-41 H-6	3-4:9-11	1-141 : 14-1P	(Signature)	r/
00	S Y	N N	EX.	$\dot{\mathcal{M}}$	1		5	Cy N	S	3	2	32	NJ.	S	S	N	 A BU	120
CUST CUST	uferne	10%	W may	0 000-	- 622	Matrix	Sic	Soll	Soli	Soli	Soli	Sölć.	Soli	2017	50/05	Soil	 Reinquist	
N-OF	en ins	1.M.L	C/L/	10/2	505	Time	10:00	10:15	10:30	Stial	12:49	00;11	11:30	11:40	11:50	12:22	 Time: DK20	5
HA	hent: N		1 Set	hone #:	, # XB	Date	4/03	4103	14/02	+103	11/23	4/03	103	1/02	4/63	4/22	ate:	5

Hall Environmental **Analysis Laboratory**

COVER LETTER

December 26, 2003

John Maxey New Mexico Salt Water Disposal Co. P.O. Box 1518 Roswell, New Mexico 882021518 TEL: (505) 625-0266 FAX (505) 622-8643

RE: NMSWDCo Site Assessment

Order No.: 0311174

Dear John Maxey:

Hall Environmental Analysis Laboratory received 30 samples on 11/21/2003 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager Nancy McDuffie, Laboratory Manager

4901 Hawkins NE, Suite A, Albuquerque, NM 87109 505.345-3975, Fax 505.345-4107

Date: 26-Dec-03

CLIENT:	New Mexico Salt Wa	ater Disposal Co.		Clie	ent San	ple ID: S	SB-1A:	0-2'
Lab Order:	0311174				Collect	ion Date:	11/19	/2003 9:00:00 AM
Project:	NMSWDCo Site Ass	essment						
Lab ID:	0311174-01					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD	9056A: ANIONS							Analyst: BDH
Chloride		120	3.0		mg/Kg		10	12/6/2003 12:34:12 PM
EPA METHOD	418.1: TPH							Analyst: GT
Petroleum Hydr	ocarbons, TR	32	20		mg/Kg		1	11/25/2003
EPA METHOD	8021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025		mg/Kg		1	12/1/2003 11:00:47 AM
Toluene		ND	0.025		mg/Kg		1	12/1/2003 11:00:47 AM
Ethylbenzene		ND	0,025		mg/Kg		1	12/1/2003 11:00:47 AM
Xylenes, Total		ND	0.025		mg/Kg		1	12/1/2003 11:00:47 AM
Surr: 4-Brome	olluorobenzene	97.4	74-118		%REC		1	12/1/2003 11:00:47 AM

Qualifiers:

ND - Not Detected at the Reporting Limit

"J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery fimits

E - Value above quantitation range

Page 1 of 32

CLIENT:	New Mexico Salt Wat	er Disposal Co.		Clie	ent Samp	le ID: S	SB-1A:	9-11'
Lab Order:	0311174				Collectio	n Date:	11/19	/2003 10:37:00 AM
Project:	NMSWDCo Site Asse	essment						
Lab ID:	0311174-02]	Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD 9	056A: ANIONS	000						Analyst: BDH
Chioride		380	3.0		mg/Kg		10.	12/6/2003 12:50:57 PM
EPA METHOD 4	18.1: TPH							Analyst: GT
Petroleum Hydro	carbons, TR	280	20		mg/Kg		1	11/25/2003
EPA METHOD 8	021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025		mg/Kg		1	12/1/2003 11:31:02 AM
Toluene		0.028	0.025		mg/Kg		1	12/1/2003 11:31:02 AM
Ethylbenzene		0.083	0.025		mg/Kg		1	12/1/2003 11:31:02 AM
Xyienes, Total		0.19	0.025		mg/Kg		1.	12/1/2003 11:31:02 AM
Surr. 4-Bromo	luorobenzene	98.7	74-118		%REC		1	12/1/2003 11:31:02 AM

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt Wat	er Disposal Co.		Cli	ent Sample l	D: SB-IA:	14-16'
Lab Order:	0311174				Collection I	Date: 11/19	/2003 11:05:00 AM
Project:	NMSWDCo Site Asse	ssment					
Lab ID:	0311174-03				Ma	trix: SOIL	
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed
EPA METHOD	9056A: ANIONS						Analyst: BDH
Chloride		1900	6.0		mg/Kg	20	12/7/2003 12:05:12 PM
EPA METHOD	418.1: TPH						Analyst: GT
Petroleum Hyd	rocarbons, TR	55	20		mg/Kg	1	11/25/2003
EPA METHOD	8021B: VOLATILES						Analyst: NSB
Benzene		ND	0.025		mg/Kg	1	12/1/2003 12:01:08 PM
Toluene		ND	0.025		mg/Kg	1	12/1/2003 12:01:08 PM
Elhylbenzene		ND	0.025		mg/Kg	1	12/1/2003 12:01:08 PM
Xylenes, Total		ND	0.025		mg/Kg	1	12/1/2003 12:01:08 PM
Surr. 4-Brom	ofluorobenzene	99.9	74-118		%REC	7	12/1/2003 12:01:08 PM

Qualifiers:

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R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

New Mexico Salt Wa 0311174	ter Disposal Co.		Clie	ent Sam Collecti	ple ID: S ion Date:	SB-1A: 1 11/19/2	19-21' 2003 11:20:00 AM
NMSWDCo Site Ass	essment				·		
0311174-04					Matrix:	SOIL	
	Result	Limit	Qual	Units		DF	Date Analyzed
56A: ANIONS	1800	6.0		mg/Kg		20	Analyst: BDH 12/7/2003 12:21:57 PM
18.1: TPH carbons, TR	ND	20		mg/Kg		1	Analyst: GT 11/25/2003
21B: VOLATILES	ND	0.025		mg/Kg		1	Analyst: NSB 12/1/2003 12:31:11 PM
	ND ND	0.025		mg/Kg mg/Kg		1 1	12/1/2003 12:31:11 PM 12/1/2003 12:31:11 PM 12/1/2003 12:31:11 PM
	New Mexico Salt Wa 0311174 NMSWDCo Site Ass 0311174-04 056A: ANIONS 18.1: TPH carbons, TR 021B: VOLATILES	New Mexico Salt Water Disposal Co. 0311174 NMSWDCo Site Assessment 0311174-04 256A: ANIONS 1800 18.1: TPH carbons, TR ND 021B: VOLATILES ND ND ND	New Mexico Salt Water Disposal Co. 0311174 NMSWDCo Site Assessment 0311174-04 256A: ANIONS 1800 6.0 18.1: TPH carbons, TR ND 20 2021B: VOLATILES ND 0.025 ND 0.025 ND 0.025 ND 0.025	New Mexico Salt Water Disposal Co. Clie 0311174 NMSWDCo Site Assessment 0311174-04 D56A: ANIONS 1800 6.0 18.1: TPH carbons, TR ND 20 D21B: VOLATILES ND 0.025 ND 0.025 ND 0.025	New Mexico Salt Water Disposal Co. Client Sam 0311174 Collect NMSWDCo Site Assessment 0311174-04	New Mexico Salt Water Disposal Co. Client Sample ID: S 0311174 Collection Date: NMSWDCo Site Assessment Matrix: 0311174-04 Matrix: Result Limit Qual Units 056A: ANIONS 1800 6.0 mg/Kg 18.1: TPH carbons, TR ND 20 mg/Kg 021B: VOLATILES ND 0.025 mg/Kg ND 0.025 mg/Kg ND 0.025 mg/Kg ND 0.025 mg/Kg ND 0.025 mg/Kg	New Mexico Salt Water Disposal Co.Client Sample ID: SB-1A:0311174Collection Date:11/19/2NMSWDCo Site AssessmentMatrix:SOIL0311174-04Matrix:SOILResultLimitQualUnitsDF256A: ANIONS18006.0mg/Kg2018.1: TPH carbons, TRND20mg/Kg1D21B: VOLATILESND0.025mg/Kg1ND0.025mg/Kg1ND0.025mg/Kg1ND0.025mg/Kg1ND0.025mg/Kg1ND0.025mg/Kg1

Qualifiers:

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S - Spike Recovery outside accepted recovery limits

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R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt Wa	er Disposal Co.		Clier	nt Sam	ple ID: SI	3-1A:	24-26'
Lab Order:	0311174			C	Collect	ion Date:	11/19	/2003 11:36:00 AM
Project:	NMSWDCo Site Asse	essment						
Lab ID:	0311174-05					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD 9 Chloride	056A: ANIONS	3700	15		mg/Kg		50	Analyst: BDH 12/7/2003 12:38:42 PM
EPA METHOD 4	18.1: TPH							Analyst: GT
Petroleum Hydro	carbons, TR	ND	20	r	mg/Kg		1	11/25/2003
EPA METHOD 8	021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025	r	mg/Kg		1	12/1/2003 1:01:16 PM
Toluene		ND	0.025	ı	ng/Kg		1	12/1/2003 1:01:16 PM
Ethylbenzene		ND	0.025	ſ	mg/Kg		1	12/1/2003 1:01:16 PM
Xylenes, Total		ND	0.025	ſ	ng/Kg		1	12/1/2003 1:01:16 PM
Surr: 4-Bromo	fluorobenzene	98.7	74-118	C	%REC		1	12/1/2003 1:01:16 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

1 - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation mage

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CLIENT: Lab Order: Project:	New Mexico Salt Water 0311174 NMSWDCo Site Assess	Disposal Co.		Cli	ent Samj Collectio	ple ID: S on Date:	5B-1A: 11/19/	29-31' 2003 11:54:00 AM
Lab ID:	0311174-06					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD S Chloride	9056A: ANIONS	5000	30		mg/Kg		100	Analyst: BDH 12/7/2003 1:12:12 PM
EPA METHOD 4 Petroleum Hydro	118.1: TPH pcarbons, TR	ND	20		mg/Kg		1	Analyst: GT 11/25/2003
EPA METHOD & Benzene Toluene Ethylbenzene Xylenes, Total Surr. 4-Bromo	3021B: VOLATILES	ND ND ND 0.036 96.0	0.025 D.025 0.025 0.025 74-118		mg/Kg mg/Kg mg/Kg mg/Kg %REC		1 1 1 1	Analyst: NSB 12/1/2003 1:31:30 PM 12/1/2003 1:31:30 PM 12/1/2003 1:31:30 PM 12/1/2003 1:31:30 PM 12/1/2003 1:31:30 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt Wa	ter Disposal Co.		Clie	nt Sam	iple ID: S	B-IA:	: 34-36'
Lab Order:	0311174			1	Collect	ion Date:	11/19	/2003 12:40:00 PM
Project:	NMSWDCo Site Ass	essment						
Lab ID:	0311174-07					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD 9	056A: ANIONS							Analyst: BDH
Chloride		2000	15		mg/Kg		50	12/7/2003 1:28:57 PM
EPA METHOD 4	18.1: TPH							Analyst: GT
Petroleum Hydro	carbons, TR	ND	20		mg/Kg		1	11/25/2003
EPA METHOD 8	021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025		mg/Kg		1	12/1/2003 2:01:44 PM
Toluene		ND	0.025		mg/Kg		1	12/1/2003 2:01:44 PM
Ethylbenzene		ND	0.025		mg/Kg		1	12/1/2003 2:01:44 PM
Xylenes, Total		ND	0.025		mg/Kg		1	12/1/2003 2:01:44 PM
Surt: 4-Bromo	fluorobenzene	101	74-1 1 8		%REC		1	12/1/2003 2:01:44 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Volue exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt W	ater Disposal Co.		Clie	ent Sam	ple ID: S	B-2A:	0-2'
Lab Order:	0311174		Collection Date: 11/19/2003 1:20:00 PM					
Project:	NMSWDCo Site As	sessment		•				
Lab ID:	0311174-08					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD	9056A: ANIONS							Analyst: BDH
Chloride		350	3.0		mg/Kg		10	12/6/2003 2:31:27 PM
EPA METHOD	418.1: TPH							Analyst: GT
Petroleum Hydi	rocarbons, TR	ND	20		mg/Kg		1	11/25/2003
EPA METHOD	8021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025		mg/Kg		1	12/1/2003 2:31:56 PM
Toluene		ND	0.025		mg/Kg		1	12/1/2003 2:31:56 PM
Elhylbenzene		ND	0.025		mg/Kg		1	12/1/2003 2:31:56 PM
Xylenes, Total		ND	0.025		mg/Kg		1	12/1/2003 2:31:56 PM
Surr: 4-Brom	ofluorobenzene	99.3	74-118		%REC		1	12/1/2003 2:31:56 PM

Qualifiers:

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- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt Wa	ter Disposal Co.		Cli	ent Samp	ole ID: S	B-2A: 9)-11'
Lab Order:	0311174				Collectio	on Date:	11/19/2	2003 1:36:00 PM
Project:	NMSWDCo Site Ass	essment						• •
Lab ID:	0311174-09					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD	9056A: ANIONS							Analyst: BDH
Chloride		1400	6.0		mg/Kg		20	12/7/2003 1:45:42 PM
EPA METHOD	418.1: TPH							Analyst: GT
Petroleum Hyd	Irocarbons, TR	ND	20		mg/Kg		1	11/25/2003
EPA METHOD	8021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025		mg/Kg		1	12/1/2003 3:02:07 PM
Toluene		ND	0.025		mg/Kg		1	12/1/2003 3:02:07 PM
Ethylbenzene		ND	0.025		mg/Kg		1	12/1/2003 3:02:07 PM
Xylenes, Total		ND	0.025		mg/Kg		1	12/1/2003 3:02:07 PM
Surr: 4-Bron	nofluorobenzene	100	74-118		%REC		1	12/1/2003 3:02:07 PM

Qualifiers:

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt Wate	r Disposal Co.	o. Client Sample ID: SB-2A: 14-16							
Lab Order:	0311174			Collection Date: 11/19/2003 1:50:00						
Project:	NMSWDCo Site Asses	sment								
Lab ID:	0311174-10				Matrix: SOIL					
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed			
EPA METHOD	9056A: ANIONS	000	2 1			10	Analyst: BDH			
Chionae		300	5.0		ngrog	U.	121012003 3.21.42 FW			
EPA METHOD	418.1: TPH						Analyst: GT			
Petroleum Hyd	rocarbons, TR	ND	20		mg/Kg	1	11/25/2003			
EPA METHOD	8021B: VOLATILES						Analyst: NSB			
Benzene		ND	0.025		mg/Kg	1	12/1/2003 4:02:14 PM			
Toluene		ND	0.025		mg/Kg	1	12/1/2003 4:02:14 PM			
Elhylbenzene		ND	0.025		mg/Kg	1	12/1/2003 4:02:14 PM			
Xylenes, Total		ND	0.025		mg/Kg	1	12/1/2003 4:02:14 PM			
Surr: 4-Brom	Iofluorobenzene	97.3	74-118		%REC	1	12/1/2003 4:02:14 PM			

Qualifiers:

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B - Analyte detected in the associated Method Blank

- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt W	ater Disposal Co.	Client Sample ID: SB-2A: 19-21'						
Lab Order:	0311174		Collection Date: 11/19/2003 2:05:00 PM						
Project:	NMSWDCo Site As	sessment							
Lab ID:	0311174-11				M	ntrix: SOE	L		
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed		
EPA METHOD	9056A: ANIONS						Analyst: BDH		
Chloride	Chloride 8				mg/Kg	10	12/6/2003 3:55:11 PM		

Qualifiers:

ND - Not Detected at the Reporting Limit,

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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CLIENT:	New Mexico Salt W	ater Disposal Co.	. Client Sample ID: SB-2A: 24-26'						
Lab Order:	0311174			Collection Date: 11/19/2003 2:20:00 PM					
Project:	NMSWDCo Site As	sessment							
Lab ID:	0311174-12	0311174-12 Matrix: SOIL							
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed		
EPA METHOD	9056A: ANIONS	600	20		malKa	10	Analyst: BDH		

Qualifiers:

ND - Not Detected at the Reporting Limit

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B - Analyte detected in the associated Method Blank

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S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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CLIENT:	New Mexico Salt Water I	Disposal Co.	. Client Sample ID: SB-2A: 29-31'						
Lab Order:	0311174		Collection Date: 11/19/2003 2:45:00 PM						
Project:	NMSWDCo Site Assessm	nent			`				
Lab ID:	0311174-13								
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed		
EPA METHOD	1700	15		molKa	50	Analyst: BDH			

Qualifiers:

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S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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6. 8. 4

Date: 26-Dec-03

CLIENT:	New Mexico Salt W	ater Disposal Co.	. Client Sample ID: SB-2A: 34-36'					
Lab Order:	0311174		Collection Date: 11/19/2003					
Project:	NMSWDCo Site A	ssessment					•	
Lab ID:	0311174-14				Matr	Matrix: SOIL		
Analyses	······································	Result	Limit	Qual Un	ts	DF	Date Analyzed	
EPA METHOD 9056A: ANIONS Chloride 1000			3.0	ma/	<a< td=""><td>10</td><td>Analyst: BDH 12/6/2003 4:45:26 PM</td></a<>	10	Analyst: BDH 12/6/2003 4:45:26 PM	

Qualifiers:

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ND - Not Detected at the Reporting Limit

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R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT: Lab Order:	CLIENT: New Mexico Salt Water Disposal Lab Order: 0311174				Client Sample ID: SB-3A: 0-2' Collection Date: 11/20/2003 8:27:00 AM						
Project:	NMSWDCo Site Asses	sment									
Lab ID:	0311174-15				Matrix:	SOIL					
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed			
EPA METHOD S Chloride	9056A: ANIONS	170	3.0		mg/Kg		10	Analyst: BDH 12/6/2003 5:02:10 PM			
EPA METHOD 4 Petroleum Hydro	118.1: TPH ocarbons, TR	ND	20		mg/Kg		1	Analyst: GT 11/25/2003			
EPA METHOD 8	021B: VOLATILES							Analyst: NSB			
Benzene		ND	0.025		mg/Kg		1	12/1/2003 4:32:20 PM			
Toluene		ND	0.025		mg/Kg		1	12/1/2003 4:32:20 PM			
Elhylbenzene		ND	0.025		mg/Kg		1	12/1/2003 4:32:20 PM			
Xylenes, Total		0.031	0.025		mg/Kg		1	12/1/2003 4:32:20 PM			
Sun: 4-Bromo	ofluorobenzene	95.4	74-118		%REC		1	12/1/2003 4:32:20 PM			

Qualifiers:

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- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	CLIENT: New Mexico Salt Water Disposal Co Lab Order: 0311174			Client Sample ID: SB-1A: 34-36'						
Project:	NMSWDCo Site Ass	essment		Ľ	Jonect	ion Date:	11/19/2	2003 12:40:00 FM		
Lab ID:	0311174-07					Matrix:	SOIL			
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed		
EPA METHOD 90 Chloride	56A: ANIONS	2000	15		mg/Kg		50	Analyst: BDH 12/7/2003 1:28:57 PM		
EPA METHOD 41 Petroleum Hydrod	18.1: TPH arbons, TR	ND	20	i	mg/Kg		1	Analyst: GT 11/25/2003		
EPA METHOD 80 Benzene Toluene Ethylbenzene Xylenes, Total Sur: 4-Bromofil	021B: VOLATILES	ND ND ND ND 101	0.025 0.025 0.025 0.025 74-118	1 	mg/Kg mg/Kg mg/Kg mg/Kg %REC		1 1 1 1	Analyst: NSB 12/1/2003 2:01:44 PM 12/1/2003 2:01:44 PM 12/1/2003 2:01:44 PM 12/1/2003 2:01:44 PM 12/1/2003 2:01:44 PM		

Qualifiers:

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B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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CLIENT: Lab Order: Project:	New Mexico Salt Wat 0311174 NMSWDCo Site Asse	er Disposal Co. ssment	,	Cli	ent Sample Collection	ID: S Date:	: SB-3A: 4-6' te: 11/20/2003 8:45:00 AM		
Lab ID:	0311174-16				М	atrix:	SOIL		
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed	
EPA METHOD Chloride	9056A: ANIONS	3700	30		mg/Kg		100	Analyst BDH 12/7/2003 2:35:56 PM	
EPA METHOD Petroleum Hydr	418.1: TPH ocarbons, TR	ND	20		mg/Kg		1	Analyst: GT 11/25/2003	
EPA METHOD Benzene Toluene Ethylbenzene Xylenes, Total Surr, 4-Brom	8021B: VOLATILES	ND ND ND ND 101	0.025 0.025 0.025 0.025 74-118		mg/Kg mg/Kg mg/Kg mg/Kg %REC		1 1 1 1	Analyst: NSB 12/1/2003 5:32:35 PM 12/1/2003 5:32:35 PM 12/1/2003 5:32:35 PM 12/1/2003 5:32:35 PM 12/1/2003 5:32:35 PM	

Qualifiers:

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B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt W	ater Disposal Co.		Clie	Client Sample ID: SB-3A: 9-11'						
Lab Order:	0311174		Collection Date: 11/20/2003 9:00:00 AM								
Project:	NMSWDCo Site As	sessment									
Lab ID:	0311174-17			latrix: SOIL	SOIL						
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed				
EPA METHOD Chloride	9056A: ANIONS	510	3.0		mg/Kg	10	Analyst: BDH 12/6/2003 5:35:40 PM				
EPA METHOD Petroleum Hydr	418.1: TPH ocarbons, TR	ND	20		mg/Kg	1	Analyst: GT 11/25/2003				
EPA METHOD	8021B: VOLATILES						Analyst: NSB				
Benzene		ND	0.025		mg/Kg	1	12/1/2003 6:02:49 PM				
Toluene		ND	0.025		mg/Kg	1	12/1/2003 6:02:49 PM				
Elhylbenzene		ND	0.025		mg/Kg	1	12/1/2003 6:02:49 PM				
Xylenes, Total		ND	0.025		mg/Kg	1	12/1/2003 6:02:49 PM				
Surr: 4-Brom	ofluorobenzene	103	74-118		%REC	1	12/1/2003 6:02:49 PM				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Page 17 of 32
CLIENT:	New Mexico Salt Water Disp	osal Co.		Clie	nt Sample l	D: SB-3A:	14-16'
Lab Order:	0311174			i	Collection T	Date: 11/20/	/2003 9:15:00 AM
Project:	NMSWDCo Site Assessment						
Lab ID:	0311174-18						
Analyses Result			Limit	Qual	Units	DF	Date Analyzed
EPA METHOD	9056A: ANIONS					<u></u>	Analyst: BDH
Chloride 570			3.0		mg/Kg	10	12/6/2003 5:52:23 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt W	ater Disposal Co.	Client Sample ID: SB-3A: 19-21'					
Lab Order:	0311174			Collection I	Date: 11/20	/2003 9:30:00 AM		
Project:	NMSWDCo Site As	sessment						
Lab ID:	0311174-19			Ma	trix: SOIL			
Analyses Result			Limit (Qual Units	DF	Date Analyzed		
EPA METHOD	9056A: ANIONS					Analyst: BDH		
Chloride 880			3.0	mg/Kg	10	12/6/2003 6:25:51 PM		

- ND Not Detected at the Reporting Limit
- 1 Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Muximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt V	Vater Disposal Co.		Clie	ent Sample I	D: SB-	-3A: 2	24-26'	
Lab Order:	0311174				Collection I	Date: 11	1/20/2	2003 9:45:00 AM	
Project:	NMSWDCo Site A	ssessment							
Lab ID:	ID: 0311174–20			Matri			ix: SOIL		
Analyses		Result	Limit	Quai	Units	D	F	Date Analyzed	
EPA METHOD	9056A: ANIONS	3200	30		malka	10	<u>.</u>	Analyst: BDH	

Qualifiers:

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt V	Vater Disposal Co.	. Client Sample ID: SB-3A: 34-36'						
Lab Order: Project:	0311174 NMSWDCa Site A	ssessment			Collect	ion Date:	11/20/:	2003 10:25:00 AM	
Lab ID:	0311174-21	33333110M				Matrix:	SOIL		
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed	
EPA METHOD Chloride	9056A: ANIONS	1900	15		mg/Kg		50	Analyst: BDH 12/8/2003 2:38:29 PM	

Qualifiers:

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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CLIENT:	New Mexico Salt Wate	er Disposal Co.		Clie	ent San	ple ID: S	SB-4A: ()-2'
Lab Order:	0311174				Collect	ion Date:	11/20/2003 11:00:00 AM	
Project:	NMSWDCo Site Asse	ssment						•
Lab ID:	0311174-22					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD	9056A: ANIONS							Analyst: BDH
Chloride		160	3.0		mg/Kg		10	12/6/2003 7:49:32 PM
EPA METHOD	418.1: TPH							Analyst: GT
Petroleum Hydi	rocarbons, TR	ND	20		mg/Kg		1	11/25/2003
EPA METHOD	8021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025		mg/Kg		1	12/1/2003 6:32:57 PM
Toluene		ND	0.025		mg/Kg		1	12/1/2003 6:32:57 PM
Ethylbenzenø		ND	0.025		mg/Kg		1	12/1/2003 6:32:57 PM
Xylenes, Total		ND	0.025		mg/Kg		1	12/1/2003 6:32:57 PM
Surr: 4-Brom	ofluorobenzene	101	74-118		%REC		1	12/1/2003 6:32:57 PM

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- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt Wa	ter Disposal Co.		Clie	ent Sam	ple ID: SB-4A: 4	1-6'
Lab Order:	0311174				Collecti	on Date: 11/20/2	2003 11:11:00 AM
Project:	NMSWDCo Site Ass	essment					
Lab ID:	0311174-23					Matrix: SOIL	
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed
EPA METHOD	9056A: ANIONS						Analyst: BDH
Chloride		800	3.0		mg/Kg	10	12/6/2003 8:06:16 PM
EPA METHOD	418.1: TPH						Analyst: GT
Petroleum Hyd	rocarbons, TR	ND	20		mg/Kg	1	11/25/2003
EPA METHOD	8021B: VOLATILES						Analyst: NSB
Benzene		ND	0.025		mg/Kg	1	12/1/2003 7:33:07 PM
Toluene		ND	0.025		mg/Kg	1	12/1/2003 7:33:07 PM
Ethylbenzene		ND	0.025		mg/Kg	1	12/1/2003 7:33:07 PM
Xylenes, Total		ND	0.025		mg/Kg	1	12/1/2003 7:33:07 PM
Surt: 4-Brom	ofluorobenzene	99.7	74-118		%REC	1	12/1/2003 7:33:07 PM

Qualifiers:

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ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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CLIENT: Lab Order: Project:	New Mexico Salt Wa 0311174 NMSWDCo Site Asso	ter Disposal Co. essment		Client Sample ID: SB-4A: 9-11' Collection Date: 11/20/2003 11:27:00 AM						
Lab ID:	0311174-24		Matrix: SOIL							
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed			
EPA METHOD 9 Chloride	9056A: ANIONS	2100	15		mg/Kg	50	Analyst: BDH 12/7/2003 3:26:10 PM			
EPA METHOD 4 Petroleum Hydro	118.1: TPH ocarbons, TR	ND	20		mg/Kg	1	Analyst: GT 11/25/2003			
EPA METHOD	3021B: VOLATILES						Analyst: NSB			
Benzene		ND	0.025		mg/Kg	1	12/1/2003 8:03:17 PM			
Toluene		ND	0.025		mg/Kg	1	12/1/2003 8:03:17 PM			
Ethylbenzene		ND	0.025		mg/Kg	1	12/1/2003 8:03:17 PM			
Xylenes, Total		ND	0.025		mg/Kg	1	12/1/2003 8:03:17 PM			
Surr: 4-Bromo	olluarabenzene	103	74-118		%REC	1	12/1/2003 8:03:17 PM			

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Qualifiers:

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank

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- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt Wate	r Disposal Co.		Clie	ent Sample I	D: SB-4A:	14-16'			
Lab Order:	0311174				Collection I	ate: 11/20	/2003 11:45:00 AM			
Project: NMSWDCo Site Assessment										
Lab ID:	0311174-25			Ma	trix: SOIL					
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed			
EPA METHOD	9056A: ANIONS	3400	70		malka	100	Analyst: BDH			

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

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CLIENT:	New Mexico Salt W	ater Disposal Co.		Clie	ent Sample I	D: SB-4A	: 19-21'	
Lab Order:	0311174				Collection I	Date: 11/20)/2003 12:00:00 PM	
Project:	NMSWDCo Site A:	ssessment						
Lab ID:	0311174-26				Ma	trix: SOIL		
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed	
EPA METHOD	9056A: ANIONS	4500			malka	100	Analyst: BDH	

Qualifiers:

ND - Not Detected at the Reporting Limit

- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- ${\rm S}$ Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Date: 26-Dec-03

CLIENT:	New Mexico Salt V	/ater Disposal Co.		Cli	ent Sample	ID: SE	3-4A:	24-26'
Lab Order:	0311174				Collection	Date:	11/20/	2003 12:20:00 PM
Project:	NMSWDCo Site A	ssessment						
Lab ID:	0311174-27				М	atrix: S	SOIL	
Analyses		Result	Limit	Qual	Units	J	DF	Date Analyzed
EPA METHOD Chloride	9056A: ANIONS	5300	30		mg/Kg	-	100	Analyst: BDH 12/7/2003 4:33:10 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

R - RPD outside accepted recovery limits

E - Value above quantitation range

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S - Spike Recovery outside accepted recovery limits

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CLIENT:	New Mexico Salt Water Dis	posal Co	•	Client Sa	mple ID: SB-4A	: 29-31'
Project: NMSWDCo Site Assessment				COME	cuon Date. 11/2	12.4J.001 W
Lab ID:	0311174-28				Matrix: SOII	-
Analyses	R	esult	Limit	Qual Unit	s DF	Date Analyzed
EPA METHOD Chloride	9056A: ANIONS	3900	30	ma/K	n 100	Analyst: BDH 12/7/2003 4:49:55 PM

- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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Hall Environmental Analysis Laboratory			эгу		Date:	26-De	c-03
CLIENT':	New Mexico Salt W	ater Disposal Co.		Clier	nt Sample ID: S	SB4A-2	9-31'
Lab Order:	0311174			C	Collection Date:	11/20/	2003 1:30:00 PM
Project:	NMSWDCo Site As	sessment					
Lab ID:	0311174-29				Matrix:	AQUE	EOUS
Analyses		Result	Limit	Qual	Units	DF	Date Analyzed
	200.0. 45805						Applyst: PDH
Chloride	5W.0. ANIONS	45000	130	ł	mg/L	1250	12/3/2003 8:12:44 PM
EPA METHOD	8260B: VOLATILES						Analyst: BL
Benzene		ND	1.0		µg/L	1	11/24/2003
Toluene		ND	1.0	1	ug/L	1	11/24/2003
Elhylbenzene		ND	1.0	1	ug/L	1	11/24/2003
Methyl tert-buly	d ether (MTBE)	ND	1.0	1	ug/L	1	11/24/2003
1,2,4-Trimethyli	benzene	ND	1.0	1	µg/L	1	11/24/2003
1,3,5-Trimethyl	benzene	ND	1.0	1	ug/L	1	11/24/2003
1,2-Dichloroeth	ane (EDC)	ND	1.0		ug/L	1	11/24/2003
1,2-Dibromoeth	iane (EDB)	ND	1.0		ug/L_	1	11/24/2003
Naphthalene	, -	ND	2.0	1	ug/L	1	11/24/2003
1-Methylnaphth	alene	ND	4.0	1	ug/L	1	11/24/2003
2-Methylnaphih	alene	ND	4.0	1	ua/L	1	11/24/2003
Acelone		26	10		ug/L	1	12/1/2003
Bromobenzene		ND	1.0		ug/L	1	11/24/2003
Bromachlorome	ethane	ND	1.0		uq/L	1	11/24/2003
Bromodichloron	nethane	ND	1.0		ug/L	1	11/24/2003
Bromoform		ND	1.0		uq/L	1	11/24/2003
Bromomethane	1	ND	2.0		ua/L.	1	11/24/2003
2-Butanone		ND	10	•	ug/L	1	11/24/2003
Carbon disulfid	e	ND	10		ua/L	1	11/24/2003
Carbon Tetrach	laride	ND	1.0		uo/L	1	11/24/2003
Chlombenzene	····	ND	1.0		ua/L.	1	11/24/2003
Chloroethane		ND	2.0		ug/L.	1	11/24/2003
Chloroform		ND	1.0		491– Ud/L	1	11/24/2003
Chloromethane	4	ND	1.0		uo/l	1	11/24/2003
2-Chlorotoluen	ά	ND	1.0		µg/1	1	11/24/2003
4-Chlomtoluen	e	ND	1.0		µ g /= µ g /L	1	11/24/2003
cis-1.2-DCE	-	ND	1.0	•	u n/l .	1	11/24/2003
cis-1.3-Dichlorr	oropene	ND	1.0			1	11/24/2003
1.2-Dibromo-3-	chloropropane	ND	2.0	1	ua/L	1	11/24/2003
Dibromochloro	methane	ND	1.0	i	ua/L	1	11/24/2003
Dibromometha	ne	ND	2.0	l	ua/L	1	11/24/2003
1.2-Dichlorobe	nzene	ND	1_0	1	ua/L	1	11/24/2003
1 3-Dichlomber	02808	ND	1.0			1	11/24/2003
1 4 Dichlomba	17200	ND	10			1	11/24/2003
Dichloradificor	nmethane	ND	10		rg uo/l	•	11/20/2003
			1.0		rai c	•	11/04/2003
			1.U 1.D		pyrt ug/l	י 1	11/24/2003
			1.0		µyr∟ va∕l	1	11/24/2003
1,2-Uichioropro	Ipane	NU	1.0		ացրե	1	17/24/2003

Qualifiers:

ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

R - RPD outside accepted recovery limits E - Value above quantitation range

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CLIENT: New Mexico Salt Water Disposal Co. Lab Order: 0311174 NMSWDCo Site Assessment **Project:**

0311174-29

Lab ID:

Client Sample ID: SB4A-29-31' Collection Date: 11/20/2003 1:30:00 PM

Matrix: AQUEOUS

Analyses	Result	Limit	Qual Un	uits DF	Date Analyzed
1,3-Dichloropropane	ND	1.0	hāł	L 1	11/24/2003
2,2-Dichloropropane	ND	1.0	hāł	L 1	11/24/2003
1,1-Dichloropropene	ND	1.0	hāt	Ľ 1	11/24/2003
Hexachlorobutadiane	ND	1.0	μg/	L · 1	11/24/2003
2-Hexanone	ND	10	hāt	L 1	11/24/2003
Isopropylbenzene	ND	1.0	hāł	L 1	11/24/2003
4-Isopropyltoluene	ND	1.0	/gų	1. 1	11/24/2003
4-Methyl-2-pentanone	ND	10	/ <u>o</u> u	L 1	11/24/2003
Methylene Chloride	ND	3.0	/gy	L 1	11/24/2003
n-Butylbenzene	ND	1.0	hāt	Լ 1	11/24/2003
n-Propylbenzene	ND	1.0	/gų	L 1	11/24/2003
sec-Butylbenzene	ND	1.0	γρμ	L 1	11/24/2003
Styrene	ND	1.0	han ha	L 1	11/24/2003
lert-Butylbenzene	ND	1.0	μg/	L 1	11/24/2003
1,1,1,2-Tetrachloroethane	ND	1.0	/gu	L 1	11/24/2003
1,1,2,2-Tetrachloroethane	ND	1.0	µg/	L 1	11/24/2003
Tetrachloroethene (PCE)	ND	1.0	μ <u>α</u> /	L 1	11/24/2003
trans-1,2-DCE	ND	1.0	μg/	L 1	11/24/2003
trans-1,3-Dichloropropene	ND	1.0	/gų	L 1	11/24/2003
1,2,3-Trichlorobenzene	ND	1.0	γρμ	L 1	11/24/2003
1,2,4-Trichlorabenzene	ND	1.0	, hdt	L 1	11/24/2003
1,1,1-Trichloroethane	ND	1.0	/gu	L 1	11/24/2003
1,1,2-Trichloroethane	ND	1.0	µg/	L 1	11/24/2003
Trichlaraelhene (TCE)	ND	1.0	hd/	L 1	11/24/2003
Trichlorofluoromethane	ND	1.0	ug/	L 1	11/24/2003
1,2,3-Trichloropropane	ND	2.0	/gy	L 1	11/24/2003
Vinyl chloride	ND	2.0	/gu	L 1	11/24/2003
Xylenes, Total	ND	1.0	ug/	L 1	11/24/2003
Surr: 1,2-Dichloroethane-d4	105	70.6-124	%F	IEC 1	11/24/2003
Surr: 4-Bromofluorobenzene	97.2	76,2-122	%F	IEC 1	11/24/2003
Surr: Dibromofluoromethane	106	67.2-131	%F	EC 1	11/24/2003
Sur: Toluene-d8	99.9	82.1-123	%F	EC 1	11/24/2003
PA METHOD 8310: PAHS					Analyst: GT
Naphthalene	ND	6.3	/gy	L 1	12/7/2003 10:29:17 AM
1-Methylnaphthalene	ND	6.3	/gų	L 1	12/7/2003 10:29:17 A
2-Methylnaphthalene	ND	6.3	λ <u>ρ</u> μ	L 1	12/7/2003 10:29:17 A
Acenaphthylene	ND	6.3	μg/	L 1	12/7/2003 10:29:17 Af
Acenaphthene	ND	6.3	بور اور	L 1	12/7/2003 10:29:17 Al
Fluorene	ND	2.0	μα	L 1	12/7/2003 10:29:17 A
Phenanthrene	ND	. 1.5	μα/	L 1	12/7/2003 10:29:17 A
Anthracene	ND	1.5	μα/	L 1	12/7/2003 10:29:17 AM
Fluoranthene	ND	0.75	ua/	L 1	12/7/2003 10:29:17 AI

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

+ - Value exceeds Maximum Contaminant Level

R - RPD outside accepted recovery limits

E - Value above quantitation range

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CLIENT:New Mexico Salt Water Disposal Co.Lab Order:0311174Project:NMSWDCo Site AssessmentLab ID:0311174-29

Client Sample ID: SB4A-29-31'

Collection Date: 11/20/2003 1:30:00 PM

Matrix: AQUEOUS

Analyses	Result	Limit	Qual Units	DF	Date Analyzed
Pyrene	ND	0.75	μg/L	1	12/7/2003 10:29:17 AM
Benz(a)anthracene	ND	0.050	µg/L	1	12/7/2003 10:29:17 AM
Chrysene	ND	0,50	µg/L	1	12/7/2003 10:29:17 AM
Benzo(b)fluoranthene	ND	0.13	µg/L	1	12/7/2003 10:29:17 AM
Benzo(k)fluoranihene	ND	0.050	µg/L	1	12/7/2003 10:29:17 AM
Benzo(a)pyrene	ND	0.050	µg/L	1	12/7/2003 10:29:17 AM
Dibenz(a,h)anthracene	ND	0.10	µg/L	1	12/7/2003 10:29:17 AM
Benzo(g.h.i)perylene	ND	0.075	µg/L	1	12/7/2003 10:29:17 AM
Indeno(1,2,3-cd)pyrene	ND	0.20	μg/L	1	12/7/2003 10:29:17 AM
Surr: Benzo(e)pyrene	80.3	54-102	%REC	1	12/7/2003 10:29:17 AM
EPA METHOD 7470: MERCURY					Analyst: MAP
Mercury	ND	0.00020	mg/L	1	12/4/2003
EPA 6010C: TOTAL RECOVERABLE	METALS				Analyst: NMO
Arsenic	ND	0.40	mg/L	20	12/3/2003 3:15:07 PM
Barium	0.45	0.040	mg/L	20	12/3/2003 3:15:07 PM
Cadmium	ND	0.040	mg/L	20	12/3/2003 3:15:07 PM
Chromlum	ND	0.12	mg/L	20	12/3/2003 3:15:07 PM
Lead	ND	0.10	mg/L	20	12/3/2003 3:15:07 PM
Selenium	ND	0.40	mg/L	20	12/3/2003 3:15:07 PM
Silver	ND	0.10	mg/L	20	12/3/2003 3:15:07 PM
EPA METHOD 160.1: TDS					Analyst: MAP
Total Dissolved Solids	70000	1.0	mg/L	1	12/1/2003

Qualifiers:

- ND Not Detected at the Reporting Limit
- J Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

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CLIENT: Lab Order:	New Mexico Salt Was 0311174	er Disposal Co.		Clie	ent Sam Collecti	ple ID: 5 on Date:	SB3A: 2 11/20/	29-31' /2003 10:00:00 AM
Project:	NMSWDCo Site Asse	essment						
Lab ID:	0311174-30					Matrix:	SOIL	
Analyses		Result	Limit	Qual	Units		DF	Date Analyzed
EPA METHOD 9 Chloride	056A: ANIONS	5900	30		mg/Kg		100	Analyst: BDH 12/7/2003 5:06:40 PM
EPA METHOD 4 Petroleum Hydro	18.1: TPH carbons, TR	ND	20		mg/Kg		1	Analyst: GT 11/25/2003
EPA METHOD 8	021B: VOLATILES							Analyst: NSB
Benzene		ND	0.025		mg/Kg		1	12/1/2003 8:33:14 PM
Toluene		ND	0.025		mg/Kg		1	12/1/2003 8:33:14 PM
Elhylbenzene		ND	0.025		mg/Kg		1	12/1/2003 8:33:14 PM
Xylenes, Total		ND	0.025		mg/Kg		1	12/1/2003 8:33:14 PM
Surr: 4-Bromol	luorobenzene	100	74-118		%REC		1	12/1/2003 8:33:14 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Page 32 of 32

CLIENT: Work Order:	New Mexico Salt Water Disposa 0311174	al Co.				,		QC SUM	MARY F Met	UEPO	RT ank
Project:	NMS WIJCO Site Assessment										
Sample ID MB	Batch ID: 4782	Test Cade	: E300	Units: mg/Kg		Analysis	5 Date 12/6/2003	3 7:16:04 PM	Prep Date		
Cilent ID: Analyte	Result	Run ID: PQL	LC_031206C SPK value	SPK Ref Val	%REC	SeqNo: LowLimit	231376 HighLimit RPC	0 Ref Val	%RPD RPt	JLImit	Qual
Chlaride	QN	0:30									
Sample ID MB 13	20203 Batch ID: R10233	Test Code.	: E300	Units: mg/L		Analysis	s Date 12/2/2003	10:04:20 AM	Prep Date		
Client ID:		Run ID:	LC_031202A			SeqNo:	229713				
Analyle	Result	Pat	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPC	D Ref Val	%RPD RPC	JLImit	Qual
Chloride	QN	0.10						and and a second descent and the second			
Sample (D MB-B	Batch ID: R10233	Test Code.	: E300	Units: mg/L		Analysis	5 Date 12/2/2003	3 11:54:00 PM	Prep Date		
Client ID:		Run ID:	LC_031202A			SeqNo:	229762				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPC) Ref Val	34AD RPL	JLimlt	Qual
Chlaride	Q	0.10									
Sample ID MB	Batch ID: R10251	Test Code.	: E300	Units: mg/L		Anaiysis	s Date 12/3/2003	1 5:25:25 PM	Prep Date		
Client ID;		Run ID:	LC_031203A			SeqNo:	230270				
Analyte	Result	POL	SPK value	SPK Rei Val	%REC	LowLimit	HighLimit RPC	D Ref Val	%RPD RPI	OLimit	Qual
Chlaride	Q	0.10							ne de un en en en en en en en en en en en en en	and an one of Manual State Courts one	
Sample ID MB-47	719 Batch ID: 4719	Test Code.	: E418.1	Units; mg/Kg		Analysis	s Date 11/25/200	33	Prep Date 1	1/24/200:	
Client ID:		Run ID:	BUCK IR_031	1125A		SeqNo:	228815				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPC	D Ref Val	%RPD RPI	DLimit	Qual
Petroleum Hydroc	arbons, TR ND	20									
										9 o 7	
Qualifiers:	ND - Not Detected at the Reparting Limit	~	S - Spi	ike Recovery autside 1	secepted rec	overy limits	B - A	Analyte detected in	the associated h	Method BI.	ank
	1. A milita detected below anaptitation lin	and a	00 0								

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CLIENT:	New Mex	cico Salt Water Disposa	l Co.						QC SUM.	MARY R	EPO	RT
Work Urder: Project:	4/11160 CIWSMN	Co Site Assessment								Meti	hod Bl	ank
Sample ID MB-4 Client ID:	720	Batch (D: 4720	Test Code Run ID:	: E418.1 BUCK IR_03	Units: mg/Kg 1125A		Analysi: SeqNo:	s Date 11/25/2 228839	003	Prep Date 11	1/24/2003	
Analyte		Result	Pal	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit R	PD Ref Val	WRPD RPD	ocumit	Qual
Petroleum Hydroc	arbons, TR	QN	20									
Sample ID MB-4	733	Batch ID: 4733	Test Code	: SWB021 DIDEID 0319	Units: mg/Kg		Analysis SeeMor	5 Date 12/1/20	103 10:30:33 AM	Prep Date 11	1/25/2003	
Analyte		Result	Par	SPK value	SPK Ref Val	%REC	LawLimit	HighLimit R	PD Ref Val	%RPD RPD)Limit	Qual
Benzene Toluene Ethytbenzene Xytenes, Total Surr: 4-Bromofi	norabenzane	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.025 0.025 0.025 0.025 0.025	·		B8.3	74	118				
Qunlificrs:	ND - Not Det	ceted at the Reporting Limit		S - Spi	ike Recovery outside :	uccepted rect	svery limits	B.	· Analyte detected in	the associated Mu	lethod Bla	h k
	J - Analyte de	steeted below quantilation fin	lits	R - RF	D outside accepted ro	scovery fimits	5					ŗ

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CLIENT:	New Mexico Salt Water Disposa	ll Co.						QC SUM	IMAR'	Y REPC	RT
Work Urder: Project:	NMSWDCo Site Assessment									Method E	lank
Sample ID MB-47	32 Batch ID: 4732	Test Code:	SW8310	Unlts: pg/L		Analysis	Date 12/7/2	2003 7:17:20 AM	Prep Da	te 11/25/20	33
Client ID:		Run ID:	HUG0_03120	I6A		SeqNo:	23148	~			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%КРD	RPDLImlt	Qual
Naphlhalane	Q	2.5									
1-Methylnaphthaler	ND	2.5									
2-Methylnaphthalei	ND	2.5									
Acenaphthylene	ΠN	2.5									
Acenaphthene	QN	2.5									
Fluorene	QN	0.80									
Phenanthrene	QN	0.60									
Anthracene	QN	0.60									
Fluoranthene	ON.	0.30									
Pyrene	QN	0.30									
Benz(a)anthracene	ND	0.020									
Chrysene	QN	0.20									
Benzo(b)fluoranthe	DN ND	0,050									
Benzo(k)fluoranthe	UN eu	0.020									
Benzo(a)pyrene	ON	0.020									
Dibenz(a,h)anthrac	sane ND	0.040									
Benzo(g,h,l)peryler	DN er	0.030									
Indeno(1,2,3-cd)py Surr: Benzo(e)p)	rane ND yrane 17.8	0.080 0	20	٥	89.0	54	102	٦			
Sample ID MB-47	72 Batch ID: 4772	Test Code:	SW7470	Units: mg/L		Analysis	Date 12/4/2	2003	Prep Da	ale 12/3/200	
Client ID:		Run ID:	MI-LA254_03	1204A		SegNo:	23038	-			
Analyte	Result	Par	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	Q	0,00020									-
Ounlifiers:	ND - Nat Detected at the Reporting Limit		113 - S	the Decquent outeid	annand raco	limite		D Appleted at the second	increase office:	the factor of the second second second second second second second second second second second second second se	1-1-1-
(cronnery)	willer Surrinday and is the color of the second statement of the second statem		110-0 110-1	ike keedvery autsine	accepted reco	צוותוו לושי	-	B - Annlyte delected	in the associ	aled Method 1	llank
	J - Analyte detected below quantitation in	onits	א - א	D outside accepted	recovery limits						~

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CLIENT: Work Order: Project:	New Mexico Salt Water Disposal 0311174 NMSWDCo Site Assessment	ů.				QCS	JMMARY R Met	UEPORT thod Blan
Sample ID MB-	1759 Batch (D: 4759	Test Code: Run ID:	SW6010A ICP_031203A	Units: mg/L		Analysis Date 12/3/2003 1:54:01 I SeqNo:	M Prep Date 1	2/2/2003
Analyte	Result	Pal	SPK value	SPK Ref Val	%REC Lo	wLimit HighLimit RPD Ref Val	%RPD RPC	ortmit Que
Bartum Cadmium Chromium Lead Silver	999999	0.020 0.0020 0.0060 0.0060 0.0050						
Sample (D MB-4 Client ID:	1759 Batch ID: 4759	Test Cade: Run ID:	SW6010A ICP_031203B	Units: mg/L		Analysis Date 12/3/2003 1:54:01 F SeqNo:	M Prep Date 1	2/2/2003
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lo	wLimit HighLimit RPD Ref Val	%RPD RPC	olimit Que
Arsenic Barlum Cadmium Chromium Lead Selenium Silver	99999999	0.020 0.020 0.0020 0.0060 0.0050 0.0050 0.020						
Sample ID MB-4 Client ID: Analyte	.740 Batch ID: 4740 Result	Test Cade: Run ID: POL	E160.1 WC_031201A SPK value	Units: mg/L SPK Ref Val	KEC Lo	Analysis Date 12/1/2003 SeqNo: 229356 w∐mit HichLimit RPD Ref Val	Prep Date 1' %RPD RPC	1/26/2003 21.imit Oue
Total Dissolved S	olids	0.						
Qualifiers:	ND - Not Detected at the Reporting Limit		S - Spil	se Recovery autside	מככבסובם דבכסענר	y limits B - Analyte dete	sted in the associated N	dethod Blank

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R - RPD outside accepted recovery limits

J - Analyte detected below quantitation limits

LIENT: D	Jew Mexico Salt Water Disposal	Co.					JA VA VA	Lava
Vork Order: 0 Project: 7	311174 MAS WDCo Site Assessment						Metho	od Blan
ample ID 5ml rb	Batch ID: R10188	Test Code:	SW8260B	Units: µg/t.	Analysis D	ate 11/24/2003	Prep Date	
tent ID:		Run ID:	THOR_031124	4	SeqNo:	228620	•	
nalyte	Result	POL	SPK value	SPK Ref Vat	C LawLimit H	lightimit RPD Ref Val	%RPD RPDLIn	nlt Qué
enzene	QN	1.0						
oluene	QN	1.0						
lihylbenzene	DN	1.0						
tethyl tert-butyl ether	(MTBE) ND	1.0						
,2,4-Trimethylbenzen.	e ND	1.0						
.3.5-Trimelhylbenzen.	RD	1.0						
,2-Dichloroethane (EL	DC) ND	1.0						
,2-Dibromoethane (El	DB) ND	1.0						
laphthaiene	QN	2.0						
-Methylnaphthalene	an	4.0						
-Methyinaphthalene	DN	4.0						
cetone	DN	0						
romobenzene	DN	1.0						
romochloromethane	DN	1.0						
romodichloromethant.	ND	1.0						
romafarm	QN	1.0						
romomethane	ND	2.0						
-Butanone	Ŋ	10						
arbon disulfide	DN	₽						
arbon Tetrachloride	DN	1.0						
thlorobenzene	an	1.0						
hloroethane	QN	2.0						
hlarofarm	QN	1.0						
thloromethane	QN	1.0						
-Chlarataluene	an	1.0						
-Chioratoluene	an	1.0						
Is-1,2-DCE	QN	1.0						
Qualifiers: NE	 Not Detected at the Reporting Limit 		S - Spike	: Recavery autside accepted	recovery limits	B - Analyte detected	in the associated Meth	hod Blank

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CLIENT: New Me.	vico Salt Water Disposal Co		OC SUMMARY REPORT
Vork Order: 0311174 Project: NMSWE	Co Site Assessment		Method Blank
s-1,3-Dichloropropene	QN	1.0	
2-Dibromo-3-chloropropane	QN	2.0	
ibromochloromethane	QN	1.0	
ibromomethane	an	2.0	
2-Dichiorobenzene	QN	1.0	
3-Dichlorabenzene	QN	1.0	
4-Dichlorobenzene	QN	1.0	
ichlorodifluoromelhane	DN	1.0	
1-Dichloroethane	an	1.0	
1-Dichloroethene	an	1.0	
2-Dichloropropane	QN	1.0	
3-Dichloropropane	QN	1.0	
2-Dichloropropane	QN	1.0	
1-Dichlaropropene	QN	1.D	
exachiorobutadiene	ND	1.0	
Hexanone	QN	10	
opropylbenzene	QN	a.	
Isopropyltoluene	QN	1.0	
Methyl-2-pentanone	QN	10	
ethylene Chloride	an	3.0	
Butylbenzene	an	1.0	
Propylbenzene	an	1.0	
c-Butylbenzene	QN	1.0	
yrene	QN	1.0	
t-Bulylbenzene	QN	1.0	
1,1,2-Tetrachloroethane	az	1.0	
1,2,2-Tetrachloroethane	DN	1.0	
trachloroethene (PCE)	DN	1.0	
ns-1,2-DCE	QN	1.0	
ns-1,3-Dichloropropene	DN	1.0	
.,3-Trichlorobenzene	an	1.0	
2,4-Trichlorabenzene	DN	1,0	
1,1-Trichloroethane	UN	¢	

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TUBIT	New Mexico Sal	t Water Disposal Co.							OC SUMMAR	XY REPORT
Work Order	: 0311174	Å soosement								Method Blank
:roject:	ואנאנאנא	Assessingut								
,1,2-Trichloroe	alhane	CIN CIN	0.1 0							
richioroethene		2 4								
nchloratiuorar	nelhane		n							
,2,3-Trichlorop	oropane		2.0							
inyl chlaride			2.0							
ylenes, Tolal			0.1	!						
Surr: 1,2-Dic	thioroethane-d4	10.39	0	0	a	104	68.4	127	0	
Surr: 4-Brom	oiluarobenzene	9.912		10	ġ i	99.1	70.4	126	0	
Surr: Dibrom	olluoromethane	10.63	0	10	0	106	70.2	126	Ð	
Surr. Toluen	e-dB	10.67	0	10	a	107	73.5	129	0	
Qualifiers:	ND - Not Detected at 1	the Reporting Limit		S - Spike Ret	covery outside p	סאסספע הסופר איז איז איז איז איז איז איז איז איז איז	ry limits	B,	Analyte detected in the assoc	sciated Method Blank
Quantiers:	ואה - ואחו המוכנותו מו	נווה ואפסטרוונוק בזוחור		av avide - e	r adistino Alavos	noosal paidagge	simil yi	'n	Anoiyle detected in the assov	ociated Method Blank

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Work Order: 01111/4 Project: NMSWDCo Sample ID 5ml rb I Client ID: Analyte Benzene Toluena Ethylbenzene Methyl tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene						うっつン	VINIAR I REFU	IXI
Sample ID 5ml rb E Client ID: Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	o Site Assessment					I	Method B	lank
Client ID: Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	Batch ID: R10229 1	fest Code: SV	/82608	Units; µg/L	Analysis	s Date 12/1/2003	Prep Dale	
Analyte Benzene Toluene Ettrylbenzene Methyt tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	ц.	Run ID: NE	PTUNE_031	201A	SeqNo:	229633		
Benzene Toluene Ethylbenzene Melhyl tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	Result	POL	SPK value	SPK Ref Val	%REC LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit	Qual
Toluene Ethylbenzene Methyl tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	QN	1.0					n a sea a sea a sea a sea ang ang ang ang ang ang ang ang ang an	
Ethylbenzene Methyt tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	QN	1.0						
Melhyl tert-butyl ether (MTBE) 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	QN	1.0						
1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	QN	1.0						
1,3,5-Trimethylbenzene	an	1.0						
•	QN	1.0						
1,2-Dichloroethane (EDC)	QN	1.0						
1,2-Dibromoethane (EDB)	Q	1.0						
Naphthalene	QN	2.0						
1-Methylnaphthalene	QN	4.0						
2-Methylnaphthaiene	QN	4.0						
Acelone	aN	10						
Bromobenzene	QN	1.0						
Bromochloromethane	QN	1.0						
Bromodichloromethane	QN	1.0						
Bromoform	QN	1.0						
Bromomethane	QN	2.0						
2-Butanone	an	10						
Carbon disulfide	QN	10						
Carbon Tetrachloride	DN	1.0						
Chlorobenzene	DN	1.0						
Chloroethane	QN	2.0						
Chloraform	DN	1.0						
Chloromethane	ON .	1.0						
2-Chlorotoluene	QN	1.0						
4-Chlorotoluene	ON ,	1.0						
cis-1,2-DCE	DN	1.0						
cis-1,3-Dichloropropene	DN	1.0						
Ourlifiers: ND - Not Detect	ed at the Reporting Limit		S - Snike	. Rucovery outside and	iented recovery limits		d in the according Mathed B1	-Jeal
J - Analyte detec	sted below quantitation limits		R - RPD	outside accepted reco	very limits			4

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	New Mexico Salt Wate	er Disposal Co.			QC SUMMARY REPORT
Work Urder: Project:	UJ1174 NMSWDCo Site Asses	ssment			Method Blank
1,2-Dibromo-3-chio	oropropane	QN	2.0		
Dibromochlorometi	hane .	QN	1.0		
Dibromomethane		DN	2.0		
1,2-Dichlorobenzer	ne	an	1.0		
1, 3-Dichlorobenzer	ne	DN	1.0		
1,4-Dichlorobenzer	пе	QN	1.0		
Dichlaradifluorame	sthane	DN	1.0		
1,1-Dichloroethane		DN	1.0		
1,1-Dichloroethene		QN	1.0		
1,2-Dichloropropan	Je	DN	1.0		
1,3-Dichloropropan	Эг	QN	1.0		
2,2-Dichloropropan	16	QN	1.0		
1,1-Dichloropropen	ЭГ	QN	1.0		
Hexachlorobutadie	มต	QN	1.D		
2-Hexanone		DN	10	-	
Isopropylbenzene		QN	1.D		
4-Isopropyltaluene		QN	1.0		
4-Methyl-2-pentanc	one	QN	10		·
Methylene Chlorlde	a	QN	3.0		
n-Butylberizene		QN	1.0		
h-Propylbenzene		QN	1.0		
sec-Butylbenzene		QN	1.0		
Styrene		QN	1.0		
ert-Butylbenzene		QN	1.0		
1,1,1,2-Tetrachloro	vethane	QZ	1.0		
1,1,2,2-Tetrachloro	thane	DN	1.0		
Fetrachloroethene	(PCE)	QN	1.0		
rans-1,2-DCE		QN	1.0		
rans-1,3-Dichlorop	ropene	QN	1.0		
1.2.3-Trichlorobenz	cone	ON	1.0		
1,2,4-Trichlorobenz	zene	QN	1.0		
1 1-Trichternethau	De De	CN	1.0		
1.0 Trichterother			, c		
		22	2		
Qualifiers:	ND - Not Detected at the Repo	orting Limit		S - Spike Recovery outside accepted recovery limits	B - Analyte detected in the associated Method Blunk
	J - Analyte detected helow and	untitution limits		R - RPD auside accented recovery limits	ţ
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Work Order: 0311174 Project: NMSWDCo Si Trichloroethene (TCE) Trichlorofluoromethane 1,2,3-Trichloropropane Vinyl chloride Xylenes, Total Surr. 1,2-Dichloroethane-d4								OC SUMMARY REPO	POR'
Project: NMSWDCo Si Trichloroethene (TCE) Trichlorofluoromethane 1,2,3-Trichloropropane Vinyl chloride Xylenes, Total Surr. 1,2-Dichloroethane-d4									
Frichloroethene (TCE) Frichlorofluoromethane 1,2,3-Trichloropropane Vinyl chloride Xylenes, Total Surr. 1,2-Dichloroethane-d4	ite Assessment							IVIELIDOD	
l'richlorofluoromethane 1,2,3-Trichloropropane Vinyl chloride Xylenes, Total Surr. 1,2-Dichloroethane-d4	QN	1.0							
1,2,3-Trichloropropane Vinyl chloride Xylenes, Total Surr, 1,2-Dichloroethane-d4	QN	1.0							
vInyl chloride Kylenes, Total Surr. 1.2-Dichloroethane-d4	QN	2.0							
Xylenes, Total Surr. 1,2-Dichloroethane-d4	QN	2.0							
Surr: 1,2-Dichloroethane-d4	QN	1.0							
	9.91	Ö	10	0	99.1	68.4	127	O	
Surr: 4-Bromofluorobenzene	9.272	0	10	a	92.7	70.4	126	0	
Surr; Dibromofluoromethane	9.462	a	10	0	94.6	70.2	126	0	
Surr: Toluene-d8	10.68	0	10	0	107	. 73.5	129	0	
Qualifiers: ND - Not Detected a	11 the Reporting Limit		S - Spike Rcc	overy outside a	iccepted reco	very limits	[[]	I - Analyte detected in the associated Method	iod B
לחיוווונהואי אין אחו בחוויויחי	ווואב אנוווועס אוווונ		ם - סוזוער זערר	DVCIY UUSIUS U	onal naidagon	עפרץ ווחונג	מ	אוםןאוב מפנכנכם וא וווכ נוצסכומונים ואוכוווסם	NOG BINK

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CLENT: New Merico Sall Warer Disposal Ca. Current: Display Carrent Sample Duplica Rouge Do 1111/3 Baich Dis 4774 Tast Colac Eaon Inits: mp/dg Analysis Date 1277200 20227 PM Pop Date 12922013 Sample D 01174/03 Baich Dis 4774 Tast Colac Eaon Inits: mp/dg Analysis Date 1277200 20227 PM Pop Date 12922013 Clenclin: Sa 14.1416 Analysis Pot Date 1292013 Sample Dis 7774 Sample Dis 7277 PM Pop Date 12922013 Clenclin: Sa 14.1416 Analysis Date 1277200 20227 PM Pop Date 12922013 Date 12922013 Analysis Raust Pol Sriver (Local) Sa 20 Date 1292014 Clenclin: Sa 14.1416 Analysis Date 1277200 20227 PM Pop Date 12922013 Clenclin: Sa 14.1417 Sa 20 Date 1292014 Date 1292014 Clenclin: Sa 14.1416 Analysis Date 1277700 20227 PM Pop Date 1292014 Date 1292014 Clenclin: Sa 14.1416 Analysis Date 1277700 20227 PM Sa 20 Date 1292014 Date 1292014 Clenclin: Sa 14.1416 Analysis Sa 20 Date 1292014 Sa 20	Hall Enviro												
Matching Matching	CLIENT: Work Order:	New M(031117	xico Salt Water Disposal t	1 Co.						QC SUM	[]MARY Sami	r REPC)RJ licat
Sample ID Dit114.03B Each ID: 4174 Test Code: Each Init: mid/40 Analysis Dis (272.07 M) Per Dis (272.06	Froject:	W CIVIN	oco ane Assessment					-					
Arable Reault Pol SPK Kafi Val %AEC LowLinti<	Sample ID 03111 Cilent ID: SB-1A	174-03B \: 14-16'	Batch ID: 4774	Test Code: Run ID:	E300 LC_031207A	Units: mg/Kg		Analysi. SeqNo:	is Date 12/7/2 : 231507	2003 2:02:27 PM 7	Prep Date	a 12/3/200:	ю
Clocke 60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Analyte		Result	Par	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Vai	%RPD F	SPDLimlt	đ
	Chloride		1 89 10	C. B	D	O	σ	0	0	1854	02 26	C.	

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R - RPD autside accepted recovery limits

J - Analyte detected below quantitation limits

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Work Order: 0311174 Project: NMSWDCo Site Assessment Project: NMSWDCo Site Assessment Sample ID 0311174-05BMS Batch ID: 4719 Tast Code: E418.1 Cilent ID: SB-1A: 24-26' Run ID: BUCK IR_0 O Analyte Result POL SPK value Petroleum Hydrocarbons, TR 105 20 101 Client ID: SB-1A: 24-26' Run ID: 4719 Test Code: E418.1 Client ID: SB-1A: 24-26' Run ID: 4719 Test Code: E418.1 Client ID: SB-1A: 24-26' Run ID: Hun ID: BUCK IR_0 Analyte Run ID: SB-1A: 24-26' Run ID: PCL SPK value Analyte SB-1A: 24-26' Run ID: Hun ID: BUCK IR_0 O O Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 O SB-1A: 19-21' SB-1A: 19-21' Run ID: PCL SPK value Analyte	Units: mg/Kg 031125A ue SPK Ref Val 01 0 031125A 031125A 031125A 031125A 031125A 031125A 0 01 0 01 0 01	%REC Lov %REC Lov %REC Lov %REC Lov	Analysis Date 11/25/2003 SeqNo: 228827 WLimit HighLimit RPD Ref Va 82 114 (Analysis Date 11/25/2003 SeqNo: 228828 WLimit HighLimit RPD Ref Va 82 114 10	Sample Matri Prep Date 11/24 %RPD RPDLim Prep Date 11/24	x Spilke
Sample (D 0311174-05BMS Batch ID: 4719 Tast Code: E418.1 Client ID: SB-1A: 24-26' Run ID: BUCK IR_0 Analyte Result PQL SPK value Petroleum Hydrocarbons, TR 105 20 101 Petroleum Hydrocarbons, TR 105 20 101 Sample ID 0311174-05BMSD Batch ID: 4719 Test Code: E418.1 Client ID: SB-1A: 24-26' Run ID: BUCK IR_0 Analyte Run ID: BUCK IR_0 101 Analyte Result PQL SPK value Sample ID 0311174-05BMSD Batch ID: 4719 Test Code: E418.1 Client ID: SB-1A: 24-26' Run ID: BUCK IR_0 Analyte Result PQL SPK value Petroleum Hydrocarbons, TR 100 20 101 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Client ID: SB-1A: 19-21' Run ID: 4733 Run ID: 470 Analyte SB-1A: 19-21' Ru	Units: mg/Kg 031125A ue SPK Ref Val 01 0 031125A 031125A 031125A 0 01 0 01 0 01 0 0131201A	%REC Lov %REC Lov %REC Lov 99.0	Analysis Date 11/25/2003 SeqNo: 228827 WLimit HighLimit RPD Ref Va 82 114 (Analysis Date 11/25/2003 SeqNo: 228828 WLimit HighLimit RPD Ref Va 82 114 10	Prep Date 11/24 %RPD RPDLim Prep Date 11/24	/2003 //2003 //2003 //2003
Analyte Result PQL SPK value Analyte Result PQL SPK value Petroleum Hydrocarbons, TR 105 20 101 Sample ID 0311174-058MSD Batch ID: 4719 Test Code: E418.1 Client ID: SB-1A: 24-26' Run ID: BUCK IR_0 Analyte Run ID: BUCK IR_0 101 Analyte Result PQL SPK value Petroleum Hydrocarbons, TR 100 20 101 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Client ID: SB-1A: 19-21' Run ID: PQL SPK value Analyte Result PQL SPK value Analyte 1.123 0.025 1	ue SPK Ref Val 01 0 031125A 031125A 03125A 0 01 0 0 11 0 0 11201A	%REC Lov 104 / %REC Lov 99.0	velimit HighLimit RPD Ref Va 82 114 (Analysis Date 11/25/2003 SeqNo: 228828 wLimit HighLimit RPD Ref Va 82 114 10	%RPD RPDLim Prep Date 11/24 %RPD RPDLim	ilt Qual (2003 Ilt Qual
Petroleum Hydrocarbons, TR 105 20 101 Sample ID 0311174-05BMSD Batch ID: 4719 Test Code: E418.1 Citient ID: SB-1A: 24-26' Run ID: BUCK IR_0 Analyte Run ID: BUCK IR_0 101 Analyte Run ID: BUCK IR_0 101 Petroleum Hydrocarbons, TR 100 20 101 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Cilent ID: SB-1A: 19-21' Run ID: PQL SPK value Analyte Randi Vie Run ID: PQL 20 101	01 0 Units: mg/Kg 031125A ue SPK Ref Val 01 0 31201A 31201A	104 104 %REC Lov	B2 114 1 Analysis Date 11/25/2003 5 SeqNo: 228828 2 WLimit HighLimit RPD Ref Va 82 114 10	Prep Date 11/24 %RPD RPDLim	/2003 It Qual
Sample ID 0311174-05BMSD Batch ID: 4719 Test Code: E418.1 Client ID: SB-1A: 24-26' Run ID: BUCK IR_0 Analyte Result PQL SPK value Analyte Result PQL SPK value Petroleum Hydrocarbons, TR 100 20 101 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Client ID: SB-1A: 19-21' Run ID: PIDFID_031 Analyte Test Code: SW8021 Analyte 1.123 0.025 1	Units: mg/Kg 031125A ue SPK Ref Val 01 0 101k: mg/Kg 31201A	%REC Lov	Analysis Date 11/25/2003 SeqNo: 228828 wLimit HighLimit RPD Ref Va 82 114 10	Prep Date 11/24 %RPD RPDLim	/2003 If Qual
Analyte Result PQL SPK value Petroleum Hydrocarbons, TR 100 20 101 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Glient ID: SB-1A: 19-21' Run ID: PIDFID_031 Analyte Rasult PQL SPK value	ue SPK Ref Val 01 0 Units: mg/Kg 31201A	%REC Lov	wLmlt HighLimit RPD Ref Va 82 114 10	%RPD RPDLIM	lt Qual
Petroleum Hydrocarbons, TR 100 20 101 Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Client ID: SB-1A: 19-21' Run ID: PIDFID_031 Analyle Result PQL SPK value	01 0 Units: mg/Kg 31201A	0.69	82 114 10		
Sample ID 0311174-04aMS Batch ID: 4733 Test Code: SW8021 Client ID: SB-1A: 19-21' Run ID: PIDFID_031 Analyte Result PQL SPK value Benzene 1.123 0.025 1	Unlis: mg/Kg 31201A			4.88 21	0
Analyle POL SPK value Benzene 1.123 0.025 1 Anarono 4.047 0.026 4		,	Analysis Date 12/1/2003 9:03:13 SeqNo:	PM Prep Date	
3enzerie 1.123 0.025 1 Anioro 4.047 0.025 4	ue SPK Ref Val	%REC Lov	wulmit Highlimit RPD Ref Va	%RPD RPDLim	iit Qual
tututerie		112 105 101 105	77 122 81 115 84 117 84 116		
Sample ID 0311174-04aMSD Batch ID: 4733 Test Code: SW8021 Xient ID: SB-1A: 19-21' Run ID: PIDFID_031	Units: mg/Kg 31201A	a, u,	Analysis Date 12/1/2003 9:33:15 SeqNo: 229478	PM Prep Date	
nalyte PQL SPK value	ue SPK Ref Val	%REC Lov	wLimit HighLimit RPD Ref Va	%RPD RPDLim	it Qual
1.081 0.025 1	1 0	108	77 122 1.12	3.80 2	7
Coluene 1.01 0.025 1	00	101	81 115 1.04	3.62	5 0
uryuuenizene Vienes, Total 3.021 0.025 3	- c	101	84 116 3.14(4.13	הכ

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Hall Environn	nental Analysis Laborat	ory							Date: 10-Dec-03	
CLIENT: 1 Work Order: (Project: 1	Yew Mexico Salt Water Disposa 3311174 NMSWDCo Site Assessment							QC SUM Laboratory C	MARY REI ontrol Spike -	ORT
Sample ID LCS Client ID: Analyte Chloride	Balch ID: R10233 Result 4.602	Test Code: Run ID: POL 0.10	E300 LC_031202A SPK value 5	Units: mg/L SPK Ref Val	%REC 92.0	Analysis SeqNo: LowLimlt 90	5 Date 12/2/20 229747 HighLimit R 110	03 7:42:47 PM PD Ref Val	Prep Date %RPD RPDLim	t Qual
Sample ID LCS Client ID: Analyle Chloride	Batch ID: R10233 Result 4.615	Test Code: Run ID: P.QL 0.10	E300 LC_031202A SPK value 5	Units: mg/L SPK Ref Val 0	%REC 92.3	Analysis SeqNo: LowLimit 90	5 Date 12/3/20 229763 HighLimit R 110	03 12:10:45 AM PD Ref Val 0	Prep Date %RPD RPDLIm	t Qual
Sample ID LCS Client ID: Analyte Chloride	Batch ID: R10251 Result 4.955	Test Code: Run ID: P.QL 0.10	E300 LC_031203A SPK valua 5	Uruits: mg/L SPK Ref Val 0	%REC 99.1	Analysis SeqNo: LowLImit 90	s Date 12/3/20 230271 HighLimit R 110	03 5:42:09 PM PD Ref Val	Prep Date %RPD RPDLim	t Qual
Sample ID LCS-471! Client ID: Analyte Petroleum Hydrocarbo) Batch ID: 4719 Result ons, TR 93	Test Code: Run ID: PQL 20	E418.1 BUCK IR_03 SPK value 101	Units: mg/Kg 1125A SPK Ref Val 0	%REC 92.1	Analysis SeqNo: LowLimit B2	5 Date 11/25/2 228816 HighLmit R 114	003 PD Ref Val 0	Prep Date 11/24, %RPD RPDLim	2003 I Qual
Sample ID LCS-472(Client ID: Analyte	0 Batch ID: 4720 Result	Test Code: Run ID: PQL	E418.1 BUCK IR_03 ⁻ SPK value	Units: mg/Kg 1125A SPK Ref Val	%REC	Analysis SeqNo: LowLimit	: Dale 11/25/2 228840 HighLimit R	003 PD Ref Val	Prep Date 11/24 %RPD RPDLIm	2003 1 Qual
Petroleum Hydrocarbo Qualifiers: N	ons, TR 95 D - Not Detected at the Reporting Limit - Analyte detected below quantitation lin	20 aits	101 S - S R - RI	D Ike Recovery outside D outside accepted r	84.1 accepted rea	82 overy limits s	114 B.	0 - Annlyre detected i	a the associated Meth	d Blank J

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Blank	d in the associated Method	B - Analyte detected		savery limits	e necepted rec	ke Recovery aulsid	S - Spi		Detected at the Reporting Limit	rs: ND - Not D	Qualifier
		٥	130	76.9	96.1	0	20	1.0	19.22	elhene (TCE)	Trichloro
		a	117	70.7	82.4	0	20	1.0	16.48	oroethene	1,1-Dichl
		D	136	85.6	95.2	a	20	1.0	18.03	ຍບອວບ	Chloroba
		a	122	87.7	96.1	٥	20	1.0	19,22		Toluene
		Ð	122	71.2	93.6	o	20	1.0	1B.73		Benzene
Qual	%RPD RPDLimit	RPD Ref Val	HighLimit	LowLimit	%REC	SPK Ref Val	SPK value	Pal	Result		Analyte
		च	22963	SeqNo:		11201A		Run ID:			Client ID:
	Prep Date	2003	Date 12/1/	Analysis		Units: µg/L	SW8260B	Test Code:	Batch (D: R10229	D 100ng lcs	Sample I
		0	130	76.9	90.6	0	20	1.0	18.11	ethene (TCE)	Tríchlora
		0	117	70.7	83.4	0	20	1.0	16.68	aroethene	1,1-Dichi
		a	136	85.6	113	0	20	1.0	22.65	nzene	Chlarabe
		D	122	87.7	91.2	0	20	1.0	18.23		Toluene
		c	122	71 2	07.5	0	00	01	1R.49		Папаспа
Qual	%RPD RPDLImit	RPD Ref Val	HighLimit	LowLimit	%REC	SPIK Ref Val	SPK value	PQL	Result		Analyte
		Σ.	22862	SeqNo:		4A	THOR_03112	Run ID;			Client ID:
	Prep Date	12003	Date 11/24	Analysis		Units: µg/L	SW8260B	Test Code;	Batch ID: R10188	D 100ng lcs	Sample I
	0 20	95	114	82	94.1	Ø	101	20	95	n Hydrocarbons, TR	Petroleur
Qual	%RPD RPDLImit	RPD Ref Val	HighLimit	LowLImit	%REC	SPK Ref Val	SPK value	Pal	Result		Analyte.
		£j	22884	SeqNo:		125A	BUCK IR_031	Run ID:			Client ID:
03	Prep Date 11/24/20	1/2003	Date 11/25	Analysis		Units: mg/Kg	E418.1	Test Code:	Balch ID: 4720	D LCSD-4720	Sample I
licate	Control Spike Dup	Laboratory (DCo Site Assessment	MSMN :	Project
JRT	MMARY REPO	OC SUN								1. New INT Drder: 0311174	Work C
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S - Spike Recovery oulside accepted recovery limits
 R - RPD outside accepted recovery limits

J - Analyte detected below quantitation limits

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B - Analyte detected in the associated Method Blank

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Work Order: 0.11114 Project: NMSWDCo Site Assessment Sample ID LCS-4732 Batch ID: 4732 Test Code: SW8310 Cilent ID: Run ID: HUGO_0312 Analyte Result PQL SPK value Naphthatene 21.53 2.5 40.1 1-Methylnaphthatene 21.25 2.5 40.1 Acenaphthylene 19.27 2.5 40.1	D Units: µg/L .031206A ralue SPK Ref Val		Analysis SeaNo:	Date 12/7/20	Laboratory C	Control Spike - gene	ic I
Sample ID LCS-4732 Batch ID: 4732 Test Code: SW8310 Citent ID: Run ID: HUGO_0312 Analyte Run ID: HUGO_0312 Analyte Result PQL SPK value Naphthalene 21.53 2.5 40.1 1-Methylnaphthalene 21.25 2.6 40.1 Acenaphthylene 19.27 2.5 40.1	0 Units: µg/L 031206A ralue SPK Ref Vat		Analysis SeoNo:	Date 12/7/20	003 8:05:20 AM	Bran Date 11/26/2002	i
Cilent ID: Run ID: HUGO_0312 Analyte Result PQL SPK value Naphthalene 21.53 2.5 40.1 1-Methylnaphthalene 21.07 2.5 40.1 2-Methylnaphthalene 19.27 2.5 40.1 Acenaphthylene 19.27 2.5 40.1	031206A ralue SPK Ref Vat	048%	SeaNo:			Ligh Date 11/Faitenna	
AnalyteResultPQLSPK valueNaphthalene21.532.5401-Metrylnaphthalene21.072.540.12-Metrylnaphthalene21.252.540.1Acenaphthylene19.272.540.1Acenaphthylene19.272.540.1	alue SPK Ref Val	CHE%		231482			
Naphlhalene 21.53 2.5 40 1-Methylnaphthalene 21.07 2.5 40.1 2-Methylnaphthalene 21.25 20.1 2-Methylnaphthalene 21.25 20.1 Acenaphthylene 19.27 2.5 40.1 Acenaphthylene 19.27 2.5 40.1	0		LowLimit	HighLimit R	PD Ref Val	%RPD RPDLimit C	lau
1-Metrylnaphthalene 21.07 2.5 40.1 2-Meirylnaphthalene 21.25 20 40 Acenaphthylene 19.27 2.5 40 Acenaphthylene 22.16 2.5 40	40 0	53.8	21.7	60.8	0		
2-Methylnaphthalene 21.25 2.5 40 Acenaphthylene 19.27 2.5 40.1 Acenaphthene 27.6 40.1	40.1 0	52,5	22.7	61.7	0		
Acenaphthylene 19.27 2.5 40.1 Accorditione 25.6 40.1	40 0	53.1	20.8	61.5	0		
Areneohthene 2.5 40	40.1 0	48.0	27.4	58	Ø		
	40 0	55.4	28.4	66.2	O		
Fiuorene 2.35 0.80 4.01	4.01 0	58.6	33	67.5	0		
Phenanthrene 1.1 0.60 2.01	2.01 0	54.7	39.4	75.6	0		
Authracene 1.31 0.60 2.01	2.01 0	65.2	42.9	77.8	0		
Fluoranthene 2.6 0.30 4.01	4.01 0	64.8	54.1	81.8	0		
Pyrene 2.66 0.30 4.01	4.01 0 ·	66.3	51.5	89.4	0		
Benz(a)anthracene 0.31 0.020 0.401	.401 0	77.3	63.3	95.9	o		
Chrysene 1.45 0.20 2.01	2.01 0	72.1	63.4	93.8	0		
Benzo(b)fluoranthene 0.50 0.501	0.501 0	79.8	70.5	103	0		
Benzo(k)fluoranthene 0.21 0.020 0.25	0.25 0	84.D	71.3	102	0		
Benzo(a)pyrene 0.25 0.020 0.251	0.251 0	87.6	71.6	105	٥		
Dibenz(a,h)anthracena 0.46 0.040 0.501	0.501 0	91.8	73.6	108	Ο		
Benza(g,h,l)penylene 0.43 0.030 0.5	0.5 0.5	86.0	70.8	114	0		
	.002 0	92.8	78.6	107	0		
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R - RPD outside accepted recovery limits

J - Analyte detected below quantitation limits

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		O	0.005	0.00020	0,004491	Mercury
C LowLl	%REC	SPK Ref Val	SPK value	POL	Result	Analyta
Seq		31204A .	MI-LA254_00	Run ID:		Client ID:
Ana		Unils: mg/L	: SW7470	Test Code	Batch ID: 4772	Sample ID LCS-4772
5 71	1.98	0	1.002	0.080	0.897	Indeno(1,2,3-cd)pyrene
12 0	84.(0	0.5	0.030	0.42	Benzo(g,ħ,i)perylene
8 7:	89.1	0	0.501	0.040	0.45	Dibenz(a,h)anthracene
6 7	87.6	0	0.251	0.020	0.22	Benzo(a)pyrene
<u>۲</u>	84.1	0	0.25	0.020	0.21	Benzo(k)fluoranthene
8 7(79.6	0	0.501	0.050	0.4	Benzo(b)fluoranthene
1 6.	75.3	0	2.01	0.20	1.51	Chrysene
8 6.	74.1	o	0.401	0.020	0.3	Benz(a)anthracene
с. Э	64.(0	4.01	0.30	2.59	Pyrene
0 0	64.(0	4.01	0.30	2.59	Fluoranthene
2 4	65.2	0	2.01	0.60	1.31	Anthracene
2 3!	54.3	Ģ	2.01	0.60	1.09	Phenanthrene
6	27.1	0	4.01	0.80	2.31	Fluorene
0 21	54.(0	40	2.5	21.61	Acenaphlhene
2 2	48.	0	40.1	2.5	18.32	Acenaphthylene
B 2(50.5	a	40	2.5	20.32	2-Methylnaphthalene
4 2.	50.4	0	40.1	2.5	20,23	1-Methylnaphthalene
9 2.	50.9	0	40	2.5	20.35	Naphthalene
c rawli	%REC	SPK Ref Val	SPK value	PQL	Result	Analyte
Seq		06A	HUGO_0312	Run ID:		Client ID:
Ana		Units: µg/L	: SW8310	Test Code	Batch ID: 4732	Sample ID LCSD-4732
					SWDCo Site Assessment	Project: NMS
					174	Work Order: 0311
二百日 有 化二乙烯酸钙 网络保护院院院院院院院院 一道 有 机		%REC LowL %REC LowL 50.9 5 50.9 5 50.9 5 50.9 5 51.6 5 537.6 5 54.6 5 64.6 5 64.6 5 83.8 7 83.8 7 83.8 7 83.8 7 83.8 7 83.8 7 83.8 7 83.6 6 83.8 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 83.6 7 84.0 7 83.6 7 83.6 7 84.0 7 84.0 7 84.0 7 84.0 7 84.0 7 84.0 7 84.0 7 84.0 </td <td>Units: µg/L Ani 06A SPK Ref Val %REC SPK Ref Val %REC LowL 0 50.9 2 0 50.4 2 0 50.8 2 0 50.8 2 0 54.2 2 0 54.2 2 0 54.6 5 0 54.6 5 0 54.6 5 0 54.6 7 0 54.6 5 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 64.6 7 0 84.0 7 0 84.0 7 0 89.5 7 0 89.5 7 10 89.5 7 11011s: mg/L Mate 1204A SRef 1204A SRef</td> <td>SW8310 Units: µg/L Ani HUGO_031206A SPK Ref Val %REC LowL SPK value SPK Ref Val %REC LowL 40 0 50.9 2 40 0 50.8 2 40 0 50.8 2 40 0 50.8 2 40 0 54.2 2 401 0 54.2 2 401 0 54.6 2 401 0 54.2 2 2.01 0 54.6 2 4.01 0 54.6 2 2.01 0 54.6 2 2.01 0 54.6 2 2.01 0 54.6 7 2.01 0 54.6 7 2.01 0 54.6 7 2.01 0 74.8 6 2.01 0 74.8 6 2.01 0 74.8 6 2.01 0 74.8 7 0.501 0 74.8 7 0.501 0 74.8 7 0.501 0 64.6 7</td> <td>Test Code: SW8310 Units: Hg/L Anit Run ID: HUGO_031206A SPK value SPK Value SP PQL SPK value SPK Kal %REC LowL 2.5 40.1 0 50.9 2 2.5 40.1 0 50.8 2 2.5 40.1 0 50.8 2 2.5 40.1 0 54.0 2 2.5 40.1 0 54.0 2 2.5 40.1 0 54.2 2 2.5 40.1 0 54.2 2 2 2.5 40.1 0 54.2 <</td> <td>174 Batch ID: 4732 Test Code: SW8310 Units: pg/L Am Batch ID: 4732 Test Code: SW8310 Units: pg/L Am Batch ID: 4732 Test Code: SW8310 Units: pg/L Am Result PQL SPK value SPK Ref Val %REC LowL 20.35 2.55 40.1 0 50.9 2 2 20.31 2.55 40.1 0 50.4 2 2 20.32 2.55 40.1 0 50.4 2 2 20.32 2.55 40.1 0 54.0 2 2 2 2 4 2</td>	Units: µg/L Ani 06A SPK Ref Val %REC SPK Ref Val %REC LowL 0 50.9 2 0 50.4 2 0 50.8 2 0 50.8 2 0 54.2 2 0 54.2 2 0 54.6 5 0 54.6 5 0 54.6 5 0 54.6 7 0 54.6 5 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 54.6 7 0 64.6 7 0 84.0 7 0 84.0 7 0 89.5 7 0 89.5 7 10 89.5 7 11011s: mg/L Mate 1204A SRef 1204A SRef	SW8310 Units: µg/L Ani HUGO_031206A SPK Ref Val %REC LowL SPK value SPK Ref Val %REC LowL 40 0 50.9 2 40 0 50.8 2 40 0 50.8 2 40 0 50.8 2 40 0 54.2 2 401 0 54.2 2 401 0 54.6 2 401 0 54.2 2 2.01 0 54.6 2 4.01 0 54.6 2 2.01 0 54.6 2 2.01 0 54.6 2 2.01 0 54.6 7 2.01 0 54.6 7 2.01 0 54.6 7 2.01 0 74.8 6 2.01 0 74.8 6 2.01 0 74.8 6 2.01 0 74.8 7 0.501 0 74.8 7 0.501 0 74.8 7 0.501 0 64.6 7	Test Code: SW8310 Units: Hg/L Anit Run ID: HUGO_031206A SPK value SPK Value SP PQL SPK value SPK Kal %REC LowL 2.5 40.1 0 50.9 2 2.5 40.1 0 50.8 2 2.5 40.1 0 50.8 2 2.5 40.1 0 54.0 2 2.5 40.1 0 54.0 2 2.5 40.1 0 54.2 2 2.5 40.1 0 54.2 2 2 2.5 40.1 0 54.2 <	174 Batch ID: 4732 Test Code: SW8310 Units: pg/L Am Batch ID: 4732 Test Code: SW8310 Units: pg/L Am Batch ID: 4732 Test Code: SW8310 Units: pg/L Am Result PQL SPK value SPK Ref Val %REC LowL 20.35 2.55 40.1 0 50.9 2 2 20.31 2.55 40.1 0 50.4 2 2 20.32 2.55 40.1 0 50.4 2 2 20.32 2.55 40.1 0 54.0 2 2 2 2 4 2

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R - RPD outside accepted recovery limits

J - Analyte detected below quantitation limits

CLLENT: N Work Order: 02 Project: N	ew Mexico Salt Water Dispos 11114 MSWDCo Site Assessment	al Co.						QC SUM Laboratory Co	MARY ontrol Sp	REPO	RT
Sample ID LCSD-4772	: Batch ID: 4772	Test Code:	SW7470	Units: mg/L		Analysis	12/4/2	2003	Prep Date	s 12/3/2003	
Cilent IU: Analyte	Result		SPK value	SPK Ref Val	%REC	oeqivu. LowLimit	HighLimit	s RPD Ref Val	1 OGA%	2PDLImit	Qual
Mercury	0.005345	0.00020	0.005	0	107	75.2	134	0.004491	17.4	0	
Sample ID LCS-4759	Batch ID: 4759	Test Code:	SW6010A	Unlts: mg/L		Analysis	Date 12/3/2	2003 1:57:54 PM	Prep Date	3 12/2/2003	
Cilent ID:		Run ID:	ICP_0312034			SeqNo:	23010	ব			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLImit	Qual
Barlum	0.4798	0.020	0.5	0	96.0	80	120	0			
Cadmium	0.4789	0.0020	0.5	0	95.8	80	120	0			
Chromium	0.4938	0.0060	0.5	a	98.8	80	120	0			
Lead	0.476	0.0050	0.5	D	95.2	80	120	Ø			
Silver	0.4891	0.0050	0.5	0	97.8	80	120	0			
Sample ID LCSD-475) Batch ID: 4759	Test Code:	SW6010A	Unlts: mg/L		Analysis	Date 12/3/2	2003 2:01:46 PM	Prep Date	a 12/2/2003	
Client ID:		Run ID:	ICP_031203A	_		SeqNo:	23010	2			
Analyte	Result	Pal	SPK value	SPK Ref Val	%REC	LowLimit	HighLimIt	RPD Ref Val	%RPD	RPDLimil	Qual
Barlum	0.4831	0.020	0.5	D	96.6	80	120	0.4798	0.677	20	
Cadmlum	0.484	0.0020	0.5	0	96.8	80	120	0.4789	1.05	20	
Chramlum	0,4985	0.0080	0.5	D	99.7	80	120	0.4938	0.950	20	
Lead	0.4666	0.0050	0.5	a	93.3	80	120	0.476	2.01	20	
Silver	0.4945	0.0050	0.5	0	98.9	80	120	0.4891	1.08	20	

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S - Spike Recovery outside accepted recovery limits R - RPD outside accepted recovery limits

limits B - Analyte detected in the associated Method Blank

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Not Detected at the Ruporting Limit
 Analyte detected below quantitation limits

Qualifiers:

Action 10, 1733 Laboratory Control Spike - gend act Indextory Control Spike - gend act Run D: Test Code: SW010A Units: mpl. Analysis Date Page Date 122/2003 157:54 M Page Date 122/2003	ect: NMSV	touton date Mater Lispuan	, oj		•				いっと	I VIWIAII		IVI
In the indext of the indextof the indext of the indext of the indext of the	•	VDCo Site Assessment							Laboratory (Control S	pike - geı	neric
D: Run ID: Rp - 123 SeqNo: 230246 0 4957 0.020 0.5 9 9.6 120 9.6 9.6 0 0.4957 0.020 0.5 0 9.6 120 0 9.6 0 0.4758 0.020 0.5 0 9.6 120 0 9.6 0 0.4758 0.0020 0.5 0 9.6 120 0 9.6 0 0.4758 0.0020 0.5 0 9.6 120 0 9.6 0 0.4758 0.0020 0.5 0 9.6 120 0 9.6 0 0.4552 0.0020 0.5 0 9.7 120 0 9.6 120 0 120	a ID LCS-4759	Batch ID: 4759	Test Code:	SW6010A	Units: mg/L		Analysis	Date 12/3	/2003 1:57:54 PM	Prep Dal	e 12/2/2003	
matrix Pol, SPK value SPK rate Val MREC LowUhit High Limit Rep Crat Val SPC Limit 0 0.455 0.020 0.5 0 95.1 60 120 0 0 0.4780 0.0020 0.5 0 95.1 60 120 0 0 0.4780 0.0030 0.5 0 95.2 60 120 0 0 0.4780 0.0030 0.5 0 95.2 80 120 0 0 0.4780 0.0030 0.5 0 95.2 80 120 0 0 0.4780 0.0030 0.5 0 95.2 80 120 0 0 0.4830 0.0120 0.75 0 96.3 120 760 10 0 10.50 0.75 0 97.3 80 120 120 12 0 10.50 0.75 0 97.4	D:		Run ID:	ICP_031203E			SeqNo:	2302	46			
α 0.457 0.20 0.2 0.6 120 0 120 0 0.4736 0.020 0.5 0 960 120 0 0 0.4736 0.0060 0.5 0 960 120 0 0 0.4730 0.0060 0.5 0 960 120 0 0 0.4631 0.0060 0.5 0 960 120 0 0 0.4681 0.0060 0.5 0 960 120 0 0 0.4681 0.0060 0.5 0 120 0 0 0.4681 0.0020 0.5 0 0.6 120 0 0 0.4481 $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$ $PolL$	ť	Result	Pal	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1 0.4796 0.020 0.5 0 96.0 120 0 0 0.1 0.4786 0.0020 0.5 0 96.8 80 120 0 0.1 0.4786 0.0050 0.5 0 96.8 80 120 0 0.1 0.4786 0.0050 0.5 0 96.3 80 120 0 0.1 0.4786 0.0050 0.5 0 97.8 80 120 0 0.4781 0.0050 0.5 0 97.8 60 120 0 0.4481 0.0050 0.5 0 70.4 50.4 747.9 747.9 1 LCL 1.4 SKR1K1V1 KHC LouLinit HPDR1v1 747.0 200.1 1 LCL 0.3 0.5 0 96.1 20.7 20 1 LCL 0.3 0.5 0 96.1 120 0.487 20.1	0	0.4957	0.020	0.5	o	99.1	80	120	o			
Unt 0.4780 0.0020 0.5 0 95 80 120 0 0.4133 0.0060 0.5 0 95.2 80 120 0 0.4131 0.0050 0.5 0 95.2 80 120 0 0.4131 0.0200 0.5 0 97.3 80 120 0 1D: 0.4321 0.0200 0.5 0 97.3 80 120 0 1D: 0.4911 0.0150 0.5 0 97.3 80 120 0 1D: 1D: PCU SMB10A Init:::mpL Analysis Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:46 PM Pres Date 1202003201:		0.4798	0.020	0.5	0	96.0	80	120	0			
Ium 0.4030 0.0060 0.5 0 9.2 0 120 0 0.4361 0.0050 0.5 0 95.2 00 120 0 0.4461 0.0050 0.5 0 97.3 0 120 0 0.4461 0.0050 0.5 0 97.4 Analysis Data 120 0 10. LCSD-4739 Bauch D: 4759 Test Code: Swep10A Units: mg/L Analysis Data 122/2003 10 122/2003 10. LCSD-4739 Test Code: Swep10A Units: mg/L Analysis Data 122/2003 2014 122/2003 10. CP Sequel 2004 XaRD Mark Infullimit PDD Are 2024 10. 0.4465 0.0200 0.5 0 97.4 2004 201 20 10. 0.4466 0.0200 0.5 0 97.4 200 203 201 20 203 20 20 20 <td>lum</td> <td>0.4789</td> <td>0.0020</td> <td>0.5</td> <td>0</td> <td>95.8</td> <td>80</td> <td>120</td> <td>o</td> <td></td> <td></td> <td></td>	lum	0.4789	0.0020	0.5	0	95.8	80	120	o			
International 0.476 0.0020 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.002 0.05 0.005 0	nlum	0.4938	0.0060	0.5	0	98.8	80	120	0			
Im 0,5228 0.020 0.52 0 120 0 120 0 (e1) LCSD-4759 Batch 1D: 4759 0.0690 0.5 0 97.8 60 120 0 700 0 (e1) LCSD-4759 Batch 1D: 4759 Test Codes: SW6010A Units: mg/L Analysis Data 122/2003 2.011-46 FM Prop. 122/2003 1D: Run 1D: CPL SPK Varlue SRPK No. 230247 249 2000 1D: 0.4887 0.0200 0.5 0 97.1 860/N: 210 0.497 20 1D: 0.4885 0.0200 0.5 0 97.1 860/N: 200 667 20 1D: 0.4466 0.0200 0.5 0 99.3 860 120 0.479 20 20 1D: 0.4466 0.0200 0.5 0 99.3 66 120 0.479 20 20 1D: 0.4466 0.0050		0.476	0.0050	0.5	¢	95.2	80	120	٥			
0.4861 0.0050 0.5 0 97.4 60 120 0 (e1) LCSD-4759 Batch ID: 4759 Test Code: SW010A Units: mg/L Analysis Data 12/3/2003 Pep Date 12/2/2003 (D: Run ID: CP_031203B Units: mg/L Analysis Data 12/3/2003 2/0457 Pep Date 12/2/2003 (D: 0.4857 0.020 0.5 0 97.1 8eq/uc: 2/0457 2/05 2/05 (D: 0.4866 0.0060 0.5 0 95.4 8eq/uc: 2/07 2/05 2/05 (D: 0.4866 0.0060 0.5 0 99.3 80 120 0.4793 0.657 2/05 (D: 0.4466 0.0050 0.5 0 99.3 80 120 0.4793 0.657 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05 2/05	lum	0.5228	0.020	0.5	0	105	80	120	O			
(c) LCSD-4759 Batch ID: 4759 Test Code: Web10A Units: mg/L Analysis Date 12/31203 2:01:46 PM Prep Date 12/22003 1D: Run ID: Run ID: Run ID: SeqNo: 30347 SeqNo: 30347 Analysis Date 12/31203 2:01:46 PM Prep Date 12/22003 2:01:46 PM Prep Date 12/22003 10 Prep Date 12/22003 2:01:46 PM Prep Date 12/22003 2:01:46 PM Prep Date 12/22003 2:01:46 PM Prep Date 12/22003 2:01:47 PM Prep Date 12/22003 2:01:46 PM Prep Date 12/22003 2:01:46 PM Prep Date 12/22003 2:01:46 PM Prep Date 12/22003 2:01:47 PM Prep Date 12/22003 2:01:47 PM		0,4891	0,0050	0.5	0	97.8	80	120	o			
ID: Run ID: CP_0031203H SeqNo: 30247 SeqNo: 30247 SeqNo: 7001 POL P	le ID LCSD-4759	Batch ID: 4759	Test Code:	SW6010A	Units: mg/L		Analysis	Date 12/3	/2003 2:01:46 PM	Prep Dat	e 12/2/2003	
(c) Result POL SPK value SMEC Low High limit RPD Rat Val SMED RPD limit (c) 0.4857 0.020 0.5 0 97.1 80 120 0.4957 2.05 20 (c) 0.4857 0.020 0.5 0 95.8 80 120 0.4957 2.05 20 (u) 0.484 0.0020 0.5 0 95.8 80 120 0.4957 2.05 20 (u) 0.4866 0.0050 0.5 0 95.7 80 120 0.4789 1.05 20 (u) 0.4866 0.0050 0.5 0 93.3 80 120 0.4789 1.05 20 20 (u) 0.4666 0.0050 0.5 0 93.3 80 120 0.4789 1.05 20 20 20 20 20 20 20 20 20 20 20 20 20	10:		Run ID:	ICP_031203E	~		SeqNo:	2302	47			
(c) (c) <td>e</td> <td>Result</td> <td>Pal</td> <td>SPK value</td> <td>SPK Ref Val</td> <td>%REC</td> <td>LawLimlt</td> <td>HighLimit</td> <td>RPD Ref Val</td> <td>047%</td> <td>RPDLImit</td> <td>Qual</td>	e	Result	Pal	SPK value	SPK Ref Val	%REC	LawLimlt	HighLimit	RPD Ref Val	047%	RPDLImit	Qual
n 0.4831 0.020 0.5 0 96.6 80 120 0.479 0.677 20 nim 0.484 0.0020 0.5 0 99.7 80 120 0.4789 1.05 20 nim 0.4885 0.0060 0.5 0 99.7 80 120 0.4789 1.05 20 nim 0.4886 0.0050 0.5 0 99.7 80 120 0.4789 1.05 20 0.4966 0.0050 0.5 0 93.3 80 120 0.4789 2.01 20 0.4966 0.0050 0.55 0 93.3 80 120 0.478 2.01 20 0.4967 1.05 0.5528 0.0200 0.55 0 90.307 20 20 0.1 10.1 1.015 1.015 1.05 0.478 2.01 20 20 20 20 20 20 20 20	2	0.4857	0.020	0.5	o	97.1	80	120	0.4957	2.05	20	
Lum 0.484 0.0020 0.5 0 95.8 80 120 0.4789 1.05 20 nium 0.4885 0.0050 0.5 0 99.7 80 120 0.4938 0.960 20 nium 0.4885 0.0050 0.5 0.5 0 93.3 80 120 0.4938 0.960 20 um 0.523 0.0050 0.5 0.5 0 93.3 80 120 0.4769 2.01 20 um 0.5233 0.0050 0.5 0 93.3 80 120 0.4769 2.01 20 um 0.5233 0.0050 0.5 0 93.3 80 120 0.43931 1.08 201 20 um 0.44051 Test Code: Test Code: Test Code: Test Code: Test Code: Test Code: 201 203 20 201 20 201 20 201 20 201 <td< td=""><td>E</td><td>0.4831</td><td>0.020</td><td>0.5</td><td>0</td><td>96.6</td><td>80</td><td>120</td><td>0.4798</td><td>0.677</td><td>20</td><td></td></td<>	E	0.4831	0.020	0.5	0	96.6	80	120	0.4798	0.677	20	
Itum 0.4985 0.0060 0.5 0 99.7 80 120 0.476 2.01 20 um 0.5223 0.0050 0.5 0 93.3 80 120 0.476 2.01 20 um 0.5523 0.0050 0.5 0.5 0 98.3 80 120 0.476 2.01 20 um 0.5523 0.0050 0.5 0.5 0 98.3 80 120 0.0307 20 um 0.5523 0.0050 0.5 0.5 0 98.3 80 120 0.0307 20 a [D LCS-4740 Batch ID: 4740 Test Code: E160.1 Units: mg/L Analysis Date 17/12003 1.0B 1.0B 20 Discolved Solids Run ID: WC_031201A 3 SeqNo: 223357 Rep Date 11/126/2003 Discolved Solids 1002 0 10 80 120 0 10 10 <td>um</td> <td>0.484</td> <td>0.0020</td> <td>0.5</td> <td>0</td> <td>96.8</td> <td>80</td> <td>120</td> <td>0.4789</td> <td>1.05</td> <td>20</td> <td></td>	um	0.484	0.0020	0.5	0	96.8	80	120	0.4789	1.05	20	
um 0.4666 0.0050 0.5 0 93.3 60 120 0.476 2.01 20 0.523 0.020 0.5 0.5 0 120 0.5228 0.0307 20 0.4945 0.0200 0.5 0.5 0 120 0.4391 1.08 20 10 1.5 0.4945 0.0050 0.5 0.5 0.0307 20 10 1.5 0.4945 0.5 0.5 0.4991 1.08 20 10 1.5 1.5 0.5 0.5 0.5235 0.0307 20 10 10 10: 10: Mile:	lium	0,4985	0.0060	0.5	0	99.7	80	120	0.4938	0.950	20	
um 0.523 0.020 0.5 0.0307 20 203 20 203 20 a lD 0.4945 0.0050 0.5 0.5 0 98.8 80 120 0.5228 0.0307 20 a lD LC5-4740 Batch ID: 4740 Test Code: E160.1 Units: mg/L Analysis Date 12/1/2003 7-rep Date 11/26/2003 b LC5-4740 Batch ID: 4740 Test Code: E160.1 Units: mg/L Analysis Date 12/1/2003 7-rep Date 11/26/2003 b LC5-4740 Batch ID: 4740 Test Code: E160.1 Units: mg/L Analysis Date 12/1/2003 7-rep Date 11/26/2003 D: Run ID: WC_031201A SeqNo: 229357 SeqNo: 229357 B: Rou ID: POL SPK Kef Val %REC LowLimit HighLimit RPD Ref Val %RPD M I		0.4666	0.0050	0.5	0	93.3	80	120	0.476	2.01	20	
a ID 0.4945 0.0050 0.5 0.5 0 98.9 60 120 0.4891 1.08 20 a ID LCS-4740 Batch ID: 4740 Test Code: E160.1 Units: mg/L Analysis Date 12/1/2003 Prep Date 11/26/2003 ID: Run ID: WC_031201A SeqNo: Z23357 Prep Date 11/26/2013 ID: Run ID: WC_031201A SeqNo: Z23357 Prep Date 11/26/2013 ID: Run ID: WC_031201A SeqNo: Z10 Z0357 Prep Date 11/26/2013 ID: PCL SPK Kef Val %REC LowLimit RPD Ref Val %RPD RPDI.Imit ID: 1.00 100 0 100 80 120 0 N <	ШП	0.523	0.020	0.5	0	105	80	120	0.5228	0.0307	20	
Io LCS-4740 Test Code: F160.1 Units: mg/L Analysis Date 12/1/2003 Prep Date 11/26/2003 ID: Run ID: WC_031201A SeqNo: 229357 SeqNo: 229357 ID: Result PQL SPK value SPK Ref Val %REC LowLimit RPD Ref Val %RPD RPDLImit Siscived Solids 1002 1.0 1000 0 100 80 120 0 N		0.4945	0.0050	0.5	0	98.9	80	120	0.4891	1.08	20	
ID: Run ID: WC_031201A SeqNo: 229357 e Result PQL SPK value SPK Ref Val %REC LowLimit RPD Ref Val %RP Dissolved Solids 1002 1.0 1000 0 100 80 120 0	le ID LCS-4740	Batch ID: 4740	Test Code:	E160.1	Units: mg/L		Analysis	Dale 12/1	/2003	Prep Dat	e 11/26/200	
Result PCIL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit 0 Dissolved Solids 1002 1.0 1000 0 100 80 120 0	D:		Run ID:	WC_031201A			SeqNo:	2293	57			
Discolved Solids 1002 1.0 1000 0 100 80 120 0	Ð	Result	Par	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLImit	Qual
	Dissolved Solids	1002	1.0	1000	0	100	80	120	0			

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pplied: iACF C 'DC 'S Jmc	in in in		XX				$\overline{\mathbf{v}}$			$ \forall $	
Ition A strong	C I I I	ND_A	<u> </u>	\sim	\mathbb{P}	γ	$\overset{\sim}{+}$	\rightarrow			three)
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Clayton M. Barnhill, PG Project Manager CMB Environmental & Geological Services, Inc. PO Box 2304 Roswell, NM 88202-2304 (505) 622-2012

Dear Mr. Barnhill:

Enclosed is the final report for the NMSWDCo - SB-3A job. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

We are pleased to provide this service to CDM and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

Daniel O'Dowd Enclosure

Daniel B. Stephens & Associates, Inc.

6020 Academy NE, Suite 100

Albuquerque, NM 87109

505-822-9400 FAX 505-822-8877



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Daniel B. Stephens & Associates, Inc.

Summary of Tests Performed

		Saturated							1/3, 15 Bar		
	Initial Soil	Hydraulic	Moisture	Unsaturated	Particle		·		Points and		
Laboratory	Properties ¹	Conductivity ²	Characteristics ³	Hydraulic	Size ⁴	Effective		Air	Water Holding	Atterberg	Proctor
Sample Number	(θ, ρ _d , φ)	CH FH	HC PP TH WP RH	Conductivity	DS WS H	Porosity	TOC	Permeability	Capacity	Limits	Compaction
SB-3A (34-36)	×	×	111214000000000			×	×				

¹ θ = Initial moisture content, ρ_d = Dry bulk density, ϕ = Calculated porosity

² CH = Constant head, FH = falling head
 ³ HC = Hanging column, PP = Pressure plate, TH = Thermocouple psychrometer, WP = Water activity meter, RH = Relative humidity box
 ⁴ DS = Dry sieve, WS = Wet sieve, H = Hydrometer

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Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

	Initial Moist	Initial Moisture Content		Wet Bulk	Calculated
	Gravimetric	Volumetric	Density	Density	Porositý
Sample Number	(%, g/g)	(%, cm ³ /cm ³)	(g/cm ³)	(g/cm ³)	(%)
SB-3A (34-36)	14.1	26.9	1.90	2.17	28.3

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Summary of Saturated Hydraulic Conductivity Tests

	Κ _{sat}	Intrinsic Permeability	Method of	f Analysis
Sample Number	(cm/sec)	(cm ²)	Constant Head	Falling Head
SB3A (34-36)	1.5E-08	1.5E-13		Х

1.5

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1.0

Summary of Effective Porosity Tests

	Effective Porosity
Sample Number	(% cm ³ /cm ³)
	Б. Г.
SB-3A (34-30)	0.0

Summary of Total Organic Carbon Tests

Sample Number

Fraction Organic Carbon (%)

*ND

SB3A (34-36)

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*ND--Not detectable at reporting limit. See data sheets.

Analysis provided by Hall Environmental, Albuquerque, NM.

Raw Laboratory Data and Graphical Plots

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Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

	Initial Mois	Initial Moisture Content		Wet Bulk	Calculated
	Gravimetric	Volumetric	Density	Density	Porosity
Sample Number	(%, g/g)	(%, cm ³ /cm ³)	(g/cm ³)	(g/cm ³)	(%)
SB-3A (34-36)	14.1	26.9	1.90	2.17	28.3



Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: CMB-NMSWDCo Job Number: WR03.0249.00 Sample Number: SB-3A (34-36) Ring Number: NA Depth: NA

Test Date: 3-Dec-03

Field weight* of sample (g): 88.66 Tare weight, ring (g): 21.89 Tare weight, cap/plate/epoxy (g): 0.00

> Dry weight of sample (g): 58.50 Sample volume (cm³): 30.79 Assumed particle density: 2.65

Initial Volumetric Moisture Content (% vol): 26.9
Initial Gravimetric Moisture Content (% g/g): 14.1
Dry bulk density (g/cm ³): 1.90
Wet bulk density (g/cm ³): 2.17
Calculated Porosity (% vol): 28.3
Percent Saturation: 94.9

Comments:

* Weight including tares

Laboratory analysis by: D. O'Dowd Data entered by: D. O'Dowd Checked by: R. Smith



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Daniel B. Stephens & Associates, Inc.

Summary of Saturated Hydraulic Conductivity Tests

	K _{sat}	Intrinsic Permeability	Method of	f Analysis
Sample Number	(cm/sec)	(cm ²)	Constant Head	Falling Head
SR3A (34 36)		1 55 13		v
3D3A (34-30)	1.52-08	1.5E-15		~

Saturated Hydraulic Conductivity Falling Head Method

Job name:	CMB-NMSWDCo	. Type of water used:	TAP
Job number:	WR03.0249.00	Backpressure (psi):	2.5
Sample number:	SB-3A (34-36)	Offset (cm):	1.1
Ring number:	NA	Sample length (cm):	2.94
_ Depth:	NA	Sample x-sectional area (cm ²):	10.47
		Reservoir x-sectional area (cm ²):	0.70

Date	Time	Temp (°C)	Reservoir head (cm)	Corrected head (cm)	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Taet # 1.							
08-Dec-03	10:19:35	19.0	112.3	287.0	19149	2.0E-08	2.0E-08
08-Dec-03	15:38:44	19.0	111.8	286.4			2.02.00
Test # 2:							
08-Dec-03	15:38:44	19.0	111.8	286.4	67303	1.1E-08	1.1E-08
09-Dec-03	10:20:27	19.5	110.7	285.3			
Test # 3:							
09-Dec-03	10:20:27	19.5	110.7	285.3	105018	1.3E-08	1.3E-08
10-Dec-03	15:30:45	19.5	108.7	283.3			

Average Ksat (cm/sec): 1.5E-08

Comments:

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Laboratory analysis by: J. Hines Data entered by: D. O'Dowd Checked by: D. O'Dowd

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Summary of Effective Porosity Tests

	Effective Porosity
Sample Number	<u>(% cm³/cm³)</u>
· ·	
SB-3A (34-36)	5.5

Effective Porosity Data

Job Name: CMB-NMSWDCo Job Number: WR03.0249.00 Sample Number: SB-3A (34-36) Ring Number: NA Depth: NA

Test Date: 10-Dec-03

Test 2

Sample Dry Weight* (g): 136.22 Tare Weight (g): 114.91 Bulk Density (g/cm³): 1.90 Calculated Porosity (% cm³/cm³): 28.3

Test 1	
Thermocouple potential (-bars):	14.4
Sample weight* at -14.4 bars (g):	139.0
Moisture content (% g/g):	13.0
<i>Moisture content</i> (% cm ³ /cm ³):	24.8
Matric potential (-cm):	14,685

Thermocouple potential (-bars):	16.4
Sample weight* at -16.4 bars (g):	138.3
Moisture content (% g/g):	9.6
<i>Moisture content</i> (% cm ³ /cm ³):	18.2
Matric potential (-cm):	16,725
	······

Moisture content at -15 bars (% cm³/cm³): 22.8

Effective porosity (% cm³/cm³): 5.5

Comments:

* Weight including tares

Laboratory analysis by: D. O'Dowd Data entered by: D. O'Dowd Checked by: D. O'Dowd



Summary of Total Organic Carbon Tests

Sample Number

Fraction Organic Carbon (%)

SB3A (34-36)

*ND

*ND--Not detectable at reporting limit. See data sheets.

Analysis provided by Hall Environmental, Albuquerque, NM.

Hall Environmental Analysis Laboratory

Date: 26-Dec-03

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CLIENT:	Daniel B. Stephens & As	soc.		Client Sample	ID: SB3A	. (34-36)
Lab Order:	0312028			Tag Numb	er:	
Project:	CMB			Collection Da	ate: 12/3/2	2003 10:00:00 AM
Lab ID:	0312028-01A			Mati	rix: SOIL	
Analyses		Result	Limit (Qual Units	DF	Date Analyzed
TOC BY WALK	LEY BLACK					Analyst: IC
TOC		ND	0.10	% C	1	12/26/2003

Qualifiers:

ND - Not Detected at the Reporting Limit

- J Analyte detected below quantitation limits
- B Analyte detected in the associated Method Blank
- * Value exceeds Maximum Contaminant Level
- S Spike Recovery outside accepted recovery limits
- R RPD outside accepted recovery limits
- E Value above quantitation range

CLIENT: Work Order: Project:	Daniel B. Stephen 0312028 CMB	s & Assoc.						QC SU	MMARY REPO Method B
Sample ID MB Client ID:	Batch IC): R10479	Test Code: Run ID:	Walkley Bla WC_031226	c Units: % C A		Analysis SeqNo:	Date 12/26/2003 237506	Prep Date
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit
0		9	0.10						
Qualifiers:	ND - Not Detected at the	e Reporting Limit		s - St	oike Recovery outside	e accepted reco	very limits	B - Analyte detect	ted in the associated Method Bl
	I Anning datantad halo	w anantitation lin	nits	R - R	PD outside accepted	recovery limits			

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Sample ID LCS Batri ID: R101D: WC. Code: WMaly Blac L Marking Dlate Rap Date Prop Date Client ID: Run ID: WC. 231226A Seq No: 237511 MePD RPD Did Analysis Data POL SYK value SYK Ref Val MEEC LowLinit Hightimit RPD Ref Val WPD RPD Initi PEOC 2.22 0.10 2 0 11 80 120 0 Init RD Init FEOL Run ID: WC. LowLinit Hightimit RPD Ref Val MPD Init RPD Init	Project:	CMB							Laboratory	Control	spike - ge	snenc
Outline And Market And Market Sample Poll in Rep In the Instrume Rep Instrume	Sample ID LCS	Batch ID: R10479	Test Code:	Walkley Blac	: Units: % C		Analysis	Date 12/2	6/2003	Prep D	ate	
FDC 2.22 0.10 2 0 11 80 120 0 Sample ID LCS Batch ID: R10479 Test Code: WAIKAP Blad Units: %C Analysis Date Prep Date Clent ID: Batch ID: R10479 Test Code: WAIKAP Blad Units: %C Analysis Date 227503 Prep Date Clent ID: Moduli Preside POL SPK ref Val %REC LowImit HighLimit RPD RPD Internation TOC 2.89 0.10 2.6 0 111 80 120 0 PLD Internation TOC 2.89 0.10 2.6 0 111 80 120 0 PLD Internation TOC 2.89 0.10 2.6 0 111 80 120 0 PLD Internation TOC 2.89 0.10 2.6 0 111 80 120 0 PLD Internation Total Automation 2.8 0.10 2.6 0 111 80 Analyre datered i	Cirent ID: Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Seqivo: LowLimit	HighLimit	II RPD Ref Val	%RPD	RPDLimit	Qua
Bample ID LCS Batch ID: R10473 Test Code: Walktey Blac Mins: %C Analysis Date Prep Date Client ID: Run ID: WC_031226A SeqNo: 237507 Prep Date Analysis Date PGL SPK Nath SeqNo: 237507 Prep Date Analysis Date PGL SPK Nath SeqNo: 237507 Prep Date Analysis Date PGL SPK Nath SREC LowLimit HighLimit RPD Nath TOC 2.89 0.10 2.6 0 111 80 120 0 TOC 2.89 0.10 2.6 0 111 80 120 0	FOC	2.22	0.10	7	0	111	80	120	0		The solution of second second second second	-
Client L: Rault Wr03126A SeqNo: 23767 Analyle Result POL SFK Ket Val SAEC LowLimit HghLimit RPD Ref Val %RPD RPDLimit Analyle Result POL SFK Ket Val %RPC LowLimit HghLimit RPD Ref Val %RPD RPDLimit FOC 2.89 0.10 2.6 0 111 80 120 0 ND FOC 2.89 0.10 2.6 0 111 80 120 0 ND Analyte decend at the Reputig Limit S S Spik Recovery outsite accepted recovery limits B - Amlyte decerted in the saccented Method	Sample ID LCS	Batch ID: R10479	Test Code:	Walktey Blac	Units: % C		Analysis	: Date 12/2	6/2003	Prep Da	ate	
Analytic Result PQL SPK rative SP	Client ID:		Run ID:	WC_031226A			SeqNo:	2375(07			
TOC 2.89 0.10 2.6 0 11 60 120 0 VIA Description 2.5 Description 2.5 Description 0 1.1 1.4 Analyte detected in the associated Method 1.4 Analyte detected in the second recovery onside accepted recovery limits 2.5 Spile Recovery onside accepted recovery limits Description Description	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Que
Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method I. A nalyte detected behave quantitation limits R - RPD outside accented recovery limits B - Analyte detected in the associated Method	0	5.89	0.10	0. N	0	÷	Sa	120	o .			
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Laboratory Tests and Methods

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Methods for Geotechnical samples

Dry Bulk Density: ASTM D 4531-91

Moisture Content: ASTM D 2216-92

Calculated Porosity Klute, A. 1986. Porosty. Chp.18-2.1, pp. 444-445, in A. Klute (ed.), Methods of Soil Analysis, American Society of Agronomy, Madison, WI

Intrinsic permeability: Fetter, C. W. 1994, P.96, Applied Hydrogeology, 3rd ed, Printice Hall

Ksat:

Falling Head: Klute, A. and C. Dirkson. 1986. Hydraulic Conductivity and Diffusivity: Laboratory Methods. Chp. 28, pp. 200-203, in A. Klute (ed.), Methods of Soil Analysis, American Society of Agronomy, Madison, Wi

Effective Porosity: Corey, A. T. 1986 Chp. 2.3.3, pp. 40-42, in A. T. Corey, Mechanics of Immiscible Fluids in Porous Media, Book Crafters, Inc., Chelsea, Michigan, U.S.A.

TOC: Page, A. L. 1982 Chp. 19-3, pp. 570-571, in A. L. Page (ed), Methods of Soil Analysis American Society of Agronomy, Madison, WI